NISM CERTIFICATION EXAMINATION WORK BOOK

V-D

Mutual Fund - Specialized Investment Fund Distributors

National Institute of Securities Markets
A Capacity Building Initiative of SEBI

Workbook for
NISM-Series-V-D: Mutual Fund - Specialized Investment Fund Distributors Certification Examination

National Institute of Securities Markets
A Capacity Building Initiative of SEBI

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This workbook has been developed to assist candidates in preparing for the National Institute of Securities Markets (NISM) Certification Examination for Mutual Fund - Specialized Investment Fund Distributors.[1]

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[1]This workbook is a consolidated study material for the Mutual Fund–Specialized Investment Fund Distributors Certification Examination. It combines content from **NISM-Series-V-A: Mutual Fund Distributors**, **NISM-Series-VIII: Equity Derivatives**, and **NISM-Series-IV: Interest Rate Derivatives**, providing a comprehensive reference for candidates preparing for the certification.

Foreword

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NISM supports candidates by providing lucid and focused workbooks that assist them in understanding the subject and preparing for NISM Examinations. The book covers all important topics to enhance the quality of sales, distribution and related support services in the mutual fund industry. It covers topics related to the basics of mutual funds, their role and structure, different kinds of mutual fund schemes and their features, accounting, valuation and taxation aspects underlying mutual funds and their distribution. The book also discusses the basics of the Indian equity derivatives market, including trading strategies that can be built using futures and options on both stocks and stock indices. It also explains the basics of fixed income securities and interest rate derivative products in India and the analytical framework of interest rate futures and options traded in Indian exchanges.

Sashi Krishnan
Director

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While the NISM Certification examination will be largely based on material in this workbook, NISM does not guarantee that all questions in the examination will be from material covered herein.

Acknowledgement

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About NISM Certifications

The Centre for Capacity Building at NISM is engaged in developing and administering Certification Examinations and CPE Programs for professionals employed in various segments of the Indian securities markets. These Certifications and CPE Programs are being developed and administered by NISM as mandated under Securities and Exchange Board of India (Certification of Associated Persons in the Securities Markets) Regulations, 2007.

The skills, expertise and ethics of professionals in the securities markets are crucial in providing effective intermediation to investors and in increasing the investor confidence in market systems and processes. The Centre for Capacity Building seeks to ensure that market intermediaries meet defined minimum common benchmark of required functional knowledge through Certification Examinations and Continuing Professional Education Programmes on Mutual Funds, Equities, Derivatives Securities Operations, Compliance, Research Analysis, Investment Advice and many more.

Certification creates quality market professionals and catalyzes greater investor participation in the markets. Certification also provides structured career paths to students and job aspirants in the securities markets.

About the Certification Examination for Mutual Fund -Specialized Investment Fund Distributors

The examination seeks to create a common minimum knowledge benchmark for all persons involved in selling and distributing Mutual Fund- Specialized Investment Fund (MF-SIF) including:

- Individual Mutual Fund and Specialized Investment Fund Distributors
- Employees of organizations engaged in sales and distribution of SIF
- Employees of Asset Management Companies especially persons engaged in sales and distribution of MF-SIF

The certification aims to enhance the quality of sales, distribution and related support services in the mutual fund industry.

Examination Objectives

On successful completion of the examination, the candidate should:

- Know the basics of Mutual Fund, their role and structure, different kind of Mutual Fund schemes and their features.
- Understand how Mutual Funds are distributed in the market-place, how schemes are to be evaluated, and how suitable products and services can be recommended to investors and prospective investors in the market.
- Know the basics of the Indian equity derivatives market.
- Understand the various trading strategies that can be built using futures and options on both stocks and stock indices.
- Know the basics of fixed income securities and interest rate derivative products in India.
- Understand the analytical framework of interest rate futures and options traded in Indian exchanges.
- Understand various hedging, trading and arbitrage strategies that can be built using interest rate derivative

Assessment Structure

The examination consists of 150 questions of 1 mark each and should be completed in 3 hours. The passing score for the examination is 60 percent which is 90 marks out of total 150 marks. There shall be negative marking of 10 percent of the marks assigned to a question.

How to register and take the examination

To find out more and register for the examination please visit *www.nism.ac.in*

Feedback and Queries

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Important

- Please note that the Test Centre workstations are equipped with either Microsoft Excel or LibreOffice. Therefore, candidates are advised to be well versed with both of these softwares for computation of numericals.
- The sample caselets and multiple-choice questions illustrated in the book are for reference purposes only. The level of difficulty may vary in the actual examination.

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MODULE 1: MUTUAL FUND DISTRIBUTORS

CHAPTER 1: INVESTMENT LANDSCAPE

CHAPTER 2: CONCEPT AND ROLE OF A MUTUAL FUND

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Appendix 4: Additional knowledge resources

CHAPTER 1: INVESTMENT LANDSCAPE

Learning Objectives:

After studying this chapter, you should understand about:

- Investors and their financial goals
- Saving or investment
- Different asset classes
- Investment risks
- Risk measures and management strategies
- Behavioral biases in investment decision making
- Risk profiling
- Understanding asset allocation
- Do-it-yourself v/s taking professional help

1.1 Investors and their Financial Goals

"Please suggest some good investments." "Which mutual fund schemes should one buy this year?" "Which is the best mutual fund scheme?" "Which is the best investment?" "Should I invest in stocks or real estate?" "What is your view of the stock market?" "Are my investments proper? Or should I make some changes?"

One hears these and many similar questions, very regularly. There is an issue with these questions. These are about the investments and not the investor. The investor's needs are not even discussed, and probably not even considered important.

As leadership guru and bestselling author Simon Sinek says, "Start with Why". The discussion of investments must start with "why" – the purpose of investment. "Why is one investing?"

1.1.1 Why Investments?

Let us take a look at some examples:

Shalini, an eight-year-old girl, lives in a mid-size town in North India with her parents. She is highly inspired by watching the recent success of India's space programs, in which some women scientists played a huge role. She wants to become a space scientist. Her parents, Mrs. And Mr. Gupta want to support her pursue her dream.

Rabindra, 45 years old, is working as an engineer in a large multinational firm. His wife is a homemaker. Since the company does not provide any pension plan, he is worried about how they would be able to live a comfortable life once he retires from the job.

Surinder Singh has recently moved to a large city from his hometown, as he got a promotion

and a transfer in the company where he works. While his job is very good, he is facing trouble in settling down with a house. He is tired of going house-hunting every now and then and is thinking of buying his own house in the near future.

Mrs. D'Souza has recently retired from her job. She received a large sum as retirement benefits. She intends to invest the same in order to receive regular income to live a comfortable life.

1.1.2 Financial Goals

The above are some examples of common situations we see regularly in our own life or the lives of people around us. Though there is no explicit mention of money in these examples, we intuitively know that money would be involved in each of these situations, whether Shalini has to be educated well, or Surinder Singh has to buy a house, or Mrs. D'Souza or Rabindra have to fund their lives in retirement. In the investment world, the requirements of these four are known as financial objectives. When we assign amounts and timelines to these objectives, we convert these into **financial goals.**

There are numerous examples of such financial goals. Among the most common are funding a child's education, the cost of the marriage of one's son or daughter, funding the lifestyle in retirement, buying a vehicle, buying or renovating one's house, taking a big vacation. At the same time, there could be some not-so-common ones like starting one's own business or taking a sabbatical from work and fund one's higher education.

Goal setting is a very important exercise while planning for investments. As seen above, all the financial goals are about the need for money that cannot be fulfilled through the inflow at that time. While the expenses for the goal may be high or low, the income (from salary, professional fees, etc.) may be less than the amount required to fund the goal. This is where money needs to be withdrawn from the investments – in other words, this is why one needs to invest the money.

The first step in goal setting is to identify these events in life. Some of these are desirable and can be planned, whereas some others, which may be undesirable, may spring up as surprises. Those events with a potential negative outcome would be undesirable. Some of the examples of the same are the death of a family member, hospitalization, accident, theft, fire, etc. One cannot plan to fund the expenses associated with such events through investments, though we can create an emergency fund using some savings and investment products. Apart from the emergency fund, one may buy insurance policies to cover the risks of such events.

After identifying the events, one needs to assign priorities–which of these are more important than the others. Retirement or children's education fall into the responsibility's category, whereas a grand vacation may be a good-to-have goal. Having said that, it is only the individual and the family that can decide which is which. A financial advisor or a mutual fund distributor may only guide and help one take an appropriate decision. At the same time, the

role of such an intermediary would be very important.
After that, one needs to assign a timeline as well as the amount of funding required at the time of such events. Take for example, if someone is planning to buy a house, one needs to decide the type of house one wants, as well as the location. These inputs would help arrive at approximate cost. After that one needs to decide by when one would like to buy this. Both the timeline and amount are critical for one to be able to plan to achieve the goal.

Such an exercise allows one to classify the goals in terms of the timeline – are the goals in the near term, or far in the future?

1.1.3 Short term needs versus Long Term Goals

Take a relook at the examples at the beginning of the chapter. Shalini's higher education is roughly ten years away, whereas Rabindra may work for another fifteen years. On the other hand, Surinder Singh may need to buy a house in the next couple of years. Mrs. D'Souza's case is interesting since she has a need for income from investments in the immediate term, but the same must also continue for a long and uncertain period, as the income is required for life. Rabindra would also enter a similar situation on retirement.

The retirement goal can be broken into two parts – accumulating a sum for retirement and then taking income out of the corpus thus accumulated. Another look at the two approaches to classify the goals indicates that the goals can be placed in the following matrix:

	Critically important (responsibilities or needs)	**Dreams**	**Good-to-have**
Immediate term			
Near term			
Medium term			
Long term			

This looks very similar to the urgent v/s important matrix that Stephen Covey discussed in his bestseller "The Seven Habits of Highly Effective People". The matrix is referred to in the context of time management, and it classifies various tasks one undertakes during the day, as well as over a period. Let us take a look at the matrix:

The Time Management Matrix		
	Urgent	Not Urgent
Important	I	II
Not Important	III	IV

(Source: The Seven Habits of Highly Effective People, by Stephen R Covey)

In the book, Covey says that as long as you keep focusing on Quadrant I, it keeps getting bigger and bigger and then starts to dominate you. This quadrant referred to by Covey is "urgent and important". When that happens, the 'important but not-so-urgent' tasks are not planned for in time until they also enter the quadrant 1, becoming urgent. The same principle applies to financial goals, too. A large number of people struggle with their finances since they do not plan for the important and not urgent events in life.

Wisdom suggests that if one plans well for those important and not urgent tasks (and goals), life changes for the better. In order to achieve this, it is important to first classify the financial goals – those events in life in terms of timeline and importance in one's life.

1.1.4 Financial Goals, Time Horizon for their achievement and Inflation

The next step would be to assign amounts to the financial goals. In the process of planning, this is an important question: How much would it cost? Shalini, the eight-year-old, wants to be a space scientist, for which she needs good quality education. How much would such education cost? Well, this question must be answered in terms of the amount needed when Shalini reaches college. And that is roughly a decade from now. In such a case, the costs are quite likely to move up. Such a rise in the cost of the goals is called inflation. It applies to many other areas of personal finance. This is known as inflation with respect to the goal value.

Inflation adjustment for the goal values is critical, without which the entire planning can go haywire. The cost of education has been going up at a very fast pace over the last few decades. Similar is the case of the cost of healthcare, which can have a big impact on the expenses during the retirement years.

1.1.5 The Pool Approach

Some people have a pool of savings / investment and meet their financial requirements from the pool. It is possible to manage that way. However, the lacuna is, you are not sure of the horizon for the investments. As we will see going ahead, knowing your horizon is important for investment decisions.

Case Study:

In case of Shalini's higher education. Assume that the cost of her higher education is Rs. 50 lacs (in today's price), whereas Shalini would go to college 10 years later. If the inflation in college fees is expected to be 8 percent p.a., her parents need to provide for Rs. 1,07,94,625 in 10 years, approximately.[2] There are too many assumptions involved here–the course Shalini would pursue, the cost of the education, and the inflation. However, one needs to start with some assumptions to plan properly. Else, the parents may plan to accumulate Rs. 50 lacs, which would be grossly insufficient.

[2]Note: Inflation numbers are taken based on random assumptions, and only for illustration purposes.

Inflation has a long-term impact, and hence while planning for funding all the long-term goals, one must consider inflation in the cost of the goal. On the other hand, the immediate term and near-term goals may not have a big impact due to changes in price.

As mentioned earlier, inflation is the rise in prices of various products, and services consumed. If the inflation is 6 percent p.a., the household expenses would be higher a year later in comparison to today's cost of living. If a family's monthly expenses are Rs. 30,000 currently, they would be spending Rs. 31,800 next year if the inflation is 6 percent. This does not look like much, but if the inflation stays at the same level, this family's monthly expenses would be roughly Rs. 53,725 after 10 years; and Rs. 96,214 after 20 years.

There is one thing common in all these financial goals: a mismatch of cash flows. Either the expenses are far higher than the income at that point in time, or there is no income at the time of funding these goals. Since these are future goals, an investor may have time to accumulate one's savings; and grow them through appropriate investment avenues.

1.2 Savings or Investments?

Before taking a look at various investment options available for an investor, some important questions need to be tackled. Do the two words "saving" and "investment" mean the same thing? Or are they different words? If these are different things, which is better – saving or investing? Such clarification is warranted since many individuals use the two terms interchangeably.

The word "saving" originates from the same root as "safe". The safety of money is of critical importance here. Whereas, when one invests money, the primary objective typically is to earn profits. The important point to note here is that there is a trade-off between risk and return.

The other difference is evident from the dictionary definition of "saving"– reduction in the amount of money used. This definition refers to reducing consumption so that some money is saved. It is this saved money that can be invested. In other words, saving and investing are not to be considered as two completely different things, but two steps of the same process – in order to invest money, one needs to save first. Thus, saving precedes investing.

1.2.1 Factors to evaluate investments

The three most important factors to evaluate investments are safety, liquidity, and returns. In addition to these, there are few more parameters such as convenience, ticket size (or the minimum investment required), taxability of earnings, tax deduction, etc. These factors have been discussed below:

Safety: This begins with the safety of capital invested. However, one could stretch that to also include the degree of surety of income from investment. In order to understand the safety of

an investment, it is important to understand the risks involved.

Liquidity: How easily can one liquidate the investment and convert it to cash? The degree of ease is different across different categories, and even within the categories, the same could be different across products. Sometimes, the nature of the product could be such that selling it is difficult, whereas sometimes there could be some operational features, e.g., a lock-in for a certain period, after which one may be able to liquidate the investment; or a penalty for an early exit. While such a penalty does not hamper liquidity, it only lowers the investment returns. Another aspect that one may also want to look at is divisibility. Is it possible to liquidate part of the investment or is it necessary to sell the whole thing?

Returns: As seen earlier in the definition of investments, the major purpose is to get some returns from investment. Such returns may be in the form of regular (or periodic) income, also known as current income; and capital appreciation, or capital gains.

The current income is receivable periodically, without having to sell the investment, whereas the capital gains can be realized only when one sells the investment.

The exit charges or penalty would bring down the returns, as seen earlier. Hence, whenever there are any such charges for withdrawals (including early withdrawals), the same must be considered as a trade-off between liquidity and returns.

Convenience: Any investment must be evaluated in terms of convenience with respect to investing, taking the money out–fully or partially, as well as the investor's ability to conveniently check the value of the investment, as well as to receive the income.

Ticket size: What is the minimum amount required for investment? There are some avenues where an investor can start investing amounts as small as Rs. 50 or Rs. 100, whereas some require more than Rs. 1 lakh, and sometimes more than Rs. 1 crore. This becomes an important factor while taking a decision about the selection of investment options. At the same time, this must not be the only factor. Some investors (though a very small number) have started considering certain investments (requiring large amounts), only because they could afford the same, without checking whether they needed it, or if that was appropriate for their situation and goals.

Taxability of income: What one retains after taxes is what matters, and hence, taxation of the earnings is another important factor that one must consider. While looking at the taxability of income, it is critical to evaluate various other factors, too, and not look at taxation in isolation. For example, some products may offer lower tax on investment returns, but the safety also may be low. At the same time, there could be some products that may offer low tax on investment returns, only if the investor stays invested for a certain term, or till the maturity of the product. In other words, if the investor sells the investment before maturity (or a certain minimum period), the investment returns may be taxable.

Tax deduction: A related matter is the tax deduction that may be available in case of certain

products. Such a deduction effectively increases the return on investment, since the same is calculated after factoring the net amount invested.

However, where a deduction is available, the product may have a lock-in period of certain years. Once again, this is a trade-off between liquidity and tax deduction.

The above discussion offers a good framework for the evaluation of investment products. However, as mentioned earlier, no factor should be seen in isolation. One also must consider the investor's situation while evaluating the avenues.

1.3 Different Asset Classes

Various investment avenues can be grouped in various categories, called asset classes. An asset class is a grouping of investments that exhibit similar characteristics. There are four broad asset categories or asset classes, and then there are various subcategories, within each of these. The four broad categories—Real estate, Commodities, Equity and Fixed income.

1.3.1 Real Estate

Real estate is considered as one of the important among all the asset classes. However, the popularity of this asset category is large because of a reason not related to investment. For those who have bought their own houses, it is the largest expense in life. The word used here is "expense", and not "investment". This would be elaborated later, but it is pertinent to mention here that in majority of cases, individuals purchase real estate for self- occupation. This should not be considered as an investment, since selling the same may have a negative impact on one's lifestyle.

Real estate could be further classified into various categories, viz., residential real estate, land, commercial real estate, etc.

As an asset category, real estate exhibits certain traits, some of which are listed as under:

- Location is the most important factor impacting the performance of an investment in real estate
- Real estate is illiquid
- It is not a divisible asset
- One can invest in physical real estate, as well as in the financial form
- Apart from capital appreciation, it can also generate current income in form of rents
- In case of real estate, the transaction costs, e.g., brokerage charges, registration charges, etc. are quite high. This would bring down the return on investment.
- The cost of maintenance of the property, as well as any taxes payable must be adjusted before calculating the return on investment, something that many individual investors do not. These expenses are also quite high, and cannot be ignored.
- The investments acquired or sold shall be accounted at transaction price excluding all transaction costs such as brokerage, stamp charges and any charge customarily included

in the broker's contract note that are attributable to acquisition/sale of investments.

1.3.2 Commodities

This is another asset category that people at large are familiar with in various ways. On a regular basis, people consume many commodities, e.g., agricultural commodities like spices; petroleum products such as petrol and diesel; or metals like gold and silver. However, it is not possible to invest in most of these, as many of these are either perishable and hence cannot be stored for long, or storage of the same could take a lot of space, creating a different kind of difficulties.

Though there are commodity derivatives available on many commodities, it may not be wise to call these "investments" for two reasons, (1) these are leveraged contracts, i.e., one can take large exposure with a small of money making it highly risky and (2) these are normally short-term contracts, whereas the investors' needs may be for longer periods.

On the other hand, there are at least two commodities that many investors are quite familiar with as investment avenues, viz., gold, and silver.

When someone invests in these commodities, the prices are almost in sync across the world. It is easy to understand the prices of gold and silver across countries by simply looking at the foreign exchange rate between the two countries' currencies, and making adjustments for various costs and restrictions imposed by any of the countries. In this manner, these two are globally accepted assets.

Both these commodities have been used as investments or storage of value for long. In fact, the history of currency would be incomplete without mention of these two. Gold has also been considered by many as a safe haven asset. In case of failure of an economy, or a currency, gold is considered to be the final shelter. However, the opposite camp also comes with very strong arguments. Many currencies across the world were pegged to the gold reserves available with the central bank of the country for long. However, this so-called gold standard has been done away with a few decades ago. And still, most of the central banks hold gold in their reserves.

An investor in these commodities would have to count only on capital appreciation since these do not generate any current income.

Gold and silver come in varying degrees of purity. Each one can be bought at different prices from the market. However, for a large majority of investors, it is almost impossible to make out the level of purity. If we opt for a purity certificate, the cost goes up and without one, the risk of getting lower quality metal is high.

1.3.3 Fixed Income

When someone borrows money, one has to return the principal borrowed to the lender in the future. There could also be some interest payable on the amount borrowed. There are various forms of borrowing, some of which are through marketable instruments like bonds and debentures[3].

There are many issuers of such papers, e.g., Companies, Union Government, State Governments, Municipal Corporations, banks, financial institutions, public sector enterprises, etc.

Many bonds pay regular interest; thus, the investors can expect current income. At the same time, if someone has invested at the time of issuance of the bond and hold the same till maturity, in almost all cases, there would be no capital gains. On the other hand, a transaction through secondary market – whether at the time of buying or at the time of selling, or both – may result into capital gains or losses.

Bonds are generally considered to be safer than equity. However, these are not totally free from risks. These risks will be discussed in detail later in the chapter.

Bonds can be classified into subcategories on the basis of issuer type i.e., issued by the government or corporates or on the basis of the maturity date: short term bonds (ideal for liquidity needs), medium term bonds, and long-term bonds (income generation needs).

1.3.4 Equity

This is the owner's capital in a business. Someone who buys shares in a company becomes a part-owner in the business. In that sense, this is risk capital, since the owner's earnings from the business are linked to the fortunes, and hence the risks, of the business. When one buys the shares of a company through the secondary market, the share price could be high or low in comparison to the fair price.

Historically, equity investing has generated returns in excess of inflation, which means the purchasing power of one's money has increased over the years. It has also delivered higher returns than other investment avenues, most of the time, if one considers long investment periods. Since the base year of 1979, Sensex has grown from a level of 100 to 82,269 till 30 January 2026. This is an appreciation of around 15.4 percent p.a., compounded annually, before adding dividends.[4]

Apart from long term capital appreciation, equity share owners may also receive dividends from the company. Such dividends are shared out of the profit that the company has

[3]We would use the two words bonds and debentures interchangeably in this discussion.

[4]Sensex is BSE's benchmark index representing shares of 30 large-sized companies. It is also considered to be one of the bellwether indices, a barometer of what is happening in the stock market in India.

generated from its business operations. If the company does really well, the dividends tend to grow over the years.

To sum up, equity share prices generally fluctuate a lot, often without regard to the business fundamentals. However, over long periods of time, the share prices follow the fortunes of the firm. If the profits of the company continue to grow over the years, the share price follows.

There are similarities and differences between the various asset categories.

Investments in equity and bonds can be done only in financial form, whereas one can buy the other two assets, viz., real estate and commodities either in financial or in physical form. It is this physical form that gives a feeling of safety to many. Anything that is tangible is perceived to be safer than something intangible.

Real estate and commodities differ from equity and bonds in another way, too. These could be bought as an investment or for consumption purposes. For example, one may invest in residential property and give it on rent to generate income. This is an investment. At the same time, one may also buy a flat to live in–for residential purposes. Such a self-occupied house may not be an investment. A similar logic may be applied to gold and silver by checking whether one has invested in the metal or bought the same for personal use.

When someone invests in equity shares, part of the profits made by the company may be shared with the investor. With a careful analysis of various equity shares, it is possible to receive a periodic income (though without any guarantee about how much would one receive, and whether one receives anything at all). Similarly, real estate could be given on rent to generate intermittent cash flow. Bonds pay interest income. It is the commodities where such intermittent cash flow is not generated.

An investor in equity, real estate and commodities is an owner of the asset, whereas an investor in bonds has lent money to someone. In such a case, the lender's receipts—be its interest payments or return of principal amount invested – are agreed at the time of the issue of such instruments. In all the other three cases, the investor's cash flows (or receipts) are unknown. To that extent, the future returns from these assets, which may also be called ownership assets, would be highly uncertain in comparison to the lending assets like bonds or fixed deposits.

While the above discussion was about the characteristics of various asset classes and certain differences across the asset categories, the same must be seen from another perspective, too. While one may buy equity shares listed in India in Indian Rupees, one can also invest in shares of various companies listed outside India. This provides exposure to another currency. For example, an investor buying the shares of a company listed on the London Stock Exchange is exposed to the fortunes of the company, as well as the change in the exchange rate between the British Pound and the Indian Rupee.

Similarly, one could also invest in bonds denominated in various currencies other than Indian Rupee, and one could also buy real estate abroad. These are called international assets. However, one must understand the basic nature of the asset class as discussed earlier, and then try to assess the impact of currency fluctuation on these investments.

Different investment avenues can be categorized into different asset category as can be seen from the illustration in Table 1.1:

Table 1.1 Investment avenues classified under different asset categories

Equity	**Fixed Income**
• Blue-chip Companies • Mid-sized companies • Small-sized companies • Unlisted Companies • Foreign Stocks • Equity Mutual Funds • Exchange Traded Funds • Index Funds	• Fixed deposit with a bank • Recurring deposit with a bank • Endowment Policies • Money back Policies • Public Provident Fund • Sukanya Samriddhi Yojana (SSY) • Senior Citizens' Savings Scheme (SCSS) • Post office Monthly Income Scheme • Recurring deposit with a post office • Company fixed deposit • Debentures/bonds • Debt Mutual Funds
Real Estate/Infrastructure	**Commodities**
Physical Asset • Residential/ Commercial Financial Asset • Real Estate Mutual Funds (REMF) • Real Estate Investment Trusts (ReIT) • Infrastructure Investment Trust (InvIT)	• Gold • Silver • Gold Funds • Commodity ETFs
Hybrid asset classes	**Others**
• Hybrid Mutual funds or Multi Asset Fund	• Rare coins • Art • Rare stamps

1.4 Investment Risks

To obtain a better understanding of the investment avenues, it is essential to understand the different types of risks involved.

1.4.1 Inflation Risk

Inflation or price inflation is the general rise in the prices of various commodities, products, and services that we consume. Inflation erodes the purchasing power of money. The following table explains what inflation can do to the purchasing power of our money.

How much money would you need to buy the goods you can buy with Rs. 10,000 today	If inflation is assumed at 8% p.a.[5]
After 5 years	Rs. 14,693
After 10 years	Rs. 21,589
After 20 years	Rs. 46,610
After 30 years	Rs. 1,00,627

The above table shows how fast the purchasing power of the money goes down. This risk hits hard over long periods. If this is not properly accounted for in the investment plan, one may fall short of the target when the need arises.

One may also look at the impact of inflation in another way. If one could buy 100 units of something with Rs. 10,000 today, assuming inflation of 8 percent p.a., one would be able to buy only 68 units of the same thing after 5 years, and only 46 units after 10 years. This clearly shows the loss of purchasing power.

In this context, it is pertinent to take a look at whether the investments are able to protect purchasing power or not. In order to protect the purchasing power, the investment return should be at least as much as inflation. If the same is higher than inflation, the purchasing power increases, whereas if one earns lower returns than inflation, the purchasing power drops.

Incidentally, when one seeks the total safety of invested capital, along with anytime liquidity, the investment returns are usually lower than inflation. Take for example, if you earn an interest rate of 7 per cent p.a. on your fixed deposit when the inflation is at 8 per cent p.a., it is obvious that the investment grows at a slower pace than the rise in prices. The return on investment without factoring inflation is known as the “nominal rate”. However, when this number is adjusted for inflation, one gets the “real rate of return”. If the investment returns are higher than inflation, the investor is earning a positive real rate, and vice versa.

1.4.2 Liquidity Risk

Investments in fixed income assets are usually considered less risky than equity. Even within that, government securities are considered the safest. In order to avail the full benefits of the investments, or to earn the promised returns, there is a condition attached. The investment must be held till maturity. In case if one needs liquidity, there could be some charges or such an option may not be available at all.

Here is an example. Assume that an investor has invested one’s money in a safe investment option, a bank deposit for a goal that is due five years from now. For such a goal, one chose to invest in a five-year fixed deposit. As is clear, the term of the deposit is five years, and the

[5] The numbers are arrived at by using the future value equation, i.e., A = P * (1 + r) ^ n, where A is the future value (the values in the right-side column); P is the present value (Rs. 10,000 in the example); r is the rate of inflation (8% p.a. in the example); n is the number of years (the periods in the first column in this table).

promised returns would accrue to the investor only if the money is kept in the deposit for the entire period. In case, for some reason the investor needs the money before maturity, there could be some deduction in the interest, which reduces the investment return. Some other products like PPF (Public Provident Fund) may offer no liquidity for a certain period, and even after that, there may be only partial liquidity.
This risk is also very closely associated with real estate, where liquidity is very low, and often it takes weeks or months to sell the investment.

Some investment options offer instant access to funds, but the value of the investment may be subject to fluctuations. Equity shares, listed on stock exchanges are an example of this. While it is easy to sell shares to get cash in case of a large number of listed shares, the equity prices go up and down periodically. Such investments are not appropriate for funding short term liquidity needs.

1.4.3 Credit Risk

When someone lends money to a borrower, the borrower commits to repay the principal as well as pay the interest as per the agreed schedule. The same applies in the case of a debenture or a bond or a fixed deposit. In the case of these instruments, the issuer of the instruments is the borrower, whereas the investor is the lender. The issuer agrees to pay the interest and repay the principal as per an agreed schedule. There are three possibilities in such arrangements:

(1) the issuer honours all commitments in time, (2) the issuer pays the dues, but with some delay, and (3) the issuer does not pay principal and the interest at all. While the first is the desirable situation, the latter two are not. Credit risk is all about the possibility that the second or the third situation may arise.

Any delay or default in the repayment of principal or payment of interest may arise due to a problem with one or both of the two reasons: (1) the ability of the borrower, or (2) the intention of the borrower. While the ability of the borrower, if the same happens to be a company, is a function of the business stability and profitability of the company. Stable companies, which may be market leaders in their respective segments, may pose a lower risk, in comparison to a new company, or a small-sized company in the same industry. Some industries may also exhibit higher stability in comparison to some other.

A lender tries to assess both before lending the money or expects enough compensation in case the ability appears to be low. In the case of debentures or bonds, the investor would expect higher interest from bonds with low safety.

In this context, the bonds issued by the government of their own country would be considered to be the safest for investors. Such bonds normally offer the lowest interest rates for the citizens of the country, due to the high (highest) safety of capital. All the other bonds/ debentures available in the country would offer a higher rate of interest.

1.4.4 Market Risk and Price Risk

When securities are traded in an open market, people can buy or sell the same based on their opinions. It does not matter whether these opinions are based on facts, or otherwise. Since the opinions may change very fast, the prices may fluctuate more in comparison to the change in facts related to security. Such fluctuations are also referred to as volatility.

There are two types of risks to a security—broad market risk and specific price risk.

Let us understand this through an example. When there is a possibility of a country getting into a warlike situation, there is a widespread fear that this may impact the economy and the companies within it. Due to such a fear, it is quite possible that the prices of all stocks (or at least a large number of stocks) in the market may witness a fall. This is a market-wide fall. On the other hand, when the sales of a company's products fall, due to technological changes, or the arrival of a better product, the company's share price falls. During such times, there could be many other companies, whose share prices may rise. This is an example of a company specific risk. As is evident from the discussion, the stability of the company's business and the profitability of the firm play a major role with respect to company specific risk factors. Between the general, market-wide factors and firm-specific factors, there could be some industry-specific factors, which would impact all the firms within the same industry. For example, if the Government policy changes with respect to a particular industry, all the firms may get impacted. Similarly, if a new and better technology becomes available, all the firms within the same industry that use the old technology may get impacted. This happened when mobile phones started becoming popular, the pager industry vanished in less than a couple of decades.

The risk specific to the security can be reduced through diversification across unrelated securities, but the one that is market-wide cannot be reduced through diversification.

1.4.5 Interest Rate Risk

Interest rate risk is the risk that an investment's value will change as a result of a change in interest rates. This risk affects the value of bonds/debt instruments more directly than stocks. Any reduction in interest rates will increase the value of the instrument and vice versa.

While most investors are familiar with the concept of debentures, they normally buy and hold these bonds till maturity. On maturity of the bond, they get the maturity amount, since it is part of the bond agreement (assuming the company does not default on the commitment).

On the other hand, if an investor sells the bond in the secondary market, one would have to do the transaction at the current market price. This price depends on many factors, but chief among these is the change in the interest rates in the economy. The relationship between interest rates and bond prices is inverse.

When the interest rates in the economy increase, the prices of existing bonds decrease, since

they continue to offer the old interest rates. Assume that a bond was issued at Rs. 1000 for one year, and it offered an interest rate of 8 percent. Immediately after the bond was issued, the interest rates in the economy increased, and new bonds are now offering 8.5 percent interest. In such a case, the earlier bond becomes less attractive. If the investor who invested in that bond wants to sell, it can only be done at a discount. The reverse is also true. If in the above example, had the interest rate moved down, the price of the bond would have moved up. The interest rate risk varies for bonds with different maturities. Those with longer maturity would witness higher price fluctuations in comparison to those with shorter maturities. Such movements in bond prices on account of changes in interest are referred to as "interest rate risk". This is a market-wide factor affecting the prices of all bonds.

1.5 Risk Measures and Management Strategies

Many of the risks cannot be eliminated, and the investor must take some of those, in order to earn decent returns on one's investment portfolio. However, one needs to manage the risks that one is taking. One may consider the following strategies for management of the investment risks:

- **Avoid**

One may avoid certain investment products if one does not want to take the respective risk. However, this may also mean giving up the opportunity to benefit out of the said investment. Many experts recommend that one should avoid the investment avenues that one does not understand.

- **Take a position to benefit from some event/development**

An investor can also take an investment position in anticipation of some developments in the market. Let us take an example here: a bond investor expects the interest rates to go down. In such a case, one may sell the short maturity bonds and invest in long maturity bonds. If the interest rates move down, the investor's judgment would be rewarded handsomely. At the same time, if the judgment is wrong, there could be losses, too. This is an example of managing the interest rate risk.

Similarly, some investors manage their investment portfolios using such strategies across multiple asset categories.

In order to take and dynamically change such positions, the investor must have superior knowledge than a large number of investors in the market. This is difficult and hence risky. Due to the amount of skill required, and the risks involved, such strategies are not recommended for a large number of investors.

- **Diversify**

While the previous strategy is possible when one has superior knowledge, not everyone would possess the same. For a lay investor a prudent approach would be to diversify across various investment options. This spreads the risk of loss and thus the probability of losing

everything can be significantly reduced through diversification.

Before managing the risks, the risks have to be measured. Measurement of credit risk is undertaken through credit rating and credit spreads. Risks related to volatility in prices, primarily the fluctuations that happen in investment returns are measured through variance, standard deviation, beta, modified duration which will be discussed in Chapter 10.

1.6 Behavioural Biases in Investment Decision Making

Before discussing asset allocation, it is important to take a detour and discuss behavioural biases in investment decision making. This is also one of the risks the investors must understand. However, this risk is not related to the investments, but the role of emotions in decision making, or in other words the irrational behaviour of investors towards management of money.

Investors are driven by emotions and biases. The most dominant emotions are fear, greed and hope. Some important biases are discussed below:

- **Availability Heuristic**

Most people rely on examples or experiences that come to mind immediately while analyzing any data, information, or options to choose from. In the investing world, this means that enough research is not undertaken for evaluating investment options. This leads to missing out on critical information, especially pertaining to various investment risks.

- **Confirmation Bias**

Investors also suffer from confirmation bias. This is the tendency to look for additional information that confirms their already held beliefs or views. It also means interpreting new information to confirm the views. In other words, investors decide first and then look for data to support their views. The downside is very similar to the previous one – investors tend to miss out on many risks.

- **Familiarity Bias**

An individual tends to prefer the familiar over the novel, as the popular proverb goes, “A known devil is better than an unknown angel.” This leads an investor to concentrate the investments in what is familiar, which at times prevents one from exploring better opportunities, as well as from a meaningful diversification.

- **Herd Mentality**

“Man is a social animal” – Human beings love to be part of a group. While this behaviour has helped our ancestors survive in hostile situations and against powerful animals, this often works against investors interests in the financial markets. There are numerous examples, where simply being against the herd has been the most profitable strategy.

- **Loss Aversion**

Loss aversion explains people's tendency to prefer avoiding losses to acquiring equivalent gains: it is better not to lose Rs. 5,000 than to gain Rs. 5,000. Such behaviour often leads people to stay away from profitable opportunities, due to the perception of high risks, even when the risk could be very low. This was first identified by Psychologists Daniel Kahneman and Amos Tversky. Kahneman went on to win Nobel Prize in Economics, later on.

- **Overconfidence**

This bias refers to a person's overconfidence in one's abilities or judgment. This leads one to believe that one is far better than others at something, whereas the reality may be quite different. Under the spell of such a bias, one tends to lower the guards and take on risks without proper assessment.

- **Recency bias**

The impact of recent events on decision making can be very strong. This applies equally to positive and negative experiences. Investors tend to extrapolate the event into the future and expect a repeat. A bear market or a financial crisis leads people to prefer safe assets. Similarly, a bull market makes people allocate more than what is advised for risky assets. The recent experience overrides analysis in decision making. For example, a rise in prices of equities will make people think only about a further rise which would lead to more investment being made in equities. This increases the risk. On the other hand, a fall in prices in an asset would make people stay away thinking it would fall further which could lead to loss of opportunities.

- **Behaviour patterns**

There are different types of people and the factors that influence their lives also impact the manner in which they save or invest. The drive to save more or be regular in investing often come from these personal factors. Behavioural tests are very useful in determining and knowing the kind of personality a person has, and this would include whether they are spenders or savers or investors. Knowing this can help in making the right efforts to get the individual to perform the desired ac-on.

- **Interest of the investors**

Many times, the financial and investment decisions are not guided by the fact as to whether this investment is suitable for a person or not but by the interest of the investor. This can lead to the construction of portfolios which are not suitable for specific people. For example, someone working in the Information Technology industry might just have technology stocks in their portfolio. This leads to a concentration of risk and is something that has to be avoided.

- **Ethical standards and boundaries**

The presence of ethical principles in the dealing of individuals also has an impact as far as their investment behaviour is concerned. Those following ethical standards are more likely to pay attention to their investments and be disciplined because they tend to follow the norms. This is a big help when it comes to building long term wealth. Trying to take shortcuts might derail the entire investment process and set back the existing efforts.

These are only some of the biases. This is not an exhaustive list. The negative effect of these biases is that the investor does not gather enough information to be able to identify more opportunities or to evaluate various risks related to investment avenues. It is only prudent for an investor to do a detailed analysis as is possible, without taking such shortcuts.

It is important to avoid behavioral biases in investment decisions. To detach emotions from investments, it is better to take the opinion of a third person i.e. Registered Investment Advisor (RIA) or Mutual Fund Distributor (MFD).

1.7 Risk Profiling

The risk profilers try to ascertain the risk appetite of the investor so that one does not sell mutual fund schemes that carry a higher risk than what the investor can handle. In order to ascertain the risk appetite, the following must be evaluated:

- The need to take risks
- The ability to take risks, and
- The willingness to take risks

Out of the above, the need to take risks arises when the investor needs higher returns to reach one's goals. The ability to take risk refers to the financial ability, and the investment horizon, whereas the willingness is linked to the psychological capacity to handle risk. The distributor has to evaluate these three, and strike a balance between them, whenever there is a conflict.

There are various approaches to creating the risk profile of the investor. The distributor is free to choose or design one's own method or tools for risk profiling, based on the brief discussion mentioned above.

1.8 Understanding Asset Allocation

The basic meaning of asset allocation is to allocate an investor's money across asset categories in order to achieve some objective. In reality, most investors' portfolios would have the money allocated across various asset categories. However, in many such cases, the same may be done without any process or rationale behind it.

Asset Allocation is a process of allocating money across various asset categories in line with a stated objective. The underlined words are very important. First, it is a "process", which always involves several steps, and those steps should not be ignored or skipped. Second, the whole idea behind asset allocation is to achieve some objective. Whichever approach one selects, one must go through the steps of the process in order to achieve the objective.
There are two popular approaches to asset allocation[6].

Strategic Asset Allocation (SAA)
Strategic Asset Allocation is allocation aligned to the financial goals of the individual. It considers the returns required from the portfolio to achieve the goals, given the time horizon available for the corpus to be created and the risk profile of the individual. In other words, it is an approach to maintain a target allocation across various asset categories. Such a target asset allocation across the asset categories is decided based on the analysis of the needs and risk appetite of the investor. Such an analysis would help a mutual fund distributor to arrive at allocation between various asset categories in percentage terms. This percentage target is also called the "strategic asset allocation".

Tactical Asset Allocation (TAA)
As opposed to the strategic asset allocation, one may choose to dynamically change the allocation between the asset categories. The purpose of such an approach may be to take advantage of the opportunities presented by various markets at different points in time, but the primary reason for doing so is to improve the risk-adjusted return of the portfolio.
In other words, the attempt is to either reduce the portfolio risk without compromising the returns or to enhance portfolio returns without increasing the risk. Tactical asset allocation is also referred to as dynamic asset allocation. Tactical asset allocation is typically suitable for seasoned investors operating with a large investible surplus.

Rebalancing

An investor may select any of the asset allocation approaches, however, there may be a need to make modifications in the asset allocations.

Let us first start with the strategic allocation. In that case, the asset allocation is likely to change periodically, since the different assets may not move together in the same direction and may not move equally, even when the direction is the same. In such a case, it is quite possible that the current asset allocation may be different from the target allocation. What should one do in such a scenario?

Well, many practitioners advocate that the portfolio should be rebalanced to restore the target asset allocation. Their argument is that the asset allocation was decided by an analysis

[6]Note: In order to keep the discussion simple, and to understand the concept of asset allocation well, we will use a two- asset portfolio, consisting equity and debt, as example in the discussion under this topic.

of the needs and risk appetite of the investor. We need to reduce the allocation to the risky asset if that has gone up. On the other hand, if the allocation has gone down in the asset that has the potential to generate higher returns, we need to correct that as well.
Such a rebalancing offers a huge benefit – it makes the investor buy low and sell high. Let us understand this through an example:
Assume that the target asset allocation for an investor is 50:50 between asset categories A and B. A year later, asset category A went up by 20 percent, whereas asset B went down by 5 percent. In such a case, the allocation has deviated from the target. If we started investment of Rs. 1,000 each in both the cases, the value in both the cases would stand at Rs. 1,200 in asset A and Rs. 950 in asset B, with the total portfolio value at Rs. 2,150. The current allocation stands at 55.81 percent in asset A and 44.19 percent in asset B. This needs to be restored to 50:50. That means selling some part of the investment in asset A (worth Rs. 125) and buying some in asset B.

As we can see here the asset A, which has gone up, is sold; and asset B, which has gone down, is bought. This happens automatically, without the investor having to take a view on the direction of the markets.

The rebalancing approach can work very well over the years when the various asset categories go through many market cycles of ups and downs.

On the other hand, one may also need to do a rebalancing of the asset allocation, when the investor's situation changes and thus the needs or the risk appetite might have changed. Rebalancing is required in the case of strategic asset allocation as well as tactical asset allocation.

With the purpose to ensure uniformity across mutual funds, SEBI has provided the timelines for rebalancing of schemes. In the event of deviation from mandated asset allocation mentioned in the Scheme Information Document (SID) due to passive breaches (occurrence of instances not arising out of omission and commission of AMCs), mandated rebalancing period for all schemes other than Index Funds and Exchange Traded Funds is 30 business days. However, the mandated rebalancing period is not applicable to the Overnight Funds.

1.9 Do-it-yourself versus Taking Professional Help

As discussed earlier, investors need to invest money from time to time. These investments can be made in various financial instruments ranging from Government sponsored schemes to bank fixed deposits to company debentures to shares of companies or real estate properties of even precious metals like gold or silver.

One option is to manage the investments oneself. That would involve finding the right investments and carrying out the related research and administration work. The other option

is to outsource the entire job to a professional or a company engaged in such a business.

A mutual fund is that second option – it is managed by a team of professionals, known as the asset management company. This is what really needs to be understood. By choosing to invest through mutual funds, one is not investing in alternative investment options, but only changing the way of investing money. The entire job of investing is outsourced to a professional firm.

So, the next logical question is: "Which of the two choices is better – investing oneself or taking professional help to manage my investments?"

This question should be broken down into three components:

1. Can one do the job oneself?
2. Does one want to do it?
3. Can one afford to outsource?

Can one do the job oneself?

This is the question about ability. In order to do a good job, there are a few requirements, viz., ability to do the job and the availability of time required for the same. There are tasks where one may not have the skills and knowledge, e.g., a history teacher may not be able to help her daughter to study Mathematics in the higher classes. At the same time, one may not have enough time required for the job.

In either case, one is unable to do manage money oneself and should consider outsourcing it.

Does one want to do it?

Even when one has the required skills and knowledge to manage one's money, it is very likely that one may not enjoy money management–either the research and analysis or administration or accounting. At the same time, one may want to spend time on one's main profession or on certain other activities, e.g., spending time with family and friends, pursuing hobbies, etc. That also means that one needs help in managing investments.

Can one afford to outsource?

There is some cost associated with mutual funds since the agencies involved need to be paid their professional fees. While we will cover the costs associated with managing mutual funds in a later chapter, it is important to mention here that SEBI (the securities markets regulator) has issued guidelines on the maximum amount that can be charged to the fund.

Most people make the mistake of comparing these fees with zero cost of managing one's own money oneself. By this comparison, the cost of a mutual fund always looks higher between

the two options.

What is missed out in this comparison is the hidden costs of doing the investment management job on one's own. This hidden cost comes in the form of one's time and the potential mistakes that an individual investor is likely to make.
First, let us look at the cost of one's time. Let us assume that a person generates the same investment returns as what a fund manager would have generated before the costs. Let us also assume that the cost of fund management is 2 percent p.a. This means if one is able to generate 12 percent p.a. by investing oneself, the mutual fund scheme would return 10 percent p.a. net of the fund management charges. On a portfolio of Rs. 10 lakhs, this amounts to a saving of roughly Rs. 20,000 for the year. Is it worth spending the amount of time one is required to spend for this saving? Please consider the amount of research one has to put in as well as the administration and accounting work. Someone may start thinking that this means investors with smaller portfolios should invest through mutual funds, but the bigger ones should not. This is where the concept of the value of time should be looked at. The value of time may be higher in the case of people with more wealth.

The second hidden cost comes in the form of the mistakes one is likely to make given the emotional attachment with one's own finances.

For most investors, a mutual fund would turn out to be a better option than to build the portfolio oneself. The next chapter discusses what mutual funds are and their role in an investor's portfolio.

Chapter 1: Sample Questions

1. **Which among the following investment avenues does not offer income on a regular basis?**
    a. Real estate
    b. Physical Gold
    c. Stocks
    d. Debentures

2. **The purchasing power of currency changes on account of which of the following?**
    a. Asset allocation
    b. Compound interest
    c. Inflation
    d. Diversification

3. **What is the real rate of return?**
    a. Return that the investor gets after payment of all expenses
    b. Return that the investor gets after taxes
    c. Return that the investor gets after adjusting the risks
    d. Return that the investor gets after adjusting inflation

4. **When the interest rate in the economy increases, the price of existing bonds___.**
    a. Increases
    b. Fluctuate
    c. Decreases

CHAPTER 2: CONCEPT AND ROLE OF A MUTUAL FUND

Learning Objectives:

After studying this chapter, you should know about:

- Concept and Role of mutual funds
- Classification of mutual funds
- Growth of mutual fund industry in India

2.1 Concept of a Mutual fund

A mutual fund is a professionally managed investment vehicle. Practically, one does not invest in mutual fund but invest through mutual funds. However, we hear of "investing in mutual funds" or "investing in mutual fund schemes". While that is fine for the purpose of discussions, technically it is not correct. As a mutual fund distributor, it is critical to understand the difference between the two concepts.

When someone says that one has invested in a mutual fund scheme, often, the scheme is perceived to be competing with the traditional instruments of investment, viz. equity shares, debentures, bonds, etc. The reality is that one invests in these instruments through a mutual fund scheme. In other words, through investment in a mutual fund, an investor can get access to equities, bonds, money market instruments and/or other securities, that may otherwise be unavailable to them and avail of the professional fund management services offered by an asset management company.

Thus, an investor does not get a different product, but gets a different way of investing. The difference lies in the professional way of investing, portfolio diversification, and a regulated vehicle.

Mutual fund is a vehicle (in the form of a "trust") to mobilize money from investors, to invest in different markets and securities, in line with stated investment objectives. In other words, through investment in a mutual fund, an investor can get access to equities, bonds, money market instruments and/or other securities, that may otherwise be unavailable to them and avail of the professional fund management services offered by an asset management company.

2.1.1 Role of Mutual Funds

The primary role of mutual funds is to help investors in earning an income or building their wealth, by investing in the opportunities available in securities markets. It is possible for mutual funds to structure a scheme for different kinds of investment objectives.

Mutual funds offer different kinds of schemes to cater to the need of diverse investors. In the industry, the words 'fund' and 'scheme' are used interchangeably. Various categories of schemes are called "funds". In order to ensure consistency with what is experienced in the market, this workbook goes by the industry practice. However, wherever a difference is required to be drawn, the scheme offering entity is referred to as "mutual fund" or "the fund".

The money that is raised from investors, ultimately benefits governments, companies and other entities, directly or indirectly, for funding of various projects or paying for various expenses. The projects that are facilitated through such financing, offer employment to people; the income they earn helps them buy goods and services offered by other companies, thus supporting projects of these goods and services companies. Thus, overall economic development is promoted.

As a large investor, the mutual funds can keep a check on the operations of the investee company, and their corporate governance and ethical standards.

The mutual fund industry itself offers livelihood to a large number of employees of mutual funds, distributors, registrars and various other service providers.

Higher employment, income and output in the economy boosts the revenue collection of the government through taxes and other means. When these are spent prudently, it promotes further economic development and nation-building.

Mutual funds can also act as a market stabilizer, in countering large inflows or outflows from foreign investors. Mutual funds are therefore viewed as a key participant in the capital market of any economy. In 2022 and 2025, when foreign portfolio investors (FPIs) sold heavily in the equity market, Mutual Fund industry provided a counterforce in the form of demand for equity stocks by virtue of fresh inflows into schemes / funds.

2.1.2 Investment Objectives of Mutual Funds

Mutual funds seek to mobilize money from all possible investors. Various investors have different investment preferences and needs. In order to accommodate these preferences, mutual funds mobilize different pools of money. Each such pool of money is called a mutual fund scheme.

Every scheme has a pre-announced investment objective. Investors invest in a mutual fund scheme whose investment objective reflects their own needs and preference.

The primary objective of various schemes stems from the basic needs of an investor, viz., safety, liquidity, and returns. Let us look at some examples of investment objectives (Table 2.1), as taken from the scheme information documents of certain mutual fund schemes.

Table 2.1: Examples of Investment Objectives

Investment Objectives	Mutual Fund Category
The scheme intends to provide reasonable income along with high liquidity by investing in only Debt and money market securities with the maturity upto 91 days.	Liquid fund
To generate capital appreciation/income from a portfolio, predominantly invested in equity and equity related instruments	Equity fund
The primary objective of the scheme is to generate long term capital appreciation by investing in a mix of asset class i.e. equity, debt, InvITs and commodities related instruments as permitted by SEBI.	Hybrid fund
The primary objective of the scheme is to support goal-based investing by reducing risk over time through a pre-determined maturity structure and a glide path strategy for asset allocation across asset classes.	Life Cycle Fund

As can be seen from the above examples, the investment objectives are a combination of safety, liquidity, and returns (be it regular income or long-term capital appreciation).

It is in line with these objectives that the scheme would decide the investment universe i.e., the types of securities to invest in. As discussed in the previous chapter, different asset classes serve different purposes. Exactly, in the same way, the schemes that seek liquidity invest in money market securities, and those seeking capital appreciation invest in equity.

Mutual fund schemes are often classified in terms of the investment objectives, i.e., what they aim to achieve; and often in terms of the investment universe, i.e., where they invest. As can be seen from the discussion above, there is a very close relation between the two types of classifications.

The money mobilized from investors is invested by the mutual fund scheme in a portfolio of securities as per the stated investment objective. Profits or losses, as the case might be, belong to the investors or unitholders. No other entity involved in the mutual fund in any capacity participates in the scheme's profits or losses. They are all paid a fee or commission for the contributions they make to launching and operating the schemes, and other related tasks.

2.1.3 Investment Policy of Mutual Funds

Each mutual fund scheme starts with an investment objective. Since mutual funds are

investment vehicles that invest in different asset categories, the mutual fund scheme returns would depend on the returns generated from these underlying investments. Hence, once the investment objective is finalised, the mutual fund scheme's investment policy is arrived at. This is to achieve the investment objective. The investment policy includes the scheme's asset allocation and investment style.

A mutual fund scheme with the objective of providing liquidity would invest in money market instruments or in debt papers of very short-term maturity. At the same time, a mutual fund scheme that aims to generate capital appreciation over long periods would invest in equity shares. This would reflect in the scheme's asset allocation, which would be disclosed in the Scheme Information Document (SID). However, even within the same asset category, the fund manager may adopt different styles, e.g., growth style or value style; or different levels of portfolio concentration e.g., focused fund or diversified fund.

The scheme's investment policy would disclose two aspects–asset allocation and investment style.

2.1.4 Important Concepts in Mutual

Funds Units

The investment that an investor makes in a scheme is translated into a certain number of 'Units' in the scheme. Thus, an investor in a scheme is issued units of the scheme.

Face Value

Typically, every unit has a face value of Rs. 10, but can be different e.g. Rs 100. The face value is relevant from an accounting perspective.

Unit Capital

The number of units issued by a scheme multiplied by its face value (Rs. 10) is the capital of the scheme–its Unit Capital.

Recurring Expenses

The fees or commissions paid to various mutual fund constituents come out of the expenses charged to the mutual fund scheme. These are known as recurring expenses. These expenses are charged as a percentage to the scheme's assets under management (AUM). The scheme expenses are deducted while calculating the NAV. This means that higher the expenses, lower the NAV, and hence lower the investor returns. Given this, SEBI has imposed strict limits on how many expenses could be charged to the scheme. For running the scheme of mutual funds, operating expenses are also incurred.

Net Asset Value

The true worth of a unit of the mutual fund scheme is otherwise called Net Asset Value (NAV) of the scheme. When the investment activity is profitable, the true worth of a unit increases. When there are losses, the true worth of a unit decreases. The NAV is also the net realizable value per unit in case the scheme is to be liquidated–how much money could be generated if all the holdings of the scheme are sold and converted into cash.

Assets Under Management

The sum of all investments made by investors in the mutual fund scheme is the entire mutual fund scheme's size, which is also known as the scheme's Assets Under Management (AUM). This can also be obtained by multiplying the current NAV with the total units outstanding. The relative size of mutual fund companies/asset management companies is assessed by their assets under management (AUM). When a scheme is first launched, assets under management is the amount mobilized from investors. Thereafter, if the scheme performs well and is marketed well, its AUM goes up and vice versa.

Further, if the scheme is open to receiving money from investors even post-NFO, then such contributions from investors boost the AUM. Conversely, if the scheme pays any money to the investors, either as a dividend or as consideration for buying back the units of investors (redemption), the AUM falls. Dividend option of schemes is now called Income Distribution Cum Capital Withdrawal (IDCW) option.

Mark to Market

The process of valuing each security in the investment portfolio of the scheme at its current market value is called Mark to Market (MTM). The mark-to-market valuation is done on a daily basis for the calculation of daily NAV of a mutual fund scheme. This results in daily fluctuations in the NAVs of all schemes.

2.1.5 Advantages of Mutual Funds for Investors

Professional Management

Mutual funds offer investors the opportunity to earn an income or build their wealth through

the professional management of their investible funds. There are several aspects to such professional management viz. investing in line with the investment objective, investing based on adequate research, and ensuring that prudent investment processes are followed.

Investing in the securities markets will require the investor to open and manage multiple accounts and relationships such as broking account, demat account and others. Mutual fund investment simplifies the process of investing and holding securities.

The fund management function is not restricted to research and selection of securities to construct a portfolio of investments, but also to take care of various administrative tasks like collection of corporate benefits (for example interest payments, dividends, rights issues, buybacks, etc.), or follow up on the same.

The calculation and publishing of NAV on a daily basis means that the accounting of the entire portfolio is done on a daily basis. The investor managing one's portfolio independently would need to take too much efforts to take care of this part.

All these benefits come at a very low cost and is available even for the smallest investments. Further, the expenses charged for professional management of funds are quite reasonable.

Affordable Portfolio Diversification

Investing in the units of a scheme provides investors the exposure to a range of securities held in the investment portfolio of the scheme in proportion to their holding in the scheme. Thus, an investor can get proportionate ownership in a diversified investment portfolio even for a small investment of Rs. 500 in a mutual fund scheme.

With diversification, an investor ensures that "all the eggs are not in the same basket". Consequently, the investor is less likely to lose money on all the investments at the same time. Thus, diversification helps reduce the risk in investment. In order to achieve the same level of diversification as a mutual fund scheme, investors will need to set apart several lakhs of rupees. Instead, they can achieve the diversification through an investment of less than thousand rupees in a mutual fund scheme.

Economies of Scale

Pooling of large sums of money from many investors makes it possible for the mutual fund to engage professional managers for managing investments. Individual investors with small amounts to invest cannot, by themselves, afford to engage such professional management.

Large investment corpus leads to various other economies of scale. For instance, costs related to investment research and office space gets spread across investors. Further, the higher transaction volume makes it possible to negotiate better terms with brokers, bankers and other service providers.

Mutual funds give the flexibility to an investor to organize their investments according to their convenience. Direct investments may require a much higher investment amount than what many investors may be able to invest. For example, an effectively diversified equity portfolio may require a large outlay. Mutual funds offer the same benefits at a much lower investment value since it pools small investments by multiple investors to create a large fund. Similarly, the Income Distribution cum Capital Withdrawal (IDCW) and growth options of mutual funds allow investors to structure the returns from the fund in the way that suits their requirements.

Thus, investing through a mutual fund offers a distinct economic advantage to an investor as compared to direct investing in terms of cost saving.

Transparency

An investor is well served if relevant information is available on time. Availability of such information is critical for making an informed investment decision. The structure of the mutual funds and the regulations by SEBI have ensured that investors get such transparency about their investments. There are three essential places from where the investor can get enough information for making informed decisions, viz., scheme related documents (SID, SAI, and KIM), portfolio disclosures (e.g. factsheet), and the NAV of the scheme. Incidentally, even a prospective investor can access all this information.

Liquidity

At times, investors in financial markets are stuck with a security for which they can't find a buyer–worse, at times they can't find the company they invested in. Such investments, whose value the investor cannot easily realize in the market, are technically called illiquid investments and may result in losses for the investor. The bond market in India is wholesale, where transactions take place in very large lot sizes, beyond the reach of the common investor. MFs offer a route for investors to participate, even at a small ticket size.

Investors in a mutual fund scheme can recover the market value of their investments, from the mutual fund itself. Depending on the structure of the mutual fund scheme, this would be possible, either at any time, or during specific intervals, or only on the closure of the scheme. Schemes, where the money can be recovered from the mutual fund only on the closure of the scheme, are compulsorily listed on a stock exchange. In such schemes, the investor can sell the units through the stock exchange platform to recover the prevailing value of the investment.

If a 'material' development takes place related to investments in a mutual fund scheme, then such information is made available on time. This helps an investor to take an appropriate action, including taking out the money from a mutual fund scheme. This combination of transparency and liquidity enhances the safety.

Tax Deferral

Mutual funds are not liable to pay tax on the income they earn. If the same income were to

be earned by the investor directly, then tax may have to be paid in the same financial year.

Mutual funds offer options, whereby the investor can let the money grow in the scheme for several years. By selecting such options, it is possible for the investor to defer the tax liability. This helps investors to legally build their wealth faster than would have been the case if they were to pay tax on the income each year.

Tax benefits

Specific schemes of mutual funds such as Equity Linked Savings Schemes (ELSS) give investors the benefit of deduction of the amount subscribed up to Rs. 150,000 in a financial year under Section 80C of the Old Tax Regime, from their income that is liable to tax. This reduces their taxable income, and therefore the tax liability.

Convenient Options

The options offered under a scheme allow investors to structure their investments in line with their liquidity preference and tax position.

There are also transaction conveniences like the ability to withdraw only part of the money from the investment account, the ability to invest the additional amount to the account, setting up systematic transactions, etc.

Investment Comfort

Once an investment is made with a mutual fund, they make it convenient for the investor to make further purchases with very little documentation. This simplifies subsequent investment activity.

Regulatory Comfort

The regulator, Securities and Exchange Board of India (SEBI), has mandated strict checks and balances in the structure of mutual funds and their activities. Mutual fund investors benefit from such protection.

Systematic Approach to Investments

Mutual funds also offer facilities that help investors invest amounts regularly through a Systematic Investment Plan (SIP); or withdraw amounts regularly through a Systematic Withdrawal Plan (SWP); or move money between different kinds of schemes through a Systematic Transfer Plan (STP). Such systematic approaches promote investment discipline, which is useful in long-term wealth creation and protection.

2.1.6 Limitations of Mutual Fund

Lack of Portfolio Customization

Some brokerages and asset management firms offer Portfolio Management Services (PMS) to large investors. In a PMS, the investor has better control over what securities are bought and

sold on his behalf. The investor can get a customized portfolio in case of PMS.

On the other hand, a unit-holder in a mutual fund is just one of several thousand investors in a scheme. Once a unit-holder has bought into the scheme, investment management is left to the fund manager (within the broad parameters of the investment objective). Thus, the unitholder cannot influence what securities or investments the scheme would invest into.

Choice Overload

There are multiple mutual fund schemes offered by several mutual fund houses and multiple options within those schemes which makes it difficult for investors to choose between them. Greater dissemination of industry information through various media and availability of professional advisors or mutual fund distributors in the market helps investors handle this overload.

In order to overcome this choice overload, SEBI has introduced the categorisation of mutual funds to ensure uniformity in characteristics of similar type of schemes launched by different mutual funds. This would help investors to evaluate the different options available before making an informed decision to invest.

No Control Over Costs

All the investor's money is pooled together in a scheme. Costs incurred for managing the scheme are shared by all the Unit-holders in proportion to their holding of units in the scheme. Therefore, an individual investor has no control over the costs in a scheme.

SEBI has however imposed certain limits on the expenses that can be charged to any scheme. These limits, which vary with the size of assets and the nature of the scheme, are discussed later. However, at the same time, it should be noted that the market forces also push the cost down, and there are many schemes that operate at expenses much lower than the limits allowed by the regulator. This aspect turns out to be advantageous for investors.

No Guaranteed Returns

The structure of mutual funds is such that—it is a pass-through vehicle and passes on the risk and return to the fund’s investors. That itself protects the interests of the investors. A mutual fund is not a guaranteed return product. It is just another way of managing money–except that instead of an investor it is a professional fund management team that takes care of the funds invested. The performance of these investments impacts the returns generated by the mutual fund scheme. The deciding factors are: the movement of the specific market in which the money is invested, the performance of individual securities held and the skills of the investment management team. Out of these, the fund manager can work towards improving one’s skills, but the other factors are out of his control.

2.2 Classification of Mutual Funds

Mutual funds can be classified in multiple ways. Funds can be classified based on the investment objective, as discussed earlier. We have different types of mutual fund schemes- growth funds, income funds, and liquid funds. The names of the categories suggest the investment objectives of the schemes. The other ways in which the mutual funds can be classified have been discussed below.

2.2.1 By the structure of the fund

Mutual fund schemes are structured differently. Some schemes are open for purchase and repurchase on a perpetual basis. Once the scheme is launched, the scheme remains open for transactions, and hence the name of this category of schemes is open-ended funds. On the other hand, some schemes have a fixed maturity date. This means that these schemes are structured to operate for a fixed period till the maturity date and cease to exist thereafter. Since the closure of the scheme is pre-decided, such schemes are known as close-ended schemes. Apart from these two, there are a couple of other variants, which would be discussed later.

Open-ended funds allow the investors to enter or exit at any time, after the NFO[7]. Investors can buy additional units in the scheme any time after the scheme opens for ongoing transactions. Prospective investors can also buy units. At any time, the existing investors can redeem their investments, that is, they can sell the units back to the scheme to get their money back.

Although some unit-holders may exit from the scheme, wholly or partly, the scheme continues operations with the remaining investors. The scheme does not have any kind of time frame in which it is to be closed. The ongoing entry and exit of investors imply that the unit capital in an open-ended fund would keep changing on a regular basis.

When an investor invests money in the scheme, new units would be created and thus the unit balance would increase. On the other hand, when someone exits the scheme (fully or partly), the units sold back to the scheme would be cancelled, due to which the unit balance of the scheme would go down.

Close-ended funds have a fixed maturity. Investors can buy units of a close-ended scheme, from the fund, only during its NFO. The investors cannot transact with the fund after the NFO is over. At the end of the maturity period, the scheme is wound up, units are cancelled and the money is returned to the investors. The fund makes arrangements for providing liquidity, post-NFO through listing of the units on a stock exchange. Such listing is compulsory for close-ended schemes to provide liquidity to the investors. Therefore, after the NFO, investors who want to buy units will have to find a seller for those units in the stock exchange. Similarly,

[7] NFO stands for New Fund Offer, or the launch of a mutual fund scheme. This is when the scheme is offered to public for the first time.

investors who want to sell units will have to find a buyer for those units in the stock exchange. Since post-NFO sale and purchase of units happen to or from counter-party in the stock exchange–and not to or from the scheme–the unit capital of the scheme remains stable or fixed. Every close ended scheme, other than an equity linked savings scheme, shall be listed on a recognised stock exchange within such time period and subject to such conditions as specified by SEBI.

Post-NFO, the sale and purchase transactions happen on the stock exchange between two different investors, and the fund is not involved in the transaction. Depending on the demand-supply situation for the units of the scheme on the stock exchange, the transaction price could be higher or lower than the prevailing NAV. Therefore, the transaction price is likely to be different from the NAV. Experience suggests that most of the time, the units trade at a discount to the NAV. This can be understood logically. The buyer has money, and hence many options to choose from, whereas the seller has the units of the close-ended fund. This puts the buyer in a better bargaining position.

Interval funds combine features of both open-ended and close-ended schemes. They are largely close-ended but become open-ended at pre-specified intervals. For instance, an interval scheme might become open-ended between January 1 to 5, and July 1 to 5, each year. The benefit for investors is that, unlike in a purely close-ended scheme, they are not completely dependent on the stock exchange to be able to buy or sell units of the interval fund. However, to provide liquidity to the investors between these intervals, the units must be compulsorily listed on stock exchanges to allow investors an exit route.

The periods when an interval scheme becomes open-ended, are called 'transaction periods'; the period between the close of a transaction period, and the opening of the next transaction period is called the 'interval period'. Minimum duration of the transaction period is 2 working days, and minimum duration of the interval period is 15 days. No redemption/repurchase of units is allowed except during the specified transaction period (during which both subscription and redemption may be made to and from the scheme).

(Note: The provision to list the units on a recognized stock exchange would apply to Specialized Investment Funds, as well, if the specific investment strategies are launched as close-ended or interval structures).

While the units of close-ended and interval funds are listed on the stock exchanges, the liquidity in these units may be poor. At the same time, even when the trade happens, the actual price may be at a discount to the NAV. This happens because of the demand-supply situation for the units of the schemes, as discussed earlier.

The Exchange Traded Funds (ETFs[8]) (See box 2.1), are an innovation that addresses this liquidity issue. The market price also tracks the NAV very closely.

[8]https://www.sebi.gov.in/legal/circulars/nov-2021/norms-for-silver-exchange-traded-funds-silver-etfs-and-gold-exchange-traded-funds-gold-etfs-_54166.html

Box 2.1: Exchange Traded Funds (ETFs)

Exchange Traded Funds (ETFs) are those mutual fund schemes that are traded on a stock exchange just like any other stock. These funds usually track an index or have a fixed portfolio strategy based on some index so they are passive in nature. In effect they are like a normal mutual fund but the only difference being that while an open-ended fund would have a single NAV at the end of the day at which all the transactions take place the situation is different for the ETF. Since the ETF is traded for the entire day, it gives multiple opportunities and prices at which the investor can either enter or exit the fund. This is similar to any other listed securities where there are multiple prices at which transactions take place and this is witnessed for an ETF too. ETFs provide additional liquidity for investors and enable them to take benefit of changes that take place in prices during the day. The downside to this is that the prices might fluctuate quite a bit and there might be a big gap with the NAV of the fund too. So, investors need to be careful about the price at which they are undertaking their transactions. There is ease of investing in an ETF because one can buy them just like a stock and the minimum investment here is also so small that any investor can participate by having these in their portfolio. Investors who already transact on the stock exchanges and have a demat account can use these for investing in ETFs. There is a huge variety in terms of the indices on which ETFs are based and hence this provides investors with a lot of choice in terms of their investments and the kind of exposure that they can take. Increasingly mutual funds are also coming out with different variants that employ varying strategies for their ETF offerings. Like Gold ETF recently Silver ETF has also been introduced by SEBI that can be defined as a mutual fund scheme that invests primarily in silver or silver related instruments which are specified by SEBI from time to time.

2.2.2 By the management of the portfolio

Actively managed funds are funds where the fund manager has the flexibility to choose the investment portfolio, within the broad parameters of the investment objective of the scheme. Since this increases the role of the fund manager, the expenses for running the fund turn out to be higher. Investors expect actively managed funds to perform better than the market.

Passive funds invest on the basis of a specified index; whose performance it seeks to track. Thus, a passive fund tracking the S&P BSE Sensex would buy only the shares that are part of the composition of the S&P BSE Sensex. The proportion of each share in the scheme's portfolio would also be the same as the weightage assigned to the share in the S&P BSE Sensex. Thus, the performance of these funds tends to mirror the concerned index. They are not designed to perform better than the market. Such schemes are also called index schemes. Since the portfolio is determined by the index itself, the fund manager has no role in deciding on investments. Therefore, these schemes have low running costs.

As on December 31, 2024, SEBI has introduced Mutual Fund Lite framework for passively managed schemes of mutual funds. Mutual fund Regulation defines "MF Lite" as a mutual fund that is having only such index funds, exchange traded funds, fund of funds or other mutual fund schemes as may be specified by SEBI from time to time. Further, MF Lite scheme is defined as any scheme launched by an MF Lite or any other eligible passive scheme as may be specified by SEBI from time to time.[9]

2.2.3 By the investment universe

This type of classification looks at the investment universe where the scheme may invest money. There are equity funds, fixed income funds, money market funds, gold funds, international funds, etc. Here, the category names indicate where the money could be invested.

This classification may get further specific depending on narrowing the investment universe. For example, within equity funds, we have large-cap funds, mid-cap funds, etc. Similarly, within debt funds, we have Government Securities funds and corporate debt funds.

2.2.4 Mutual fund scheme categorization and SEBI regulation[10]

With a view to bring in standardization in the classification of mutual funds and to ensure the

[9]Chapter X of the SEBI Mutual Fund Regulations 2026 describes Mutual Funds Lite Framework. "Mutual fund lite" or "MF Lite" means a mutual fund granted registration under ChapterX of these regulations and has only such index funds, exchange traded funds, fund of funds or other mutual fund schemes as may be specified by SEBI.

[10]Participants are advised to go through the SEBI Circular number HO/24/13/15(2)2026-IMD-RAC4/I/5764/2026 dated 26 February 2026 for more information.

schemes are clearly distinct from one another, SEBI issued a circular on Categorization and Rationalization of Mutual Fund Schemes in 2026.

The objective was to bring uniformity in the characteristics of similar type of schemes launched by different mutual fund houses so that the investor can objectively evaluate the schemes chosen for investment. Accordingly, there are five broad categories of mutual fund schemes. Within each category, there are many sub-categories.

A. Equity Schemes (13 sub-categories)
B. Debt Schemes (17 sub-categories)
C. Hybrid Schemes (7 sub-categories)
D. Life Cycle Funds
E. Other Schemes (2 sub-categories)

A. Equity schemes

1. Multi Cap Fund: An open-ended equity scheme investing across large cap, mid cap, small cap stocks. (See Box 2.2)
As per SEBI, the Multi Cap Fund must have the minimum investment in equity and equity related instruments as 75 percent of total assets distributed in the following manner*:

- Minimum investment in equity & equity related instruments of large cap companies - 25% of total assets
- Minimum investment in equity & equity related instruments of mid cap companies - 25% of total assets
- Minimum investment in equity & equity related instruments of small cap companies - 25% of total assets

For this purpose, SEBI also defined the various market capitalization categories as under:

Box 2.2: Definition of Large-cap, Mid-cap and Small-cap

Large cap, mid cap and small cap companies are defined as follows:

1. Large Cap: 1st -100th company in terms of full market capitalization
2. Mid Cap: 101st -250th company in terms of full market capitalization
3. Small Cap: 251st company onwards in terms of full market capitalization

The same definition applies in case of other scheme categories, too, as applicable.

2. Large Cap Fund: An open-ended equity scheme predominantly investing in large cap stocks. The minimum investment in equity and equity related instruments of large cap companies shall be 80 percent of total assets.

3. Large and Mid-Cap Fund: An open-ended equity scheme investing in both large cap and mid cap stocks. The minimum investment in equity and equity related instruments of large cap companies shall be 35 percent of total assets. The minimum investment in equity and equity related instruments of mid cap stocks shall be 35 percent of total assets.

4. Mid Cap Fund: An open-ended equity scheme predominantly investing in mid cap stocks. The minimum investment in equity and equity related instruments of mid cap companies shall be 65 percent of total assets.

5. Small cap Fund: An open-ended equity scheme predominantly investing in small cap stocks. Minimum investment in equity and equity related instruments of small cap companies shall be 65 percent of total assets.

6. Dividend Yield Fund: An open-ended equity scheme predominantly investing in dividend yielding stocks. Scheme should predominantly invest in dividend yielding stocks. The minimum investment in equity shall be 80 percent of total assets.

7. Value Fund: A value fund is an open-ended equity scheme following a value investment strategy. Minimum investment in equity & equity related instruments shall be 80 percent of total assets. Mutual Funds shall be permitted to offer both Value and Contra funds subject to the condition that scheme portfolio overlap between the two schemes shall not be more than 50%.

8. Contra Fund: A contra fund is an open-ended equity scheme following a contrarian investment strategy. Minimum investment in equity & equity related instruments shall be 80 percent of total assets. Mutual Funds shall be permitted to offer both Value and Contra funds subject to the condition that scheme portfolio overlap between the two schemes shall not be more than 50%.

9. Focused Fund: An open-ended equity scheme investing in maximum 30 stocks (the scheme needs to mention where it intends to focus, viz., multi cap, large cap, mid cap, small cap). Minimum investment in equity & equity related instruments shall be 80 percent of total assets.

10.Sectoral: An open-ended equity scheme investing in a specific sector such as bank; power is a sectoral fund. The minimum investment in equity and equity related instruments of a particular sector/ theme shall be 80 percent of total assets. For any scheme offering in sectoral/thematic equity category, Mutual Funds shall ensure that no more than 50% of the scheme's portfolios would overlap with other equity schemes in sectoral/thematic category and other equity schemes categories except for large cap scheme.

11.Thematic: An open-ended equity scheme investing in line with an investment theme. For example, an infrastructure thematic fund might invest in shares of companies that are into infrastructure, construction, cement, steel, telecom, power etc. The minimum investment in equity and equity related instruments of a particular sector/ theme shall be 80 percent of total assets. For any scheme offering in sectoral/thematic equity category, Mutual Funds shall

ensure that no more than 50% of the scheme's portfolios would overlap with other equity schemes in sectoral/thematic category and other equity schemes categories except for large cap scheme.

12. ELSS – Tax Saver Fund: An open-ended equity linked saving scheme with a statutory lock-in of 3 years and tax benefit. The minimum investment in equity and equity related instruments shall be 80 percent of total assets (in accordance with Equity Linked Saving Scheme, 2005 notified by the Ministry of Finance).

13. Flexi-cap Fund: An open-ended equity scheme where the minimum investment in equity and equity related assets are 65% of the total assets. This would be a dynamic fund where there can be investment across large cap, mid cap as well as small cap stocks.[11]

In the equity category schemes, Mutual Funds may invest residual portion in equity, money market instruments and other liquid instruments, gold and silver instruments as permitted by SEBI and in InvITs, subject to the ceilings laid out in MF regulations with respect to the respective asset class.

B. Debt schemes

1. **Overnight Fund:** An open-ended debt scheme investing in overnight securities. The investment is in overnight securities having a maturity of 1 day.[12]

2. **Liquid Fund:** An open-ended liquid scheme whose investment is into debt and money market securities with a maturity of up to 91 days only.

3. **Ultra-Short-Term Fund:** An open ended ultra-short-term debt scheme investing in debt and money market instruments with Macaulay duration of the portfolio between 3 months and 6 months.

4. **Ultra Short to Short Term Fund:** An open-ended low duration debt scheme investing in debt and money market instruments with Macaulay duration of the portfolio between 6 months and 12 months.

5. **Money Market Fund:** An open-ended debt scheme investing in money market instruments having maturity up to 1 year.

6. **Short Term Fund:** An open-ended short-term debt scheme investing in debt and money

[11] Mutual Funds have the option to convert an existing scheme into a Flexi Cap Fund subject to compliance with the requirement for change in fundamental attributes of the scheme in terms of SEBI (Mutual Funds) Regulations,2026. https://www.sebi.gov.in/legal/circulars/nov-2020/circular-on-introduction-of-flexi-cap-fund-as-a-new-category-under-equity-schemes_48108.html

[12] The overnight funds can deploy, not exceeding, 5% of the net assets of the scheme in G-secs and/or T-bills with a residual maturity of up to 30 days for the purpose of placing the same as margin and collateral for certain transactions.
Source: https://www.sebi.gov.in/legal/circulars/dec-2021/circular-on-mutual-funds_54542.html

market instruments with Macaulay duration of the portfolio between 1 year and 3 years.

7. **Medium Term Fund:** An open-ended medium-term debt scheme investing in debt and money market instruments with Macaulay duration of the portfolio being between 3 years to 4 years. Portfolio Macaulay duration under anticipated adverse situation is 1 year to 4 years.

8. **Medium to Long Term Fund:** An open-ended medium-term debt scheme investing in debt and money market instruments with Macaulay duration of the portfolio between 4 years and 7 years. Portfolio Macaulay duration under anticipated adverse situation is 1 year to 7 years.

9. **Long Term Fund:** An open-ended debt scheme investing in debt and money market instruments with Macaulay duration of the portfolio greater than 7 years.

10. **Dynamic Term Fund:** An open-ended dynamic debt scheme investing across duration.

11. **Corporate Bond Fund:** An open-ended debt scheme predominantly investing in AA+ and above rated corporate bonds. The minimum investment in corporate bonds shall be 80 percent of total assets (only in AA+ and above rated corporate bonds).

12. **Credit Risk Fund:** An open-ended debt scheme investing in below highest rated corporate bonds. The minimum investment in corporate bonds shall be 65 percent of total assets (only in AA (excludes AA+ rated corporate bonds) and below rated corporate bonds).[13]

13. **Banking and PSU Debt:** An open-ended debt scheme predominantly investing in debt instruments of banks, Public Sector Undertakings, Public Financial Institutions and Municipal Bonds. The minimum investment in such instruments should be 80 percent of total assets.

14. **Gilt Fund:** An open-ended debt scheme investing in government securities across maturity. The minimum investment in G-secs is defined to be 80 percent of total assets (across maturity).

15. **10-year constant maturity Gilt Fund:** An open-ended debt scheme investing in government securities such that the Macaulay duration of the portfolio is equal to 10 years. Minimum investment in G-secs is 80 percent of total assets .

16. **Floating Interest Rates Fund:** An open-ended debt scheme predominantly investing in floating rate instruments (including fixed rate instruments converted to floating rate exposures using swaps/derivatives). Minimum investment in floating rate instruments (including fixed rate instruments converted to floating rate exposures using

[13]Vide SEBI Circular (SEBI/HO/IMD/DF3/CIR/P/2017/114 October 6, 2017**)** words/phrases that highlight/emphasize only return aspect of the scheme shall not be used in the name of the scheme (for instance credit opportunities fund, high yield fund, credit advantage etc.)

swaps/derivatives) shall be 65 percent of total assets.

17. Sectoral Fund: Minimum investment in debt & debt related instruments of a particular sector across duration (only in AA+ and above rated corporate bonds)- 80% of total assets. Sectoral Debt Funds may be launched in following sectors: Financial Services, Energy, Infrastructure, Housing, Real Estate.

C. Hybrid Schemes

1. Conservative Hybrid Fund: An open-ended hybrid scheme investing predominantly in debt instruments. Investment in debt instruments shall be between 75 percent and 90 percent of total assets while investment in equity and equity instruments shall be between 10 percent and 25 percent of total assets.

2. Balanced Hybrid and Aggressive Hybrid Fund:

i. **Balanced Hybrid Fund:** An open-ended balanced scheme investing in equity and debt instruments. The investment in equity and equity related instruments shall be between 40 percent and 60 percent of total assets while investment in debt instruments shall be between 40 percent and 60 percent. No arbitrage is permitted in this scheme.

ii. **Aggressive Hybrid Fund:** An open-ended hybrid scheme investing predominantly in equity and equity related instruments. Investment in equity and equity related instruments shall be between 65 percent and 80 percent of total assets while investment in debt instruments shall be between 20 percent and 35 percent of total assets.

3. Dynamic Asset Allocation or Balanced Advantage: It is an open-ended dynamic asset allocation fund with investment in equity/debt that is managed dynamically.

4. Multi Asset Allocation: An open-ended scheme investing in at least three asset classes with a minimum allocation of at least 10 percent each in all three asset classes. Foreign securities are not treated as a separate asset class in this kind of scheme.

5. Arbitrage Fund: An open-ended scheme investing in arbitrage opportunities. The minimum investment in equity and equity related instruments shall be 65 percent of total assets. Exposure in debt instruments shall be limited to government securities with maturity less than 1 year as well as repo of government bonds only.

6. Equity Savings: An open-ended scheme investing in equity, arbitrage and debt. The minimum investment in equity and equity related instruments shall be 65 percent of total assets and the minimum investment in a debt shall be 10 percent of total assets. Net equity

exposure- 15%-40% of total assets. The minimum hedged and unhedged investment needs to be stated in the SID. Asset Allocation under defensive considerations may also be stated in the SID.

In the hybrid category schemes, Mutual Funds may invest residual portion in InvITs (except for arbitrage funds), ETCDs, Gold ETFs and Silver ETFs.

D. Life Cycle Funds

Life Cycle Fund: Scheme following glide path strategy-based investing across various asset classes i.e. Equity, Debt, InvITs, ETCDs, Gold & Silver ETF. Mutual Fund may launch Life Cycle Funds with a minimum tenure of 5 years and a maximum tenure of 30 years. Such fund may be launched for tenures in multiple of 5 years and a maximum of 6 funds by a Mutual Fund can be active for subscription at any given point in time.

Illustration

For Life Cycle Funds with maturity of 15 years

Years to Maturity	Investment in Equity (%)	Investment in Debt (%)	Investment in Gold/Silver ETFs/ ETCDs /InvITs (%)
10-15 Years	65-80	5-25	0-10
5-10 Years	50-65	5-25	0-10
3-5 Years	35-50	25-50	0-10
1-3 Years	20-35	25-65**	0-10
< 1 Years	5-20	25-65**	0-10

E. Other Schemes

1. **Index Funds/Exchange Traded Fund:** An open-ended scheme replicating/tracking a specific index. This minimum investment in securities of a particular index (which is being replicated/ tracked) shall be 95 percent of total assets.

2. **Fund of Funds (Overseas/Domestic):** An open-ended fund of fund scheme investing in an underlying fund. The minimum investment in the underlying fund shall be 95 percent of total assets.

There can be only one scheme per category, except in the following cases:

1. Index funds and ETFs replicating or tracking different indices,
2. Fund of Funds having different underlying schemes, and
3. Sector funds and thematic funds investing in different sectors or themes

Apart from the above, let us also take a look at certain other categories:

Fixed Maturity Plans are a kind of close-ended debt fund where the duration of the investment portfolio is closely aligned to the maturity of the scheme. AMCs tend to structure the scheme around pre-identified investments. Further, being close-ended schemes, they do not accept money post-NFO. Therefore, the fund manager has a little ongoing role in deciding on the investment options. Such a portfolio construction gives more clarity to investors on the likely returns if they stay invested in the scheme until its maturity (though there can be no guarantee or assurance of such returns). This helps them compare the risk and returns of the scheme with alternative investments.

Target Maturity Funds (TMF) are a type of debt mutual fund in India that offer a unique investment strategy. These funds are designed to mature on a specific date, typically ranging from 2 to 14 years, allowing investors to plan their financial goals accordingly. TMFs invest in bonds with matching maturities, minimizing reinvestment risk and providing predictable returns. They are ideal for investors seeking low-risk, income-generating investments with a defined horizon, such as retirement planning or children's education. Additionally, TMFs provide liquidity through listing on stock exchanges, allowing investors to exit before the maturity date if needed. In the last few years, the Indian mutual fund industry has witnessed growing interest in these funds. TMFs offer benefits like predictable returns, low credit risk, tax efficiency, and liquidity, making them an attractive option for investors seeking stable, long-term investments.

Capital Protection Oriented Funds are closed-end hybrid funds. In these types of funds, the exposure to equity is typically taken through the equity derivatives market. The portfolio is structured such that a portion of the principal amount is invested in debt instruments so that it grows to the principal amount over the term of the fund. For example, Rs.90 may be invested for 3 years to grow into Rs.100 at maturity. This provides protection to the capital invested. The remaining portion of the original amount is invested in equity derivatives to earn higher returns.

Infrastructure Debt Funds are investment vehicles that can be sponsored by commercial banks and NBFCs in India in which domestic/offshore institutional investors, especially insurance and pension funds can invest through units and bonds issued by the IDFs. Infrastructure Debt Funds (IDFs), can be set up either as a Trust or as a Company. A trust based IDF would normally be a Mutual Fund (MF), regulated by SEBI, while a company based IDF would normally be an NBFC regulated by the Reserve Bank.

According to SEBI Mutual Fund Regulations, IDF means a close ended mutual fund scheme that invests primarily (minimum 90 percent of scheme assets) in the debt securities or securitized debt instrument of infrastructure companies or infrastructure capital companies or infrastructure projects or special purpose vehicles which are created for the purpose of facilitating or promoting investment in infrastructure, and other permissible assets in accordance with Securities and Exchange Board of India (Mutual Funds) Regulations, 2026 or bank loans in respect of completed and revenue generating projects of infrastructure

companies or projects or special purpose vehicles. IDF-MFs can be sponsored by banks and NBFCs. Only banks and Infrastructure Finance companies can sponsor IDF-NBFCs.

Real Estate Mutual Fund scheme is allowed to invest in real estate assets or other permissible assets in cities mentioned in accordance with the SEBI Circular issued on 2 May 2008.These funds are closed-end funds and have to be listed on a stock exchange. Other real estate and infrastructure investment instruments allowed by SEBI are Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs). However, these two are not mutual fund schemes. (See Box 2.2)

Environmental, Social and Governance ("ESG") Investing[14]

SEBI has introduced a separate sub-category for ESG investments under the thematic category of Equity schemes. Any scheme under the ESG category can be launched with one of the following strategies:

a. Exclusion
b. Integration
c. Best-in-class & Positive Screening
d. Impact investing
e. Sustainable objectives
f. Transition or transition related investments

Moneys collected under ESG schemes shall be invested in the manner as specified by the Board from time to time.

[14] Candidates may read more about ESG Investing in MF at: https://www.sebi.gov.in/legal/circulars/jul-2023/new-category-of-mutual-fund-schemes-for-environmental-social-and-governance-esg-investing-and-related-disclosures-by-mutual-funds_74186.html

Box 2.2: Real Estate Investment Trusts and Infrastructure Investment Trusts

Real Estate Investment Trusts (REIT) are trusts registered with SEBI that invest in commercial real estate assets. The REIT will raise funds through an initial offer and subsequently through follow-on offers, rights issue and institutional placements. The valueof the assets owned or proposed to be owned by a REIT coming out with an initial offer willnot be less than Rs. 500 crore and the minimum offer size will not be less than Rs.250 crore.The minimum subscription amount in an initial offer which was Rs. 50,000/- earlier has now been brought down to Rs 10,000-15,000. The units are listed on the stock exchange. The traded lot of a REIT will also be one unit. For Small and Medium REITs (SM REITs), the scheme asset value must be at least ₹50 crore (and capped at ₹500 crore).

Infrastructure Investment Trusts (InvIT) are trusts registered with SEBI that invest in the infrastructure sector. The InvIT will raise funds from the public through an initial offer of units. The offer shall be for not less than Rs. 250 crores and the value of the proposed assets of the InvIT shall not be less than Rs. 500 crores. The minimum subscription size which was Rs.1 lakh earlier has now been brought down to Rs 10,000-15,000. The units are listed on a stock exchange and the traded lot will be one unit.

New types of funds

There is an increase in the variation seen in the kinds of funds that are being launched by mutual fund houses. Some of these variants are discussed below.

Smart Beta Fund

Smart beta funds are an extension of index or Exchange Traded Funds (ETFs) as they change the basis of the exposure in the portfolio to the index using alternative strategies. For example, a fund that tracks an index will have the same exposure as the index and this would mean weightage by market capitalisation. Smart beta strategies rely less on market cap and this could include things like equal weightage or exposure based on additional parameters. The whole idea of smart beta funds is to improve returns. Increase diversification and reduce risk.

Quant Funds

Quant funds rely on data analysis and numbers usually undertaken by machines to select the securities in the portfolio. There are pre-determined models that are created and these are derived through analysis of past data. The model then runs through the emerging data to select the holdings and make decisions about buying and selling. This takes out the human element in decision making.

International REITs

A fund that invests in Real Estate Investment Trusts abroad gives an exposure to the investor both to international funds plus the commercial real estate sector. In India too, the number of REITs being listed are increasingly slowly and this kind of fund provides a different kind of holding to those who need such exposure.

Specialized Investment Fund

The current range of investment products with varying risk-reward profiles, are intended to meet the investment needs of retail, high net-worth and institutional investors. The regulatory framework and prudential norms governing these vehicles become progressively more flexible from mutual funds (MFs) to portfolio management services (PMS) to alternative investment funds (AIFs), in sync with the investment profile and investment size of these products.

Over the years, a gap has emerged between MFs and PMS in terms of portfolio flexibility, creating an opportunity for a new investment product. To bridge this gap, SEBI in its recent amendment to SEBI (Mutual Funds) Regulations, has introduced a new product line under mutual funds known as Specialized Investment Fund (SIF).

The minimum required investment amount is Rs. 10 lakhs from the investors across all investment strategies of the same AMC.

Investment strategies under SIF

The following investment strategies shall be permitted to be launched under SIF, at this stage:

A. Equity Oriented Investment Strategies

a. Equity Long-Short Fund

Under this strategy the minimum investment in equity and equity related instruments should be 80% and the maximum short exposure through unhedged derivative positions in equity and equity related instruments would be 25%. It could be an open ended/interval equity investment strategy investing in listed equity and equity related instruments including limited short exposure in equity through derivative instruments.

b. Equity Ex-Top 100 Long-Short Fund

Under this strategy, a minimum of 65% of NAV must be invested in equity and equity related instruments of stocks excluding the top 100 stocks by market capitalisation. The short exposure through unhedged derivative positions in equity and equity related instruments of other than large cap stocks would be restricted to a maximum of 25% of NAV. The structure of the fund could be open-ended or interval type.

c. Sector Rotation Long-Short Fund

While the above two strategies are operated at stock level, this one would be at the sector level, which means if a fund manager decides to go short on a sector, all stocks from the sector must be held as short positions. Under this strategy, the minimum investment in equity and equity related instruments must be at least 80%, while the maximum number of sectors could be 4. The maximum short exposure through unhedged derivative positions would be restricted to 25% of the NAV. This also could be an open-ended or interval scheme.

In all the three cases, the AMC may decide to allow redemptions on a daily basis or any lesser frequency.

B. Debt Oriented Investment Strategies

a. Debt Long-Short Fund

This would be an interval fund investing in debt instruments across duration, including unhedged short exposure through exchange-traded debt derivative instruments.

b. Sectoral Debt Long-Short Fund

This also would be an interval scheme, investing in debt instruments including limited short position in debt instruments of minimum two sectors. Such short positions should be across the sectors, which means that the short positions shall be across all the instruments of that particular sector. The scheme must invest in debt instruments of at least two sectors, with the maximum sector exposure restricted to 75%. The

maximum short exposure through unhedged derivative positions in debt instruments would be restricted to 25% of the NAV.

Both the above strategies would be interval schemes. The AMCs may allow redemption from the scheme once a week or any lesser frequency.

C. Hybrid Investment Strategies

a. Active Asset Allocator Long-Short Fund

This would be an interval scheme. The investment strategy would be to dynamically invest across equity, debt, equity derivatives, debt derivatives, commodity derivatives, REITs and InvITs. The maximum short positions in equity derivatives and debt derivatives would be restricted to 25% of the NAV.

b. Hybrid Long-Short Fund

This would also be an interval scheme with an investment strategy to take exposure into equity securities, debt securities, equity derivatives and debt derivatives. The scheme can take short exposure in equity and debt through unhedged derivative positions. The scheme would be required to invest a minimum of 25% each in equity securities and debt securities, which the maximum short exposure through unhedged derivative positions in equity and debt instruments would be restricted to 25% of the net assets of the scheme.

Both the above strategies would be interval schemes. The AMCs may allow redemption from the scheme two times a week or any lesser frequency.

To avoid proliferation of investment strategies and in line with the approach followed for categorization of MF schemes, only one investment strategy shall be permitted to be launched under each of the aforementioned categories.

2.3 Growth of the mutual fund industry in India

Mutual funds have become popular among the investors in India. Mutual fund industry in India has witnessed a surge in the mutual fund assets under management (AUM) from Rs. 11.89 lakh crores in March 2015 to Rs 82.03 lakh crore in February 2026. The 11-year growth stands at 19.3 per cent p.a. compounded annually.[15]

Even, the number of folios have also seen a big rise. From a little over 4.8 crore folios in March 2010, it has reached 27.39 crore in March 2026.

The share of mutual funds in the overall financial investments in India has risen from 10

[15] Source: AMFI website

percent in March 2016 to 12 percent in March 2017 and to 14 percent in March 2018. Compared to this, there has been a drop in the share of bank deposits from 71 percent to 69 percent and then to 65 percent during the same period. At the same time, the growth of the Indian mutual fund industry has been stupendous in comparison to the world. The Indian mutual fund industry's share has gone up from 0.33 percent in 2008 to 0.60 percent in 2018.[16] Another major development is the rising popularity of SIPs.[17] The SIP contribution has grown phenomenally from Rs. 8,055 crores in March 2019 to Rs. 32,087 crores in March 2026.[18]. SIP assets stood at Rs 15.11 lakh crore in March 2026.

[16] Source: *Digital Evolution – Can technology be the propelling factor for the industry?* a report published by CRISIL for AMFI in August 2018)

[17] For latest updates of MF industry growth, please refer: https://www.amfiindia.com/otherdata/industry-data-analysis?

[18] Source: AMFI Monthly Note

Chapter 2: Sample Questions

1. **_____indicates how much money can be generated per unit of mutual fund in case the scheme is liquidated.**
    a. Asset Under Management
    b. Net Asset Value
    c. Market price
    d. Exit load

2. **Which of the following is an advantage of mutual funds?**
    a. Customized portfolio
    b. Convenience to buy stocks and bonds directly from the mutual fund
    c. Economies of scale

3. **Which amongst the following categories of mutual funds have a fixed maturity date?**
    a. Open-ended funds
    b. Exchange Traded Funds
    c. Close-ended funds
    d. Interval funds

4. **In the sectoral and thematic funds category, an AMC can launch**
    a. As many schemes as they want, without any limit
    b. Upto a maximum of 100 such funds per AMC
    c. As many schemes as they want, subject to the condition that overlap between two funds is less than 50%

5. **In a Life Cycle Fund, as the fund moves towards maturity:**
    a. Equity component moves up, debt component comes down
    b. Equity component moves down, debt component goes up
    c. Equity component moves up, gold component comes down
    d. Equity component comes down, gold component moves up

CHAPTER 3: LEGAL STRUCTURE OF MUTUAL FUNDS IN INDIA

Learning Objectives:

After studying this chapter, you should know about:

- Legal Structure of mutual funds
- Key Constituents of a Mutual Fund
- Organization Structure of Asset Management Company
- Role and support functions of service providers of mutual funds

3.1 Structure of Mutual Funds in India

SEBI (Mutual Fund) Regulations, 2026 define "mutual fund" as "mutual fund" means a fund established in the form of a trust granted registration under regulation 3 and which raises monies through the sale of units to the public under one or more schemes for investing in securities, money market instruments, gold or gold related instruments, silver or silver related instruments and such other assets and instruments as may be specified by SEBI." The firm must set up a separate Asset Management Company (AMC) to run a mutual fund business.

Key features of a mutual fund that flows from the definition above are:

- It is established as a trust
- It raises money through the sale of units to the public or a section of the public
- The units are sold under one or more schemes
- The schemes invest in securities (including money market instruments) or gold or gold-related instruments or silver or silver related instruments or real estate assets.

SEBI has stipulated the legal structure under which mutual funds in India need to be constituted. The structure, which has inherent checks and balances to protect the interests of the investors, can be briefly described as follows:

- Mutual funds are constituted as Trusts. Therefore, they are governed by the Indian Trusts Act, 1882.

- The mutual fund trust is created by one or more Sponsors, who are the main persons behind the mutual fund business.

- Every trust has beneficiaries. The beneficiaries, in the case of a mutual fund trust, are the investors who invest in various schemes of the mutual fund, called unit-holders.

- The operations of the mutual fund trust are governed by a Trust Deed, which is executed between the sponsors and the trustees. SEBI has laid down various clauses that need to be part of the Trust Deed.

- The Trust acts through its trustees. Therefore, the role of protecting the interests of the beneficiaries (investors / unit-holders) is that of the Trustees. The first trustees are named in the Trust Deed, which also prescribes the procedure for a change in Trustees.

- To perform the trusteeship role, either individuals may be appointed as trustees or a Trustee company may be appointed. When individuals are appointed as trustees, they are jointly referred to as 'Board of Trustees'. A trustee company functions through its Board of Directors.

- Day to day management of the schemes is handled by an Asset Management Company (AMC). The AMC is appointed by the sponsor or the Trustees.

- The trustees execute an investment management agreement with the AMC, setting out its responsibilities.

- Although the AMC manages the schemes, custody of the assets of the scheme (securities, gold, gold-related instruments, real estate assets & silver or silver related instruments) is with a Custodian, who is appointed by the Trustees.

- Investors invest in various schemes of the mutual fund. The record of investors and their unit-holding may be maintained by the AMC itself, or it can appoint a Registrar & Transfer Agent (RTA).

3.2 Key Constituents of a Mutual Fund

3.2.1 Sponsors

The application to SEBI for registration of a mutual fund is made by the sponsor(s). Thereafter, the sponsor invests in the capital of the AMC.

Since sponsors are the main people behind the mutual fund operation, few points regarding their eligibility criteria have been specified as follows:

- The sponsor should have a sound track record and general reputation of fairness and integrity in all business transactions. The requirements are:

  - The sponsor should be carrying on business in financial services for not less than 5 years; and

  - ensure that the net worth (share capital plus reserves minus accumulated losses) is positive in all the immediately preceding 5 years; and

  - ensure that the positive *liquid networth* [19]is more than the proposed capital

[19]Liquid networth" means the networth deployed in liquid assets which are unencumbered and shall include cash, money market instruments, Government Securities, Treasury bills, Repo on Government securities and any other like instruments

contribution of the sponsor in the asset management company and ensure that in case of change in control of the existing asset management company due to acquisition of shares, the positive liquid net worth of the sponsor or funds tied up by the sponsor is to the extent of aggregate par value or market value of the shares proposed to be acquired, whichever is higher; and

- have net profit after providing for depreciation, interest and tax in each of the immediately preceding five years; and
- have average net annual profits after depreciation, interest and tax during the immediately preceding five years of at least rupees 10 crore.

- The sponsor should be a fit and proper person for this kind of operation.

Association of Mutual Funds in India's (AMFI) website[20] lists the names of all the Asset Management Companies, which are members of AMFI, in terms of the category of the sponsor, viz., Banks, Institutions, Private sector, etc. Within banks, there are predominantly Indian joint ventures, and others; and similarly, within the private sector, there are Indian, foreign, and predominantly Indian joint ventures.

3.2.2 Board of Directors of the Trustee Company of a Mutual Fund

The Board of Directors of the Trustees Company (Trustees) have a critical role in ensuring that the mutual fund complies with all the regulations and protects the interests of the unit-holders.

Regulation 11 of the SEBI Mutual Funds Regulations 2026 stipulates the eligibility criteria of the appointment of the trustees of a mutual fund. It states that a person shall be eligible to be appointed as a trustee only if that person—

(a) complies with fit and proper person criteria specified in Schedule II of the Securities and Exchange Board of India (Intermediaries) Regulations, 2008;

(b) is not a director (including independent director), officer or employee of an asset management company;

(c) is not trustee of any other mutual fund; and

(d) furnishes all such information as may be sought by the SEBI.

Prior approval of SEBI needs to be taken before a person is appointed as Trustee.

At least two-thirds of the trustees on the Board of the trustee company would need to be

as specified by the Board from time to time.

[20] www.amfiindia.com

independent directors who are not associates of the sponsor or the AMC or the trustee company.

SEBI expects Trustees to perform a key role in ensuring legal compliances and protecting the interest of investors. The rights and responsibilities of Trustees, as per SEBI MF Regulations 2026 are:

1. Appointment and termination of asset management company
2. Addressing conflict of interest and broker empanelment
3. Regulatory compliance and trustee responsibilities
4. Trustee oversight for investor interests
5. Additional trustee oversight
6. The trustees shall also exercise due diligence on such matters as may be specified by the Board.

3.2.3 Mutual Fund Trust

A mutual fund is constituted in the form of a trust and the instrument of trust is in the form of a deed, duly registered under the provisions of the Indian Registration Act, 1908 (16 of 1908), executed by the sponsor in favour of the trustees named in such an instrument.

3.2.4 Asset Management Company

Day to day operations of a mutual fund is handled by the AMC. The sponsor trustees shall appoint the AMC with the approval of SEBI.

As per SEBI Mutual Fund Regulations 2026:

(a) The directors of the asset management company must be individuals possessing adequate professional experience in finance and financial services related fields.

(b) The persons so appointed as director and/ or key personnel shall also be fit and proper persons in accordance with the criteria specified in Schedule II of the Securities and Exchange Board of India (Intermediaries) Regulations, 2008.

(c) The board of directors of asset management company must comprise at least fifty per cent directors, who are not associates of the sponsor, or any of its subsidiaries, or the trustees.

(d) The directors of the asset management company (including Chairman) shall not simultaneously serve on the board of a trustee company of any mutual fund. Prior approval of the trustees is required before a person is appointed as a director on the board of the AMC.

A person shall not simultaneously hold the office of director in more than one asset management company.

The asset management company need to have a net-worth of not less than rupees fifty crore deployed in assets as may be specified by the Board to be effective from January 01, 2024. The net-worth of the asset management company as required must be maintained on a continuous basis and it is the responsibility of the sponsor to ensure the same. A change in the control of the AMC directly or indirectly can be made only with the prior approval of the trustees and SEBI. A written communication about the change in the control of the AMC is sent to each unitholder (for those unitholders whose e-mail IDs are registered with the mutual funds, the communication can be sent through e-mail) and an advertisement is given in one English daily newspaper having nationwide circulation and, in a newspaper, published in the language of the region where the Head Office of the mutual fund is situated. The unitholders are given the option to exit on the prevailing Net Asset Value (NAV) without any exit load within a time period not less than 30 calendar days from the date of communication.

The AMC is responsible for conducting the activities of the mutual fund. It, therefore, arranges for the requisite offices and infrastructure, engages employees, provides for the requisite software, handles advertising and sales promotion, and interacts with regulators and various service providers.

The AMC has to take all reasonable steps and exercise due diligence to ensure that the investment of funds pertaining to any scheme is not contrary to the provisions of the SEBI regulations and the trust deed. Further, it has to exercise due diligence and care in all its investment decisions.

The appointment of an AMC can be terminated by a majority of the trustees, or by 75 percent of the Unit-holders. However, any change in the AMC is subject to prior approval of SEBI and the Unit-holders.

The AMCs desirous of launching Specialized Investment Fund (SIF), shall fulfill the additional requirements and meet the eligibility criteria as specified by SEBI.

3.2.5 Custodian

The custodian has custody of the assets of the fund. As part of this role, the custodian needs to accept and give delivery of securities for the purchase and sale transactions of the various schemes of the fund. Thus, the custodian settles all the transactions on behalf of the mutual fund schemes.

All custodians need to register with SEBI under the SEBI (Custodian) Regulations 1996. The Custodian is appointed by the trustees. A custodial agreement is entered into between the trustees and the custodian.

The SEBI regulations provide that if the sponsor or its associates control 50 percent or more

of the voting rights of the share capital of the custodian, or if 50 percent or more of the directors of a custodian represent the interest of the sponsor or its associates, then, unless certain specific conditions are fulfilled, that custodian cannot be appointed for the mutual fund operation of the sponsor or its associate or subsidiary company.

An independent custodian ensures that the securities are indeed held in the scheme for the benefit of investors–an important control aspect.

The custodian also tracks corporate actions such as dividends, bonuses and rights in companies where the fund has invested.

3.3 Organization Structure of Asset Management Company

It is important to understand the various functions of an Asset Management Company (AMC) through the details of various departments within the firm (Chart 3.1).

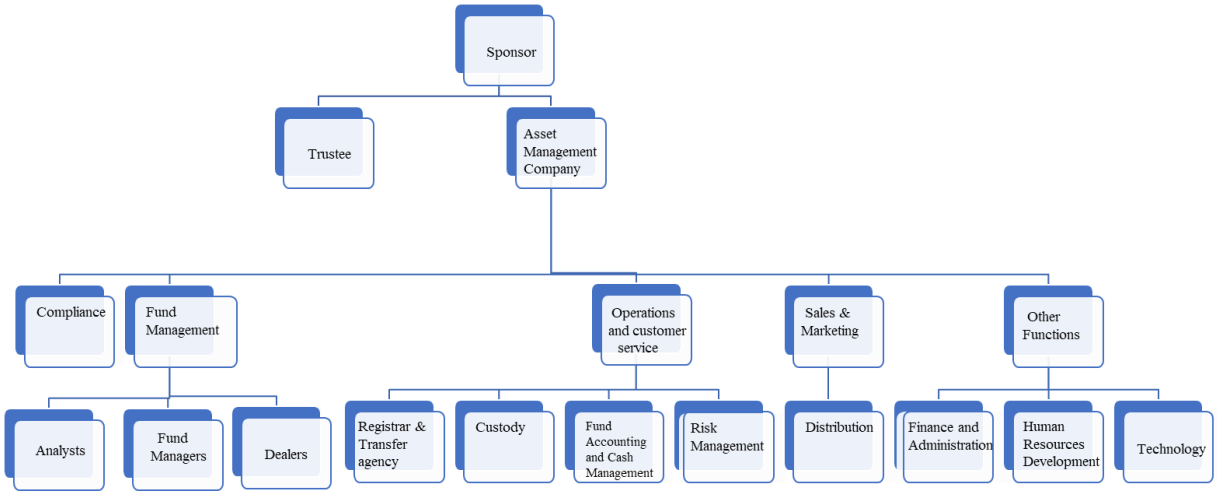

Chart 3.1: Organisation Structure of Asset Management Company

Chart 3.1 is used for the explanation of various functions within an AMC. Individual AMCs may have some differences in the structure.

3.3.1 Compliance Function

Compliance Officer needs to ensure all the legal compliances. In the scheme documents of new issues, the Compliance Officer signs a due-diligence certificate to the effect that all regulations have been complied with, and that all the intermediaries mentioned in the scheme related documents have the requisite statutory registrations and approvals. To ensure independence, the Compliance Officer reports directly to the head of the AMC. The Compliance Officer works closely with the Trustees on various compliance and regulatory issues. It is the responsibility of the compliance officer to report any issue of non-compliance directly and immediately to the trustees.

3.3.2 Fund management

Fund management is the most critical function in an Asset Management Company. It is at the core of the value proposition offered by the firm. The main function of this team is to invest the investors' money in line with the stated objective of the scheme and to manage the same effectively.

Normally, the team can be broken into three sub-teams, viz., the analysts, the fund managers, and the dealers.

The analysts analyse various opportunities, be it individual securities, or sectors, or the state of the markets, or the economy. Some of them may analyse the stock markets, whereas some may analyse debt markets. Within debt markets, some may evaluate credit opportunities, whereas some may analyse the interest rate movements. Their job is to identify investment opportunities.

The fund managers evaluate the opportunities presented to them by the analysts, the brokers, and other research firms. They may also identify opportunities by themselves. The performance of the scheme is the fund manager's responsibility.

The third sub-team is that of the dealers, whose responsibility is to place orders with securities brokers based on the instructions of the fund managers.

3.3.3 Operations and customer services team

When a customer visits a branch office of an AMC, s/he is attended to by the customer services team. Such a team is also called the front office team. Apart from this front office team, there is also a team in the back office to help investors by resolving various queries. Both these together are part of the Customer Services Team. Many AMCs have adopted information technology solutions and have set up call centers and chat bots to answer customer queries and resolve service issues.

The Registrar and Transfer Agency (RTA), which is a big part of this unit, maintains investor records as well as allots or redeems units, processes purchase/redemption/switch requests, dividends, etc. It also generates the account statement that an investor receives.

There is a Custody Team within this group that interacts with the custodian for the purpose of settlement of various transactions that the fund management team initiates.

The Fund accounting team maintains books of accounts of each individual mutual fund scheme and calculates NAV on a daily basis.

Under SEBI's Risk Management Framework (RMF), risk management is an independent and specialized function within every Asset Management Company (AMC). The framework requires AMCs to strengthen accountability by designating dedicated risk officers for key

areas of exposure—namely, investment risk, compliance risk, operational risk, and cyber security.

3.3.4 Sales and Marketing Team

This team reaches out to the investors through mass media, marketing campaigns and through a distribution channel. Their major responsibilities include branding, advertising, management of various events, and distribution of mutual fund products through various distribution channels. Mostly, it is this team that would interact with the mutual fund distributors, and take care of relationship management and engagement. This team also helps in the growth of the distribution network through various interactions and training programs.

3.3.5 Other functions

These functions are largely supported functions to run the AMC operations smoothly. These include Finance/Accounts, Administration, Human Resources and Development (HRD), Information Technology. They perform various tasks that ensure smooth functioning of the AMC, as well as improve customer experiences.

- The **Accounts team** handles the finances of the AMC. This unit is different from the fund accounting team.
- There is an **Administration Department** that takes care of various facilities, offices, and other infrastructure. In many AMCs, the administration reports to the finance function.
- The **HRD department** is responsible for attracting, nurturing and retaining talent within the firm. They take care of the learning and development requirements of the personnel.
- The **Information Technology department** also referred as the Technology team, takes care of the IT infrastructure required by various functions and departments. This may also include the AMC website, as well as many facilities offered to investors and distributors with the help of technology.

3.4 Role and Support function of Service Providers

3.4.1 Fund Accountant

The fund accountant performs the role of calculating the NAV, by collecting information about the assets and liabilities of each scheme. The AMC can either handle this activity in-house or engage a service provider. There is no need for registration with SEBI to perform this function.

3.4.2 Registrars and Transfer Agents

The Registrars and Transfer Agents (RTAs) maintain investor records. Their offices in various centers serve as Investor Service Centers (ISCs), which perform a useful role in handling the documentation of investors. The functions of the RTA include processing of purchase and redemption transactions of the investor and dealing with the financial transactions of receiving funds for purchases and making payments for redemptions, updating the unit

capital of the scheme to reflect these transactions, updating the information in the individual records of the investor, called folios, keeping the investor updated about the status of their investment account and information related to the investment.

The appointment of RTA is done by the AMC. It is not compulsory to appoint an RTA. The AMC can choose to handle this activity in-house. All RTAs need to register with SEBI.

3.4.3 Auditors

Auditors are responsible for the audit of accounts.

Accounts of the mutual fund schemes need to be maintained independently of the accounts of the AMC. The auditor appointed to audit the mutual fund scheme accounts needs to be different from the auditor of the AMC.

While the scheme auditor is appointed by the Trustees, the AMC auditor is appointed by the AMC.

3.4.4 Distributors

Distributors have a key role in selling suitable types of mutual fund schemes to their clients/investors. A distributor can be empaneled with more than one AMCs. Distributors can be individuals or institutions such as distribution companies, broking companies and banks.

Distributors need to pass the NISM Certification Examination (NISM-Series- V-A: Mutual Fund Distributors (MFD) Certification Examination) and register with AMFI. Regulatory aspects of their role and, some of the distribution and channel management practices are covered later in Chapter 6 of the book.

Through a circular, SEBI has also allowed provisions for empanelment of a new cadre of mutual fund distributors, who are allowed to sell a certain limited set of schemes[21]. This new cadre of distributors can be empaneled if they clear the NISM-Series- V-B: Mutual Fund Foundation Certification Examination and register with AMFI under the particular category of distributors.

3.4.5 Collecting Bankers/Payment Aggregators

The investors' money goes into the bank account of the scheme they have invested in. These bank accounts are maintained with collection bankers who are appointed by the AMC.

Leading collection bankers make it convenient to invest in the schemes by accepting applications of investors in most of their branches. Payment instruments against applications handed over to branches of the AMC or the RTA need to be banked with the collecting bankers so that the money is available for investment by the scheme. Thus, the banks enable the

[21] SEBI circular CIR/IMD/DF/21/2012 dated September 13, 2012.

collection and payment of funds for the schemes.

Through this kind of mix of constituents and specialized service providers, most mutual funds maintain high standards of service and safety for investors.

While banks play a big role in facilitating mutual fund transactions, a new category of players have made an entry – the payment aggregators. There are some payment gateway providers, digital wallets, and payment banks. All these players facilitate the transactions by allowing investors to buy mutual fund units.

3.4.6 KYC Registration Agencies

It is mandatory for all investors in the securities market, including the mutual fund investors, to be KYC (Know Your Customer) compliant under the provisions of the Prevention of Money Laundering Act. The KYC process (covered in detail later in the book) involves establishing the identity and the address of the investor.

If the investor has to go through the KYC process with each mutual fund, then it would become a repetitive process. SEBI issued regulations for registration of central KYC Registry Agencies (KRAs) in 2011. This introduced a common KYC for investors investing in securities markets. KYC registration firms are registered with SEBI.

KRAs process various details and documents to establish the identity of the investor and assign a number through a letter. A copy of this letter can be submitted to any SEBI registered intermediary with whom the investor wants to transact. Since the KRAs deal with sensitive investor information, they are mandated to have enough checks and balances in place to ensure that confidentiality is maintained. The regulations mandate KRAs to have computerised connectivity to share data with one another.

3.4.7 Valuation agencies

SEBI has issued guidelines for the purpose of arriving at fair valuation of debt securities that are non-traded or thinly traded. According to these guidelines, there have to be at least two valuation agencies that provide valuation matrix. The AMCs have to make use of this valuation level to arrive at fair valuation of these investments. AMFI has appointed CRISIL Ltd. and ICRA Ltd. for the purpose.

3.4.8 Credit Rating Agencies

Credit rating agencies rate debt securities issued by various issuers. Fund managers consider such ratings as an initial input while taking investment decisions, prior to doing their own due diligence. In few mutual fund products, credit rating assumes greater importance. Certain categories of debt funds such as corporate bond funds, credit risk funds are defined on the basis of credit rating. Even capital protection- oriented schemes carry a credit rating assigned by the rating agency. Such schemes have restrictions pertaining to their investment universe,

which is also a function of the credit rating assigned by these agencies.

In case of Fixed Maturity Plans (FMPs), the AMC is allowed to disclose the proposed rating profile of the scheme before the portfolio is constructed. It is then mandatory to invest in debt securities only within the proposed rating profile, or less risky papers (higher credit rating than proposed). Thus, credit rating agencies assume an important role in case of debt mutual funds. However, as per SEBI MF regulations, the MFs are required to disclose riskometer and the risk matrix which captures risks associated with the schemes.

3.4.9 Depositories and the Depository Participants

A depository is an institution, which holds the securities in dematerialised or electronic form on behalf of the investors. Initially, depositories held only equity shares on behalf of the investors, later other securities including debt securities and mutual fund units were also dematerialised. Investors have the option of holding their mutual fund units in dematerialised form through a depository participant. If not held in dematerialized form, the units are tracked in the form of Account Statements. The units of ETFs are compulsorily held in demat form as only demat securities are allowed to be traded on stock exchanges.

The depositories reach out to the investors through the depository participants. As an analogy, one can consider the depositories as the head office of a bank and the depository participants akin to the branches of the bank. Like a bank account holder does not transact directly with the head office of the bank, but only with the branch; an investor does not deal with the depository, but with the depository participant.

There are two depositories in India, viz., National Securities Depository Limited (NSDL), and Central Depository Services Limited (CDSL).

3.4.10 Stock exchanges and the transaction platforms

Investors can now transact in mutual fund units through the stock exchanges. The units of close-ended funds and ETFs are compulsorily listed on at least one stock exchange. At the same time, units of open-ended funds are also available through special segments on the stock exchanges. At the Bombay Stock Exchange (BSE), this segment is known as BSE-Star MF; while at the National Stock Exchange of India (NSE), it is called NSE Mutual Fund II Platform (NMF-II). Now, investors can also transact directly through stock exchanges.

MF Utilities India is another transaction platform for units of mutual funds. This is an initiative by the mutual fund industry under the Association of Mutual Funds in India (AMFI). This platform allows for the aggregation of transactions for a mutual fund investor. Investors can perform various transactions such as purchase, sale, switch, etc. Investors are able to complete their required transactions across multiple mutual funds using a single platform which makes it easier for them to handle.

These platforms play a very important role in enhancing the reach of mutual funds. Further,

the internet and mobile based applications have helped to reduce paperwork and reduce transaction related errors. These applications make the process simple to execute and this increases the comfort level of investors to transact.

Execution Only Platforms (EOP)[22]

SEBI has described the functions of Execution Only Platforms. An EOP for facilitating transactions in direct plans of schemes of Mutual Funds means, "Any digital or online platform which facilitates transactions such as subscription, redemption and switch transactions in direct plans of schemes of Mutual Funds". The platforms provided by SEBI registered Investment Advisors and Stock Brokers to their advisory or broking clients shall not be covered under the EOP framework.

No entity shall operate as an EOP without obtaining registration from SEBI or the AMFI, as the case may be and, in the manner, specified. Two categories of EOPs have been defined. Category 1 EOP shall obtain registration from AMFI. The entity shall be a body corporate. The entity shall act as an agent of AMCs and integrate its systems with AMCs and/or RTAs authorized by such AMCs, to facilitate transactions in Mutual Funds. The entity may act as an aggregator of the transactions in direct plans of schemes of Mutual Funds and provide services to investors/other intermediaries. Category 2 EOPs shall obtain registration as a Stock Broker in terms of the SEBI (Stock Brokers) Regulations, 2026 under the EOP segment of the Stock Exchanges. The entity shall be a body corporate. The entity shall operate as an agent of investor and operate only through the platforms provided by the Stock Exchanges.

3.5 Role and Function of AMFI

- Association of Mutual Funds in India (AMFI) is the association of all the registered Asset Management Companies. The objectives of AMFI are: To define and maintain high professional and ethical standards in all areas of operation of the mutual fund industry.
- To recommend and promote best business practices and code of conduct to be followed by members and others engaged in the activities of mutual fund and asset management including agencies connected or involved in the field of capital markets and financial services.
- To interact with SEBI and to represent to SEBI on all matters concerning the mutual fund industry.
- To represent to the Government, Reserve Bank of India and other bodies on all matters relating to the mutual fund Industry.
- To undertake a nationwide investor awareness programme to promote proper understanding of the concept and working of mutual funds.
- To disseminate information on the mutual fund industry and to undertake studies

[22] Candidates may read more at: https://www.sebi.gov.in/legal/circulars/jun-2023/regulatory-framework-for-execution-only-platforms-for-facilitating-transactions-in-direct-plans-of-schemes-of-mutual-funds_72479.html

and research directly and/or in association with other bodies.

- To regulate the conduct of distributors including disciplinary actions (cancellation of ARN) for violations of Code of Conduct.
- To protect the interest of investors/unitholders.

A major role of AMFI involves the registration of mutual fund distributors, by allotting them AMFI Registration Number (ARN), which is mandatory for becoming a mutual fund distributor. Periodically, AMFI also issues various circulars recommending best practices for the asset management companies, as well as the distributors.

An important point to note here is that AMFI is neither a regulatory body nor a Self-Regulatory Organisation (SRO).

Chapter 3: Sample Questions

1. **Mutual funds are constituted as 'Trusts' in India. Who are the beneficiaries of the trust?**
    a. The employees of the Asset Management Company
    b. The mutual fund distributors
    c. Unitholders
    d. Trustees of the mutual fund

2. **Whose job is it to track the various corporate actions like a bonus, dividend, or rights issues in companies where the mutual fund scheme has invested?**
    a. Registrar and Transfer Agency
    b. Custodian
    c. Auditors of the Asset Management Company
    d. Unitholders

3. **AMFI is:**
    a. An association of the MF AMCs in India
    b. Self-Regulatory Organisation (SRO) of MF AMCs in India
    c. Regulator for MF AMCs in India
    d. An association of MF distributors in India

4. **For valuation of debt securities for MF NAV, the approved agency is**
    a. AMFI
    b. NSE
    c. CRISIL and ICRA
    d. BSE

5. **Investment of funds pooled from unit-holders is the responsibility of:**
    a. Asset Management Company
    b. Trustees
    c. Custodian
    d. RTA

CHAPTER 4: LEGAL AND REGULATORY FRAMEWORK

Learning Objectives:

After studying this chapter, you should know about:

- Role of regulators in India
- Role of SEBI in regulating mutual funds
- Due Diligence Process by AMCs for Distributors of Mutual Funds
- SEBI Advertisement Code for mutual funds
- Investor Grievance and Redress Standards
- AMFI Code of Ethics and AMFI Code of conduct for Intermediaries

4.1 Role of Regulators in India

At a broad level, the regulations in financial markets are driven by the need to safeguard the interests of the consumers of various financial products and services, as well as to ensure a regulated development of the financial markets, which is essential for the growth of the economy. Currently, there are four regulators, viz.,

1. Reserve Bank of India (RBI) that regulates the banking system, as well as money markets;
2. Securities and Exchange Board of India (SEBI) that regulates the securities markets;
3. Insurance Regulatory and Development Authority of India (IRDAI) that regulates the insurance market; and
4. Pension Fund Regulatory and Development Authority of India (PFRDA) that regulates the pension market.

These regulators come under the purview of the Ministry of Finance.

4.2 Role of Securities and Exchange Board of India

As mentioned earlier, securities[23] markets in India are regulated by the Securities and Exchange Board of India (SEBI). It regulates, among other entities, mutual funds, depositories, custodians, registrars and transfer agents (RTAs) and credit rating agencies in the country.

The Preamble of the Securities and Exchange Board of India describes the basic functions of the Securities and Exchange Board of India as "to protect the interests of investors in securities and to **promote the development** of, and to **regulate the securities market** and for matters connected therewith or incidental thereto".

The regulations cover three important aspects to achieve the above objectives:

[23]The term 'securities' means financial instruments that are transferable and tradeable in the secondary market. It is defined in Section 2(h) of Securities Contracts (Regulation) Act, 1956.

- Disclosures by issuers of securities, e.g., companies that issue shares or debentures, and mutual funds that issue mutual fund units
- Efficiency of transactions in the securities markets
- Low transaction costs

Apart from the above, various other areas also warrant regulations, such as:

- Deliberate speculation in stock markets
- Insider trading
- Excessive risks taken by mutual funds
- Inadequate collateral by issuers of debt securities

If such activities are unchecked, the trust of the investors would be lost in the functioning of the markets, which eventually may lead to drying up of precious financial resources. This would further dry up the investment activity, or channeling of household savings in capital markets that the economy needs for growth.

4.2.1 Regulatory reforms by SEBI

SEBI issued the mutual fund regulations initially in 1996, which was replaced by the Mutual Fund Regulation 2026. Since 1996, there have been many amendments through various regulations and circulars. In all the cases, the objective has always remained to protect the interests of the mutual fund investors, and to empower investors to take informed investment decisions. The regulations have covered many aspects such as investor services, accounting of NAV, valuation norms, disclosures and investment norms.

The various provisions of the regulations can be broken down into the following categories, with a brief discussion of what they cover:

Different types of Regulation Categories	**Areas covered**
1. Scheme related documents (Offer documents[24] for schemes)	The regulatory provisions cover various aspects related to various scheme related documents, including the objectives and content of the respective documents. These also cover the frequency of publication of the respective documents that ensures the relevant information is up-to-date. SEBI has mandated that the scheme performance should be compared with the total return index, as against the price return index. A Price Return Index considers only the price movement of its constituents and thus captures only the capital gains of the constituents. On the other hand, a Total Returns index considers

[24]As per SEBI Mutual Fund Regulations the offer document is defined as the scheme information document and statement of additional information by which a mutual fund invites public for subscription of units of a scheme.

	all dividends/interest payments that are generated from the basket of components that make up the index in addition to the capital gains. The cash flows are presumed to be notionally reinvested on their ex-date into the basket of underlying components that make up the index. A mutual fund scheme takes into consideration, capital gains as well as the dividend earnings/interest income of the instruments in which it has invested while calculating the return generated by the scheme. TRI is more appropriate as a benchmark to compare the performance of mutual fund schemes. Therefore, SEBI stipulated that all Mutual Fund schemes be benchmarked against Total Return Indices.
1A. Registration	These cover various aspects of registration of key players, viz., asset management company, sponsor, trustees. The regulations also cover various scenarios including merger of AMCs, change in management of the same, etc.
2. Conversion and consolidation of existing schemes	The relevant regulations/guidelines/circulars define the manner in which the scheme mergers or consolidation should take place such that the interests of all unitholders are protected. SEBI circular on mutual fund scheme categorization and rationalization aimed towards conversion and consolidation of existing schemes and new products. The objective was to reduce the number of schemes to one per category in the open-ended arena, so that investors do not get confused. However, that required consolidation through merger of certain schemes with other schemes. The SEBI regulations and circulars detail the procedure of such scheme mergers, as well as the disclosures of performance of such schemes. The circular on scheme categorization and rationalization, mandated that there can be only one scheme per category within the fund house. Various other provisions such as the definition of various categories based on market capitalization were included to bring-in uniformity.25

[25]For disclosure of the maximum risk the fund manager can take in a scheme, SEBI has classified all debt schemes in terms of a Potential Risk Class (PRC) matrix consisting of parameters based on maximum interest rate risk (measured by Macaulay Duration (MD) of the scheme) and maximum credit risk (measured by Credit Risk Value (CRV) of the scheme). The AMCs will continue to retain the same category of their schemes and they have full flexibility to place single/multiple schemes in any cell of the PRC. Candidates are advised to read the circular https://www.sebi.gov.in/legal/circulars/jun-2021/circular-on-potential-risk-class-matrix-for-debt-schemes-based-on-interest-rate-risk-and-credit-risk_50440.html which is effective from December 1 2021.

3. New products	These regulations govern the new product categories that may be approved from time to time. For example, in the recent past, there have been product launches under new categories such as Infrastructure Debt Funds and ESGs.
4. Risk management system	Mutual funds are repositories of a large volume of client data. Also, huge sums of money are involved in investment through mutual funds. Therefore, robust operational risk management systems are warranted and SEBI has issued detailed guidelines for governance of these aspects. SEBI regulations and circulars also mandate exposure limits for investments by mutual fund schemes to ensure that investors get a diversified portfolio and the schemes remain true-to-label. These regulations also cover creation of segregated portfolios in the event of any credit event in debt mutual fund schemes. After the 2018 credit crisis, SEBI laid down the provision for creating segregated portfolios for protecting the interests of the unitholders and giving fair treatment to all investors in case of a credit event and to deal with liquidity risk.26 In the year 2008, when there was a global liquidity crisis, SEBI brought many reforms such as disallowing premature redemption in case of Fixed Maturity Plans (FMPs), and disallowing the phrase "liquid plus" while naming mutual fund schemes.
5. Disclosures and reporting norms	Mutual funds are among the best investment vehicles and one of the reasons for this is the 'transparency' factor. SEBI has issued many guidelines to ensure proper disclosures and reporting norms. These norms mandate the different kinds of disclosures along with the manner and frequency of reporting. In many cases, SEBI has provided the format in which the disclosures must be made such that the investor gets appropriate, and adequate information in a timely manner to enable the investor to take an informed investment decision.
6. Governance norms	These provisions are very exhaustive and cover many areas of governance, from fund level governance norms that include formation of audit and valuation committees, role of independent directors and trustees to scheme level governance norms that include minimum number of investors in a scheme; benchmarking of scheme's performance; systems audit of mutual funds, to the role of mutual funds in corporate governance.

[26]Creation of segregated portfolio is a mechanism to separate distressed, illiquid assets from other more liquid assets in a mutual fund portfolio to deal with a situation arising due to a credit event.

7. Secondary market activities	These provisions pertain to the secondary market activities by the mutual funds in all the markets—equity, debt, government securities, and derivatives.
8. Net Asset Value (NAV)	NAV disclosures, rounding-off of NAV, cut-off time for various commercial transactions, time stamping and uniformity in calculation of sale and purchase price are the areas covered through regulatory provisions under this head.
9. Valuation	Valuation of various securities in which the mutual fund scheme has invested.
10. Loads, fees and expenses	Regulatory provisions impose limits to various loads, fees, and expenses. These provisions also cover disclosure of commission payable to distributors.
11. Income distribution cum Capital Withdrawal distribution procedure	The procedure for distribution of IDCW, the norms defining the calculation of distributable surplus, out of which the IDCW can be paid out have been laid out in regulations, guidelines and circulars.27
12. Investment by schemes	Guidelines and circulars for investment restrictions and investment limits by mutual fund schemes.
13. Advertisements	As the name suggests, these regulatory provisions govern what the advertisements can cover and what they cannot; the frequency of statutory advertisements; inclusion of disclaimers and risk factors in various advertisements, etc.
14. Investor rights and obligations	These provisions cover various matters pertaining to the investor rights including dispatch of account statements or redemption pay-outs, penalty in case of delays, instant access facility in case of liquid funds, etc.
15. Certification and registration of intermediaries	The requisite certification and registration norms for the intermediaries are covered here, including the need and process for the certification examination and continuous professional education (CPE).
16. Transaction in mutual fund units	These provisions cover the transactions through stock exchanges and other similar platforms, the kind of documents that the AMC/RTA need to preserve, KYC norms, etc.

[27] https://www.sebi.gov.in/legal/circulars/nov-2022/timelines-for-transfer-of-dividend-and-redemption-proceeds-to-unitholders_65455.html

16A. Corporate Debt Market Development Fund (CDMDF)	SEBI regulations for Corporate Debt Market Development Fund to act as a Backstop Facility for purchase of investment grade corporate debt securities, to instill confidence amongst the participants in the Corporate Debt Market during times of stress and to generally enhance secondary market liquidity by creating a permanent institutional framework for activation in times of market stress . Ensures transparency, investor protection, and market development.
16B. Execution Only Platforms (EOP)	These regulations cover applicability and scope of EOPs, categories, eligibility criteria, on-boarding and integration, rights and obligations of EOPs, transaction and on-boarding fees, operational risk management, grievance redressal, handling of conflict of interest, technology related requirements, and disclosures, among others.
17. Miscellaneous	All the matters not covered in the above 16 categories would get covered under miscellaneous

Advertisements, valuation of securities, calculation of NAV—each of these aspects related to mutual funds are very tightly regulated. Such an approach ensures that the Indian mutual fund industry remains one of the most regulated and transparent investment options for investors.

4.2.2 Mutual Funds Regulations

The applicable guidelines for mutual funds are set out in the SEBI Mutual Funds Regulations, 2026. Some aspects of these regulations are discussed in various sections of this workbook. An updated and comprehensive list of circulars issued by SEBI can be found in the Mutual Funds section of SEBI's website: www.sebi.gov.in. Master Circulars, which capture the essence of various circulars issued from time to time, may be downloaded from www.sebi.gov.in.[28]

Wherever applicable, mutual funds need to comply with regulations issued by other regulators also. For instance, RBI regulates the money market and foreign exchange market in the country. Therefore, mutual funds need to comply with RBI's regulations regarding investment in the money market, investments outside the country, investments from people other than Indian residents in India, remittances (inward and outward) of foreign currency etc.

Stock Exchanges are regulated by SEBI. Every stock exchange has its own listing, trading and margining rules. Mutual Funds need to comply with the rules of the exchanges with which they choose to have a business relationship i.e., for listing the units of the mutual fund schemes launched by them.

[28]Candidates are advised to read the SEBI master circular on mutual funds issued from time to time along with other circulars issued by SEBI.

4.2.3 Investment restrictions for mutual fund schemes

Mutual fund is a managed investment vehicle. It is a pass-through vehicle—in that the risks and the returns are passed on to the unitholders. The investors have no control, over the investment management of the mutual fund. It is in this context that SEBI has laid down regulations pertaining to investment universe, restrictions and portfolio diversification for investment by mutual fund schemes. Such regulations intend to control the risks taken by the mutual fund managers.

Regulation 39 of the SEBI MF Regulations, describes that subject to the investment objective of the relevant mutual fund scheme and provisions of these regulations, the asset management company shall invest funds of a mutual fund scheme only in the following:

(a) securities;

(b) money market instruments;

(c) privately placed debentures;

(d) securitised debt instruments, which are either asset backed or mortgage backed securities;

(e) gold or gold-related instruments;

(f) silver or silver-related instruments; and

(g) any other asset or instrument as may be specified by the Board from time to time.

Further, SEBI may specify conditions for investment of the funds collected under mutual fund schemes or Specialized Investment Fund.

The SEBI Regulations provide for various limits to the kind of investments that are possible in mutual fund schemes. In few cases, there are also aggregate limits for all schemes of a mutual fund. The regulator's objective behind setting these limits is to ensure mitigation of risks in the scheme and protecting the investor's interests. The restrictions specified apply at the time of making the investment. Some of the important restrictions specified in Regulation 41 of the SEBI MF Regulations 2026 are:

Restrictions on Investments – Regulation 41

i. Any investment to be made under regulation 39, other than investments made by gold exchange traded fund schemes and silver exchange traded fund schemes, shall be subject to the investment restriction specified in the Sixth Schedule of the SEBI MF Regulations 2026 and with any other restrictions as may be specified by SEBI from time to time.
ii. A gold exchange traded fund scheme and silver exchange traded fund scheme may invest in exchange traded commodity derivatives subject to such restrictions as may be specified by SEBI from time to time.
iii. The mutual fund shall settle their transactions only in dematerialised securities except for such instruments as may be specified by SEBI from time to time.

iv. A gold exchange traded fund scheme and silver exchange traded fund scheme shall be subject to the following investment restrictions:
   (a) the funds of any such scheme shall be invested only in gold or gold related instruments or silver or silver related instruments, as the case may be, in accordance with its invest-ment objective, except to the extent necessary to meet the liquidity requirements for honouring redemptions requests, as disclosed in the offer document; and
   (b) pending deployment of funds in accordance with clause (a), the mutual fund may invest such funds in short-term deposits of scheduled commercial banks.
v. The funds of mutual fund scheme shall not in any manner be used in carry forward transactions except in the manner specified by SEBI.
vi. The mutual fund may enter into derivatives transactions on a recognized stock exchange, subject to the framework specified by SEBI from time to time.
vii. Any short selling transaction for the mutual fund schemes shall be executed on a recognized stock exchange and shall be subject to the framework for short selling and securities lending and borrowing specified by SEBI from time to time.
viii. Any transfers of investments between schemes within the same mutual fund shall be permitted subject to such conditions as specified by SEBI from time to time.

Investment Restrictions as per Schedule 6 of MF Regulations 2026:

i. Mutual fund scheme's investment in equity shares, equity related instruments and debt instruments shall only be made in listed or to be listed securities except that mutual fund can invest in:
ii. unlisted Government Securities and money market instruments other than commercial papers; and (b) unlisted non-convertible debentures to the extent and in the manner as specified by SEBI.
iii. Mutual Fund Scheme's investment in unrated debt instruments shall be subject to such conditions as specified by SEBI from time to time.
iv. A scheme may invest in another scheme under the same mutual fund or any other mutual fund without charging any fees and such inter scheme investment shall be subject to limits as may be specified by the Board from time to time. This clause shall not apply to any fund of fund schemes.
v. No scheme of a mutual fund shall make any investment in any fund of funds scheme.
vi. A fund of funds scheme shall be subject to the following investment restrictions:
vii. a fund of funds scheme shall not invest in any other fund of funds scheme; and
viii. a fund of funds scheme shall not invest its assets other than in schemes of mutual funds, except to the extent of funds required for meeting the liquidity requirements for the purpose of repurchases or redemptions, as disclosed in the offer document of fund of funds scheme.
ix. Every mutual fund shall buy and sell securities on the basis of deliveries and shall in all cases of purchases, take delivery of relevant securities and in all cases of sale, deliver the securities: Provided that a mutual fund may engage in short selling of securities in accordance with the framework relating to short selling and securities lending and borrowing specified by the Board: Provided further that a mutual fund may enter into derivatives transactions in a recognized

stock exchange, subject to the framework specified by the Board. Provided further that sale of government security already contracted for purchase shall be permitted in accordance with the guidelines issued by the Reserve Bank of India in this regard.

x. Every mutual fund shall get the securities purchased or transferred in the name of the mutual fund on account of the concerned scheme except in respect of such securities as may be specified by SEBI from time to time.

xi. Pending deployment of funds of a scheme in terms of investment objectives of the scheme, a mutual fund may invest them in short term deposits of schedule commercial banks, subject to such Guidelines as may be specified by the Board.

xii. Investment by mutual fund schemes shall be subject to such prudential limits as prescribed by SEBI from time to time.

Restrictions on SIF Investments

As per regulation 51 of the SEBI MF Regulations 2026, the permissible investment limits for SIFs are:

(i) The Specialized Investment Fund may invest monies collected under any of its investment strategies in instruments permitted under regulation 39 for mutual funds schemes.

(ii) SEBI may specify the manner of investment by a Specialized Investment Fund.

Any investment under sub-regulation (1) of regulation 51 is subject to investment restrictions applicable to mutual fund schemes as specified in the Sixth Schedule.

4.2.4 SEBI Advertisement Code for Mutual Funds

Advertisement issued by mutual funds shall be in terms of Fifth Schedule of SEBI (Mutual Fund) Regulations, 2026, listed as follows:

i. Advertisements shall be accurate, true, fair, clear, complete, unambiguous and concise and shall not be misleading.

ii. Advertisements shall not contain statements that are false, misleading, biased or deceptive, based on assumption/projections and shall not contain any testimonials or any ranking based on any criteria.

iii. Advertisements shall not be so designed as likely to be misunderstood or likely to disguise the significance of any statement. Advertisements shall not contain statements that directly or by implication or by omission may mislead the investor.

iv. Advertisements shall not carry any slogan that is exaggerated or unwarranted or slogan that is inconsistent with or unrelated to nature and risk and return profile of the product.

v. No celebrities shall form part of the advertisement.

vi. Advertisements shall not be so framed as to exploit the lack of experience or knowledge of the investors. Extensive use of technical or legal terminology or complex language and the inclusion of excessive details that may detract the investors, should be avoided.

vii. Advertisements shall contain information that is timely and consistent with the disclosures made in the Scheme Information Document, Statement of Additional Information and the Key Information Memorandum.

viii. No advertisement shall directly or indirectly discredit other advertisements or make unfair

comparisons.

ix. Advertisements shall be accompanied by a standard warning in legible fonts which states 'Mutual Fund investments are subject to market risks, read all scheme related documents carefully.' No addition or deletion of words shall be made to the standard warning.

x. Advertisements in vernacular language(s) shall contain the standard warning as specified in previous clause in the vernacular language.

xi. In audio-visual media-based advertisements, the standard warning in visual and accompanying voice-over reiteration shall be audible in a clear and understandable manner. For example, in standard warning, both the visual and the voice-over reiteration containing 14 words running for at least 5 seconds may be considered as clear and understandable.

In addition to the provisions of the fifth Schedule, mutual funds shall comply with the following:[29]

- While advertising pay out of Income Distribution Cum Capital Withdrawal (IDCW), all advertisements shall disclose the IDCW declared or paid in rupees per unit along with the face value of each unit of that scheme and the prevailing NAV at the time of declaration of the IDCW.
- Further, for IDCW payouts at maturity of closed-ended scheme(s)/ at completion of the interval period of interval scheme(s), AMC shall advertise that "the entire distributable surplus at the time of maturity or at the completion of the interval period shall be distributed."
- Pay out of IDCW/ Bonus: While advertising pay outs, all advertisements shall disclose, immediately below the pay-out figure (in percentage or in absolute terms) that the NAV of the scheme, pursuant to pay out would fall to the extent of payout and statutory levy (if applicable).

A. Disclosing performance-related information of mutual fund schemes:

(a) When the mutual fund scheme has been in existence for more than three years:

- Performance advertisement of mutual fund schemes shall be provided in terms of CAGR for the past 1 year, 3 years, 5 years and since inception.[30]

- Point-to-point returns on a standard investment of Rs. 10,000 shall also be shown in addition to CAGR for the scheme to provide ease of understanding to retail investors.

- Information based on period computed from the last day of month-end preceding the date of advertisement, shall be provided.

- It should be clearly mentioned whether the disclosed performance is of regular or direct plan of the Mutual Fund. A footnote should clearly mention that different plans have

[29] https://www.sebi.gov.in/legal/circulars/mar-2021/circular-on-mutual-funds_49393.html

[30] To disclose the performance of mutual fund schemes since inception, SEBI has clarified that such disclosure of performance shall be made since the date of allotment of units in the scheme.

different expense structures.

- If the same fund manager has not managed the scheme for the full period for which the information is being published in the advertisement, the same should be disclosed in the footnote.

(b) Where the scheme has been in existence for less than six months past performance shall not be provided. Further, if the scheme has been in existence for more than six months but less than one year, then simple annualized growth rate of the scheme for the past 6 months from the last day of month-end preceding the date of advertisement shall be provided.

(c) In case of Overnight funds, Liquid funds and Money Market funds, wherein investors have very short investment horizon, the performance can be advertised by simple annualisation of yields if a performance figure is available for at least 7 days, 15 days and 30 days provided it does not reflect an unrealistic or misleading picture of the performance or future performance of the scheme.

(d) For the sake of standardization, a similar return in INR and by way of CAGR must be shown for the following apart from the scheme benchmarks:

Scheme Type	**Benchmark**
Equity scheme	Sensex/Nifty
All Debt Schemes having duration /maturity up to 1year and Arbitrage Funds	1 year T-Bill
All Debt Schemes which are not covered in Point 2	10 years dated GoI security
Conservative Hybrid Fund	10 years dated GoI security
Balanced Hybrid Fund / Aggressive Hybrid Fund / Dynamic Asset Allocation or Balanced Advantage / Multi Asset Allocation	Sensex or Nifty
Equity Savings	10 years dated GoI security
Retirement Fund / Children's Fund	Sensex or Nifty
Index Funds / ETFs & FoFs (Overseas/ Domestic)	Appropriate benchmark based on the underlying asset allocation as per above
Retirement Fund / Children's Fund	Sensex/Nifty

These disclosures shall form part of the Statement of Additional Information (SAI) and all advertisements of Mutual Funds.

(e) When the performance of a particular mutual fund scheme is advertised, the advertisement shall also include the performance data of all the other schemes managed by the fund managers of that particular scheme. Such performance data of the other schemes managed by the fund manager shall be provided as follows:

- Performance of other schemes managed by the fund manager, along with their respective

scheme's benchmark, shall be provided in terms of CAGR for a period of 1 year, 3 years and 5 years.

- In case the number of schemes managed by a fund manager is more than six, then the AMC may disclose the total number of schemes managed by that fund manager along with the performance data of top 3 and bottom 3 schemes (in addition to the performance data of the scheme for which the advertisement is being made) managed by that fund manager in all performance-related advertisements. However, in such cases, AMCs shall ensure that a true and fair view of the performance of the fund manager is communicated by providing additional disclosures if required.

- If a mutual fund scheme has not been managed by the same fund manager for the full period of information being published in the advertisement, the same should be disclosed in a footnote.

- Further, for the advertisement published in internet-enabled media, mutual funds shall be permitted to provide an exact website link to such summarized information of the performance of other schemes managed by the concerned fund manager.

Celebrity endorsements of Mutual Funds at industry level

SEBI has permitted celebrity endorsements at the industry level for the purpose of increasing awareness of Mutual Funds as a financial product category. However, such celebrity endorsements of Mutual Funds at industry level are subject to the following conditions:

- The celebrity endorsements shall not promote a scheme of a particular Mutual Fund or be used as a branding exercise of a Mutual Fund house/AMC.

- Expenses towards such celebrity endorsements shall be limited to the amounts that are aggregated by Mutual Funds at industry level for the purpose of conducting investor education and awareness initiatives.

- Prior approval of SEBI shall be required for issuance of any endorsement of Mutual Funds as a financial product, which features a celebrity for the purpose of increasing awareness of Mutual Funds.

Branding and advertisement requirements for Specialized Investment Funds (SIFs)

In order to take due care to ensure the communication is appropriate regarding SIF, SEBI has made it mandatory for the AMCs to ensure that the SIF has distinct identification, separate from the mutual fund, to maintain clear differentiation between the offerings of the SIF and that of a mutual fund.

The AMC has to ensure the SIF has a distinct brand name and a distinct logo, separate from that of its regular mutual fund. However, in order to facilitate the establishment and initial recognition of the SIF's brand, the AMC may use the sponsor's or mutual fund's brand name in the offer

documents, advertisements and promotional materials of the SIF for a period of five years from the date of SEBI's approval for the launch of the SIF.

Further, when referring to the sponsor's or mutual fund's brand name for SIF, the AMC is recommended to use phrases such as "brought to you by," "offered by," or similar terms.

The font size of the sponsor's or Mutual Fund's brand name in all offer documents, marketing, and promotional materials must be equal to or smaller than the font size of the SIF's brand name.

The AMC must adhere to the advertisement guidelines applicable to Mutual Fund schemes for all investment strategies offered under the SIF.

The AMC shall also be required to maintain a separate website or a dedicated web page exclusively for the SIF, ensuring clear differentiation between the SIF's offerings and the regular Mutual Fund offerings.

SEBI Guidelines for Circulation of Unauthenticated News

SEBI has issued guidelines to all market intermediaries relating to the circulation of unauthenticated news through various modes of communication. Following are the guidelines stipulated by SEBI:

(a) Proper internal code of conduct and controls should be put in place by market intermediaries registered with SEBI. Employees/temporary staff/voluntary workers etc. employed/working in the offices of market intermediaries should not encourage or circulate rumors or unverified information obtained from client, industry, any trade or any other sources without verification.
(b) Access either to Blogs/Chat forums/Messenger sites etc. should be restricted or under supervision or access should not be allowed.
(c) Logs for any usage of such Blogs/Chat forums/Messenger sites (called by any nomenclature) have to be treated as records and the same should be maintained as specified by the respective Regulations, which govern the concerned intermediary.
(d) Employees should be directed that any market related news received by them either in their official mail/personal mail/blog or in any other manner, should be forwarded only after the same has been seen and approved by the concerned Intermediary's Compliance Officer. If an employee fails to do so, he/she shall be deemed to have violated the various provisions contained in SEBI Act/Rules/Regulations etc. and shall be liable for action. The Compliance Officer shall also be held liable for breach of duty in this regard.

4.2.5 Investors' Rights & Obligations

Mutual fund investors are entitled to some important rights, which are meant to protect the investments and bring more transparency to the mutual fund investors. These rights are bifurcated into two parts—AMC related rights and Fund related rights. Some of these rights have been discussed below.

Right to beneficial ownership

Unit-holders have a proportionate right to the beneficial ownership of the assets of the scheme.

The investor can ask for a Unit Certificate for his/her Unit-holding. Investors also have the option to receive an allotment of mutual fund units of open ended and closed end schemes in their demat account. The mutual fund/AMC is bound to co-ordinate with the RTA and Depository to facilitate this.[31] Units of all mutual fund schemes held in the dematerialised form are freely transferable.[32] Further, the asset management company shall allow transfer of mutual fund units in the manner specified by SEBI from time to time.

Right to change the distributor

Investors can choose to change their distributor or opt for direct investing. This needs to be done through a written request by the investor. In such cases, AMCs will need to comply, without insisting on any kind of 'No Objection Certificate' from the existing distributor.

Right to Inspect documents

Unit-holders have the right to inspect key documents such as the Trust Deed, Investment Management Agreement, Custodial Services Agreement, RTA agreement and Memorandum & Articles of Association of the AMC.

Right to appoint nominees

The investors can appoint up to 10 nominees, who will be entitled to the 'Units' in the event of the demise of the investors. The investor can also specify the percentage distribution between the nominees. If no distribution is indicated, then an equal distribution between the nominees will be presumed.

Right to pledge mutual fund units

Investors can pledge their mutual fund units. This is normally done to offer security to a financier.

Right to grievance redressal

There is a formal grievance redressal policy for investors. SEBI has mandated that the status of complaints redressed should be published by each AMC in their annual report. The same should be available on the website of the mutual fund and on AMFI's website. It should provide the status of the number of complaints received by the AMC, the time taken to resolve the complaints and the status of pending complaints.

The scheme related documents also have details of the number of complaints received and their disposal. Pending investor complaints can be a ground for SEBI to refuse permission to the AMC to launch new schemes.

[31]In the case of unit-holding in demat form, the demat statement given by the Depository Participant would be treated as compliance with the requirement of Statement of Account.

[32]However, in case of Equity Linked Savings Scheme (ELSS), free transferability of units (whether in demat or physical form) is curtailed for the statutory minimum holding period.

Rights of investors in the context of change in Fundamental Attributes

If there is a change in the fundamental attributes of a mutual fund scheme, then the unitholders are provided the option to exit at the prevailing NAV without any exit load. This exit window has to be open for at least 30 days.

The asset management company shall ensure that no change in the fundamental attributes of any scheme, fees and expenses payable or any other change that would modify the scheme and affect the interest of unit holders, shall be carried out unless:

a. written communication (including digital modes such as email/SMS etc.) about the proposed change is sent to each unit holder;

b. details, as specified by the Board, are appropriately displayed on the website of asset management company; and

c. unit holders are given an option to exit at the prevailing Net Asset Value without any exit load.

Rights to terminate the appointment of an AMC

75 percent of unitholders can terminate the appointment of an AMC. In addition, 75 percent of the unitholders (unitholding) can pass a resolution to wind up a scheme. The Trustees are bound to obtain the consent of the unit-holders:

- Whenever required to do so by SEBI, in the interest of the unit-holders.
- Whenever required to do so by 75 percent of the unit-holders (in practice, Unit- holding) of the scheme.
- When the majority of the trustees decide to wind up a scheme or prematurely redeem the units of a close ended scheme.[33]

If an investor feels that the trustees have not fulfilled their obligations, then he can file a suit against the trustees for breach of trust. Under the law, a trust is a notional entity, therefore investors cannot sue the trust but they can file suits against trustees.

Right to unclaimed amounts[34]

AMC is expected to make a continuous effort to remind the investors through letters to claim their dues. The Annual Report has to mention the unclaimed amount and the number of such investors for each scheme. Recovery of unclaimed amounts by the investors is as follows:

- If the investor claims the money within 3 years, then payment is based on prevailing NAV i.e.,

[33]For details, refer to the https://www.sebi.gov.in/legal/regulations/jan-2022/securities-and-exchange-board-of-india-mutual-funds-regulations-1996-last-amended-on-january-25-2022-_55732.html

[34]The mutual fund has to deploy unclaimed dividend and redemption amounts in the money market and in a separate plan of Liquid scheme floated by mutual funds especially for investing the unclaimed amounts. AMC can recover investment management and advisory fees on management of these unclaimed amounts, at a maximum rate of 0.50 percent per annum and there shall be no exit loads charged on this plan.

after adding the income earned on the unclaimed money.

- If the investor claims the money after 3 years, then payment is based on the NAV at the end of 3 years.

Right to unclaimed amounts[35]

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- If the investor claims the money within 3 years, then payment is based on prevailing NAV i.e., after adding the income earned on the unclaimed money.
- If the investor claims the money after 3 years, then payment is based on the NAV at the end of 3 years.

Investors also have rights to various services such as receiving account statements, statements of portfolios, half-yearly disclosures etc. To enhance transparency, SEBI has mandated mutual funds to disclose details of debt and money market securities transacted in their schemes portfolio, including inter-scheme transfers, on a daily basis with a time lag of 15 days in a prescribed format.[36]

Proceeds of Illiquid Securities

It is possible that security was treated as wholly or partly non-recoverable at the time of maturity or winding up of a scheme. The security may subsequently yield a higher amount to the scheme. Treatment of such excess is as follows:

- If the amounts are substantial and recovered within 2 years, then the amount is to be paid to the old investors
- In other cases, the amount is to be transferred to the Investor Education Fund maintained by each mutual fund.

4.3 Due Diligence Process by AMCs for Distributors of Mutual Funds

Asset Management Companies and the Mutual Funds are regulated by SEBI through the SEBI (Mutual Funds) Regulations,2026. The AMCs are vested with the responsibility of regulating the practices of the distributors. As part of that process, the AMCs are required to conduct due diligence on their distributors. AMFI often coordinates a common, unified due diligence process for qualifying MFDs to avoid duplication. SEBI has issued a circular regarding the process for carrying out such an exercise. This has been discussed in section 6.2 in Chapter 6 in detail.

[35] Candidates are also advised to see circular on 'Deployment of unclaimed redemption and dividend amounts https://www.sebi.gov.in/legal/circulars/jul-2021/deployment-of-unclaimed-redemption-and-dividend-amounts-and-instant-access-facility-in-overnight-funds_51513.html (effective from December 01 2021)

[36] In this context, it should be noted that the principle of *caveat emptor* (let the buyer beware) applies to mutual fund investments. So, the unit-holder cannot seek legal protection on the grounds of not being aware, especially when it comes to the provisions of law, and matters fairly and transparently stated in the Scheme Documents. Unit-holders have a right to proceed against the AMC or trustees in certain cases. However, a proposed investor i.e., someone who has not invested in the scheme does not have the same rights.

4.4 Investor Grievance Redress Mechanism

In the event of any issue with the AMC or mutual fund scheme, the investor can first approach the investor service Centre. If the issue is not redressed, even after taking it up at senior levels in the AMC, then the investor can write to SEBI with the complaint details. The asset management company shall redress investor grievances promptly but not later than twenty-one calendar days from the date of receipt of the grievance and in such manner as may be specified by the Board.

SEBI Complaint Redress System

SEBI Complaint Redress System (SCORES) is a web-based centralized grievance redress system of SEBI. SCORES enables investors to lodge, follow up on their complaints and track the status of redressal of such complaints online on the website (http://scores.sebi.gov.in). This system enables the market intermediaries and listed companies to receive complaints from investors, redress such complaints and report redressal. All the activities starting from a lodging of a complaint till its closure by SEBI is online and works in an automated environment. An investor, who is not familiar with SCORES or does not have access to SCORES, can lodge complaints in physical form at any of the offices of SEBI. Such complaints are scanned and then uploaded in SCORES for processing.

Entities against which complaints are handled by SEBI include:

- Listed companies/registrar & transfer agents
- Brokers/stock exchanges
- Depository participants/depository
- Mutual funds
- Portfolio Managers
- Other entities (KRAs, Collective investment scheme, Merchant banker, Credit rating agencies, foreign portfolio investor etc.)

Cyber Security and Cyber Resilience

With a key objective to address evolving cyber threats, to align with the industry standards, to encourage efficient audits, and to ensure compliance by SEBI Registered Entities (REs), SEBI has issued detailed Cyber Security and Cyber Resilience Framework (CSCRF). The CSCRF also sets out standards formats for reporting by REs.

The CSCRF is standards based and broadly covers the five cyber resiliency goals adopted from Cyber Crisis Management Plan (CCMP) of Indian Computer Emergency Response Team (CERT-In) for countering Cyber Attacks and Cyber Terrorism including:

1. Anticipate
2. Withstand
3. Contain
4. Recover
5. Evolve

4.5 AMFI Code of Conduct for Intermediaries

4.5.1 AMFI Code of Ethics (ACE)

One of the objectives of the Association of Mutual Funds in India (AMFI) is to promote the investors' interest by defining and maintaining high ethical and professional standards in the mutual fund industry. The AMFI Code of Ethics (ACE) sets out the standards of good practices to be followed by the Asset Management Companies in their operations and in their dealings with investors, intermediaries and the public.

SEBI (Mutual Funds) Regulation, 2026 requires all Asset Management Companies and Trustees to abide by the Code of Conduct as specified in the Fourth Schedule to the Regulation. **Appendix 1** has the details.

The AMFI Code has been drawn up to supplement that schedule, to encourage standards higher than those prescribed by the Regulations for the benefit of investors in the mutual fund industry**.** **Appendix 2** has the details.

While the SEBI Code of Conduct lays down broad principles, the AMFI Code of Ethics (ACE) sets standards that are more explicit for AMCs and Trustees.

4.5.2 AMFI's Code of Conduct for Intermediaries of Mutual Funds

AMFI has also framed a set of guidelines and code of conduct for intermediaries (known as AMFI Guidelines & Norms for Intermediaries (AGNI)), consisting of individual agents, brokers, distribution houses and banks engaged in selling of mutual fund products. The Code of Conduct is detailed in **Appendix 3**.

In the event of breach of the Code of Conduct by an intermediary, the following sequence of steps is initiated by AMFI:

- Write to the intermediary (enclosing copies of the complaint and other documentary evidence) and ask for an explanation within 3 weeks.
- In case an explanation is not received within 3 weeks, or if the explanation is not satisfactory, AMFI will issue a warning letter indicating that any subsequent violation will result in cancellation of AMFI registration.
- If there is a proven second violation by the intermediary, the registration will be cancelled, and intimation sent to all AMCs.

The intermediary has a right of appeal to AMFI.

Chapter 4: Sample Questions

1. **Which of the following regulates mutual funds in India?**
    a. **Securities and Exchange Board of India**
    b. Association of Mutual Funds in India
    c. Asset Management Companies
    d. Board of Trustees of mutual funds

2. **Mutual funds can buy and sell securities only on delivery basis. State whether this statement is True or False.**
    a. **True**
    b. False

3. **Which of the following statements is 'True' with respect to celebrity endorsement for mutual funds?**
    a. **SEBI has permitted celebrity endorsement at the industry level for the purpose of increasing the awareness of mutual funds**
    b. SEBI has permitted celebrity endorsements for the promotion of individual mutual fund schemes
    c. Celebrities can endorse only NFOs
    d. Celebrities can endorse only ongoing mutual fund schemes

4. **Investors have the right to specify up to ___nominees for their mutual fund investment folios.**
    a. Zero
    b. One
    c. Two
    d. **Ten**

CHAPTER 5: SCHEME RELATED INFORMATION

Learning Objectives:

After studying this chapter, you should know about:

- Mandatory Documents
  - Scheme Information Document
  - Statement of Additional Information
  - Key Information Memorandum
- Non-Mandatory Documents

5.1 Mandatory Documents

"Mutual fund investments are subject to market risk. Please read all scheme related documents before investing." These lines are mentioned in all mutual fund related communications. So, what are the scheme related documents?

The legal documents that provide the information that the investor requires are available called in the scheme related documents - Scheme Information Document (SID), Statement of Additional Information (SAI) and the Key Information Memorandum (KIM).

Scheme related documents can be used for making an informed investment decision. The suitability of a mutual fund scheme to an investor depends upon the features of the scheme and matching it to the needs of the investor from the investment.

Investors need to note that their investments are governed by the principle of *caveat emptor* i.e., let the buyer beware. An investor is presumed to have read and understood the scheme related documents before investing in a mutual fund scheme. In fact, since this is a contractual arrangement, the person signing the application form has legally accepted the terms of the offer. Therefore, an investor cannot claim at a future date of being unaware of a fact that was disclosed in the scheme related documents.

There are primarily two important documents for understanding about the mutual fund scheme:

a) **Scheme Information Document (SID),** which has details of the particular scheme,
b) **Statement of Additional Information (SAI),** which has statutory information about the mutual fund or AMC, that is offering the scheme.

It stands to reason that a single SAI is relevant for all the schemes offered by a mutual fund. In practice, SID and SAI are two separate documents, though the legal technicality is that SAI is part of the SID.

Both documents are prepared in the format prescribed by SEBI and submitted to SEBI. The contents need to flow in the same sequence as in the prescribed format. The mutual fund is

permitted to add any other disclosure, which it feels, is 'material' for the investor.

Since investors are not sophisticated experts of finance or law, the documents are prepared in simple language, and in a clear, concise and easy to understand style.

While SEBI does not approve or disapprove the Scheme Related Documents, it gives its observations. The mutual fund needs to incorporate these observations in these documents. Thus, the Documents in the market are "vetted" by SEBI, and not approved by SEBI.

Draft SID and SAI are public documents, available for viewing on SEBI's website (https://www.sebi.gov.in/filings/mutual-funds.html). The final documents (after incorporating SEBI's observations) have to be hosted on AMFI's website (www.amfiindia.com) as prescribed by SEBI. Every mutual fund, on its website, provides for download of these documents for all its current schemes.

Objective of the scheme related documents

SID and SAI together are the primary source of information for any investor—existing as well as prospective. These operating documents describe the product.

Since the investor is required to make an informed investment decision, these documents serve the purpose of providing the required information in an easy-to-understand language.

The units of the scheme are offered to the investor through the scheme related documents. By signing the application form and making a payment, the investor is accepting the offer, and by issuing units against such an acceptance, the mutual fund then completes the contract. Thus, the scheme related documents contain information that forms the basis of the contractual relationship between the investor and the fund.

5.1.1 Scheme Information Document

The Scheme Information Document (SID) sets forth the information about the scheme that a prospective investor ought to know before investing. An SID remains effective until a 'material change' (other than a change in fundamental attributes and within the purview of the SID) occurs and thereafter changes are filed with SEBI and communicated to the investors or publicly notified by advertisements in the newspapers, subject to the applicable Regulations.

Contents of Scheme Information Document (SID)

It is essential to read and understand the SID. SID format is prescribed by SEBI. Refer to this appendix or download SID from the website of any mutual fund or SEBI and go through the sections discussed below for a better understanding of how this document can be used to understand the features of a mutual fund scheme.

The cover page has the name of the scheme followed by its type viz—Open-ended/Close-ended/Interval (the scheme structure), Equity/Debt/Liquid/Hybrid etc. (the expected nature of scheme portfolio). It also mentions the face value of the Units being offered, relevant NFO

dates (opening, closing, re-opening), date of SID, name of the mutual fund, and name and contact information of the AMC and trustee company. The cover page has the following standard clauses, which every investor ought to note "The particulars of the Scheme have been prepared in accordance with the Securities and Exchange Board of India (Mutual Funds) Regulations 2026, as amended till date, and filed with SEBI, along with a Due Diligence Certificate from the AMC. The units being offered for public subscription have not been approved or recommended by SEBI nor has SEBI certified the accuracy or adequacy of the Scheme Information Document".

The Scheme Information Document is structured in the following manner:

- Table of Contents
- Highlights
- Introduction
    - Risk Factors
        - Standard
        - Scheme-specific
    - Provisions regarding the minimum number of investors in the scheme
    - Any other special considerations
    - Definitions
    - Due Diligence Certificate (issued by the AMC)
- Information about the scheme
    - Name and type of the scheme
    - Investment Objectives and Policies
    - Asset Allocation Pattern
    - Where will the scheme invest?
    - Investment Strategy
    - Fundamental Attributes
    - Benchmark
    - Managers of the Scheme
    - Investment Restrictions
    - Performance track record of the scheme
- Units and Offer
- Fees & Expenses
- Rights of Unit-holders
- General Unit-holder information
- Penalties, Litigation etc.

The content of SID is discussed below in detail. The following discussion looks at how the SID can be used for making an informed investment decision. The suitability of a mutual fund to an investor depends upon the features of the scheme and matching it to the needs of the investor from the investment. The principal questions that an investor needs to find answers for and the sections of the SID where they can be found are described below.

Eligible investors

The segment on New Fund Offer (NFO) and Ongoing Offer Details of the Scheme Information Document (SID) provides a list of categories of investors eligible to invest in the scheme. The section also lists the persons who are not eligible to invest in the scheme.

Scheme suitability

The suitability of the scheme depends upon multiple factors such as the financial need of the investor from the investment, the risk and return preferences, the investment horizon and other individual preferences. The details of the scheme that has to be matched with the investor's preferences are found in the following sections.

The Risk-o-meter and Statement of the suitability of the scheme are available on the front page of the SID.

(a) **The risks in the scheme** are listed in the segment on **Risk of the SID which** includes standard or general risk factors that affect all mutual fund schemes. These include risks that arise from the nature of mutual fund investments such as the possibility of volatility in the value of the units of the scheme. As the value of the underlying securities in the portfolio changes, there is no guarantee or assured returns in the scheme. The sponsors are not responsible or liable for any loss arising out of the operations of the scheme beyond the contribution made by each sponsor towards setting up the scheme. The past performances are only indicative and do not guarantee the future performance of the schemes. Even specific risk factors to the mutual fund scheme are listed in this section. The specific risk factors are the risks that arise out of the type of investment the schemes will make. Investments in fixed income securities may have credit risks, interest rate and price risks, liquidity risks, pre-payment risks, reinvestment risks. Equity and equity-related securities are prone to risks of price volatility, unlisted securities have high liquidity risk, listed securities may also be subject to liquidity risk from lower trading volumes. Investment in foreign securities, securitized instruments, derivatives and others will also have risks that are specific to those types of investments. The strategies adopted by the scheme's fund managers will also affect the risk in the scheme. The risk mitigation strategies adopted by the fund management to control and manage the risks associated with investing in specific types of securities are described in the SID.

(b) The **Type of Scheme** describes the nature of the scheme briefly. It categorizes the scheme as open-ended or close-ended/interval/balanced/income/equity or debt/liquid/ETF oriented. The information is available in the segment on **'Information about the Scheme' in the SID.**

(c) The segment on 'Information about the Scheme 'of the SID also describes the **Investment Objective** of the scheme that helps investors match their objective to that of the scheme. Schemes may also define a primary objective and a secondary objective. This description helps investors determine whether the scheme is suitable for their needs. The Investment

objective is also available in the segment on Highlights/Summary of the Scheme at the beginning of the Scheme Information Document.

(d) The segment on 'Information about the Scheme' of the SID describes the **Asset Allocation** of the scheme, which is the proportion of the net assets of the scheme that will be invested in different asset classes such as equity, debt and others. Apart from the asset allocation, the **level of risk in each of these asset classes** is provided to help investors assess the level of risk in the scheme as also to understand the nature of returns of the scheme.

(e) The scheme information document also describes the types of instruments that the scheme is likely to invest in. SID also gives details of the **regulatory restrictions** on the investments that the scheme will make.

(f) The **Investment Strategy** that will be followed by the scheme is covered under SID. This section informs investors about the philosophy adopted to identify securities to be included in the portfolio, rebalancing the portfolio and approach to selling investments held. All these factors will affect the risk and suitability of the scheme to the investor. The investment management structure created in the Asset Management Company to make investment decisions is also detailed in the SID.

All these elements of the scheme help an investor decide on the suitability of the scheme.

Buying units of the scheme from mutual fund

The Type of Scheme will determine when the investor can invest in the scheme. If it is an open-ended scheme, then the investor can buy units of the scheme during the New Fund Offer (NFO) period and in the continuing investment period as defined in the Scheme Information Document at the applicable NAV. In case of a closed-ended scheme, the investor can buy units of the scheme from the mutual fund only during the NFO. In case of Interval schemes the investors can buy units directly from the mutual fund at the time of the NFO and during the Specified Transaction Periods at the applicable NAV.

This information is available on the **cover page of the Scheme Information Document (SID).** The description of the scheme as open-ended/close-ended/interval, along with a line on when the units will be offered by the mutual fund gives the information that the investor requires. **SID** also covers the details of the **Units and Offer** and provides information about when the investor can invest in the scheme.

Applying for Units of a mutual fund scheme

The information available in the Statement of Additional Information (SAI) and the Scheme Information Document (SID) have to be read together to get all the information on how to apply for the units of a scheme.

SAI provides information on who can invest, information to be provided in the application form, points at which the application can be submitted, the modes of payments for purchases made and the details to be provided for each option available for payments and restricted modes such as third party payments along with exceptions, the mandatory information to be provided such as Permanent Account Number (PAN), bank account details and compliance with Know Your Customer (KYC) norms and exceptions to the rules (if any), the cut-off time for submission of applications, facilities and modes available for transacting in the units, regulations specific for any special category of investors such as minors, NRI and PIO investors, the facilities available to investors such as holding investments in demat form, and any other information that a prospective investor may require.

Transactions: purchase and repurchase prices

The information available in the SID for NFOs and Ongoing Offer covers information on the price at which investors can purchase and redeem units**.** This price will depend upon the applicable NAV for the transaction, which in turn will depend upon the cut-off time prescribed for the particular type of scheme and the transaction value.

Load Structures

The segment on load structures of the SID describes the impact of loads on the redemption price of units.

Investment limits: maximum and minimum amount an investor can invest

There is a segment on **Highlights/Summary** of the scheme available at the beginning of the SID. The information available in the SID for NFOs and Ongoing Offer provides details of the minimum amount of purchase that has to be made and the minimum balance that has to be maintained in the folio. The minimum amount for which redemption requests have to be made is also mentioned.

Plans and options available under the scheme

The segment on **Highlights/Summary** of the scheme available at the beginning of the SID and the information available in the SID for NFOs and Ongoing Offer provides details of the different plans, Regular and Direct, for making the investment. Each plan offers options such as Pay-out of Income Distribution cum Capital Withdrawal (IDCW) plan and growth, dividend re- investment and dividend sweep, the details of which are also provided.

Modes of transaction

The segment on **'How to Apply'** of the SAI provides information on the various ways in which the investor can transact with the mutual fund. This includes transacting directly with the mutual fund either physically or via Internet, through channel distributors, electronic mode, stock exchanges and others. The information is also available in the SID.

Liquidity and Redemption in a scheme

The segment on **Highlights/Summary** of the scheme available at the beginning of the SID provides a summary of the Liquidity in the investment in the scheme. SID provides also details of the price for redemption, the cut-off time for submitting the requests and how the request can be made and the modes by which the payments will be made for different categories of investors.

Fees, expenses, transaction charges

SID details the different categories of expenses, fees and loads that affect the returns to the investors in the scheme. The fees are charged to the scheme and the NAV reflects the adjustment. The loads are paid by each investor out of their investment value at the time of exit. The examples provided in this section make it easier for the investor to understand the impact. Information on the transaction charges[37] that the investor directly pays is mentioned in the segment on **Highlights/Summary** of the scheme available at the beginning of the SID.

Special products and facilities

SID discusses special products and facilities available to the investors in the scheme such as systematic investment plans, systematic transfer plans, triggers, switch options, Transfer of Income Distribution cum capital withdrawal plans and such.

Sources of information

SID provides details of the periodic information that the mutual fund will provide to the investor on the investments held in their folio through an account statement or other communication. Apart from account specific information, **SID** also details the periodic disclosures that the investor can access on the current value of the units, performance of the scheme and portfolio of the scheme. The performance of the scheme and that of its benchmark is also provided in SID.

Calculation of the scheme's Net Asset Value (NAV) per unit

SID provides the details of the computation of the NAV**.**

Tax implications

SID also gives the prevalent tax laws applicable to investing in mutual funds in brief.

Fundamental Attributes

SID discusses fundamental attributes (core aspects of the scheme) as explained in Box 5.1.

[37] SEBI has withdrawn the transaction charges framework - https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html

Box 5.1 Fundamental Attributes

Within the SID, there is an important section on fundamental attributes of a scheme with following parameters:

(i) Type of a scheme

- Open ended/Close ended/Interval scheme
- Sectoral Fund/Equity Fund/Balance Fund/Income Fund/Index Fund/Any other type of Fund

(ii) Investment Objective

- Main Objective - Growth/Income/Both.
- The tentative portfolio break-up of Equity, Debt, Money Market Instruments, other permitted securities and such other securities as may be permitted by the Board from time to time with minimum and maximum asset allocation, while retaining the option to alter the asset allocation for a short-term period on defensive considerations.

(iii) Terms of Issue

- Liquidity provisions such as listing, repurchase, redemption.
- Aggregate fees and expenses charged to the scheme.
- Any safety net or guarantee provided.

According to Regulation 22(9)(c) of SEBI (Mutual Funds) Regulations, 2026, the Trustees are required to ensure that no change in the fundamental attributes of the Scheme(s) or the trust or fee and expenses payable or any other change which would modify the scheme shall be carried out unless:

a. written communication (including digital modes such as email/sms etc.) about the proposed change is sent to each unit holder;
b. details, as specified by SEBI, are appropriately displayed on the website of asset management company; and
c. unit holders are given an option to exit at the prevailing Net Asset Value without any exit load.

5.1.2 Statement of Additional Information

Statement of Additional Information (SAI), has statutory information about the mutual fund or AMC, that is offering the scheme. Therefore, a single SAI is relevant for all the schemes offered by a mutual fund.

Content of Statement of Additional Information

Every mutual fund, on its website, provides for download of its SAI. However, investors have

a right to ask for a printed copy of the SAI. Through the AMFI website (www.amfiindia.com), investors can access the SAI of all the mutual funds.
Refer to SAI from the website of any mutual fund and go through the sections discussed below for a better understanding of how these documents can be used to understand the features of a mutual fund scheme.

Content of SAI	Description of Content
Constituents of the mutual fund	**SAI** gives complete details of the constituents of the mutual fund--Sponsors, AMC and Trustee Company, of service providers {Custodian, Registrar & Transfer Agent, Statutory Auditor, Fund Accountant (if outsourced) and Collecting Bankers}. This includes their experience, condensed financial information (for schemes launched in last 3 financial years), key personnel, rights and obligations and other information the investor may require to evaluate the investment.
How to Apply	**SAI** provides guidance on how to apply.
Rights of Unit-holders	**SAI** details the rights to beneficial ownership of the assets of the scheme, timelines for servicing investor applications and acknowledgements, right to receive information and disclosures and to exercise the option to exit in the event of changes in the scheme, and other rights of investors.
Investment Valuation Norms	**SAI** provides the details of the regulatory specifications on how different securities in the portfolio will be valued. The rules for valuation are standardized by the regulator, SEBI.
Tax, Legal & General Information	SAI provides information on legal aspects of the investment that deal with nominations, transfer and transmission of units, investment by minors, pledge/lien on units and others. Also, this section provides details regarding taxation and other general information.
Investor Grievance	**SAI provides** details of how the investor can register a grievance.

5.1.3 Key Information Memorandum

While an investor is expected to read all the scheme related documents, circulation of the same along with the application forms is too difficult and costly, especially if the printed forms are to be distributed. In order to ensure the investor gets access to sufficient information in spite of such a constraint, a Key Information Memorandum (KIM) is mandatorily circulated along with the application form.

KIM is essentially a summary of the SID and SAI. It contains the key points of these documents

that are essential for the investor to know to make a decision on the suitability of the investment for their needs. It is more easily and widely distributed in the market. As per SEBI regulations, every application form is to be accompanied by the KIM.

Some of the key items contained in the KIM are as follows:

- Name of the AMC, mutual fund, Trustee, Fund Manager and scheme
- Dates of Issue Opening, Issue Closing and Re-opening for Sale and Re-purchase
- Investment Objective
- Asset allocation pattern of the scheme
- The risk profile of the scheme i.e., a snapshot of the risk to the principal invested, the suitable investment horizon for investment and the type of securities that the scheme will invest in.
- Plans and Options
- Benchmark Index
- Dividend Policy
- Performance of scheme and benchmark over last 1 year, 3 years, 5 years and since inception.
- Expenses of the scheme
- Information regarding registration of investor grievances

5.1.4 Addendum

While the SID, SAI and KIM need to be updated periodically, the interim changes are updated through the issuance of such addendum. The addendum is considered to be a part of the scheme related documents and must accompany the KIM.

5.1.5 Updation of Scheme Documents—Regulatory provisions

Updation of SID

For the open ended and interval schemes, the SID shall be updated within next six months from the end of the 1st half or 2nd half of the financial year in which schemes were launched, based on the relevant data and information as at the end of previous month. Subsequently, SID shall be updated within one month from the end of the half-year, based on the relevant data and information as at the end of September and March respectively.

The procedure to be followed in case of changes to the open ended and interval scheme shall be as under:

a. In case of change in fundamental attributes in terms of Regulation 22(9)(c)

i. An addendum to the existing SID shall be issued and displayed on AMC website immediately.
ii. SID shall be revised and updated immediately after completion of duration of the exit

option (not less than 30 days from the notice date).

iii. A public notice shall be given in respect of such changes in one English daily newspaper having nationwide circulation as well as in a newspaper published in the language of region where the Head Office of the Mutual Fund is situated.

b. In case of other changes:

i. The AMC shall be required to issue an addendum and display the same on its website immediately.
ii. The addendum shall be circulated to all the distributors/brokers/Investor Service Centre (ISC) so that the same can be attached to all KIM and SID already in stock till it is updated.
iii. Latest applicable addendum shall be a part of KIM and SID. (e.g., in case of changes in load structure the addendum carrying the latest applicable load structure shall be attached to all KIM and SID already in stock till it is updated).
iv. Further, the account statements shall continue to include applicable load structure.

Updation of SAI

- Regular update has to be done by the end of 3 months of every financial year. Material changes have to be updated on an ongoing basis and uploaded on the websites of the mutual fund and AMFI.

Updation of KIM

- KIM shall be updated at least once in half-year, within one month from the end of the respective half-year, based on the relevant data and information as at the end of September and March and shall be filed with SEBI forthwith through electronic mode only.

5.1.6 Other Mandatory information/disclosure

While the scheme information documents provide mandatory information that help a prospective investor to make informed investment decision, the existing investors in a mutual fund scheme also need to track the progress of their investments.

There are two key disclosures that an investor should receive for that purpose, viz., the current value of one's investments, and information about where the scheme has invested.

The current value of investments is a function of the number of units in an investor's account and the NAV per unit. In order to get the current value of the investments, one has to multiply the number of units with the NAV.

Current value of investments = Unit balance in the investor's account X current NAV

This means that an investor should be able to regularly know the NAV. The unit balance can be seen from the latest account statement that one would have got. Chapter 9 has a detailed

discussion on when and how an investor gets the account statement.

Disclosure of Daily NAV

Each scheme's NAV is required to be disclosed at the end of each business day. The same is published on the website of the AMC. The Mutual Fund declares the Net Asset Value of the scheme on every business day on AMFI's website https://www.amfiindia.com/net-asset-value (as per the time limit for uploading NAV defined in the applicable guidelines) and also on their website.

In case of open-ended schemes, the NAV is calculated for all business days and released to the Press. In Liquid and Overnight Funds, NAVs are declared on Sundays / holidays as well, which reflects the accrual for that day. In case of closed-ended schemes, the NAV is calculated at least once a week.
SEBI has revised the time limit for the disclosure of NAV of Mutual Fund Schemes investing overseas.[38]

With the availability of historical NAV, an investor should also be able to calculate how a scheme has performed over whatever period one wants to check for.

Disclosure of Total Expense Ratio[39]

One of the important factors that impact the scheme's NAV is the Total Expense Ratio (TER), charged to the scheme. Though the same is very tightly regulated through SEBI regulations, the investor should know about the scheme expense ratio.

1. Trustees and AMCs are advised to take proper care and exercise due diligence to ensure that all expenses charged to the scheme are clearly identified and disclosed in the offer document and they are strictly in conformity with the MF Regulations
2. AMCs shall prominently disclose on a daily basis, the TER (scheme-wise, date-wise) of all schemes except infrastructure debt fund (IDF) schemes under a separate head – "Total Expense Ratio of Mutual Fund Schemes" on their website and on the website of AMFI.
3. Each item of expenditure accounting for more than 10% of total expenditure shall be disclosed in the accounts or the notes thereto of the schemes.
4. The disclosure shall strictly be in the format given at Format No. 7Eand shall be in a downloadable spreadsheet and a machine-readable format. The formula for TER shall be as follows:

TER = Base Expense Ratio (BER) + Brokerage Cost + Transaction Cost incurred for the purpose of execution of trade + Statutory levies (including GST.

[38]Candidates are advised to read the circular: https://www.sebi.gov.in/legal/circulars/mar-2023/review-of-time-limit-for-disclosure-of-nav-of-mutual-fund-schemes-investing-overseas_69519.html

[39] Candidates are advised to read the Master circular: https://www.sebi.gov.in/legal/master-circulars/mar-2026/master-circular-for-mutual-funds_100491.html

The format of disclosure of TER of mutual fund schemes is exhibited below in Table 5.1.

Table 5.1 Total Expense Ratio (TER) for Mutual Fund Scheme

Name of Scheme: XYZ										
Date (DD/MM/YYYY)	**Regular Plan**					**Direct Plan**				
	Base Expense Ratio (BER) (%)[1]	**Brokerage cost (%)[2]**	**Transaction Cost incurred for the purpose of execution of trade (%)[3]**	**Statutory Levies (including GST) (%)[4]**	**Total TER (%)**	**Base Expense Ratio (%)[1]**	**Brokerage cost (%)**	**Transaction Cost incurred for the purpose of execution of trade (%)**	**Statutory Levies (including GST) (%)[4]**	**Total TER (%)**

1. Base Expense Ratio as per Regulation 66(7) of SEBI (Mutual Funds) Regulations, 2026.
2. Brokerage Cost as per Regulation 66(9) of SEBI (Mutual Funds) Regulations, 2026.
3. Transaction cost incurred for the purpose of execution of trade as referred under Regulation 66(10) of SEBI (Mutual Funds) Regulations, 2026.
4. Present GST rate is XX%.
5. Percentages mentioned above are annualized.
6. Base Expense Ratio of direct plan shall have a lower expense ratio excluding distribution expenses, commission, etc., and no commission shall be paid from such plans.

Any change in the BER in comparison to previous base BER charged to any scheme/plan shall be communicated to investors of the scheme/plan through notice via email or SMS at least three working days prior to effecting such change. (For example, if changed BER is to be effective from January 8, 2026, then notice shall be given latest by January 2, 2026, considering at least three working days prior to effective date). Further, the notice of change in BER shall be updated in the aforesaid section of website at least three working days prior to effecting such change. Scheme-wise dashboard on mutual fund website

Each AMC is also required to publish a scheme performance dashboard on the website, and update it on a regular basis. The dashboard highlights how various schemes of the mutual fund have performed over various holding periods. The scheme performance data is also

available on the AMFI website.

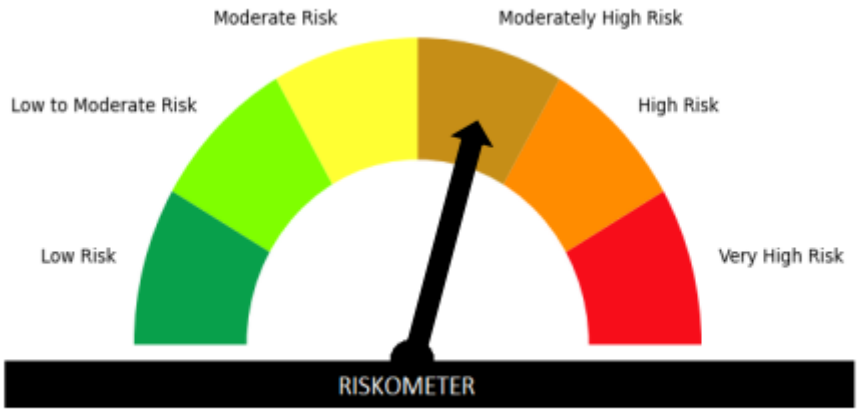
Most AMCs allow this dashboard to be downloaded in a tabular form. This contains the following information about the schemes of the mutual fund:

- Scheme name
- Scheme classification and category: For example, Equity multi-cap scheme; or Solution-oriented scheme–retirement fund
- Type of scheme: Open-ended or close-ended
- The investment objective of the scheme
- Name of the fund manager
- Benchmark index (including additional benchmark, if any)
- Exit load[40] and lock-in period (if any)
- Plans and options: For example, direct and regular plans; Income Distribution cum capital withdrawal and growth options, etc.
- Minimum investment amount
- Month-end AUM
- TER
- Scheme inception date
- Month-end portfolio
- Scheme performance

Such a dashboard allows an investor to make an easy comparison of schemes across the mutual fund.

Risk-o-meter

To enable investors to make an informed decision regarding their investments, a pictorial representation of the risk to the principal invested in a mutual fund product is depicted using a 'Riskometer'. The pictometer will categorize the risk in the scheme at one of six levels of risk, as shown in the picture below:



The risk of the scheme/benchmark is [level of risk]

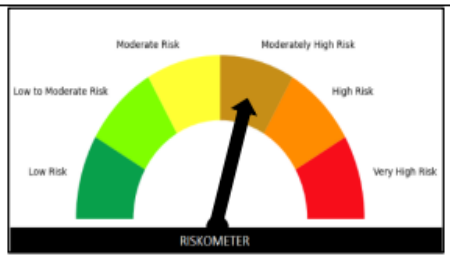
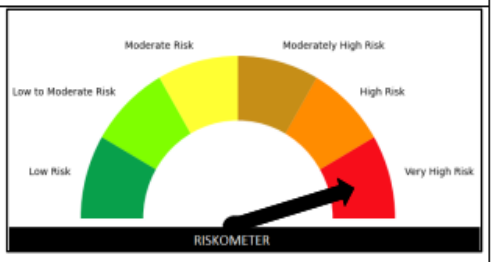
[40]It is clarified that the provision of Regulation 44(4) of MF Regulations applies on all open-ended mutual fund schemes wherever exit load is applicable. The # indicates colour code as specified by SEBI.

The above risk-o-meter indicates that investors should understand that their principal will be at moderate risk. There is also a written statement of the risk to the principal below the 'Risk-o-meter'.

Risk-o-meter shall have the following six levels of risk for mutual fund schemes with the given color scheme

- Low risk – Irish Green [#08A04B]
- Low to Moderate risk – Chartreuse [#7FFF00]
- Moderate risk – Neon Yellow [#FFFF33]
- Moderately High risk – Caramel [#C68E17
- High risk – Dark Orange [#FF8C00]
- Very High risk – Red [#F70D1A]

The mutual fund has to calculate the risk value of each scheme based on the parameters that have been provided. Every scheme needs to check the parameters and then determine its risk for the investor. This has to be depicted on the risk-o-meter. If there is any change in the risk level then this has to be conveyed through a Notice cum addendum and email or SMS to the unitholders. The risk-o-meter has to be evaluated on a monthly basis. The format for the said disclosure shall be as under:

Name of the Scheme(s)	*Existing Risk-o-meter of Scheme/Benchmark*	*Revised Risk-o-meter of Scheme/Benchmark*
XXXX Large and Midcap Fund	 *The risk of the scheme is moderately high*	 *The risk of the scheme is very high*

Mutual Fund/AMCs shall also disclose risk-o-meter of the scheme and benchmark while disclosing the performance of scheme vis-à-vis benchmark.

Additionally, for the evaluation of risk value of commodities in which mutual funds are permitted to invest, SEBI has directed that, investments in such schemes must be assigned a risk score corresponding to the annualized volatility of the price of the said commodity. The annualized volatility will be computed quarterly based on past 15 years' prices of benchmark index of the said commodity. The risk score for the commodity will be in terms of the following

table[41]:

Annualized volatility	Risk value on risk
<10%	3 (Moderate)
10-15%	4 (Moderately High)
15-20%	5 (High)
>20%	6 (Very High)

While the risk-o-meter is an attempt to simplifying the presentation of levels of risk, it may be referred as the first step in the analysis of scheme categories, however, it should not be the only factor for taking an investment decision. The same may apply to the discussion on risk profiles of various schemes that preceded the discussion on risk-o-meter. Each category would have some risks that are common to the category, and various schemes may take different risks, even within the same category. An investor would be advised to do careful research oneself. In case one is unable to do so, one must consider taking help of a mutual fund distributor or a registered investment adviser.[42]

Risk-Band - SIFs

While the Risk-o-meter is mandatory in case of the mutual funds schemes, the SIFs are riskier than all the other mutual fund schemes. In such a case, and in order to avoid potential confusion, the risk levels in case of SIFs would be depicted through a pictorial risk meter, termed as Risk-Band, which shall have five levels of risks for the investment strategies:

A. Risk band level 1 (Lowest risk)
B. Risk band level 2
C. Risk band level 3
D. Risk band level 4
E. Risk band level 5 (Highest risk)

The AMC shall assign the risk level of the schemes at the time of NFO. Any change in the risk level will have to be communicated by way of a notice-cum-addendum and by way of email or SMS to the unitholders of the particular investment strategy. The risk band shall be evaluated on a monthly basis. The AMC shall disclose the risk band for all the investment strategies on their website within 10 days from the close of each month. The AMC shall also disclose the risk level of the respective investment strategies as on 31st March of each year, along with the number of times the risk level has changed over the year on their website as well on the website of AMFI.

[41] https://www.sebi.gov.in/legal/circulars/apr-2022/circular-on-risk-value-of-commodities-for-_57913.html

[42]Investors should consult their financial advisers if they are not clear about the suitability of the product. A line to this effect was part of the circular on product labelling issued in 2013. [SEBI circular no. CIR/IMD/DF/5/2013 dated March 18,2013].

Portfolio disclosure

This is a list of securities where the corpus of the scheme is currently invested. The market value of these investments is also stated in portfolio disclosures. Mutual Funds/ AMCs shall disclose portfolio (along with ISIN) as on the last day of the month / half-year for all their schemes on their respective website and on the website of AMFI within 10 days from the close of each month/ half-year respectively in a user-friendly and downloadable spreadsheet format. For debt schemes, such disclosure shall be done on fortnightly basis within 5 days of every fortnight. In addition to the current portfolio disclosure, yield of the instrument shall also be disclosed.

In case of unit holders whose e-mail addresses are registered, the Mutual Funds/ AMCs shall send via email both the monthly and half-yearly statement of scheme portfolio within 10 days from the close of each month/ half-year respectively. [43]

As far as SIFs are concerned, the portfolio is required to be disclosed as on the last day of every alternate month, viz., May, July, September, November, January and March. This should be uploaded on the websites of the AMC as well as AMFI within 10 days from the close of such month in a user friendly and downloadable format. The portfolio disclosure should include all securities along with their ISIN and must include all securities.
The SIFs must include scenario analysis in their Investment Strategy Information Document (ISID), depicting the expected loss to the investor due to market movements.

Financial results

a. Every mutual fund and asset management company shall, within one month from the close of each half-year ending on 31st March and 30th September, host the unaudited financial results of their schemes on their website.
b. The financial results referred to in clause(a) shall be in the format specified by the Board from time to time and shall include such additional details as are necessary to give a true and fair view of operations of the mutual fund.
c. Written communication (including digital modes such as email/SMS etc.) shall be sent to unitholders by the asset management company about the availability of financial results referred to in clause (a)

Annual reports and related disclosures

Annual report or abridged summary is required to be hosted on AMCs website and on the website of AMFI. This is sent by email to the investors who have registered their email id with the fund, no later than four months from the date of closure of the relevant financial year i.e., March 31 each year. Investors' who have not registered their email-id have an option of receiving a physical copy of the Annual report or an Abridged summary thereof. The advertisement in this reference is required to be published by the mutual fund in all India editions of at least two daily newspapers, one each in English and Hindi. The asset

[43] https://www.sebi.gov.in/legal/master-circulars/may-2023/master-circular-for-mutual-funds_71438.html

management company shall display a functional link of the full scheme-wise Annual Reports prominently on their website

Disclosure pertaining to change in control of the AMC

While seeking the approval of SEBI for change in the control of the AMC, the mutual fund handing over the control to another person, should file the draft letter / email to be sent to the unitholders along with draft advertisement to be published in the newspaper.[44]

5.2 Non-Mandatory Disclosures

Fund Factsheet

One of the most popular documents from the mutual fund is the monthly Fund Factsheet. Investors, fund distributors, fund rating agencies, research analysts, media and others access information about the various schemes of the mutual fund and extensively use this document. While it is not a regulatory requirement to publish the monthly fact sheet, it is a market practice followed by all the fund houses, on a voluntary basis. Publishing it monthly is part of AMFI best practices guideline. Since fund factsheet is a marketing and information document, various SEBI regulations pertaining to information disclosure are applicable to it.

The fund factsheet contains the basic information of each scheme such as the inception date, corpus size (AUM), current NAV, benchmark and a pictorial depiction of the fund's style of managing the fund. The fund's performance relative to the benchmark is provided for the different periods along with the benchmark returns, as required by SEBI's regulations. The factsheet also provides the SIP returns in the scheme, portfolio allocation to different sectors and securities. However, some fund houses do not disclose the entire portfolio but only the top 10 holdings.

In the factsheet, security wise as well as sector wise allocation is provided for equity schemes. Some factsheets also disclose the derivatives exposure taken by the mutual fund schemes. To clarify, mutual funds can take derivative exposure for hedging, but cannot take open derivative positions. In the debt funds, the factsheet discloses the rating profile of the various securities, and a snapshot of exposure of the scheme to various rating baskets.

Portfolio features such as the price-earnings ratio (PE), Beta and other risk measures such as standard deviation and Sharpe ratio (in case of equity funds), credit rating profile, average maturity and duration (in case of debt funds) are also available in the factsheet. The factsheet also provides investment details such as the minimum investment amount, the plans and options available in the scheme, the loads and expenses and systematic transaction facilities available in the fund.

[44] Candidates are advised to read: https://www.sebi.gov.in/legal/circulars/aug-2023/timeline-for-the-exit-option-window-period-for-change-in-control-of-amc_75221.html

Chapter 5: Sample Questions

1. **"Please read the scheme related documents carefully" – which documents does this line refer to?**
    a. Scheme Information Document and audited balance sheet of the Asset Management Company
    b. Trust deed and Key Information Memorandum
    c. Statement of Additional Information and fund fact sheet
    d. Scheme Information Document and Statement of Additional Information

2. **Which of the following statements is 'TRUE' with respect to the Scheme Information Document (SID) and Statement of Additional Information (SAI)?**
    a. These two documents are prepared in the format prescribed by Association of Mutual Funds in India as part of AMFI's Code of Conduct
    b. These two documents are prepared in the format prescribed by Association of Mutual Funds in India as part of AMFI's Best Practices Circular
    c. These two documents are prepared in the format prescribed by Securities and Exchange Board of India
    d. Each Asset Management Company is free to prepare these documents in the format they desire

3. **How often should the Key Information Memorandum (KIM) be updated?**
    a. At least once a month
    b. At least once every six months
    c. At least once a year
    d. It need not be updated after it is issued once

4. **The NAV of scheme is disclosed on the website of _____?**
    a. RBI
    b. AMC
    c. Both a and b
    d. Neither a nor b

5. **Which among the following is not a statutory document?**
    a. Fund factsheet
    b. Statement of Additional Information
    c. Scheme Information Document
    d. Key Information Memorandum

CHAPTER 6: FUND DISTRIBUTION AND CHANNEL MANAGEMENT PRACTICES

Learning Objectives:

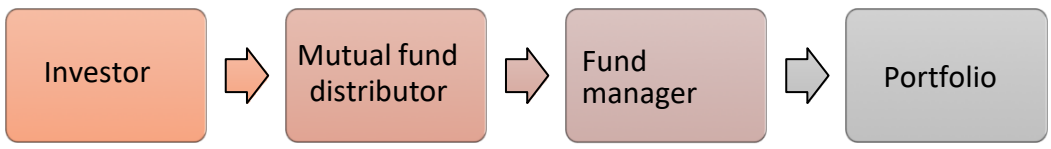
After studying this chapter, you should know about:

- Role and importance of mutual fund distributors
- Different kinds of mutual fund distributors
- Modes of distribution
- Pre-requisites to become a mutual fund distributor
- Revenue of a mutual fund distributor
- Commission disclosure mandated by SEBI
- Due Diligence Process by AMCs for Distributors of Mutual Funds
- Nomination facilities for mutual fund distributors
- Change of distributors

6.1 The role and importance of mutual fund distributors

An investor needs to invest the money in a portfolio of various investment options to achieve financial goals. This process of building a portfolio could be achieved with the help of the selection of a basket of mutual fund schemes. However, one may still need help in constructing a portfolio with the help of an expert. This expert could be a mutual fund distributor.

Chart 6.1: Mutual Fund Investors, professionals and portfolio



In Chart 6.1, two professionals have been shown between the investor and her investment portfolio, viz., a mutual fund distributor, and a fund manager. This fund manager could be a mutual fund manager managing a mutual fund portfolio in line with the scheme's investment objectives, as discussed earlier.

The fund manager analyses various inputs and data points including the company specific or industry specific information, and economy wide factors. The analysis may include liquidity aspects in the market, and the mood of the market participants. After such a detailed

analysis, the fund manager constructs a portfolio of securities in line with the stated objective of the mutual fund scheme.

On the other hand, the mutual fund distributor's job is to assess the needs, limitations, resources and financial goals of the investor. This analysis would help the mutual fund distributor arrive at a suitable asset allocation plan for the investor. Armed with this, the distributor then goes on to identify mutual fund schemes, which are appropriate for the investor in the given situation.

Look at this in another way, the mutual fund distributor analyses the situation of the investor; whereas the fund manager analyses the market factors. Both the professionals play important roles in helping the investor achieve one's financial goals.

With that background look at various categories of mutual fund distributors.

6.2 Different kinds of mutual fund distributors

Mutual funds are distributed in India to the investors through multiple channels, viz., individual mutual fund distributors, bank branches, national distributors through their branches or their sub-agents, post offices, and directly by the AMCs. While the category of distributors is also varied, the platforms used are also many. Funds may be distributed through the traditional method of using paper-based application forms, or through electronic platforms such as websites, mobile phones and stock exchanges.

Let us first look at the different categories and their characteristics.

6.2.1 Individual players

India has a long history of distribution of financial products through individuals. Both Life Insurance Corporation of India Ltd (LIC), and Unit Trust of India (UTI) depended on a huge force of individual agents. While the two institutions made various products and solutions available, the agency force (i.e., individual agents) ensured these products reached the households. These same agents also distributed the small savings products, and to that extent, they played a huge role in bringing household savings into financial products.

Almost all of them operated as individuals, and single-handedly, without any staff or skeleton staff. Even today, this is a very large part of the distribution link between the asset management companies and the investors. Quite a few new mutual fund distributors start their business this way – single-handedly, as individuals.

Later, some of them expand and grow into larger entities. While the former is known as the "individual" channel, the rest can be called the "non-individual" channel.

The traditional non-institutional channels operate through different business models. These could be as under:

- Through their own branch offices and employees
- Through a network of sub-agents

6.2.2 Non-individual entities

Non-individual entities include partnerships, regional distributors, national distributors, NBFCs, banks, stockbrokers, etc. Out of these, the distribution companies and banks are sometimes referred as institutional distributors.

In both cases, the investor is serviced by an individual—be it an employee of the firm or a sub-agent. However, the difference lies in the operations of the firm and its cost structure—the former incurs fixed expenses of running the large operations, whereas the latter have higher variable costs. The employees earn through salary, whereas the sub-agents earn a commission, which is linked to the business generated.

Within the non-individual distributors, there are different business models.

Banks

Banks have emerged as a prominent channel for the distribution of mutual fund products to their account holders. Within the banking structure, the multinational banks were the first to enter the business of mutual fund distribution. The private sector banks and the public-sector banks entered the business much later. Nowadays, even some cooperative banks are also distributing mutual funds. Banks employ different business units catering to different client segments, viz., retail banking and wealth management or priority banking or private banking. The categorization is based on the wealth of the clients or the surplus available for investment in financial assets.

Mutual funds have built relationships with PSU banks that have a wide reach in non-urban centres to distribute mutual fund products through them. Also, private and foreign banks actively participate in the distribution process of mutual fund products.

Many others like stock brokers and NBFC also use a similar classification between retail clients and wealthy clients. While some **NBFCs and stock brokers** reach out to service their clients through their own employees, some have empaneled sub-agents. One may also call it an agency channel. These sub-agents are not employees of the firm but purely work as an extended distribution arm.

While the banks and NBFCs may operate at a national level, there could be some other firms that only distribute financial products. Some of these firms may have a national presence, while some others may operate within a region. These are often referred as **national distributors**

or regional distributors in the mutual fund industry.

Some new players have entered the fray of late. These are the e-commerce platforms and few other online distributors that also distribute mutual fund schemes. These players operate through the internet without having a physical office for the clients to visit. SEBI has provided the guidelines for Execution Only Platforms (EOP), relevant for digital / online platforms.

6.3 Modes of distribution

Traditionally, not just mutual funds, but all financial products were distributed through the use of application forms printed on paper. This process involved carrying physical forms to the client's place and then depositing those forms at the respective official points of acceptance (OPOAs). With the advent of the internet and mobile phones, the distribution channel shifted to digital mode. Of late, the balance is shifting towards digital transactions, though the physical paper-based transactions continues.

Many distributors and their investors still prefer the paper mode, whereas the new age Internet-based businesses, viz. e-commerce platforms, and online distributors operate entirely through the digital mode.

On the other hand, there are a few that employ a hybrid mode, where some transactions take place digitally, some others happen physically.

The different models of online distribution are discussed below.

6.3.1 Online Channel Partners

The advent of the internet has changed the way business is conducted in many industries, and mutual fund distribution is no different. The distributors are able to expand their business beyond geographical boundaries. Investors, also prefer to transact through the internet, rather than the cumbersome paperwork and dependence on the distributor. A few distributors offer transaction support through their own websites.

6.3.2 Stock Exchange Platforms

SEBI has facilitated buying and selling of the units of open-ended mutual funds through the stock exchanges. Exchanges have developed mutual fund transaction engines for this purpose. The low cost and deeper reach of the stock exchange network enable an increased level of participation of retail investors in mutual funds. AMCs are required to list the units of close-ended and interval schemes on a stock exchange and the units of ETFs are also bought and sold in the stock exchange.

Both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) have extended their trading platforms to help the stock exchange brokers become a channel for investors to transact in Mutual Fund units. NSE's platform is called NMF II Platform. BSE's platform is the

BSE STAR Mutual Funds Platform.

NMF II platform of NSE has two versions - one for trading members and one for distributors. All trading members of the stock exchange who have registered with AMFI as Mutual Fund Distributor and have signed up with the respective mutual fund can offer transactions through this facility to their investors. The units can also be transacted on these platforms through clearing members of the stock exchange. Depository participants can process redemption requests only. The list of eligible schemes for transaction on these platforms are notified by the respective mutual funds. These eligible schemes are not listed on the stock exchange. Similarly, distributors having valid AMFI registration can seek limited purpose membership of the Exchange to transact in Mutual Fund units only.

The stock exchanges only offer a transaction platform, but they do not replace the RTAs. Since this is essentially an order routing system between the investors and the AMC, the exchanges do not offer settlement guarantee. Responsibility for settlement is with the AMC. However, the normal stock exchange redressal mechanism would be available to address any investor complaints.

SEBI vide its circular dated February 26, 2020, has allowed the investors to directly access the infrastructure of stock exchanges to purchase and redeem mutual fund units directly from the mutual fund/asset management companies.

There is an element of convenience that is available for investors when they transact mutual fund units on the stock exchange. This is because the entire system is seamless and the investor is familiar with it. In case of stocks, the investor needs to enter their order details either through their broker or online and these are routed to the stock exchange and then executed. The same route is followed for mutual fund units where the investor is able to transact seamlessly and get the units in their demat account.

One of the main features of this platform is that the distributor only handles the transactions of the investor. The rest of the process, including the pay-in and pay-out of money as well as the units, takes place through the stock exchange infrastructure. This involves the clearing corporation too.

The beneficial part of this entire system is that apart from the normal purchase and sale of units there is also the facility of undertaking a SIP which is a very crucial way of investing for investors. STP and SWP transactions, apart from a switch, are also possible on the stock exchange. The ease of making the investment and the facility offered is also a reason why the investor might find this an attractive route to invest.

6.3.3 MF Utilities[45]

MF Utilities (MFU) is a transaction aggregating platform that connects investors, RTAs, distributors, banks, AMCs and others. MFU facilitates the distributors with online access to submit investor transactions. This platform provides them with a single point for time-stamping of transactions, document submission, paperless transaction facility, and login facility for their clients.

Investors who register on the MFU are allotted a Common Account Number (CAN) under which all their mutual fund holdings are consolidated. Investors have to be KYC compliant to register for a CAN. If an investor is not already KYC compliant, then the MFU will facilitate KYC registration along with the allotment of 'CAN'.

The MFU offers a Common Transaction Form to transact in multiple schemes across participating mutual funds using a single form. The form can be submitted through a mutual fund distributor or to neutral Points of Service (PoS) and others irrespective of the RTA servicing the mutual fund. MFU offers multiple modes of payments for investment through physical and electronic means. MFU allows a single payment for multiple subscriptions made under a single form. The existing mutual fund holding is mapped to the CAN based on PAN, holding pattern and other parameters. Investors may have multiple CANs based on the combination of holdings and mode of holding. Investors can also request online access through which they can submit transactions, view holdings and lodge and track complaints. The bank and nomination details provided to the MFU at the time of registering for the CAN will override the information provided in the folios.[46]

MFCentral is a unified digital platform developed by India's largest registrars, CAMS and KFintech, under SEBI mandate, to act as a single-window portal for all mutual fund investments. It provides a consolidated view of holdings across different AMCs, enables digital service requests (like updating contact/bank details, nomination), and facilitates financial transactions.

Key Functions of MFCentral

- **Consolidated Portfolio View:** View all mutual fund folios across different AMCs, including

[45]Candidates are advised to read the master circular: https://www.sebi.gov.in/legal/master-circulars/mar-2026/master-circular-for-mutual-funds_100491.html

[46]In order to make it more convenient to the existing and future investors to transact and avail services while invested in Mutual Funds SEBI has decided that the RTAs shall implement standardized practices, system interoperability amongst various stakeholders to jointly develop a common industry wide platform that will deliver an integrated, harmonized, elevated experience to the investors across the industry. AMCs and Depositories are advised to facilitate the RTAs for development of the platform. (The platform is operational since 31st December 2021). Read more at: https://www.sebi.gov.in/legal/circulars/jul-2021/circular-on-rta-inter-operable-platform-for-enhancing-investors-experience-in-mutual-fund-transactions-service-requests_51395.html

both Demat and Non-Demat holdings, in one dashboard.

- **Service Requests:** Allows, via the MFCentral portal, paperless updates for bank mandates, email/mobile numbers, KYC, and nominee details.
- **Financial Transactions:** Perform transactions such as purchasing (lumpsum/SIP), redemption, and switching of mutual fund schemes.
- **Folio Management:** Consolidate multiple folios, update details for minors turning adults, and update FATCA/CRS declarations.
- **Data Access:** Generate Consolidated Account Statements (CAS) and view information on unclaimed dividends or bonuses.
- **Family Portfolio Tracking:** Enables users to consolidate and track investments of family members under one profile.

6.3.4 Computer-based and Mobile-based Apps offered by distributors

Apart from the above platforms and the websites of distributors, the transaction facilities are now available on mobile devices –smartphones, feature phones, and tablet computers. This makes it even more convenient than going to a website. These are through apps that are created by distributors in order to facilitate investments for their clients. These multiple channels make it easier for clients to transact in a simple manner.

6.3.5 Electronic platforms created by the AMCs

Apart from the above, various AMCs have also created their own facilities like web-based and mobile-based applications that facilitate various transactions. Many AMCs also offer transaction facilities through SMS and WhatsApp. When an investor uses these platforms then they are dealing directly with the mutual fund.

6.3.6 New age investment platforms

The Indian investors have also seen the emergence of new-age investment platforms. These are technology-based platforms that allow investors to invest in mutual funds apart from other areas like stocks, bonds etc. One of the key features of these platforms is the simplicity of investment without the hassle of too much paperwork plus its low cost. On many of these platforms, investors can buy direct plans of mutual funds too. These are available through both websites as well as apps so it also becomes simple to interact. Examples of these include Groww, Kuvera, Paytm money, Coin etc.

6.4 Pre-requisites to become Distributor of a Mutual Fund[47]

An Asset Management Company may appoint an individual, bank, non-banking finance company or distribution company as a distributor. SEBI has mandated mutual fund

[47] Candidates may read about, "become a mutual fund distributor' at https://www.amfiindia.com/distributor/mutual-funds-introduction?zoneName=BecomeMFDistributor

distributors, agents or any persons employed or to be employed in the sale and/or distribution of mutual fund products, to have a valid certification from the National Institute of Securities Markets (NISM) by passing NISM Series-V-A: Mutual Fund Distributors Certification Examination.

Any entity engaged in sale and/or distribution of mutual fund products, shall also be eligible to offer products under the SIF, subject to such entity fulfilling additional eligibility criteria as specified by SEBI.

In order to be eligible to sell or market mutual funds, the following are compulsory:

- **Obtaining NISM Certification**
  - The individual needs to pass the NISM certification examination mandated by SEBI.
  - For persons who have attained the age of 50 years or who have at least 10 years of experience in the securities markets in the sale and/ or distribution of mutual fund products as of May 31, 2010, can obtain the certification either by passing the NISM certification examination or qualifying for Continuing Professional Education (CPE) by obtaining such classroom credits as may be specified by NISM from time to time.[48]
- **Know Your Distributor Requirements**

As part of SEBI's drive to streamline the distribution process of mutual fund products, AMFI has introduced the KYD process to verify the correctness of the information provided in the registration documents and to have verification of the ARN holders.[49]

The process consists of document verification and a biometric process.

- ***Self-attested copy*** of the PAN card and specific documents as proof of address to be submitted along with application form at the CAMS-PoS (Computer Age Management Services-Points of Service). The original documents have to be presented for verification.
- ***The biometric process*** consists of taking the impression of the index finger of the right hand of the ARN holder. This is done at the PoS at the time of submission of documents (both for new registrations and for renewal of ARN). In case of non-individual distributors, the biometric process will be conducted on specified authorized persons.
- An acknowledgement confirming the completion of KYD process is received from the CAMS-PoS.
- The existing ARN holders have to send the photocopy of the acknowledgement to all the

[48]SEBI Gazette Notification Ref. No. LAD-NRO/GN/2010-11/09/6422 dated May 31, 2010.

[49]The new cadre of distributors are not required to comply with KYD/bio-metrics requirements. However, they are required to submit self-attested copies of identity proof (photo PAN card of individual applicants/ in case of Proprietary concern, PAN card of the Proprietary Concern (if available) or Photo PAN Card of the Proprietor) and address proof, as mentioned in KYD application form.

AMCs with whom they are empaneled.

- **Obtaining AMFI Registration Number**

After obtaining the certification and completing KYD requirements, the next stage is to register with AMFI. On registration, AMFI allots an AMFI Registration Number (ARN). Individuals from the exempted category (i.e., who have attained the age of 50 years or have at least 10 years of experience as of May 31, 2010) can obtain the ARN without passing the certifying examination, provided they have attended the prescribed CPE program. Minimum age for obtaining ARN is 18 years.

- **Empanelment with AMCs**

Armed with the ARN No., the distributor/stock exchange broker can get empaneled with any number of AMCs. Alternatively, they can become agents of a distributor who is already empaneled with AMCs. Empanelment with the AMC or enrolment as an agent of an empaneled distributor is compulsory to be able to sell mutual fund schemes and earn the commissions.

Institutions that are into the distribution of mutual funds need to register with AMFI. The employees of these institutions need to clear the NISM Series V-A: Mutual Fund Distributors Certification Examination and obtain an Employee Unique Identification Number (EUIN) from AMFI. The Intermediaries have to ensure that the employees quote the EUIN in the Application Form for their client's investments. There is no separate ARN required for these employees since they operate under the ARN of the institution that they are working for.

6.4.1 Procedure for getting empaneled as a mutual fund distributor with AMC

Empanelment with an AMC is a simple process. There is a Request for Empanelment Form to be filled in. This provides for basic details, such as:

- Personal information of applicant–Name of person, Age, Trade Name, Contact Information, ARN, PAN, Income tax category (such as Resident Individual, Company, Non-Resident Indian, Foreign Company).
- Names and contact information of key people handling sales and operations.
- Business details, such as office area, number of branches, number of employees, geographical area covered, years of experience, number of investors, number of agents, fund houses already empaneled in, size of AUM etc.
- Bank details and preferences regarding Direct Credit of brokerage in the bank account.
- Preferences regarding receiving information from the AMC.
- Nominee

- The applicant also needs to sign a declaration, which provides for the following:
    - Correctness and completeness of information provided
    - Commitment to keep all the transactional information confidential
    - Commitment to abide by instructions given, as also statutory codes, guidelines and circulars
    - Not to issue advertisement or publicity material other than that provided by the AMC or pre-approved by the AMC
    - Ensure that the risk factors are mentioned along with performance and other related information
    - Provide all the information and documents that the AMC may ask for from time to time
    - Ensure that all employees who are engaged in selling or marketing of mutual funds have an EUIN.
    - Undertake not to rebate commission back to investors, or attract investors through the temptation of rebate/gifts, pass back of commission etc.
    - Power to the AMC to terminate the empanelment at any time
    - Some AMCs directly empanel only distributors who are likely to generate adequate business – and request others to work under one or the other empaneled distributors.
    - At times, AMCs link the levels of commission to the volumes generated. In such cases, an agent might find it beneficial to work under an established distributor.

While many of the above clauses would be included in the application forms, there is no standard format and each asset management company use their own format for collecting such details, as well as for empanelment of distributors.

AMFI has announced that w.e.f. October 1, 2024 applications for grant of ARN and EUIN shall be accepted only through online mode via AMFI website (www.amfiindia.com). The paper-based process is henceforth discontinued.

6.5 Revenue for a mutual fund distributor

The mutual fund distributor earns revenue in the form of commission income for the distribution of the mutual fund products/schemes in the manner specified by SEBI from time to time. SEBI has withdrawn the benefits of upfront commission and transaction charges for

the MFDs.[50]

Further, AMFI has described the commission structure for MFDs which is as follows:

Mutual fund distributors receive commission on the investments mobilized by them under Regular Plan of MF schemes from the AMCs with whom they are empaneled. The trail commission is typically paid on monthly basis as per the commission structure decided by the respective AMCs as per their business policy.

As per SEBI MF Master Circular issued on 20 March 2026, AMCs shall adopt full trail model of commission in all schemes, without payment of any upfront commission or upfronting of any trail commission, directly or indirectly, in cash or kind, through sponsorships, or any other route.

In other words, incentives in any other form to the distributor which is not in the form of trail commission is not permitted as per above regulatory guideline. In short, MFDs are paid only trail commission and, such trail commission can be paid only in monetary terms.

Further, in order to discourage mis-selling by mutual fund distributors, under Regulation 66(6) of SEBI MF Regulations 2026, SEBI has introduced a provision ‘‘the asset management company shall pay charges or commission or fees related to distribution of mutual fund schemes, and in the manner as may be specified by SEBI from time to time”.

6.5.1 Concept of Trail Commission

Trail commission is calculated as a percentage of the net assets attributable to the Units sold by the distributor. The commission payable is calculated on the daily balances and paid out periodically to the distributor as per the agreement entered into with AMC.

The trail commission is normally paid by the AMC on a quarterly basis or monthly basis. Since it is calculated on net assets, distributors benefit from increase in net assets arising out of valuation gains in the market.

For example, suppose an investor has bought 1000 units at Rs. 10 each. The distributor who procured the investment may have been paid an initial commission calculated as a percentage on 1000 units X Rs. 10 i.e., Rs 10,000.

Later, suppose the NAV of the scheme goes up to Rs.15. Trail commission is payable on 1000 units * Rs 15 i.e., Rs 15,000 – not the Rs 10,000 mobilised. In short, trail commission depends on the NAV.

Further, unlike products like insurance, where agent commission is paid for a limited number

[50] https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html

of years, a mutual fund distributor is paid trail commission for as long as the investor's money is held in the fund.

Such indexing of agent commissions to the current value of the investment, and the absence of a time limitation to earning it, are unique benefits that make it attractive for distributors to sell mutual funds.

Let us take an example here. A distributor mobilised a sum of Rs. 10 lakhs on a particular day when the scheme's NAV was Rs. 10.0000. The total units allotted were 1,00,000.

In this case (Rs. 10,00,000 / Rs. 10.0000). We have assumed a trail commission rate of 1% p.a. in this case. Given below is the table showing calculation of trail commission for the month of July 2019. (All NAVs are randomly generated, and not of any actual scheme).[51]

No. of units allotted = 1,00,000 at NAV of Rs. 10.0000

Trail Commission is 1 percent of Value i.e., Rs.10,00,000 and subsequently as the NAV changes, the value changes.

Table 6.1 Calculation of trail commission for distributors

Date	NAV (A)	Value (B)	Trail commission (B*1%/365)
01-Aug-19	10.0000	10,00,000.00	27.40
02-Aug-19	10.0270	10,02,698.66	27.47
03-Aug-19	10.0270	10,02,698.66	27.47
04-Aug-19	10.0270	10,02,698.66	27.47
05-Aug-19	9.9140	9,91,396.69	27.16
06-Aug-19	9.9888	9,98,879.74	27.37
07-Aug-19	9.9114	9,91,144.38	27.15
08-Aug-19	10.0835	10,08,348.30	27.63
09-Aug-19	10.1522	10,15,224.62	27.81
10-Aug-19	10.1522	10,15,224.62	27.81
11-Aug-19	10.1522	10,15,224.62	27.81
12-Aug-19	10.1522	10,15,224.62	27.81
13-Aug-19	9.9837	9,98,374.86	27.35
14-Aug-19	10.0792	10,07,920.67	27.61
15-Aug-19	10.0792	10,07,920.67	27.61
16-Aug-19	10.0897	10,08,968.80	27.64
17-Aug-19	10.0897	10,08,968.80	27.64
18-Aug-19	10.0897	10,08,968.80	27.64
19-Aug-19	10.1038	10,10,377.83	27.68
20-Aug-19	10.0837	10,08,365.86	27.63

[51]This is taken only for the purpose of the calculation and in no way is any indication of the trail commission payable.

21-Aug-19	10.0114	10,01,135.92	27.43
22-Aug-19	9.8527	9,85,267.02	26.99
23-Aug-19	9.9143	9,91,432.35	27.16
24-Aug-19	9.9143	9,91,432.35	27.16
25-Aug-19	9.9143	9,91,432.35	27.16
26-Aug-19	10.1285	10,12,853.10	27.75
27-Aug-19	10.1683	10,16,828.15	27.86
28-Aug-19	10.1171	10,11,710.96	27.72
29-Aug-19	10.0137	10,01,367.16	27.43
30-Aug-19	10.0849	10,08,494.98	27.63
31-Aug-19	10.0849	10,08,494.98	27.63
Total trail commission for the period:			853.13

In the above example, the trail commission is calculated for each day using the below formula:

Trail commission for the day = AUM X trail commission rate

Since the trail commission rate is mentioned as percent per annum, the same needs to be divided by 365 to arrive at the daily trail commission amount.

Smart distributors have accumulated a portfolio of loyal investors to whom they offer superior service. The trail commission on these investments ensures a steadily rising income for the distributor. Additional investments from the same investors, and other investors referred by the current investors, help them grow the portfolio.

A point to note is that the commission is payable to the distributors to mobilize money from their clients. Hence, no commission is payable to the distributor for their own investments (self-business).

Regulations require distributors to disclose to their investors all commissions in the form of trail commissions or any other form payable to them from similar competing schemes of a different mutual fund from amongst which the particular scheme was recommended to the investor.

6.5.2 Additional commission for promoting mutual funds

With a view to promoting mutual funds, SEBI has allowed mutual funds to charge additional expenses, which can be used for distribution related expenses, including distributor commission[52].

[52]Candidates are advised to read regulation 52(4A) and SEBI Circular dated November 27, 2025 regarding the additional incentives to distributors for onboarding new individual investors from B-30 cities and women investors: https://www.sebi.gov.in/legal/circulars/nov-2025/additional-incentives-to-distributors-for-onboarding-new-individual-investors-from-b-30-cities-and-women-investors_98007.html
Further, read - https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html for details regarding the transaction charges paid to Mutual Fund Distributors.

SEBI has introduced a revised framework for paying additional commission to mutual fund distributors for mobilising investments from new investors. It aims to promote investor inclusion, especially among smaller towns and women investors. [53]

The new investments / inflows eligible for the additional commission are:

a) New individual investors (new PAN) from B-30 cities, at the mutual fund industry level;
b) New women individual investors (new PAN) from both Top 30 and B-30 cities.

SEBI has described the following incentive structure for the distributors:

a) AMCs shall pay additional commission to distributors for onboarding eligible new investors, subject to the conditions specified by SEBI.
b) The structure of such additional commission shall be as under:

Investment Mode	**Commission Structure**
Lump Sum Investment	1% of the amount of the first application subject to a maximum of ₹2,000, provided the investor remains invested for a minimum period of one year
Systematic Investment Plan (SIP)	1% of the total investment made during the first year, subject to a maximum of ₹2,000.

c) The additional distribution commission shall be paid from the 2 basis points on daily net assets, mandated to be set apart annually by AMCs for investor education, awareness and financial inclusion initiatives, subject to adequate claw back provisions.

d) The additional commission specified by SEBI shall be in addition to the existing trail commission paid to the distributor from the scheme.

e) Distributors shall be eligible to receive the additional commission for mobilizing investments from new women investors from Top-30 cities and in cases where the commission for new investment from B-30 cities has not been claimed for the same woman investor/ investment. Dual incentives for the same investor/investment shall not be permitted.

The details of additional expenses are covered in Chapter 7.

[53]Candidates are advised to read regulation 52(4A) and SEBI Circular dated November 27, 2025 regarding the additional incentives to distributors for onboarding new individual investors from B-30 cities and women investors: https://www.sebi.gov.in/legal/circulars/nov-2025/additional-incentives-to-distributors-for-onboarding-new-individual-investors-from-b-30-cities-and-women-investors_98007.html

6.5.3 Transaction Charges

The Asset Management Companies (AMCs) were allowed to pay transaction charges for subscriptions worth more than Rs. 10,000 to the mutual fund distributors. However, as per SEBI's circular issued in August 2025, this transaction charges framework has been withdrawn, thereby removing the following:

- The investor-borne transaction charges,
- The requirement for investors to pay upfront commissions to distributors.

Distributors will be compensated directly by Asset Management Companies (AMCs), in line with SEBI's view that distributors act as agents of AMCs. No charges will be deducted from investor contributions. However, upfronting of trail commission is allowed only in case of inflows through Systematic Investment Plans (SIPs).

6.5.4 Applicability of GST on distributors commission

The Goods and Services Tax (GST) became applicable with effect from July 2017. GST is payable by any person making taxable supplies of goods/services and whose annual turnover exceeds Rs. 20 lakhs. Additionally, on certain goods and services specified by the Government, tax is to be paid by the recipient, under reverse charge instead of the supplier.

A mutual fund distributor, who has registered and obtained a GST number would be required to raise an invoice for the commission, and pay the GST to Government. At the same time, as per Section 9(4) of the CGST Act and Section 5(4) of the IGST Act, the registered recipient is liable to pay tax on procurements from unregistered suppliers under the reverse charge mechanism.

Normally, the supplier of goods and services pays the GST on supply to the Government. The supplier adds this amount to the bill while charging the customer (recipient of goods or services). However, in the reverse charge mechanism, the recipient of the goods and services pays the said tax to the Government.

6.6 Commission Disclosure mandated by SEBI

SEBI has mandated Mutual Funds/AMCs to disclose on their respective websites the total commission and expenses paid to distributors who satisfy one or more of the following conditions with respect to non-institutional (retail and HNI) investors:

- Multiple points of presence (More than 20 locations)
- AUM raised over Rs. 100 crores across the industry in the non-institutional category but including high net worth individuals (HNIs).
- The commission received of over Rs. 1 crore p.a. across industry
- The commission received of over Rs. 50 lakhs from a single Mutual Fund/AMC.

Mutual Funds/AMCs shall also submit the above data to AMFI. AMFI shall disclose the consolidated data in this regard on its website.

In addition to the total commission and expenses paid to distributors, mutual funds / AMCs need to make additional disclosures regarding distributor-wise gross inflows (indicating whether the distributor is an associate or group company of the sponsor(s) of the mutual fund), net inflows, average assets under management and ratio of AUM to gross inflows on their respective website on a yearly basis.

In case the data indicates that a distributor has an excessive portfolio turnover ratio, i.e., more than two times the industry average, AMCs conduct an additional due diligence of such distributors. Mutual Funds/ AMCs are required to submit the above data to AMFI and consolidated data with respect to the same will be disclosed on the AMFI website.

6.7 Due Diligence Process by AMCs for Distributors of Mutual Funds[54]

SEBI has mandated AMCs to put in place a due diligence process to regulate distributors who qualify any one of the following criteria:

a. Multiple point presence (More than 20 locations)
b. AUM raised over Rs. 100 crores across the industry in the non-institutional category but including high net worth individuals (HNIs)
c. The commission received of over Rs. 1 Crore p.a. across industry
d. The commission received of over Rs. 50 Lakhs from a single mutual fund

At the time of empaneling distributors and during the period i.e., review process, mutual funds/AMCs have to undertake a due diligence process to satisfy 'fit and proper' criteria that incorporate, amongst others, the following factors:

a. Business model, experience and proficiency in the business.
b. Record of regulatory/statutory levies, fines and penalties, legal suits, customer compensations made; causes for these and resultant corrective actions taken.
c. Review of associates and subsidiaries on the above factors.
d. Organizational controls to ensure that the following processes are delinked from sales and relationship management processes and personnel:

- Customer risk/investment objective evaluation.
- MF scheme evaluation and defining its appropriateness to various customer risk categories.

6.8 Difference between distributors and Investment Advisors

An investment advisor means any person, who for consideration, is engaged in the business

[54]Refer SEBI Circular No. CIR/IMD/DF/13/2011 dated August 22, 2011.

of providing investment advice to clients or other persons or group of persons and includes any person who holds out himself as an investment adviser, by whatever name called; It excludes any distributor of mutual funds who is registered with an association of asset management companies of mutual funds, providing any investment advice to its clients incidental to its primary activity.

This definition makes it clear that any person who holds out as an investment advisor would be covered. So, a distributor cannot call themselves an investment advisor. Further, an investment advisor cannot earn both from advisory as well as distribution commission so this needs to be known as both the activities need to be separated.

6.8.1 Advisory

This refers to a service where a distributor represents to offer advice while distributing the product, it will be subject to the principle of 'appropriateness' of products to that customer category. Appropriateness is defined as selling only that product that is identified as best suited for investors within a defined upper ceiling of risk appetite. No exception shall be made. (See Box 6.8.3: Do mutual funds advise their clients?)

6.8.2 Execution only

a. In case of transactions that are not booked as 'advisory', it shall still require:

   - If the distributor has information to believe that the transaction is not appropriate for the customer, a written communication be made to the investor regarding the unsuitability of the product. The communication shall have to be duly acknowledged and accepted by investor.

   - Obtain a customer confirmation to the effect that the transaction is 'execution only' notwithstanding the advice of inappropriateness from that distributor prior to the execution of the transaction.

   - That on all such 'execution only' transactions, the customer is not required to pay the distributor anything other than the standard flat transaction charges[55].

b. There shall be no third categorization of customer relationship / transaction.

c. While selling mutual fund products of the distributors' group/associates, the distributor shall make disclosure to the customer regarding the conflict of interest arising from the distributor selling such products.

Compliance and risk management functions of the distributor shall include a review of defined

[55] SEBI has recently withdrawn the benefit of transaction charges: https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html

management processes for:

i. The criteria to be used in review of products and the periodicity of such review.
ii. The factors to be included in determining the risk appetite of the customer and the investment categorization and periodicity of such review.

Other kinds of due diligence performed are:

i. Review of transactions, exceptions identification, escalation and resolution process by internal audit.
ii. Recruitment, training, certification and performance review of all personnel engaged in this business.
iii. Customer on-boarding and relationship management process, servicing standards, enquiry / grievance handling mechanism.
iv. Internal/external audit processes, their comments/observations as it relates to MF distribution business.
v. Findings of ongoing review from a sample survey of investors.

Mutual funds/AMCs may implement additional measures as deemed appropriate to help achieve greater investor protection. At this stage, it is important to note here that the advice offered by mutual fund distributors is incidental to the business of fund distribution, and hence the distributors cannot project themselves as investment advisors or financial planners.[56]

[56]Please refer to the AMFI guidance on MFD: https://www.amfiindia.com/distributor-corner/importantinformation_distributors

6.8.3 Do mutual fund distributors advise their clients? (See Box 6.8.3)

Box. 6.8.3 Do mutual fund distributors advise their clients

SEBI Investor Adviser Regulations, 2013 exempt distributors of mutual funds from registration as investment advisers, so long as the distributor is providing any investment advice to one's clients incidental to the primary activity of distribution of funds.

At the same time, the due diligence process mentioned above also defines the customer relationships or transactions only in two ways, viz. advisory, or execution only. In both cases, however, the common thing for the mutual fund distributor is to see whether the product is suitable for the client or not. No third categorization of customer relationships or transactions is allowed. The distributor must perform an analysis of suitability.

Ensuring suitability is also a part of the SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to securities market) 2003. This amendment to the regulation included mis-selling in units of a mutual fund scheme within the ambit of the mis-selling regulation. The regulation defines mis-selling in units of mutual fund schemes as any of the below:

1. Making a false or misleading statement, or
2. Concealing or omitting material facts of the scheme, or
3. Concealing the associated risk factors of the scheme, or
4. Not taking reasonable care to ensure the suitability of the scheme to the buyer.

A look at the above provisions would help one understand the role of a mutual fund distributor. If a mutual fund distributor does not take care of the above, one would be considered to be involved in mis- selling activities.

6.9 Nomination facilities to Agents/Distributors and Payment of Commission to Nominee

The livelihood of a large number of mutual fund distributors (self-employed individuals) depends on the commission income, primarily the trail commission. The mutual fund distributor builds his long-term source of income by bringing-in business. In case of the death of a mutual fund distributor (MFD), there would be a loss of income for his/her family. Therefore, to provide protection against loss of income to the mutual fund distributor's family, AMFI has advised its members (AMCs) to offer nomination facility to the AMFI registered mutual fund distributors, as a uniform practice across the industry to enable the nominee to receive a commission. Therefore, the AMCs provide nomination facility to the mutual fund distributors at the time of empanelment.

Accordingly, commissions are paid to the nominees or legal heirs (where no nominee is registered) of the deceased MFDs. The AMCs may require the legal heirs to produce necessary

documents evidencing legal heirship/succession where nomination is not registered. Such commission shall be payable until such time the ARN code of the deceased agent/distributor is not changed by the investor. However, no new business is permitted under the ARN code of the deceased MFD. In addition, no new systematic transactions or changes to existing systematic transactions can be registered under the ARN code of the deceased MF.

However, the distributors are encouraged to provide nominations to reduce the unnecessary hurdles, which the legal heirs of a deceased distributor may face in obtaining legal heir certificate/succession certificate etc. Wherever the nominees are registered, the payment of commission can be made to the registered nominees, without the requirement of legal heir certificate, succession certificate etc. on submission of necessary documents such as death certificate.

- A nominee/legal heir need not be an ARN holder to claim and receive the commission.
- Commission can be paid to the nominee/legal heir only for those assets, which were procured by the deceased MFD during the validity of his ARN prior to his/her demise. ARN of the deceased agent/distributor should be valid on the date of demise of ARN holder and commission payment/ ARN should not have been suspended by AMFI, for whatsoever reason, at the time of the demise of ARN holder. The future expiry of the ARN of the deceased agent/distributor post his demise is not taken into account for continued payment of upfront (only for SIPs) and trail commission to the nominee/legal heir. Commission can be paid to the nominee until AUM under the ARN of the deceased ARN holder becomes nil[57].
- The nominee shall receive the commissions only as trustee for the legal heirs of the deceased MFD.
- Nominees or legal heirs are not allowed to transfer the assets to his/her account unless a specific request is received from the investors in this regard. In case a specific request is received from the investor, the assets can be transferred provided the nominee or legal heir is a valid ARN Holder.

Nominee/legal heir of the ARN holder are required to intimate AMFI about demise of ARN holder along with a true copy of death certificate duly attested by Gazette Officer. On receipt of such intimation, AMFI will intimate all AMCs about the demise of the ARN holder. However, this is not applicable for Overseas Distributors.

For being eligible for transfer of AUM of the deceased mutual fund distributor -

(a) ARN of the deceased agent / distributor should have been valid on the date of demise of

[57]As per the prevailing regulatory guidelines, distributors are eligible only for Trail commission, the upfront commission or transaction charges have been discontinued: https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html

the distributor and his/her commission payment/ ARN should not have been suspended for any reason whatsoever, at the time of his/her demise.

(b) The Nominee/ legal heir should have a valid ARN as on the date of request for transfer of AUM and should be KYD compliant. and should have submitted his/her annual declaration(s) of self-certification (where applicable) due as on the date of request for transfer of AUM. Also, his/her ARN should not have been suspended by AMFI for any reason whatsoever. The nominee or legal heir must inform all clients via letter or email about the proposed change in the ARN code. Investors have 15 days from the date of this communication to raise any objections directly with the respective Asset Management Company (AMC).

Only those assets, which were procured by the deceased Agent / Distributor prior to his/her, demise and during the validity of his/her ARN, can be transferred to the ARN of the nominee/ legal heir.

6.10 Change of distributor

While the trail commission is payable to the distributor for mobilisation of money from the investors, the other purpose of the same is also to ensure that the investor continues to receive regular updates and various services from the distributor. The distributor also keeps getting compensation for such efforts. However, the mutual fund industry allows the investor to change the distributor, without specifying any reason.

In order to remove any possibility of any wrongdoing, e.g., inducing or forcing the investor to request a change of distributor code in the folio, the industry has taken a decision. In case of a change of distributor code in a folio, no commission would be payable to any distributor, neither the old one nor the new one.

In respect of change of distributor / ARN code initiated by the investor, the AMCs may consider making payment of trail commission to the transferee distributor after a cooling off period of twelve (12) months from the date of change of distributor code in the Unitholder database.[58]

Investors can choose to change their distributor or go direct. This needs to be done through a written request by the investor. In such cases, AMCs will need to comply, without insisting on any kind of 'No Objection Certificate' from the existing distributor. In such a case, the commission would not be payable to either of the distributors– the old or the new. Such provisions ensure two things simultaneously. While the investor reserves the right to change the distributor, a distributor is discouraged to lure a client to change the code. At the same time, if a distributor has opted for voluntary cessation of business, the investor should not be left in the lurch. Hence, if the change of distributor code is initiated by the investor on account of voluntary cessation of business by the distributor, the new distributor would get the trail

[58] https://www.amfiindia.com/uploads/AMFI_Master_Cicular_for_MF_Ds_3c7f5ee44f.pdf

commission as per the guidelines specified by SEBI/AMFI from time to time.

A distributor can initiate a change in the distributor code in the folios of one's clients on account of any of the following:

i. Change in the name/legal status of the distributor (such as an individual MF distributor converting his MF distribution business to a partnership firm, a partnership firm converting itself into Limited Liability Partnership (LLP), a private limited company converting itself into a public limited company or vice versa;
ii. Merger/acquisition/consolidation/transfer of business/new code acquired within the same group in case of non-individual distributors;
iii. Transfer of AUM consolidation initiative within the same family/close relatives in case of individual distributors; and
iv. Transfer of business by individual distributors

In no other circumstances, such a change would be allowed.

At the same time, the transfer of AUM can happen only if the entire AUM is getting transferred from the existing distributor, and only in the name of a valid ARN holder, who is KYD compliant. The old ARN has to be surrendered and no further business can be done under that ARN, once the AUM transfer is complete. AMFI has prescribed a detailed procedure for effecting such a change.

Chapter 6: Sample questions

1. **Only individuals are allowed to distribute mutual funds in India. State whether True or False.**
    a. True
    b. False

2. **Mutual Fund Distributors Certification Examination offered by ___ is required for becoming a mutual fund distributor.**

    a. Securities and Exchange Board of India
    b. National Institute of Securities Markets
    c. Association of Mutual Funds in India
    d. National Skills Development Corporation

3. **Mutual fund distributors earn no commission when the investor chooses to invest in "direct" plans. State whether True or False.**

    a. True
    b. False

CHAPTER 7: NET ASSET VALUE, TOTAL EXPENSE RATIO AND PRICING OF UNITS

Learning Objectives:

After studying this chapter, you should learn about:

- Fair Valuation Principles and relevance for investors
- Computation of Net Assets of mutual fund scheme
- Dividends & Distributable Reserves
- Concept of Entry and Exit Load and its impact on NAV
- Key accounting and reporting requirements applicable to mutual funds
- NAV, Total expense ratio and pricing of units for the Segregated Portfolio

7.1 Fair Valuation Principles

An investor in a mutual fund scheme is the beneficial owner of the units one has bought. Expand this further, and it means that the ownership of the mutual fund scheme is collectively in the hands of all the investors at any point in time. At the same time, the investors can sell their units and new investors can buy. Thus, periodically, the ownership could also change. In such a case, it becomes very important that any investor in the scheme gets a fair price for one's investments.

In order to ensure such fair treatment to all investors, SEBI has laid down certain fair valuation principles.

The asset management companies are required to compute and carry out a valuation of investments made by its scheme(s) in accordance with the investment valuation norms specified in the Seventh Schedule of SEBI (Mutual Funds) Regulation 2026. The primary objective behind the introduction of these principles was to ensure fair treatment to all investors including existing investors as well as investors seeking to purchase or redeem units of mutual funds in all schemes at all points of time. At the same time, the valuation principles also address the mispricing risk and reduce the vulnerability of short-term debt-oriented schemes to redemption pressure.

The 10 principles as laid out by SEBI are as under:

Principle No.1:

The valuation of investments shall be based on the principles of fair valuation i.e., valuation shall be reflective of the realizable value of the securities/assets. The valuation shall be done in good faith and in true and fair manner through appropriate valuation policies and procedures.

Principle No.2:

The policies and procedures approved by the Board of the Asset Management Company shall identify the methodologies that will be used for valuing each type of securities/assets held by the mutual fund schemes. Investment in new type of securities/assets by the mutual fund scheme shall be made only after establishment of the valuation methodologies for such securities with the approval of the Board of the asset management company.

Principle No.3:

The assets held by the mutual funds shall be consistently valued according to the policies and procedures. The policies and procedures shall describe the process to deal with exceptional events where market quotations are no longer reliable for a particular security.

Principle No.4:

The asset management company shall provide for the periodic review of the valuation policies and procedures to ensure the appropriateness and accuracy of the methodologies used and its effective implementation in valuing the securities/assets. The Board of Trustee and the Board of asset management company shall be updated of these developments at appropriate intervals. The valuation policies and procedures shall be regularly reviewed (at least once in a Financial Year) by an independent auditor to seek to ensure their continued appropriateness.

Principle No.5:

The valuation policies and procedures approved by the Board of asset management company should seek to address conflict of interest.

Principle No.6:

Disclosure of the valuation policy and procedures (with regard to valuation of each category of securities/assets where the scheme will invest, situation where these methods will be used, process and methodology and impact of implementation of these methods, if any) approved by the Board of the asset management company shall be made in Statement of Additional Information, on the website of the asset management company/mutual fund and at any other place where the Board may specify to ensure transparency of valuation norms to be adopted by asset management company.

Principle No.7:

The responsibility of true and fairness of valuation and correct NAV shall be of the asset management company, irrespective of disclosure of the approved valuation policies and procedures i.e., if the established policies and procedures of valuation do not result in fair/ appropriate valuation, the asset management company shall deviate from the established

policies and procedures in order to value the assets/ securities at fair value provided that:

any deviation from the disclosed valuation policy and procedures may be allowed with appropriate reporting to Board of Trustees and the Board of the asset management company and appropriate disclosures to investors.

Principle No.8:

The asset management company shall have policies and procedures to detect and prevent incorrect valuation.

Principle No.9:

Documentation of rationale for valuation including inter scheme transfers shall be maintained and preserved by the asset management company as per Seventh Schedule of SEBI (Mutual Fund) Regulations, 2026 to enable audit trail.

Principle No.10:

In order to have fairness in the valuation of debt and money market securities, the asset management company shall take into consideration prices of trades of same security or similar security reported at all available public platform.

In addition to the above, a mutual fund may value its investments according to the Valuation Guidelines notified by SEBI. In case of any conflict between the Principles of Fair Valuation and Valuation Guidelines, the Principles of Fair Valuation detailed above shall prevail.

Valuation

A mutual fund scheme invests the investors' money in a portfolio of securities created and managed based on the investment objective and strategy of the scheme. The investments include securities, money market instruments, privately placed debentures, securitised debt instruments, gold/silver and gold/silver related instruments, real estate assets and infrastructure debt instruments and assets. The NAV of the scheme will depend upon the value of this portfolio, which in turn, depends upon the value of the securities held in it. The valuation of these securities to determine the net asset value has to be done in accordance with the valuation guidelines laid down by SEBI and AMFI. This includes the following guidelines:

1. Traded Securities other than money market and debt securities:

    a. The securities shall be valued at the last quoted closing price on the stock exchange.

    b. When the securities are traded on more than one recognised stock exchange, the securities shall be valued at the last quoted closing price on the stock exchange where the security is principally traded. It would be left to the asset management

company to select the appropriate stock exchange, but the reasons for the selection should be recorded in writing. There should, however, be no objection for all scrips being valued at the prices quoted on the stock exchange where a majority in value of the investments are principally traded.

c. Once a stock exchange has been selected for valuation of a particular security, the asset management company shall record reasons for the change of the exchange in writing.

d. When on a particular valuation day, security has not been traded on the selected stock exchange, the value at which it is traded on another stock exchange may be used.

e. When a security is not traded on any stock exchange on a particular valuation day, the value at which it was traded on the selected stock exchange or any other stock exchange, as the case may be, on the earliest previous day may be used provided such date is not more than thirty days prior to the valuation date.

2. Non-traded securities other than money market and debt securities:

a. When a security is not traded on any stock exchange for a period of thirty days prior to the valuation date, the scrip must be treated as a 'non-traded' scrip.

b. Non-traded securities shall be valued "in-good faith" by the asset management company on the basis of appropriate valuation methods based on the principles approved by the Board of the asset management company. Such decision of the Board must be documented in the Board minutes and the supporting data in respect of each security so valued must be preserved. The methods used to arrive at values "in-good faith" shall be periodically reviewed by the trustees and reported upon by the auditors as "fair and reasonable" in their report on the annual accounts of the fund. For the purpose of valuation of non-traded securities[59], the following principles should be adopted: —

i. equity instruments shall generally be valued on the basis of capitalization of earnings solely or in combination with the net asset value, using for the purposes of capitalization, the price or earnings ratios of comparable traded securities and with an appropriate discount for lower liquidity;

ii. in respect of convertible debentures and bonds, the non-convertible and convertible components shall be valued separately. The non-convertible component should be valued on the same basis as would be applicable to a debt instrument. The convertible component should be valued on the same basis as

[59] SEBI (Mutual Fund) Regulations (2026), in the case of real estate mutual funds schemes, investments in unlisted equity shares shall be valued as per the norms specified by the Board in this regard.

would be applicable to an equity instrument. If, after conversion, the resultant equity instrument would be traded Pari passu with an existing instrument which is traded, the value of the latter instrument can be adopted after an appropriate discount of the non- tradability of the instrument during the period preceding the conversion while valuing such instruments, the fact whether the conversion is optional should also be factored in;

iii. in respect of warrants to subscribe for shares attached to instruments, the warrants can be valued at the value of the share which would be obtained on the exercise of the warrant as reduced by the amount which would be payable on exercise of the warrant. A discount similar to the discount to be determined in respect of convertible debentures [as referred to above] must be deducted to account for the period which must elapse before the warrant can be exercised;

3. Value of Gold: the gold held by a gold exchange traded fund scheme shall be valued at the AM fixing price of London Bullion Market Association (LBMA) in US dollars per troy ounce for gold having a fineness of 995.0 parts per thousand, subject to the conditions mentioned in valuation guidelines issued by SEBI in SEBI (MF Regulations), 2026.

4. Value of Silver: The silver held by a silver exchange traded fund scheme shall be valued at the AM fixing price of London Bullion Market Association (LBMA) in US dollars per troy ounce for silver having a fineness of 999.0 parts per thousand subjects to the conditions mentioned in valuation guidelines issued by SEBI in SEBI (MF Regulations), 2026.

7.2 Computation of Net Assets of Mutual Fund Scheme and NAV

7.2.1 Net Assets of Scheme

Let us understand the concept with a simple example.

Investors have bought 20 crore units of a mutual fund scheme at Rs. 10 each. The scheme has thus mobilized 20 crore units X Rs. 10 per unit i.e., Rs 200 crore.

An amount of Rs. 140 crores, invested in equities, has appreciated by 10 percent.

The balance amount of Rs 60 crore, mobilized from investors, was placed in bank deposits and money market instruments.

Interest and dividend received by the scheme is Rs 8 crore, scheme expenses paid is Rs 4 crore, while a further expense of Rs 1 crore is payable.

If the above details are to be captured in a listing of assets and liabilities of the scheme, it would read as follows:

Particulars	Amount (Rs. crore)
Liabilities	
Unit Capital (20 crore units of Rs 10 each)	200
Profits {Rs 8 crore (interest and dividend received) minus Rs 4 crore (expenses paid) minus Rs 1 crore (expenses payable)}	3
Capital Appreciation on Investments held (10 percent of Rs 140 crore)	14
Unit-holders' Funds in the Scheme	**217**
Expenses payable	1
Scheme Liabilities	**218**
Assets	
Market value of Investments (Rs 140 crore + 10 percent)	154
Bank Deposits and money market instruments {Rs 60 crore (original) plus Rs 8 crore (interest and dividend received) minus Rs 4 crore (expenses paid)}	64
Scheme Assets	**218**

The unitholders' funds in the scheme are commonly referred to as "net assets". The assets of the scheme are the investments held by it. This along with the accrued income that includes dividend or interest due on securities held in the portfolio but not yet received, and receivables, such as the amount due on shares sold, constitute the total assets. The scheme may have some short-term liabilities and accrued expenses. The current liabilities include payables for securities bought and borrowings for a period not exceeding six months to meet liquidity needs.

As is evident from the table:

- Net assets include the amount originally invested, the profits booked in the scheme, as well as the appreciation in the investment portfolio.
- Net assets increase when the market prices of securities held in the portfolio increase, even if the investments have not been sold and profits realized.
- A scheme cannot show better profits by delaying payments. While calculating profits, all the expenses that relate to a period need to be considered, irrespective of whether or not the expense has been paid. In accounting language, this is called the accrual principle.
- Similarly, any income that relates to the period will boost profits, irrespective of whether or not it has been actually received in the bank account. This again is in line with the accrual principle.

7.2.2 Net Asset Value

In the market, when people talk of NAV, they refer to the value of each unit of the scheme. This is equivalent to:

Unit-holders' Funds in the Scheme (Net Assets) ÷ No. of outstanding Units

In the above example, it can be calculated as:

Rs 217 crore ÷ 20

crore i.e., Rs 10.85 per

unit.

An alternate formula for calculating NAV is:

(Total Assets minus Liabilities other than to Unitholders) ÷ No. of outstanding Units

i.e., (Rs 218 crore – Rs 1 crore) ÷ 20 crore

i.e., Rs 10.85 per unit.

From the above, it follows that:

a. Higher the interest, dividend and capital gains earned by the scheme, higher would be the NAV.
b. Higher the appreciation in the investment portfolio, higher would be the NAV.
c. Lower the expenses, higher would be the NAV.

The summation of these three parameters gave us the *profitability metric* as being equal to:

(A)+ Interest income
(B) + Dividend income
(C) + Realized capital gains
(D) + Valuation gains
(E) – Realized capital losses
(F) – Valuation losses
(G) – Scheme expenses

Example 1: Calculate the NAV given the following information:

- Value of stocks: Rs. 150 crores
- Value of bonds: Rs. 67 crores
- Value of money market instruments: Rs. 2.36 crore
- Dividend accrued but not received: Rs. 1.09 crore
- Interest accrued but not received: Rs. 2.68 crore
- Fees payable: Rs. 0.36 crore
- No. of outstanding units: 1.90 crore

NAV = (Value of stocks + Value of bonds + Value of money market instruments + Dividend accrued but not received + Interest accrued but not received – Fees payable) / No. of outstanding units

NAV = (150 + 67 + 2.36 + 1.09 + 2.68 – 0.36) / 1.90 = 222.77 / 1.90 = Rs. 117.25

Example 2: Calculate the NAV given the following information:

- Value of stocks: Rs. 230 crores
- Value of money market instruments: Rs. 5 crores
- Dividend accrued but not received: Rs. 2.39 crore
- Amount payable on purchase of shares: Rs. 7.5 crore
- Amount receivable on sale of shares: Rs. 2.34 crore
- Fees payable: Rs. 0.41 crore
- No. of outstanding units: 2.65 crore

NAV = (Current value of investments held + Income accrued + Current assets – Current liabilities – Accrued expenses) / No. of outstanding units

Income accrued is the dividend declared but not received. Expenses accrued include fees payable.

The NAV is calculated as:

NAV = (230 + 5 + 2.39 + 2.34 – 7.5 – 0.41) / 2.65 = 231.82 / 2.65 = Rs. 87.48

7.2.3 Mark to Market

The process of valuing each security in the investment portfolio of the scheme at its current market value is called '*mark to market*' i.e., marking the securities to their market value. Why is this done?

The NAV is meant to reflect the true worth of each unit of the scheme because investors buy or sell units on the basis of the information contained in the NAV. If investments are not marked to market, then the investment portfolio will end up being valued at the cost at which each security was bought. Valuing shares of a company at their acquisition cost, say Rs.15, is meaningless if those shares have appreciated to, say Rs. 50. If the scheme were to sell the shares at the time, it would recover Rs. 50 and not Rs. 15. When the NAV captures the movement of the share from Rs.15 to Rs. 50, then it is meaningful for the investors.

What happens if the portfolio was not marked to market and investors are issued units post the NFO also at the face value of the unit?

Consider the following example:

Unit Capital	Rs. 1,00,000
Face Value per unit	Rs. 10
No. of units issued (Unit Capital / Face Value per unit)	10,000 units (Rs. 1,00,000/ Rs. 10 per unit)
Net Asset of the scheme	Rs. 1,50,000

Net Asset Value (Net Asset of the scheme/ No. of units issued)	Rs. 15 (Rs. 1,50,000/ 10,000)

CASE 1

Assume an investor buys 100 units when the NAV is Rs. 15 and the units are issued to him at the face value of Rs. 10. Post the purchase, the schemes numbers will be as follows:

Particulars	**Value**	**Calculation**
Unit Capital	Rs. 101000	Rs. {100000 + (100 * 10)}
No. of outstanding units	10100 units	(10000 + 100) units **OR** (Rs. 101000 / Rs. 10 per unit)
Net Assets	Rs. 151000	Rs. {150000 + (100 * 10)}
Net Asset Value (NAV)	**Rs. 14.95**	Rs. (151000 / 10100)

CASE 2

Assume an investor redeems 100 units when the NAV is Rs. 15 and the units are redeemed at the face value of Rs. 10. Post the redemption the schemes numbers will look as follows:

Particulars	**Value**	**Calculation**
Unit Capital	Rs. 99000	Rs. {100000 – (100 * 10)}
No. of outstanding units	9900 units	(10000 – 100) units **OR** (Rs. 99000 / Rs. 10 per unit)
Net Asset	Rs. 149000	Rs. {150000 – (100 * 10)}
Net Asset Value	**Rs. 15.05**	Rs. (149000 / 9900)

Issuing fresh units at a price lower than the NAV will result in the post issue NAV coming down for all investors (Case 1). Redeeming units at price lower than the NAV will increase the NAV for the remaining investors (Case 2).

Thus, marking to market helps investors buy and sell units of a scheme at fair prices, which are determined based on transparently calculated and freely shared information on NAV. Such mark-to-market based NAV also helps in assessing the performance of the scheme/fund manager.

7.2.4 Total Expenses in Mutual Fund Scheme

Types of Expenses

All types of expenses incurred by the Asset Management Company have to be clearly identified and appropriated for all mutual fund schemes.

All expenses of mutual fund schemes should be clearly identified and shall be paid from the scheme. The expenses shall be subject to the base expense limits, brokerage limits, transaction cost and statutory levy permissible under these regulations.

Any expenditure in excess of the base limits specified in these regulations shall be borne by the asset management company or the trustees or sponsors.

Investment and Advisory Fees are charged to the scheme by the AMC. The details of such fees are fully disclosed in the Scheme Information Document.

The asset management company shall pay charges or commission or fees related to distribution of mutual fund schemes in the manner as may be specified by SEBI from time to time.

Recurring Expenses[60]

1. In addition to the investment and advisory fee, the AMC may charge the mutual fund scheme with recurring expenses including:

   (a) marketing and selling expenses including fees, commission and charges towards distribution of mutual fund schemes, if any;

   (b) brokerage cost incurred towards execution of trades;

   (c) registrar services for transfer of units sold or redeemed;

   (d) fees and expenses of trustees;

   (e) audit fees;

   (f) custodian fees;

   (g) costs related to investor communication;

   (h) costs of fund transfer from location to location;

   (i) costs of providing account statements and Income Distribution cum Capital Withdrawal payout/redemption cheques and warrants;

   (j) insurance premium paid by the fund;

   (k) winding up costs for terminating a scheme;

   (l) costs of statutory advertisements;

   (m) expenses towards storage and handling of underlying goods due to physical settlement of any commodity derivative contract or cost towards storage and handling of gold and silver;

   (n) listing fees, in case of schemes listed on a recognised stock exchange; and
   (o) such other expenses as may be specified or approved by the Board.

[60] Candidates are advised to read Master Circular and MF Regulation 2026 for further information.

2. In case of a scheme other than an index fund scheme or an exchange traded fund, where, as per the scheme information document, the scheme will invest a minimum of sixty-five per cent of its net assets in equity and equity related instruments, the scheme will be considered as equity-oriented scheme for the purpose of limits of total expense ratio as specified in the SEBI Mutual Fund Regulations,2026.

3. The total expense ratio of the scheme excluding issue or redemption expenses, whether initially borne by the mutual fund or by the asset management company, but including the investment management and advisory fee shall be subject to the following limits:

   (a) in case of fund of funds scheme

   - Investing in liquid schemes, index fund scheme and exchange traded funds; the total expense ratio of the scheme including weighted average of the total expense ratio levied by the underlying scheme(s) shall not exceed 0.90 per cent of the daily net assets of the scheme.

   - Investing a minimum of sixty-five per cent of assets under management in equity-oriented schemes as per scheme information document, the total expense ratio of the scheme including weighted average of the total expense ratio levied by the underlying scheme(s) shall not exceed 2.10 percent of the daily net assets of the scheme.

   - Investing in schemes other than as specified above, the total expense ratio of the scheme including weighted average of the total expense ratio levied by the underlying scheme(s) should not exceed 1.85 per cent of the daily net assets of the scheme.

   If the total expense ratio to be charged over and above the weighted average of the total expense ratio of the underlying scheme shall not exceed two times the weighted average of the total expense ratio levied by the underlying scheme(s), subject to the overall ceilings as stated above.

   (b) In case of an index fund scheme or exchange traded fund, the total expense ratio of the scheme including the investment and advisory fees shall not exceed 0.90 per cent of the daily net assets.

   (c) In case of open-ended schemes other than as specified for fund-of-fund and index fund schemes, the total expense ratio of the scheme shall not exceed the following limits:

Assets under Management Slab (Rs. Crore)	Total Expense Ratio limits for Equity oriented schemes (In percent)	Total Expense Ratio limits for other than equity-oriented schemes (In percent)
On the first Rs. 500 crores of the daily net assets	2.10	1.85
On the next Rs 250 crore of the daily net assets	1.90	1.65
On the next Rs 1,250 crore of the daily net assets	1.60	1.40
On the next Rs 3,000 crore of the daily net assets	1.50	1.25
On the next Rs 5,000 crore of the daily net assets	1.40	1.15
On the next Rs.40,000 crores of the daily net assets	Total expense ratio reduction of 0.05 percent for every increase of Rs.5,000 crores of daily net assets or part thereof.	
On the balance of assets	0.95	0.70

(d) in case of close ended and interval schemes,

(i) The total expense ratio of equity-oriented scheme(s) shall not exceed 1.00 per cent of the daily net assets of the scheme.

(ii) The total expense ratio of close ended and interval scheme(s) other than schemes specified in clause d (i) above shall not exceed 0.80 per cent of the daily net assets of the scheme.

In addition to the above-mentioned limits, the following expenses may be charged to the scheme:

i. **Brokerage and transaction cost** which are incurred for the purpose of execution of trade up to 0.06 percent of trade value in case of cash market transactions and 0.02 percent of trade value in case of derivatives transactions.

ii. The total of all expenses charged to the investors of the scheme, as mentioned under definition of 'Total expense ratio', shall be total of expense charged within the base limit specified, brokerage cost, transaction cost incurred for the purpose of execution of trade and statutory levies charged to the investors.

iii. No charges other than the base expense ratio, brokerage cost, transaction cost, statutory levy and exit load including levies as may be specified by the Board, shall be charged to the investors.

iv. Further, in order to encourage mutual fund distributors to expand their outreach and create awareness among new investors, the MFDs are eligible for additional commission in the manner as specified by SEBI from time to time.[61]

AMCs need to prominently disclose on a daily basis, the TER (scheme wise, date wise) of all schemes under a separate head – "Total Expense Ratio of Mutual Fund Schemes" on their website and on the website of AMFI in downloadable spreadsheet format.

7.2.5 Valuation of perpetual bonds

Mutual funds invest in different types of debt instruments. Some of them have features that are subordinate to equity that means that they absorb losses before equity. Many others are convertible to equity if a specific event is triggered and there has to for absorption of losses. Additional Tier 1 and Tier 2 bonds that are issued by banks and are perpetual in nature, fall under this category. These are also popularly known as AT 1 or Tier 2 bonds. SEBI has imposed limits on the exposure that a fund can take to these bonds.

No mutual fund shall own more than 10% of such types of bonds issued by a single issuer. In addition, a mutual fund scheme shall not invest more than 10% of its assets into such instruments. The scheme should also not invest more than 5% of its assets in such instruments of a single investor. These limits have to be within the overall limits of an issuer that are specified in the prudential guidelines issued by SEBI.

The investments of mutual funds schemes that are already in excess of this limit would be grandfathered and there would not be any further investment permitted into such instruments. In addition, the valuation of such bonds has also been prescribed by SEBI.

Time Period	**Deemed residual maturity of AT 1 bonds (years)**	**Deemed residual maturity of AT 2 bonds**
Till March 31, 2022	10	10 years or contractual maturity whichever is earlier
April 1, 2022 to September 30, 2022	20	Contractual maturity
October 1, 2022 to March31, 2023	30	Contractual maturity
April 1, 2023 onwards	100*	Contractual maturity

*100 years from the date of issuance of the bond.

[61]Candidates are advised to read regulation 52(4A) and SEBI Circular dated November 27, 2025 regarding the additional incentives to distributors for onboarding new individual investors from B-30 cities and women investors: https://www.sebi.gov.in/legal/circulars/nov-2025/additional-incentives-to-distributors-for-onboarding-new-individual-investors-from-b-30-cities-and-women-investors_98007.html

Close ended debt schemes can invest only in instruments that mature before the end date of the scheme. Due to this reason, these types of funds cannot invest in perpetual bonds where for the purpose of valuation it is considered that the maturity date is 100 years from the date of issuance.

In order to provide for a glide path towards the final valuation, it has been decided that there would be a phased movement towards the 100-year maturity date valuation. It would be as under;

Macaulay Duration for the bonds would be calculated based on the deemed residual maturity as per the table above.

In addition, if on the call date the issuer does not exercise the call option then the valuation and the Macaulay Duration would be calculated considering the date of maturity as 100 years from the date of issue for AT 1 bonds and contractual maturity for AT 2 bonds. Also, if the non-exercise of the call is due to the financial stress of the issuer or there is some bad news then this has to be reflected in the valuation.

Moreover, in order to align the valuation methodology, SEBI has decided that the valuation of AT-1 Bonds by Mutual Funds shall be done on Yield to Call basis.[62]

7.3 Dividends & Distributable Reserves

As seen earlier, in the calculation of net assets, investments are taken at their market value. This is done, to ensure that sale and re-purchase transactions are affected at the true worth of the unit, including the gains on the investment portfolio.

Similarly, it was seen that income and expense are accounted on the basis of the accrual principle. Therefore, even though they may not have been received or paid, they are accrued as income or expense, if they relate to a period until the accounting date.

Unlike accrued income (which is receivable - it is only a question of time) and accrued expense (which is payable - it is only a question of time), valuation gains in the scheme's portfolio may never get translated into real gains - it is NOT just a question of time. The securities need to be sold, for the scheme to be sure about the capital gains i.e., the capital gains need to be *realized*.

Since the investments in the portfolio are not yet sold, the gains in them are on paper - they are not *realised*. They will be realized when those investments are sold.

SEBI guidelines stipulate those dividends can be paid out of *distributable reserves.* In the calculation of distributable reserves:

- All the profits earned (based on the accrual of income and expenses as detailed

[62] https://www.sebi.gov.in/legal/circulars/aug-2024/valuation-of-additional-tier-1-bonds_85470.html

above) are treated as available for distribution.

- Valuation gains are ignored. But valuation losses need to be adjusted against the profits.
- That portion of the sale price on new units, which is attributable to valuation gains, is not available as a distributable reserve.

This conservative approach to calculating distributable reserves ensures that dividend is paid out of real and realized profits, after providing for all possible losses.

The trustees shall decide the quantum of dividend and the record date. With respect to dividends up to monthly frequency the trustees can delegate to the officials of the AMC to declare and fix the record date as well as the quantum of dividend. This would have to be ratified by the trustees in the immediately following Board meeting. The record date is the date used as a cut-off to determine the eligibility to receive the dividend by investors based on the register of unitholders. The NAV will be adjusted at the end of the record date to reflect the payout of the dividend. Within one day of the trustees' decision, the AMC shall issue a public communication giving the details of the dividend including the record date. The record date shall be five calendar days from the issue of the notice by the AMC. The public notice should clearly state that the NAV will decline pursuant to the Pay-out of Income Distribution cum capital withdrawal plan and any statutory levy. Failure to pay dividend by the stipulated time will lead to interest being calculated on the delayed payment from the record date.

The need for notice is not necessary for schemes/plans such as liquid schemes or other debt schemes with dividend distribution frequency ranging from daily to monthly. The SID should have requisite disclosures in this regard. Listed schemes shall follow the requirements stipulated in the listing agreement for the purpose of declaring and distributing dividends.

There is no assurance or guarantee to Unitholders as to the rate or quantum of dividend distribution that it will be paid regularly.

A certain proportion of the sale price of investments in a mutual fund scheme represents realised gains that are credited to an equalisation reserve that can be used to pay dividends. Investors need to be told that their dividend also includes a certain part of their capital. The mutual funds also have to clearly indicate the distinction that when a distributable surplus is paid how much of this is the appreciation of NAV and how much is capital distribution.

7.4 Concept of Entry and Exit Load and its impact on NAV

A distinctive feature of open-ended schemes is the ongoing facility to acquire new units from the scheme (sale transaction) or sell units back to the scheme (re-purchase transaction).

In the past, schemes were permitted to keep the Sale Price higher than the NAV. The difference between the Sale Price and NAV was called the "entry load". If the NAV of a scheme was Rs 11.00 per unit, and it were to charge entry load of 1 percent, the Sale Price would be Rs 11 + 1 percent on Rs 11 i.e., Rs 11.11. Since entry load is no longer permitted, the Sale Price is same as the NAV.

Schemes are permitted to keep the re-purchase Price lower than the NAV. The difference between the NAV and re-purchase Price is called the "exit load". If the NAV of a scheme is Rs. 11 per unit, and it were to charge exit load of 1 percent, the re-purchase Price would be Rs. 11 – 1 percent on Rs. 11 i.e., Rs. 10.89.

Schemes can also calibrate the load when investors offer their units for re-purchase. Investors would be incentivized to hold their units longer, by reducing the load as the unit holding period increased. For instance, load would be 3 percent if the investor were to exit in year 1, 2 percent if the investor were to exit in year 2, and so on.

Earlier, schemes had the flexibility to differentiate between different classes of investors within the same scheme, by charging them different levels of load. Further, all the money collected as loads were available for the AMC to bear various selling expenses. There were liberal limits on how much could be charged as loads.

However, the current position is that:

- SEBI has banned entry loads. So, the Sale Price needs to be the same as NAV (subject to applicable stamp duty, if any, as discussed in the next section).

- While charging exit loads, no distinction will be made among unitholders on the basis of the amount of subscription. While complying with the same, any imposition or enhancement in the load shall be applicable only on prospective investments. The parity among unitholders on exit load shall be made applicable at portfolio level.

- No exit load will be charged on bonus units and units allotted on reinvestment of dividend.

- Exit loads have to be credited back to the scheme immediately i.e., they are not available for the AMC to bear selling expenses.

Now that the schemes cannot have an entry load, the sale price would be equal to the scheme NAV. Say for example, if an investor invests Rs. 25,000 in a scheme with NAV of Rs. 43.21, she will get 578.570 units (i.e., Rs. 25000 / Rs. 43.21).

7.5 Key Accounting and Reporting Requirements

- The accounts of the schemes need to be maintained distinct from the accounts of the AMC. The auditor for the AMC has to be different from that of the schemes.

- Norms are prescribed on when interest, dividend, bonus issues, rights issues etc. should be reflected for in the accounts.
- NAV is to be calculated up to 4 decimal places in the case of index funds, liquid funds and other debt funds.

- NAV for equity and balanced funds is to be calculated up to at least 2 decimal places.
- Investors can hold their units even in a fraction of 1 unit. However, current stock exchange trading systems may restrict transacting on the exchange to whole units.
- The frequency of disclosures of NAV, Portfolio and Scheme accounts was discussed earlier.

7.6 NAV, Total expense ratio and pricing of units for the Segregated Portfolio[63]

To ensure fair treatment to all investors in case of a credit event and to deal with liquidity risk, SEBI has permitted creation of segregated portfolio of debt and money market instruments by mutual funds schemes.

The key provision with respect to the NAV, TER and pricing of units are:

- AMC shall not charge investment and advisory fees on the segregated portfolio. However, TER (excluding the investment and advisory fees) can be charged, on a pro-rata basis only upon recovery of the investments in segregated portfolio.
- The Net Asset Value (NAV) of the segregated portfolio shall be declared on a daily basis. Adequate disclosure of the segregated portfolio shall appear in all scheme related documents, in monthly and half-yearly portfolio disclosures and in the annual report of the mutual fund and the scheme.

  Segregated portfolio is discussed in details in Chapter 10.

[63]Vide SEBI circular dated December 28, 2018, 'credit event' was considered for creation of segregated portfolio in mutual fund schemes. Segregated portfolio shall mean a portfolio, comprising of debt or money market instrument affected by a credit event, that has been segregated in a mutual fund scheme. However, vide circular dated November 7, 2019, SEBI has permitted creation of segregated portfolio of unrated debt or money market instruments by mutual fund schemes of an issuer that does not have any outstanding rated debt or money market instruments. However, this is allowed only in case of an actual default of either the interest or principal amount.

Chapter 7: Sample Questions

1. **As per the fair valuation principles laid out by SEBI, it is mandatory to disclose the valuation policy in_____.**
   a. **Statement of Additional Information**
   b. Statement of Accounts sent to investors periodically
   c. Fund fact sheet
   d. The fair valuation principles are not to be put in public

2. **Investors have bought 20 crore units of a mutual fund scheme at Rs. 10 each. The scheme has thus mobilized 20 crore units X Rs. 10 per unit i.e., Rs 200 crore. An amount of Rs. 140 crore is invested in equities. The balance amount of Rs 60 crore, mobilized from investors, was placed in bank deposits. Interest and dividend receivable (accrued but yet not received) by the scheme is Rs 8 crore, scheme expenses payable (accrued but not paid yet) is Rs 4 crore. Calculate the scheme's NAV per unit.**
   a. Rs. 20.40
   b. **Rs. 10.20**
   c. Rs. 20.00
   d. Rs. 10.00

3. **In case of mutual fund schemes, dividends can be paid only out of_____.**
   a. Premium reserve account
   b. Unit capital
   c. **Distributable surplus generated by the scheme**
   d. Mark-to-market profits

CHAPTER 8: TAXATION

Learning Objectives:

After studying this chapter, you should know about:

- Applicability of taxes in respect of mutual funds
- Capital Gains
- Dividend Income
- Difference between dividend distribution tax and capital gains tax
- Setting off Gains and Losses under Income Tax Act
- Securities Transaction Tax
- Tax benefits under Section 80 C of Income Tax Act, 1961
- Tax Deducted at Source

When anyone considers making an investment, one of the objectives is to get some investment returns. However, such returns on investments or income from investments may be subject to tax. The investor would get the income after the payment of taxes. In such a case, it is important to understand the taxation associated with one's investments. This chapter covers taxation in respect of mutual funds. As discussed earlier, the mutual fund is an investment vehicle that invests in various investment options. Hence, a distributor of mutual funds must understand the tax applicable on the income of the mutual fund scheme, as well as the tax applicable on investments made by an investor in mutual fund schemes.

8.1 Applicability of taxes in respect of mutual funds

8.1.1 Income from investment in mutual fund units

Investors must consider the effect of taxes on their investment returns. It is not how much you earn, but how much you keep after taxes that counts. As a mutual fund is a pass-through vehicle, we must consider the income at two levels– income earned by the fund, and income earned by the investor.

8.1.2 Income earned by mutual fund schemes

The schemes of the mutual funds invest in marketable securities like shares and debentures. These securities generate income in the form of dividend or interest. Apart from this, when the fund buys and sells the shares and debentures in the securities market, there could be capital gains or losses. Interest, dividend and capital gains form the income of the mutual fund.

As per the prevailing tax laws in India, a mutual fund's income is exempt from income tax, since mutual funds are constituted as trusts in India for the benefits of the unitholders. Section 10(23)(D) of the Income Tax Act exempts all the income earned by the mutual fund

schemes from any tax.

8.1.3 Income earned by the investor from investment in mutual fund units

We have already seen that the investor can choose from two options within the scheme, viz. (earlier called Dividend) Income Distribution cum Capital Withdrawal (IDCW) option and growth. The one who has opted for Income distribution cum capital withdrawal (dividend) may get income in form of dividends, whereas the investor in the growth plan would not get any dividend whatsoever, irrespective of the profits earned by the fund.

The investor in the growth plan would earn capital gains (or losses) whenever one sells the units of the scheme. On the other hand, the investor in the Income Distribution cum capital withdrawal (dividend) plan may get dividend, as and when declared by the fund, as well as capital gains (or losses) when one sells the units.

Both these may have different tax treatment in comparison to the income that one earns through salary or professional fees and other means. The tax structure is different for different types of investors, as well as for different categories of funds, too.

Let us look at the applicable tax rates in case of capital gains and dividends. The tax rates would vary as under:

- **Type of income**: The capital gains are taxed differently in comparison to the dividend income (IDCW).

- **Holding period**: Capital gains may be categorized as short term and long term based on the holding period. At the same time, within capital gains, short term capital gains may attract different tax rates in comparison to long term capital gains.

- **Type of mutual fund schemes**: Income from equity-oriented mutual fund schemes is taxed at different rates in comparison to non-equity-oriented schemes. The Income Tax Act defines two categories of mutual funds, viz., equity-oriented funds and non- equity-oriented funds. The schemes holding more than 65 percent of the assets under management in equity shares listed on recognised stock exchanges in India are classified as equity-oriented mutual fund schemes. All the other schemes are classified as non-equity-oriented schemes. For example, fund-of-funds investing in other equity mutual fund schemes, would be classified as non-equity-oriented schemes. Though the said scheme is eventually investing in equity assets (equity mutual funds), it is classified as a non-equity-oriented scheme for the purpose of income tax.

- **Type of investor**: The tax treatment may differ for Resident Indian Investors, NRIs, and non-individual investors. It must be noted that in case of joint holding, the income, be it capital gains or dividend, would be considered to have been earned by the first holder.

- **Date of purchase**: The union budget 2023 brought some changes in the taxation of capital gains. These changes were applicable from April 1, 2023 onwards. Investments made prior to that date, i.e., April 1, 2023 would enjoy the old tax structure.

- **Date of redemption**: Union budget for the year 2024-25 was presented in the parliament in July 2024 after the new government was formed basis the results of union elections 2024. To achieve the objective of simplification of taxes, this budget brought about many changes, primarily the tax on capital gains. The new tax rules became effective immediately. However, If the units are redeemed before July 23, 2024, the old tax rates would apply. The new tax rates would be applicable for units redeemed on or after July 23, 2024.

8.2 Capital Gains

When a unitholder sells units of the scheme, the selling price could be different from the price at which the units were bought. The difference between the purchase price of the units and the selling price of the units would be treated as capital gain (or loss). If the selling price is higher than the purchase price, there is an incidence of capital gain, whereas if the selling price is lower than the purchase price, there is a capital loss. The capital gains are subject to tax. Capital gains tax is classified depending on the period of holding and the type of funds invested in.

Capital gains are classified into two categories: short term capital gains and long-term capital gains. For classifying assets into long-term and short-term, there will only be two holding periods: 12 months and 24 months. The holding period for all listed securities as well as for units of equity-oriented funds is 12 months. The holding period for all other assets is 24 months.

The tax structure and rates on capital gains were further modified in the Union Budget presented in the Parliament in July 2024.[64]

Equity mutual funds were exempt from long term capital gains tax earlier. In the Union Budget of the year 2018, this was changed. The long-term capital gains became taxable and the applicable tax rate is decided by the regulator from time to time. Relating to this, there are two important provisions that are discussed here:

1. **Grandfathering of capital gains**: Since the capital gains from equity assets were non-taxable till the announcement of the budget in 2018, an introduction of the tax would have meant that even the gains earned till then would also become taxable. This is equivalent to introducing tax with retrospective effect. In order to avoid such a situation, the finance minister introduced a clause, which came to be known as the "grandfathering of the capital

[64] Candidates shall read 'Tax Regime Specific to Mutual Fund Investors in India' at https://www.amfiindia.com/investor/knowledge-center-info?zoneName=TaxRegimeForMutualFunds

gains". This meant that the capital gains earned till January 31, 2018 would not be taxable, which means that for all the equity mutual funds that one has invested in, the valuation as on January 31, 2018 becomes the base point. Gains would be calculated for the purpose of tax by taking the higher of the purchase price or the NAV as on January 31, 2018. The grandfathering benefit was offered in order to ensure that the effect of the tax is only on a prospective basis and not retrospective.

a. The long-term capital appreciation in the various investments in equity-oriented mutual funds was exempt from tax, as per the prevailing laws until the above change. If the appreciation prior to such an announcement was also subject to tax, it would tantamount to retrospective taxation.

b. What this means is that if someone had invested Rs. 1,00,000 in an equity- oriented mutual fund scheme in 2017 (or any such period prior to the grandfathering date of January 31, 2018) and the value of the investments as on January 31, 2018 was Rs. 2,00,000.

Scenario: 1

If the investor sells the investments completely and realises a value of Rs. 1,80,000 on February 9, 2018 then the long-term capital gains for the purpose of taxes would be considered to be zero, since the realised value is less than the value of investments on January 31, 2018 (i.e., the difference between the realised value of Rs. 1,80,000 and the value on January 31, 2018 – Rs. 2,00,000).

Scenario 2:

If the investor sells the investments completely and realises a value of Rs. 2,20,000; the long-term capital gains for the purpose of taxation would be considered to be Rs. 20,000 (The difference between the realised value of Rs. 2,20,000 and the value on January 31, 2018 – Rs. 2,00,000).

2. **Exemption up to Rs. 1.25 lakhs**: In case of long-term capital gains arising out of equity shares and equity-oriented mutual funds, the tax is applicable only on the capital gains above Rs. 1.25 lakhs. The first Rs. 1.25 lakhs worth of long-term capital gain from this category is tax-exempt

For example, if an investor has earned a total long term capital gain worth Rs. 90,000 in a year, the entire capital gain would be exempt from tax. On the other hand, if the total capital gain is Rs. 1,35,000; the first Rs. 1,25,000 would be exempt from capital gains tax, but the next Rs. 10,000 would be subject to tax.

Tax Regulations for Unit Holders

Investment asset	STCG	LTCG	Holding period
Equity-oriented funds (including hybrid funds with more than 65% in equity)	20%	12.50%	LTCG applicable after 12 months. Exemption Rs 1.25 lakh per financial year.
Debt-oriented funds (including hybrid funds with more than 65% in debt)	Marginal Slab Rate (MSR)		
Hybrid mutual funds with 35% to 65% in domestic equities	MSR	12.50%	LTCG applicable after 24 months
Other MFs (Fund of Funds, International Funds / FOFs)	MSR	12.50%	LTCG applicable after 24 months
Equity ETFs	MSR	12.50%	LTCG applicable after 12 months
Gold ETFs	MSR	12.50%	LTCG applicable after 12 months
Debt ETFs	Marginal Slab Rate (MSR)		

8.3 Income Distribution cum Capital Withdrawal

Dividend income from mutual funds used to be tax-free in the hands of the investor. Earlier, there was no tax payable at all, irrespective of how much dividend one earned. However, the dividend would be paid to the investor after the deduction of dividend distribution tax from the scheme itself. To that extent, although the dividend was tax-free, the NAV reduced to the extent of the dividend as well as the dividend distribution tax. Thus, this tax had an impact on the investor's after-tax returns.

In the Union Budget presented by the finance minister in February 2020, the situation changed. The dividend distribution tax has been done away with, whereas the dividend would henceforth be added to the taxable income of the assessee for the year. This means the dividends would be taxable in the hands of the recipient at the applicable tax rate.

Earlier, till 2019-20, dividend used to be tax-free in the hands of the investor and there was a dividend distribution tax deducted by the MF on behalf of the investor. Since April 2020, dividend distribution tax has been done away with, and IDCW is taxable in the hands of the investor at marginal slab rate.

What is the change for those who opted for Income distribution cum capital withdrawal option in mutual funds?

In the new regime, tax on dividend would be a function of the applicable rate of tax based on the total income for the year, and hence the tax rate goes up for those with higher income. This means those who were in higher tax earlier might have paid a lower tax on the dividend income in comparison to their nominal rate of tax. This difference goes away. On the other hand, the investors, who were tax-exempt also had to still bear the impact of the dividend distribution tax in the earlier regime. Now with the changes implemented, the dividend income would be tax-exempt for investors in various tax-exempt categories, for example charitable trusts and individuals in the tax-exempt slab.

Let us understand one important difference between dividend distribution tax (old regime) and the tax on dividends in the hands of investors (new regime). The dividend distribution tax was not considered a tax in the hands of the investor, and hence it was not available as a setoff against any other tax liability. On the other hand, in the new regime, tax on dividends can be reduced through various exemptions and adjustments, as applicable.

It must also be noted here that both the dividend distribution tax (old regime) as well as the tax on dividend income in the hands of the investor (the new regime) are similar in the sense that the NAV of the scheme goes down more than the net-of-tax[65] amount received in the hands of the investor.

In the earlier regime:

Drop in NAV = Dividend paid to the investor + dividend distribution tax
Thus, the dividend received by the investor would be net of the dividend distribution tax, which is lower than the drop in NAV.
Under the new regime:

Post-tax dividend received by the investor = Dividend paid out by the scheme – Tax payable thereon, as per the applicable tax slab, with the exception of tax-exempt unit-holders.

On the other hand, the growth option works out to be more tax-efficient. Since the mutual fund schemes are tax-exempt, and the capital gains are realized only when booked, one can allow the gains to run without worrying about tax on the same. This concept is known as deferment of taxes and allows one the benefit of compounding before tax.

There is a further change from April 1, 2021, when the mutual funds who declare dividend have to indicate how much of the amount is due to income distribution that is due to appreciation of NAV and how much is capital distribution. Earlier investors would take the entire amount of dividend for taxation under the head dividend but now a distinction would

[65] The tax mentioned here refers to dividend distribution tax in the earlier regime, whereas under the newregime, it would be income tax

have to be made and tax calculated on this segregated basis.

8.4 Stamp Duty on Mutual Fund Units

With effect from July 1, 2020, mutual fund units issued against Purchase transactions (whether through lump-sum investments or SIP or STP or switch-ins or Reinvestment of Income Distribution cum capital withdrawal option would be subject to levy of stamp duty* @ 0.005% of the amount invested[66]. Transfer of mutual fund units (such as transfers between demat accounts) is subject to payment of stamp duty* @ 0.015%.

Box 8.2 provides some more details regarding stamp duty on mutual fund units.

Box 8.2: Stamp Duty on MF units

In adherence to the amendments carried out in the Indian Stamp Act in February 2019, stamp-duty is required to be paid for issue and transfer of Mutual Fund units with effect from1 July 2020.

- Stamp duty @0.005% of the investment amount shall be applicable at the time of **issue of units** for both physical (SoA) and demat units.
- Units will be allotted for the amount available post deduction of stamp duty.
- Stamp duty will be applicable to all transactions pertaining to scheme inflows:
    - Purchase
    - Additional Purchase
    - Dividend reinvestment
    - Systematic Investment Plan (SIP)
    - Systematic Transfer Plan (STP)
    - Income distribution cum capital withdrawal (Dividend) Transfer Plan (DTP).This will also include triggers from past SIP/STP registrations.

8.5 Setting off of Capital Gains and Losses under Income Tax Act

The Income Tax Act provides for taxation under various heads of income viz. salaries, income from house property, profits & gains of business or profession, capital gains, and income from other sources. In the normal course, one would expect that a loss in one head of income can be adjusted (set off) against gains in another head of income, since a person is liable to pay tax on the total income for the year. However, there are limitations to such set-off. A few key provisions here are:

- Capital loss, short term or long term, cannot be set off against any other head of income (e.g., salaries).
- Short term capital loss is to be set off against short term capital gain or long- term capital gain.

[66] Pursuant to Notification No. S.O. 4419(E) dated December 10, 2019 issued by Department of Revenue, Ministry of Finance, Government of India, read with Part I of Chapter IV of Notification dated February 21, 2019 issued by Legislative Department, Ministry of Law and Justice, Government of India on the Finance Act, 2019, and subsequent Notification dated March 30, 2020 issued by Department of Revenue, Ministry of Finance, Government of India.

- Long term capital loss can only be set off against long term capital gain.
- Unabsorbed capital loss can be carried forward upto 8 years.

Several other factors go into taxation or tax exemption. However, there are certain limits to the setting-off in case of mutual funds. This is discussed below.

Bonus Stripping

Suppose an investor buys units of a scheme at Rs. 30. Thereafter, the scheme declares a 1:1 bonus issue i.e., the investor receives 1 new unit, for every unit that was bought earlier. Logically, the NAV of the scheme will halve, and it is likely that the units would now have a value of Rs. 15. At this stage, if the investor sells the original unit at Rs. 15, a loss of Rs 15 is incurred [Rs 30 (original purchase price for the Units) minus Rs 15 (currently realised)].

However, such capital loss is not available for setting off against capital gains, if the original units were bought within a period of 3 months prior to the record date for the bonus issue and sold off within a period of 9 months after the record date.

In such cases, the capital loss will be treated as the cost of acquisition of the bonus units. Even if the condition is fulfilled i.e., you purchase the units before 3 months of record date and sell after 9 months of record date, as a practice it is discouraged. Investments should be made for the fundamental attributes of the scheme.

8.6 Securities Transaction Tax

When an investor sells units of an equity fund in the stock exchange, or offers them for re-purchase to the fund, s/he will have to incur Securities Transaction Tax (STT) i.e., STT is applicable only on redemption/switch to other schemes/sale of units of equity oriented mutual funds whether sold on stock exchange or otherwise.

STT is not applicable on purchase of units of an equity scheme. It is also not applicable to transactions in debt securities or debt mutual fund schemes.

STT applicability for Investors in Equity oriented Mutual funds

Transaction	**Rates (in percent)**	**Payable by**
Purchase of units of equity oriented mutual fund	Nil	Purchaser
Sale of units of equity oriented mutual fund (delivery based)	0.001	Seller
Sale of equity shares, units of business trust, units of equity oriented mutual fund (non- delivery based)	0.025	Seller
Sale of units of an equity oriented mutual fund to the mutual fund	0.001	Seller

8.7 Tax benefit under Section 80C of the Income Tax Act

Certain mutual fund schemes, known as Equity Linked Savings Schemes (ELSS Tax Saver) are eligible for deduction under Section 80C of the Income Tax Act under the old tax regime. As the name suggests, this is an equity- linked scheme, and hence the scheme invests in equity shares. The benefit is available up to Rs. 1.50 lacs per year per taxpayer in case of individuals and HUFs, under the Old Tax Regime. The scheme has a lock-in period of three years from the date of investment.

Let us now understand some nuances of this.

First, this is one of the eligible investments under Section 80C, where the limit is to be shared across the eligible avenues. This means if someone has exhausted the limit under the said section through some other avenue, any investment in ELSS would not get any additional tax exemption, but the investment would still be locked-in for a minimum period of three years.

Second, if one is investing in this scheme through SIP, each investment would be locked-in from the date of the respective investment. The lock-in for the entire amount would not get over on completion of 3 years from the date of the first SIP instalment.

Third, if one opts for (dividend) Income distribution cum capital withdrawal reinvestment plan, each time a dividend is reinvested, the same would also attract a 3-year lock-in. Most AMCs have done away with this option in case of ELSS. They only allow growth option or dividend pay- out.

Fourth, the tax benefit would be available to the first holder, in case of a joint holding.

The finance minister, in the Union Budget 2020, proposed two parallel tax structures for the individual taxpayers. There is an old structure, which was applicable before the budget was presented that allowed different kinds of exemptions and deductions under various sections of the Income Tax Act. A parallel tax structure has been announced in Union Budget 2020, which has more slabs, and lower rates of taxes for similar slabs. However, under the new regime, most exemptions have been removed. Those who opt for this new structure would not be able to take the benefit of tax-saving under Section 80C. Hence, for these investors, ELSS is just another equity-oriented mutual fund scheme that carries a lock-in provision.

There are also a few retirement-oriented funds including some that are more than a couple of decades old, which have the benefit of Section 80C. These funds have a lock-in of 5 years and they are meant for accumulation of corpus for a person for their later years. Investing in these funds would also allow the investor to get a Section 80C deduction. However, one should check whether a specific retirement fund has this benefit because not all of them in operation have this Section 80C benefit.

8.8 Tax Deducted at Source

There is no TDS on re-purchase proceeds to resident investors. However, for certain cases of non-resident investments, the same is applicable. The income tax regulations prescribe different rates, depending on the nature of the investor (Indian/ Foreign and Individual/Institutional), nature of investment (equity/debt) and nature of the income (dividend/capital gain). In case of dividends (IDCW) from mutual fund schemes, even for resident Indians, TDS is applicable. The tax is required to be deducted at 10 percent on the dividend amount if it exceeds Rs. 10,000.

Further, Government of India has entered into Double Taxation Avoidance Agreements (DTAA) with several countries. These agreements too, specify rates for Withholding Tax. The TDS applicable for non-resident investors is the lower of the rate specified in the income tax regulations or the tax specified in the DTAA of the country where the investor is resident. The investor, however, will need to provide sufficient information and documents to satisfy the mutual fund that he is entitled to such concessional rate as is specified in the DTAA.

8.9 Applicability of GST

AMC(s) can charge GST, as per applicable Taxation Laws, to the schemes within the limits prescribed under SEBI (Mutual Fund) Regulations.

- GST on fees paid on investment management and advisory fees shall be charged to the scheme in addition to the overall limits specified as per the Total Expense Ratio (TER) provisions.
- GST on all the fees other than investment and advisory fees shall be charged to the scheme within the maximum limit of TER.
- GST on exit load, if any, shall be deducted from the exit load and the net amount shall be credited to the scheme.
- GST on brokerage and transaction cost paid for execution of trade, if any, shall be within the limit of TER.

The commission payable to the distributors of mutual funds may be subject to GST, as applicable in case of the ARN holder. Such tax cannot be charged to the scheme. As per SEBI regulations from 1 April 2026, the cost structure is base expense ratio + execution brokerage with specified limits + statutory levies e.g. GST. The base expense ratio of the scheme shall be sum of expenses allowed i.e. investment and advisory fees, out-of-pocket expenses and brokerage commission but excluding statutory levy applicable, if any, on the said expenses and transaction cost. The total of all expenses charged to the investors of the scheme, shall be total of expense charged within the base limit specified, brokerage cost permitted, transaction cost incurred for the purpose of execution of trade, and statutory levies charged to the investors. No charges other than the base expense ratio, brokerage cost, transaction cost, statutory levy and exit load including levies as may be specified by the Board, shall be charged to the investors.

Chapter 8: Sample Questions

1. **What is the tax applicable on the income earned by the mutual fund schemes?**

   a. It is a function of the type of income since dividends, short term capital gains and long-term capital gains attract different tax rates
   b. Income earned by a mutual fund is exempt from taxes
   c. 10 percent plus surcharge and cess
   d. It is a function of the marginal rate of tax applicable to the respective investor in the mutual fund scheme

2. **Redemption from which of the following mutual fund schemes would attract Securities Transaction Tax (STT) for an investor?**

   a. Multi-cap mutual fund
   b. Government Securities Fund
   c. Liquid Fund
   d. Overnight Fund

CHAPTER 9: INVESTOR SERVICES

Learning Objectives:

After studying this chapter, you should know about:

- New Fund Offer Process
- NFO price and on-going price for subscription of mutual fund schemes
- Investment Plans and Options
- Allotment of mutual fund units to investors
- Content and periodicity of Statement of Account
- Mutual Fund Investor
- Application form of mutual funds
- Financial Transactions in mutual funds through online and physical mechanism
- Cut-off timing and Time stamping
- KYC requirements for mutual fund investors
- Different types of systematic transactions
- Operational aspects of Systematic Transactions
- Process of Non-Financial Transactions in Mutual Funds
- Change in Status of Special Investor Categories
- Investor transactions – turnaround times

Mutual fund is an investment vehicle for a large number of investors. In order to provide uniform experience, it is critical that various processes and investor services are standardized. Such standardization lends comfort to the investors since they know what to expect and when. They also know what not to expect in terms of services.

We would look at various investor services involved at various stages in the life of a mutual fund investment.

9.1 The NFO process

New Fund Offer

Units in a mutual fund scheme are offered to investors for the first time through a New Fund Offer (NFO). The following are a few key steps leading to the NFO:

- The Asset Management Company (AMC) decides on a scheme to take to the market. This is decided on the basis of inputs from the Chief Investment Officer (CIO) on investment objectives that would benefit investors, and inputs from the Chief Marketing Officer (CMO) on the interest in the market for the investment objectives.

- An AMC can have one fund/scheme in a category. There are defined funds within broad Equity, Debt and Hybrid categories. Hence, the NFO has to be in a category where the AMC does not already have a fund/scheme. Alternatively, it has to be in a category where

an AMC can have multiple funds/schemes e.g., Sector/Theme, Index or Fund of Funds.

- AMC prepares the Scheme Information Document for the NFO. This needs to be approved by the Trustees and the Board of Directors (BoD) of the AMC.
- The documents are then filed with SEBI. The observations that SEBI makes on the SID need to be incorporated. After approval by the trustees, the same can be issued in the market.
- The AMC decides on a suitable timetable for the issue, keeping in mind the market situation.
- The AMC launches its advertising and public relations campaigns to make investors aware of the NFO. These need to comply with SEBI's advertising code.
- The AMC holds events for intermediaries and the press to make them familiar with the scheme, its unique features, benefits for investors, etc.
- The Scheme Documents and Application Forms are distributed to market intermediaries, and circulated in the market so that investors can apply in the NFO.

Three dates are relevant for the NFO of an open-ended scheme:

NFO Open Date – This is the date from which investors can invest in the NFO

NFO Close Date – This is the date up to which investors can invest in the NFO

Scheme Re-Opening Date – This is the date from which the investors can offer their units for re-purchase to the scheme (at the re-purchase price); or buy new units of the scheme (at the sale price). Upon re-opening the AMC does sale and re-purchase at NAV based prices.

Close-ended Schemes have an NFO Open Date and NFO Close Date. But they have no Scheme Re-opening Date, because the scheme does not sell or re-purchase units. Investors will need to buy or sell units from the stock exchange where the scheme is listed.

Under the SEBI guidelines, all NFOs can remain open for subscription for a minimum period of three working days and NFOs other than ELSS can remain open for subscription for a maximum of 15 days. Allotment of units or refund of money, as the case may be, should be done within 5 business days of closure of the scheme. Further, open-ended schemes have to re-open for sale/re- purchase within 5 business days of the allotment.

Deployment of the funds collected by an AMC in an NFO

As per Regulation 35 (5) SEBI has introduced guidelines requiring mutual funds to specify realistic deployment timelines in the Scheme Information Document (SID) as specified by SEBI from time to time.

9.2 New Fund Offer Price/On-going Offer Price for subscription

New Fund Offer (NFO) Price is the price per unit that the investors have to pay to invest during the NFO.

Ongoing price for purchase, redemption (sale) /switch outs (to other schemes/plans of the Mutual Fund) by investors is the price at which the investor purchases or receives redemptions/switch-outs. Since there is no entry load as per regulation, sale price of units is same as NAV. Redemption price also is same as NAV, except if there is exit load.

9.3 Investment Plans and Services

9.3.1 Direct and Regular Plans

Chapter 6 discussed various fund distribution practices. Investors have a choice of going through the distributors or invest directly through the AMC. Since the distribution services involve charges with respect to the various services provided by the distributor, any investor going direct is assumed to have decided not to avail those services. In such a case, the investor may not bear the cost of such services. Each mutual fund has to offer two plans to the investors, viz., regular plan and direct plan. Both these would have different total expense ratio (TER).

The direct plan shall have a lower expense ratio excluding distribution expenses, commission, etc., and no commission shall be paid from such plans. Since the TER is different in both cases, the plans will have separate NAVs.

It must be clearly understood that the direct plan is only for those investors, who purchase units directly from the fund and the same is not available for investors who route their investments through a distributor. If investment (purchase/repurchase) is routed through a distributor, then it is considered that one has chosen to invest in the Regular Plan.

Apart from these two plans at different NAVs, the AMC cannot offer separate plans based on expense ratio.

9.3.2 Income Distribution cum capital withdrawal (Dividend) Pay-out, Income Distribution cum capital withdrawal (Dividend) Re-Investment and Growth Options

Most mutual fund schemes offer two options – Income Distribution cum capital withdrawal and Growth. A third option, which is possible, is the Re-investment of Income Distribution cum capital withdrawal Option. From April 1, 2021 the dividend option has been renamed to Income Distribution cum capital withdrawal to reflect the actual situation about the income earned by the investor. These are different options within a scheme having the same portfolio. Therefore, the portfolio returns are the same for all three options. However, they differ in the structure of cash flows and income accruals for the unit-holder, and therefore there is a difference in the unitholder's taxability, number of units held and value of those units. The post-tax return from each of these options will therefore be different.

In a Pay-out of Income Distribution cum capital withdrawal plan, the fund declares a dividend from time to time. Some schemes (liquid and debt funds with very short-term maturity) even

declare a dividend daily, subject to the availability of profits. When a dividend is paid, the NAV of the units falls to that extent.

The reduced NAV, after a Pay-out of Income Distribution cum capital withdrawal, is called ex-Dividend NAV. After a dividend is announced, and until it is paid out, it is referred to as cum-Dividend NAV.

In a Pay-out of Income Distribution cum capital withdrawal option, the investor receives the dividend in his/her bank account. The Pay-out of Income Distribution cum capital withdrawal plan does not change the number of units held by the investor.

The dividend received in the hands of the investor will be taxed in the hands of the investor, as per the current tax laws. In addition, the nature of the income, which the mutual fund has to provide a break up for, will determine the head under which this is taxed.

In a Re-investment of Income Distribution cum capital withdrawal plan, as in the case of pay-out option, NAV declines to the extent of dividend. The resulting NAV is called ex- dividend NAV, like in case of Pay-out of Income Distribution cum capital withdrawal plan.

However, the investor does not receive the dividend in his bank account; the amount is re-invested in the same scheme and additional units are allotted to the investor. The reinvestment happens at the ex-dividend NAV. Thus, if dividend is Rs. 2 per unit on a Unit-holder's 100 units, the dividend would amount to Rs. 200. Assuming the ex-dividend NAV of the scheme is Rs. 20, then Rs. 200 ÷ Rs. 20 i.e., 10 units will be added to the unit-holder's portfolio. Tax is paid by the unit-holder in the year of receipt. In this example Rs 200 is dividend received, and the unit-holder will pay tax as per his/her tax slab.

In a ***growth option***, dividend is not declared. Therefore, nothing is received in the bank account (unlike Income Distribution cum capital withdrawal pay-out option) and there is nothing to re-invest (unlike Income Distribution cum capital withdrawal re- investment option). The NAV would therefore capture the full value of the portfolio gains. As in the case of Income Distribution cum capital withdrawal pay-out option, there will be no accretion to the number of units held. The NAV of those units will however be higher, to reflect the gain in the portfolio.

Across the three options, the investor can also receive money by offering his/her units for re-purchase or selling them in the stock market. Taxability would depend on the scheme type and period of holding, as discussed earlier. Table 9.1 summarises, the implication of the 3 options and Illustration 9.1 explains the implications for investors who opt for these three different options.

Table 9.1: Implications of different options in mutual funds

Parameter	Income Distribution cum capital withdrawal **(Pay out Option)**	Income Distribution cum capital withdrawal **(Re-investment Option)**	**Growth Option**
Dividend received in bank account	Yes	No	No
Tax on Dividend	Yes	Yes	N.A.
Increase in number of units on account of re- investment of dividend	No	Yes	No
NAV change	NAV declines to the extent of dividend.	NAV declines to the extent of dividend.	NAV captures the portfolio valuation changes entirely.

Illustration 9.1: Investment options for different investors

Investor A, Investor B and Investor C invest in 100 units of a mutual fund scheme at a NAV of Rs.10 in the growth, Income Distribution cum capital withdrawal payout and Income Distribution cum capital withdrawal reinvestment option respectively. The NAV appreciates to Rs.12 and the mutual fund declares a dividend of 10 percent.

a. What is the dividend amount that the investors are entitled to receive?

The dividend amount is 10 percent of the face value of Rs.10, Re.1 per unit.

b. Which of the investors in the scheme are entitled to receive the dividend?

Investors in the Income Distribution cum capital withdrawal (payout) and Income Distribution cum capital withdrawal (reinvestment) option, i.e., investor B and Investor C are entitled to receive the dividend.

c. How will the dividend be received by B and C?

B will be paid out the dividend of Rs.100 (i.e., Re 1 X 100 units) while the dividend amount of Rs.100 due to C will be reinvested in the scheme at the ex-dividend NAV of Rs.11 (Rs.12 (NAV)- Re1 (Dividend))

d. How many additional units will be received by C?

Investor C will receive Rs.100/Rs.11 = 9.09 additional units on account of the dividend reinvested.

e. What is the value of the investment and return earned by each investor calculated on the ex-dividend date?

Investor A: The value of the investments is Rs.1200 (i.e., 100 units x Rs.12). Rs.200 is earned as capital gains from the appreciation in the NAV from Rs.10 to Rs.12

Investor B: The value of the investment is Rs.1100 (i.e., 100 units x Rs.11). Rs.100 is earned as dividend and Rs.100 as capital gains from the appreciation in the NAV from Rs.10 to Rs.11 (ex- dividend). The total return earned is Rs.200

Investor C: The value of the units is Rs.1200 (i.e., 109.09 units x Rs.11). The units held goes up after the re-investment of dividend to 109.09 units. The NAV comes down to Rs.11 after the payment of dividend. The returns earned are Rs.100 as capital gains on the original 100 units held and Rs.100 earned as dividends that is re-invested.

The post-tax returns to each of the investors will be different since the tax applicable on dividend and capital gains earned are different.

9.4 Allotment of Units to the Investor

NFO: Since entry load is banned, units in an NFO are sold at the face value i.e., Rs. 10. Therefore, the investment amount divided by Rs. 10 would give the number of units the investor has bought.

Subject to the receipt of the specified minimum subscription amount for the scheme, full allotment is made to all valid applications received during the New Fund Offer. The Trustee reserves the right, at their discretion without assigning any reason thereof, to reject any application. Allotment is completed within 5 business days after the closure of the New Fund Offer. In case of applicant who have quoted their demat account, the units are credited within 2 working days to the demat account as per the depository account details as stated by the applicant in the application form.

Allotment of units and despatch of allotment advice to FPIs (Foreign Portfolio Investors) is subject to RBI approval if required. Investors who have applied in non-depository mode are entitled to receive the account statement of units within 5 Business Days of the closure of the NFO Period. For applicants applying through the ASBA mode, on intimation of allotment by CAMS to the banker the investors account is debited to the extent of the amount due thereon.

On-going offer: The price at which units are sold to an investor as part of ongoing sales in an open-end scheme is the sale price, which in turn is the applicable NAV (currently entry load is not permitted by regulation, hence the sales price is equal to the NAV). The investment amount divided by the sale price would give the number of units the investor has bought. Thus, an investor who has invested Rs. 12,000, in a scheme where the applicable sale price is Rs 12, will be allotted Rs 12,000 ÷ Rs 12 i.e., 1,000 units.

In a rights issue, the price at which the units are offered is clear at the time of investment. The investment amount divided by the rights price gives the number of units that the investor has bought. It may however be noted that rights issues, which are common for shares, are less meaningful for units of mutual fund schemes.

In a bonus issue, the investor does not pay anything. The fund allots new units for free. Thus, in a 1:3 bonus issue, the investor is allotted 1 new unit (free) for every 3 units already held by the investor. Since the net assets of the scheme remain the same – only the number of units' increases - the NAV will get reduced proportionately and the value of the investor's holding does not change as a result of the bonus issue.

On allotment, units are credited to the investor's demat account (if the investor has opted for receiving dematerialised units) as specified in the ASBA application form. The units of the

Scheme held in the dematerialised form are fully and freely transferable.[67]

If application is rejected, full amount will be refunded within 5 business days from the date of closure of NFO. If refunded later than 5 business days, interest @ 15 percent p.a. for delay period will be paid and charged to the AMC.

Minimum investment threshold for investment strategies launched under Specialized Investment Funds (SIF) would be Rs. 10 lakhs. This should be the aggregate investment by an investor across all investment strategies offered by the SIF, at the PAN level. Investments made in other mutual fund schemes would not be counted for this minimum threshold.

9.5 Account statements for investments

Monthly Statement of Account

Mutual funds issue the Statement of Account every month if there is a transaction during the month. It shows for each transaction (sale/re-purchase), the value of the transaction, the relevant NAV and the number of units transacted. Besides, it also provides the closing balance of units held in that folio and the value of those units based on the latest NAV.

Annual Account Statement

The Mutual Funds provide the Account Statement to the Unit-holders who have not transacted during the last six months prior to the date of generation of account statements. The Account Statement reflects the latest closing balance and value of the units prior to the date of generation of the account statement.

The account statements in such cases may be generated and issued annually. Alternately, soft copy of the account statements is sent to the investors registered e-mail address, instead of physical statement, if so mandated.

Consolidated Account Statement

i. The asset management company shall ensure that consolidated account statement for each calendar month is issued (post/email), as per the timeline specified by SEBI from time to time, detailing all the transactions and holding at the end of the month across all schemes of all mutual funds, to all the investors in whose folios transaction has taken place during that month.

[67]However, this is subject to lock-in period, if any and subject to lien, if any marked on the units in accordance with the provisions of SEBI (Depositories and Participants) Regulations, 1996 as may be amended from time to time and as stated in SEBI Circular No. CIR/IMD/DF/10/2010 dated August 18, 2010. Further, for the procedure of release of lien, the investors shall contact their respective DP. Also, when a person becomes a holder of the units by operation of law or upon enforcement of pledge, then the AMC shall, subject to production/submission of such satisfactory evidence, which in its opinion is sufficient, effect the transfer, if the intended transferee is otherwise eligible to hold the units.

ii. In respect of investors in whose folios no transaction has taken place during the preceding six-month period ending in September or March, a consolidated account statement shall be issued on half yearly basis as per the timeline specified by the Board from time to time

iii. The asset management company shall identify common investor across mutual funds by their permanent account number for the purposes of issuing consolidated account statement.

Explanation: - As per Mutual Fund Regulations, the word 'transaction' includes purchase, redemption, switch, dividend payout, dividend reinvestment, systematic investment plan, systematic withdrawal plan, systematic transfer plan and bonus transactions.

9.6 Mutual Fund Investors

Eligibility to Invest

The following categories of people/entities are eligible to purchase units of most schemes of mutual funds:

Individual Investors

They invest for their personal benefit or the benefit of their family. Following are the types of individual investors:

- Resident Indian adult individuals, above the age of 18: They can invest, either singly or jointly (not exceeding three names).

- Minors i.e., persons below the age of 18: Since they are not legally eligible to enter into a contract, they need to invest through their guardians. SEBI has modified Investment in units of Mutual Funds in the name of minor through guardian stating that the payment for investment by any mode shall be accepted from the bank account of the minor, parent or legal guardian of the minor, or from a joint account of the minor with parent or legal guardian. For existing folios, the AMCs shall insist upon a Change of Pay-out Bank mandate before redemption is processed.[68]

- Hindu Undivided Families (HUFs): Here, family members pool the family money (inherited) for investments. The head of the family (called "Karta") invests on behalf of the family. Against his name in the application, he would add the letters "HUF" to show that the investment belongs to the family.

- Non-Resident Indians (NRIs)/Persons of Indian Origin (PIO) resident abroad: Indian citizens, who are working abroad, and their family residing abroad, are typical NRIs who invest in India. Some Indians go on to become citizens of foreign countries such as the

[68] Candidates are requested to read the circular: https://www.sebi.gov.in/legal/circulars/may-2023/investment-in-units-of-mutual-funds-in-the-name-of-minor-through-guardian_71148.html

US, Canada, New Zealand etc. Since India did not permit dual citizenship earlier, they needed to give up their Indian citizenship. However, their status as erstwhile Indians, entitles them to invest in mutual fund schemes on full repatriation or non- repatriation basis. As part of the documentation, they need to provide their PIO (Person of Indian Origin) Card/OCI (Overseas Citizenship of India) Card. NRI/PIO residents abroad have the facility of investing on a repatriable basis i.e., when they sell their investments, the sale proceeds can be transferred abroad. Alternatively, they can invest on a non-repatriable basis, in which case the proceeds from the sale of those investments cannot be remitted abroad.

- Foreign investors: They can invest in equity schemes of MFs registered with SEBI after completing the KYC process. Foreign nationals can invest in Indian mutual funds as Qualified Foreign Investors (QFIs). The QFI is sub-category of Foreign Portfolio Investor and refers to any foreign individuals, groups or associations, or resident. However, they should be from a country that is a member of Financial Action Task Force (FATF) or a country that is a member of a group, which is a member of FATF, and a country that is a signatory to International Organization of Securities Commission's (IOSCO) Multilateral Memorandum of Understanding (MMOU). QFIs can purchase Indian mutual fund units through demat account mode (direct route) and unit confirmation receipt (UCR).[69]

Non-individual Investors

Here, the investments are made by organizations/institutions. Their authorized individuals sign the documents on behalf of the organizations/institutions they represent. Following are the types of non-individual investors:

- Companies / corporate bodies, registered in India
- Registered Societies and Co-operative Societies
- Trustees of Religious and Charitable Trusts
- Trustees of private trusts
- Partner(s) of Partnership Firms
- Association of Persons or Body of Individuals, whether incorporated or not
- Banks (including Co-operative Banks and Regional Rural Banks) and Financial Institutions and Investment Institutions
- Other Mutual Funds registered with SEBI
- Foreign Portfolio Investors registered with SEBI
- International Multilateral Agencies approved by the Government of India
- Army/Navy/Air Force, Para-Military Units and other eligible institutions
- Scientific and Industrial Research Organizations
- Universities and Educational Institutions
- Foreign portfolio investors who meet KYC requirements to invest in equity and debt

[69] Source: https://www.valueresearchonline.com/stories/30193/can-foreign-nationals-invest-in-indian-mfs/

schemes of Mutual Funds can invest through two routes:

- Direct route - Holding MF units in demat account through a SEBI registered depository participant (DP).
- Indirect route- Holding MF units via Unit Confirmation Receipt (UCR)

Sources of Information on Eligibility to invest

The individual investors eligible to invest as detailed above can invest in any mutual fund scheme unless the mutual fund comes out with a specific scheme, or a plan within a scheme, that is not intended for any category of investors.

The non-individual investors eligible to invest as detailed above can invest in any mutual fund scheme. However, in some schemes, only specific classes of non-individual investors are permitted. For instance, some Gilt schemes have specific plans, which are open only for Provident Funds, Superannuation and Gratuity Funds, Pension Funds, Religious and Charitable Trusts and Private Trusts.

Therefore, it is a good practice to check the 'Who can Invest?' section of the Scheme Information Document (SID), especially for a first-time investor.

9.7 Filling the Application Form for Mutual Funds

The information required to be provided in the application form is discussed below.

Direct Plan and Regular Plan

Investors have the option to invest (purchase or subscribe to mutual fund units) directly without routing the investment through a distributor (Direct Plan). In this case, the investor must mention "Direct" in the space provided in the application form for entering the AMFI Registration Number (ARN).

If the investment (purchase/subscription) is routed through a distributor/Advisor (Regular Plan) then the ARN/RIA number and other details have to be provided in the space provided for the same.

Unit Holder Information

A mutual fund investment can have up to three holders. All the holders must be investors eligible to invest in a mutual fund. The folio is created in the name of the first holder who is the primary investor. All benefits of the investments such as dividends, redemption payments and tax benefits will go to the first holder.

The information to be provided includes the name(s), nationality, identity proof and KYC compliance, signatures of all the holder(s), address and communication details of the first

holder. In case of FPI/NRI/PIO investors, an overseas address must also be provided.

Minor as a unit holder

An investment made for a minor (less than 18 years) is done through a guardian who complies with the KYC and PAN requirements and all other formalities as if the investment was for themselves. The guardian is typically a natural parent or court appointed legal guardian. The documents to establish the natural relationship/legal guardianship (notarized photocopy of the court order) has to be provided at the time of investment. The date of birth of the minor has to be provided in the application form and the proof of age of the minor investor has to be given along with the application. An investment for a minor cannot have joint holders. On attaining maturity, the information of the erstwhile minor investor has to replace that of the guardian. KYC, PAN, Signature attested by banker and bank account details are updated in the folio. The guardian can no longer operate the folio and the account will be frozen for operations till the change of status of the erstwhile minor is updated.

POA as a unit holder

Similarly, a folio operated under a Power of Attorney (PoA), requires the PoA holder and issuer to comply with the KYC and PAN requirements and a certified copy of the PoA to be submitted to the mutual fund before the holder can operate the folio. The grantor or investor can continue to operate the account despite granting a PoA. The PoA holder can conduct all transactions except make or change nominations.

Status of the Holder and Mode of Holding

Other information that has to be provided includes the status of the first holder as an individual or non-individual and mode of holding and operating the account as single/joint/either or survivor. The selection has to be made at the time of application and may be altered at any point in time. If no selection is made, then the default option is applied. The default option is mentioned in the application form. Once a mutual fund folio is created as a jointly held account there can be no change in the joint holders. A joint holder cannot be deleted or a new one added, except in the event of death can a name be deleted.

Once the first holder's PAN is validated for KYC, the address provided in the KYC form will override the information provided in the application form.

KYC Details

The KYC acknowledgement letter as proof of compliance with the KYC norms by each holder has to accompany the application form. Also, additional KYC details are mandatorily collected in the application form relating to occupation, gross annual income or net worth and politically exposed persons status for both individual and non-individual applicants.

FATCA and CRS Details

For applicants, including guardians, whose country of birth/citizenship/nationality/tax residency is other than India, the application requires additional information under Foreign Account Tax Compliance Act (FATCA) and Common Reporting Standards (CRS). The information that is required is:

- Place/City of Birth, Country of Birth, Country of Citizenship/Nationality
- Is the investor's Tax Residency/Country of Birth/Citizenship/Nationality other than India (Yes or No)?
- If yes, indicate all countries in which the investor is resident for tax purpose and the associated Tax ID number (Details of Country of Tax Residency and Tax Payer Reference ID).

Bank Account Details

It is mandatory for investors to provide the bank details of the sole/first holder of the folio in the application form. This includes the name of the bank where the account is held, the branch and the city, the account number, type of account (current, savings, NRO, NRE, FCNR and others), MICR code and IFSC details.

For unitholders opting to hold the units in dematerialized form, the bank account details provided in the application form should match the details of the bank account that is linked to the demat account.

If the pay-out bank account is different from the bank account through which the payment for the purchase of the units was processed then additional documents to validate the pay-out account have to be provided along with the application form. This additional document may be an original cancelled cheque of the pay-out account where the account number and name of the first holder of the folio are printed on the face of the cheque, a self-attested copy of the bank pass book or bank statement showing the first holder's name and account, with entries not older than 3 months, or a letter on the bank letter head providing the details of the account.

Dividends and redemption proceeds will be credited directly to the bank account via electronic modes such as direct credit, NEFT, NACH facility. Applicants can also choose to receive the payments through cheque/demand draft.

For Minors: Payment for investment should be made by means of a cheque, demand draft or any other mode shall be accepted from the bank account of the minor or from a joint account of the minor with the guardian only. For existing folios, the AMCs are required to insist upon a change of pay-out bank mandate before redemption is processed.[70]

[70] SEBI Circular dated December 24, 2019.

Investment Details

Investors have to make their choice of scheme, plan, option and pay-out option at the time of making the application. Each scheme will offer a regular plan where the investment is routed through a distributor and a direct plan where the applicant invests directly without the assistance of a distributor.

The expense ratio for the regular plan is higher since there are distribution costs to be accounted for. Each scheme will also typically offer a growth option and an Income Distribution cum capital withdrawal (dividend) option. The Income Distribution cum capital withdrawal (dividend) option may offer a pay-out and a re-investment option. Under the pay-out option there may also be different frequencies of dividend payment offered.

While the scheme selection is mandatory to be done by the applicant, however, if the other selections are not made then the default option will apply. The default options will be clearly mentioned in the instructions listed in the application form.

Payment Details

The details of the payment instrument the bank account through which the payment for the investments is being made has to be mentioned in the application form. The payment has to be made out to the account specified by the mutual fund in the application form. The application number or folio number should be mentioned on the reverse of the payment instrument. The bank through which the payment is made need not be the same as the bank account details provided in the application form to receive dividend and redemption proceeds.

Unit Holding Option

Investors have the option to hold the units in physical mode or demat mode. If the units are to be held in a demat account then the details of the beneficiary account, name and ID of the depository participant (DP) have to be provided. The name(s), mode of holding, PAN details and bank account of the applicant will be verified against the depository data. A copy of the DP statement has to accompany the application to be able to verify the details of the account. The dividend and redemption proceeds will be paid out to the bank account linked to the demat account.

If an investor opts to hold the units in dematerialized form in an existing demat account, then the applicant(s) details provided in the application form has to be the same as that appearing in the demat account with the depository participant. The KYC performed by the depository participant will be considered as KYC verification done by the mutual fund. A copy of the Client Master Form/demat statement showing active demat account details should be provided for verification of details.

Nomination

The applicant can make a nomination[71] in favour of number of nominees and in the manner as specified by SEBI. The nomination can be made at the time of application or subsequently at any time. A folio held by a single holder should have a nomination made in the application.

Mutual Funds may require the applicant to provide a separate declaration of the intention not to nominate or consider not providing the nomination details as consent to proceed with the application without a nomination.

As per new SEBI rules, investors subscribing to mutual fund units on or after September 30, 2023 will have the choice of either provide nomination or opt out of nomination by providing a signed declaration.[72]

In a further simplification of processes, the provisions related to compulsory appoint a nominee or to give a declaration would be optional for the mutual fund folios having joint holding pattern.

Minimum Investment

The Scheme Information Document (SID) and Key Information Memorandum (KIM) provide information on the minimum application amount. Typically, the limit may be higher for the initial investment required to initiate the folio and lower for subsequent purchases. While investing, the investor needs to confirm that the investment meets the minimum investment limit set by the mutual fund for the scheme. The application has to be signed by all the holders irrespective of the mode of holding.

9.8 Financial Transactions with Mutual Funds

Financial transaction in mutual funds include purchase of mutual fund units (initial purchase in an NFO and additional purchases in an ongoing offer), redemptions i.e., sale transactions and switches. These are explained below.

Initial Purchase of Mutual Fund Units

Fresh purchase or initial purchase of mutual fund units in a scheme can be made during the new fund offer (NFO) period or even subsequently in an open-ended scheme, during the open

[71] Candidates are advised to read this circular which has come into effect from March 1, 2025. https://www.sebi.gov.in/legal/circulars/jan-2025/circular-on-revise-and-revamp-nomination-facilities-in-the-indian-securities-market_90698.html

[72] The circular, issued on 15 June 2022, stated that "All the AMCs are advised to set deadline as March 31, 2023 for nomination / opting out of nomination for all the existing individual unit holder(s) holding mutual fund units either solely or jointly as mentioned at para 1 above, failing which the folios shall be frozen for debits".
Via another Circular dated 28 March 2023, SEBI has postponed the applicable date to 30 September 2023, for freezing of folio.

offer period. The mutual fund would need the completed application form with the prescribed documentation and the requisite investment amount, to allot an investment folio in the name of the investor.

Application forms are available with offices of AMCs, distributors and Investor Service Centres (ISCs). They are also downloadable from the websites of the AMCs concerned. The common application form, with Key Information Memorandum (KIM), is designed for fresh purchases i.e., instances where the investor does not have an investment account (technically called "folio") with the specific mutual fund.

An existing investor can also use the application form to make fresh purchases in other schemes of the same mutual fund or even make additional purchases in a scheme. In this case, the assigned folio number has to be provided and all the personal information already captured under the folio will apply to the new investment being made also. The information on unit holders does not have to be provided again. The information provided in the application form is used to create the investor record or folio with the mutual fund.

Additional Purchases

Once an investor has a folio with a mutual fund, subsequent investments with the same mutual fund do not call for the full application form and documentation. Only a transaction slip needs to be filled giving the folio number, and submitted with the requisite payment. A transaction slip can be used to make additional purchases in an open-ended scheme in which the investor has already invested. It can also be used to make fresh purchases in another scheme of the same mutual fund under the same folio.

Most mutual funds send a transaction slip (with the investor's folio number pre-printed) along with the Statement of Account. Alternatively, blank transaction slip (without pre-printed folio number), which is available with branches of the AMC, distributors and ISCs, or downloadable from internet, can be used. An application form may also be used to make additional purchases and the investor can mention the existing folio number in the appropriate place provided for the same. The personal data and bank account details as they feature in the existing folio would apply to the additional investment being made and override any conflicting information provided in the application form. If the name of the holder in the folio does not match that provided in the application for additional investment, then the application form may be rejected at the discretion of the AMC.

The investor needs to confirm that the investment is above the minimum investment limit set by the mutual fund for additional purchases in the scheme.

Repurchase of Units

The investor in an open-ended scheme can offer the units for repurchase to the mutual fund.

The transaction slip needs to be filled out to affect the re-purchase. The folio number, names of the unit holders and the scheme, plan and option from which the redemption is requested should be clearly mentioned. The request should be signed according to the mode of holding of the folio. Investor has the option to decide on the repurchase amount (which is generally the case) or number of units offered for re-purchase. The re-purchase price is the applicable NAV (which is discussed later in this unit under 'Cut-off Time') less Exit Load if any.

If the investor has specified the re-purchase amount, then that amount divided by the re-purchase price would be the number of units that will be reduced from his folio.

If the investor has specified the number of re-purchase units, then those many units will be reduced from his folio; payment would be made equivalent to the number of units re-purchased, multiplied by the re-purchase price. Units will be redeemed on a First-in-First-Out (FIFO) basis.

If, while effecting the re-purchase, the investment holding in the folio goes below the minimum limit for maintaining the folio set by the mutual fund for the scheme, then all the units may be re-purchased and the investment folio of the investor may be closed.

The redemption request can be made physically by submitting the duly filled transaction slip at any of the Investor Service Centres, branch offices of the mutual fund.

Units held in dematerialized form have to be redeemed through the depository participant (DP). The investor has to submit the duly completed redemption form (available with the DP) to the DP. After verification, the DP will electronically execute the redemption request which will then be forwarded to the AMC/RTA. After verifying the redemption request, the AMC/RTA will make the payment to the investor's bank account registered with the demat account.

The pooling of funds and/or units by stock brokers/clearing members in any form or manner has been discontinued for mutual fund transactions. For both demat and non-demat mode transactions, the units will be credited and debited directly to/from the investors' demat account/folio account without routing it through the pool account of the stock brokers/clearing members. However, for redemption of units held in dematerialised mode, the practice of issuance of Delivery Instruction Slip ('DIS') (physical or electronic) to the Depository Participant to debit the units for delivery to clearing corporation can be continued[73].

Switch

A *switch* is redemption from one scheme and a purchase into another combined into one transaction.

[73]https://www.sebi.gov.in/legal/circulars/mar-2022/discontinuation-of-usage-of-pool-accounts-for-transactions-in-the-units-of-mutual-funds-two-factor-authentication-2fa-for-redemption-and-other-related-requirements-extension-of-timeline_57471.html

The subscription frequency and redemption frequency must be the same for all mutual fund schemes, except for the Specialized Investment Funds (SIFs), wherein the same could be distinct from each other. For example, an investment strategy under SIF may permit daily subscriptions (purchases), while offering weekly redemptions (repurchases).

9.8.1 Payment Mechanism for mutual fund purchases

Payments for mutual fund purchases need to be made through the banking channel modes that have been approved by the regulators. The acceptable modes of payments are through online transactions or different payment mechanisms such as cheque, demand draft and cash (subject to conditions) etc.

Online Transactions

Investors can conduct their mutual fund transactions online. The investor is required to fill in the requisite details in an application form. Based on this, the investor is allotted a user name and password (Personal Identification Number – PIN). The investor to make additional purchases of units in the mutual fund or to request re-purchase of the units held in the mutual fund can use this. Payment transactions are made through the internet banking facility provided by banks.

Digital payment mediums or electronic payment mediums use digital modes for making and receiving payments. There is no use of cash in physical form and the payment cycle is completed online. Digital payments provide advantages of ease and speed of payment process, the safety of funds and provide a record of funds usage. However, there is the risk of data theft and some of the modes of payment may be difficult for a person not comfortable with technology. In order to safeguard interest of investors, SEBI has mandated the Two-Factor Authentication for subscription and redemption transactions in the units of Mutual Funds.[74]

The Digital Payment Mediums available include the following:

Internet Banking

Internet banking is the most commonly used digital payment service. It provides access to banking services anywhere and at any time through the official website of the banking institution. Net banking allows fund transfers to own and third-party accounts, online bill payments, online shopping and other such facilities that involves making and receiving payments. The National Electronic Fund Transfer (NEFT) facility allows the digital transfer of funds between bank accounts. The Immediate Payment Service (IMPS) is an instant interbank electronic fund transfer available to registered users of banks through mobile phones, net

[74] https://www.sebi.gov.in/legal/circulars/sep-2022/two-factor-authentication-for-transactions-in-units-of-mutual-funds_63557.html

banking and ATMs.

Remittance can also be made directly to the bank account of the scheme through Real Time Gross Settlement (RTGS)/National Electronic Funds Transfer (NEFT) facilities (for transfers within India) or SWIFT transfer (for transfers from abroad). While RTGS transfers are instantaneous, NEFT transfers are batched together in the banking system and effected at various times during the day. SWIFT transfers tend to pass through multiple banks in different geographies, and multiple levels within the same bank, resulting in delays. All banks and their branches are not enabled to provide electronic transfer facilities.

Before money is remitted directly to the mutual fund, it is advisable to get the proper bank account details from the AMC/distributor. The details of the mutual fund, such as account number, account name, IFSC details etc. are required to do an electronic transfer. Some mutual funds may provide this information in the application form. The bank will generate a unique transaction reference number. The acknowledgement from the bank for the transfer request has to be appended along with the application as proof of transfer. The account number mentioned in the transfer instruction copy provided as proof should have the first holder as one of the account holders.

National Automated Clearing House (NACH) is a centralised clearing system launched by the National Payments Corporation of India (NPCI). NACH aims to replace and consolidate multiple existing Electronic Clearing Service (ECS) systems across India and create a faster and more efficient clearing platform. It is a web-based solution for Banks, Financial Institutions, Corporate and Governments, to facilitate interbank high volume, electronic transactions which are repetitive and periodic in nature. This has been introduced in place of ECS for repetitive payments. NACH have same day presentation and settlement, including returns processing.

The various facilities offered by NACH include standardisation and digitisation of mandates, overall simplification, reduction of operational cost, and minimisation of activation time. Existing ECS mandates have now been moved to the NACH platform, in partnership with the participating banks. However, no intervention from investors will be necessary in this regard.

The service is now active in all Indian banks with core banking facility. It comes in two variants – NACH Credit and NACH Debit. The significant benefits to bank customers include automatic debits from their account for bill payments (telephone, electricity, etc.), loan instalments, insurance premiums, SIPs and more. Not only this, NACH is useful for corporate and financial institutions that make payments in bulk like dividend distributions, salaries, interests, pensions, etc.

M-Banking i.e., mobile banking is another convenient way for investment and transaction purpose.

Stock exchange platform and MFU platform are also used for purchase transactions. The details have been discussed in Chapter 6.

Unified Payment Interface

The Unified Payment Interface (UPI) allows fund transfer between accounts through the mobile app. The users have to register for a mobile banking facility to be able to use the app. There are many UPI apps available such as BHIM, banking applications, Aadhaar app etc. which one can download on their phone. After the application (app) is downloaded, a Virtual Payment Address (VPA) has to be created by going through an authentication process. This is like an email address and links the UPI app to the user's bank account through the mobile phone registered with the bank. The VPA can be changed if so desired. Multiple bank accounts can be linked to a VPA, but one account has to be designated as the default account. To make payments using the UPI, one needs the VPA of the payee. The user can also receive funds using the UPI. A new version of the UPI allows the transfer of funds using the Aadhaar number instead of a VPA.

Application Supported by Blocked Amount

Application Supported by Blocked Amount (ASBA) is a facility where the investment application in a New Fund Offer (NFO) is accompanied by an authorization to the bank to block the amount of the application money in the investor's bank account.

The benefit of ASBA is that the money goes out of the investor's bank account only on an allotment. Until then, it keeps earning interest for the investor. Further, since the money transferred from the investor's bank account is the exact application money that is due on account of the allotment, the investor does not have to wait for any refund.

Aadhaar Enabled Payment Service

Aadhaar Enabled Payment Service (AEPS) allows bank to bank transaction using the Aadhaar number of the customer. The Aadhaar number has to be linked to the bank account to be able to use AEPS. The account holder can withdraw and deposit cash and transfer money to another account linked to the Aadhaar number. The AEPS uses the fingerprint of the individual as the password to authorize transactions and is thus a secure mode of transfer of funds.

National Unified USSD Platform

National Unified USSD Platform (NUUP) based mobile banking allows transactions even without a smartphone and internet. The code *99# dialed from the phone registered with a bank for a bank account allows transactions such as making payments, checking balances, fund transfers and getting a mini statement. Most leading banks support this service. NUUP is currently available in 11 regional languages.

Cards

Cards are the most commonly used mode of digital payments. Debit cards are issued by banks to their account holders and allow card holders to carry out fund transactions linked to their bank account. Credit cards are issued by banks and other approved entities and allow credit card holders to use the card up to approved credit limits. Prepaid cards can also be used to make card payments. The cards are used by swiping it at the merchants' PoS device. A PIN may be required to confirm the transaction in case of a debit card. Online payments can also be made using cards. The drawback is that the merchant may have to pay a charge on each transaction done through credit cards. Mutual funds purchases using credit cards are not allowed.

E-Wallets

E-Wallets are a virtual or digital version of the physical wallet. Money is loaded to the E-Wallet and used as required to make payments and transfer funds to other E-Wallets. However, they cannot be used to transfer money to a bank account. Using the E-Wallet does not require a PIN or Password which makes them susceptible to unauthorized use by anyone who can get access to the mobile phone on which the Wallet is stored. Wallets of banks, payment banks and e-commerce platforms are commonly called E-Wallets. The use of E-Wallets is subject to certain conditions like following regulations pertaining to cut-off timings, time stamping etc. MFs/AMCs shall ensure that total subscription through e-wallets for an investor is restricted to Rs.50,000/- per investor per financial year. This limit of Rs.50,000/- would be an umbrella limit for investments by an investor through both E-Wallet and/or cash, per mutual fund per financial year. MFs/ AMCs shall ensure that only amounts loaded into e-wallet through cash or debit card or net banking, can be used for subscription to MF schemes. Any amount loaded into e-wallet through credit card, cash back, promotional scheme etc. are not allowed for subscription to MF schemes. Also, no third-party transactions are allowed through e-wallets. It shall be ensured that all e-wallets are fully compliant with KYC norms as prescribed by Reserve Bank of India.[75]

Digital payments such as Net Banking, Debit cards, UPI are amongst the accepted modes of payment for mutual fund schemes currently.

One-Time Mandate (OTM) is a payment facility that investors can use to authorize their bank to process debits to their specified bank account raised by a specified mutual fund for purchase of units. The debits happen through the National Automated Clearing House (NACH). It eliminates the need for the investor to initiate payment every time a purchase transaction is conducted. It is a one-time process to register a bank account under this facility. An existing investor can fill up the OTM form to register a bank account and hand it over to the Investor Service Centre for processing. A new investor can submit the OTM form along with the application form for subscription. The OTM mandate requires the bank name, bank

[75] https://www.sebi.gov.in/legal/circulars/mar-2023/e-wallet-investments-in-mutual-funds_69254.html

account number, account type, IFSC and MICR code to be provided to identify the account to be registered. A cancelled cheque or copy with the name and account number pre-printed on it has to accompany the application form for verification of the account details. The folio number for existing investors and the application form number for new investors have to be provided along with the email id and phone number. Investors can select the frequency at which debit can be made, monthly, quarterly, half-yearly, or 'As and when presented' and specify the fixed amount that can be debited. The mandate also allows account holders to specify the maximum amount that can be debited on a daily basis and select the category— 'As and when presented' under the frequency parameter to enable multiple SIP or other purchase debits under the folio. For example, investors can mandate an amount of Rs.5000/- that can be debited as and when presented. There is no limit on number of transactions as long as the total amount is within the daily maximum limit specified in the mandate. The period for which the mandate will be valid should also be specified in the form. The name(s) and signatures of the bank account holders have to be affixed on the form. Registering the OTM can take 3 to 4 weeks.

The OTM mandate is at a folio level. This means that the folio holder can use the OTM mandate for all purchase transactions under the folio. Mutual funds may specify the schemes and the type of purchase transactions that can be conducted through the OTM— Fresh lump sum purchase, additional purchase, SIP investments.

The OTM can be used to make the eligible purchases through physical, online, SMS and other modes of transaction offered by the mutual fund. The mandate can be cancelled by submitting the OTM form indicating cancellation.

Other payment mechanism for mutual fund purchases

Cheque/Demand Draft

Application forms for fresh investment/transaction slip for additional purchase is normally accompanied by a cheque/demand draft (DD) drawn in favour of the scheme in which the application is to be made. In order to prevent misuse of physical payment instruments, mutual funds prescribe precautions such as mentioning of the name/PAN number of the investor and details of the scheme on the payment instrument. A separate payment instrument should accompany each scheme/each plan.

The account holder signs cheques, while the banker signs DDs. Generally, DDs are accepted only if the investor is from a location where there is no official collection centre for the application. The bank charges for the outstation DD will be borne by the AMC within specified limits.

NRI/PIO applications need to be accompanied by a cheque drawn on an NRO/NRE/FCNR account (for non-repatriable investment) or NRE/FCNR account (for repatriable investment). If Indian Rupee Drafts are purchased abroad or cheques issued from NRE/FCNR account an

account debit certificate from the bank issuing the draft confirming the debit and/or Foreign Inward Remittance Certificate (FIRC) by the investor's banker shall also be enclosed to certify the source of funds as remitted from abroad.

The payment instrument would need to be local i.e., cheque should be drawn on a local bank account. If it is drawn on an out-station bank account, then the bank should offer the facility of 'at par' payment in the location where the application form and cheque are submitted. If such an 'at par' facility is available, 'payable at par at…… (list of locations / all over India)' would be clearly mentioned on the face or back of the cheque. Cheques accompanying the investment application are to be signed by the investor and drawn on an account in which the first holder is an account holder.

Similarly, DD should clearly mention the place of payment as the location where the application form/transaction slip and payment instrument are being submitted.

The payment instrument should not be post-dated (except for future instalments under SIP), and not stale (i.e., cheque date should not be more than 3 months older than the date on which the cheque is to be banked). Third-party cheques are not accepted except in special cases. To know about Third Party Payments, refer to Box.9.1[76].

[76] With the purpose to safeguard the interest of unitholders SEBI has directed the AMCs that payment for MF transactions should be accepted through only such modes where independent traceability of end investor can be ensured and source account details are available as audit trail without relying on any other intermediary's records. This is done to ensure that the folio and source bank account belong to the same person. Candidates are advised to read Section B. Other measures to prevent third-party payments and to safeguard the interest of unitholders of the circular: https://www.sebi.gov.in/legal/circulars/oct-2021/circular-on-mutual-funds_53103.html and also the revised circular https://www.sebi.gov.in/legal/circulars/mar-2022/discontinuation-of-usage-of-pool-accounts-for-transactions-in-the-units-of-mutual-funds-two-factor-authentication-2fa-for-redemption-and-other-related-requirements-extension-of-timeline_57471.html

Box: 9.1 Third Party Payments

A third-party payment is defined as one made through a bank account other than that of the first holder of the folio. If the payment is made through a joint bank account, then the person mentioned as the first holder of the folio should be one of the joint holders for the payment tobe considered non-third-party payment.

There are some exceptions where third party payments will be accepted.

- Payment by Parents/Related Persons on behalf of a minor in consideration of natural love and affection or as gift for a value not exceeding Rs 50,000/-for each regular purchase or per SIP instalment. 'Related Person' means any person investing on behalf of a minor in consideration of natural love and affection or as a gift. In such cases, persons who make payment should be KYC Compliant and sign Third PartyDeclaration form.
- Employer making payments on behalf of the employee through payroll deductions, and custodian on behalf of FPIs are permitted third-party payments.

A Third-Party Declaration form duly completed has to accompany the application where the payment is from this source. The beneficial investor has to be clearly identified in the form by giving the full name of the first/sole investor and using the folio number if it is an existing number or the application form number for a new investment. Compliance with the KYC norms and providing the PAN details are mandatory by the third party making the payment irrespective of the amount involved. The source of funds with which the payments are being made should be clearly established. Where the payment is being made by cheque then the name of the third party making the payment should be pre-printed on the cheque. If this is not available, then a bank statement or pass book having the party's name or letter on the bank's letterhead giving details of the bank account held should be attached. Similarly, if the payment is made by a pre-funded instrument such as a demand draft, then proof of the funding having come from the third-party's account has to be enclosed. If electronic modes such as RTGS/NEFT, NACH or account transfer are used then the acknowledgement copy of the instructions to the bank has to be provided. The purpose of the documentary proof is to provide AMC the evidence that the payment was made out of the bank account of the third party and should therefore have the details of the account holder clearly mentioned. Pre-funded instruments such as demand drafts issued against cash for Rs. 50,000 or more will not be accepted as payment.

Cash Payments

Mutual funds usually do not accept cash. Small investors, who may not be taxpayers and may not have PAN/bank accounts, such as farmers, small traders/businessmen/workers are allowed cash transactions for the purchase of units in mutual funds to the extent of Rs. 50,000/-per investor, per mutual fund, per financial year. This is subject to compliance with the Prevention of Money Laundering Act, 2002 and SEBI Circulars on Anti Money Laundering (AML) and other applicable AML rules, regulations and guidelines. This facility is available only for resident individuals, sole proprietorships and minors investing through their guardians. They must be compliant with the KYC norms, whether or not they have a PAN. The application must be submitted in physical mode to avail of this payment option. A prescribed deposit slip for making cash investments available at the Investor Service Centre (ISC) has to be used to give details of the scheme in which the investment is being made and the amount of investment. The deposit slip along with the cash has to be deposited at the bank branches designated to accept the cash investments. The acknowledgement copy of the bank slip received from the bank along with the application form/transaction slip has to be submitted

to the ISC for time stamping.

Although investment can be made in cash, repayment in form of redemptions, dividend payments etc. can be only through the banking channel. The pay-out bank details have to be provided in the application form.

Apart from the above-mentioned exception for small investors, application money needs to come through normal banking channels. Instruments or payment modes that are not accepted for payment include Stock-invests, Postal orders, Money orders, Cash (except as discussed above), Outstation cheques and Post-dated cheques (except for systematic investments).

AMCs may also use instruments or payment channels such as RTGS, NEFT, IMPS, direct credit, etc. or any other mode allowed by Reserve Bank of India from time to time, for payments including refunds to unitholders in addition to the cheque, demand draft or dividend warrants.

9.8.2 Payment Mechanism for Repurchase of Units

The investor has various options for receiving the money, due to him from the scheme on re- purchase of units:

Cheque

This is a traditional approach, where the receipt of money in the investor's bank account is delayed on account of the processes involved viz. time taken by the AMC to prepare and send the cheque, time taken by postal authorities/courier to deliver the cheque, time taken by the investor to deposit the cheque in the bank, and time taken by the banking system to transfer the proceeds to the investor's bank account.

Electronic Modes

Electronic modes allow for the repurchase proceeds to be transferred electronically to the investor's bank account. This is much faster because the various processes mentioned earlier for payment by cheque, are obviated. A Direct Credit from the mutual fund's account to that of the investor can be done provided the investor holds an account with a bank with which the mutual fund has the arrangement to make direct credits. Other electronic modes include RTGS/NEFT/NACH etc. Details such as the account number, branch address, IFSC/MICR code have to be provided to the mutual fund to enable credit to the bank accounts of investors of redemption amounts and dividends. This information is collected at the time of making the application. Electronic modes may not be available to all investors, depending upon their geographic location and/or the bank and branch with which they hold their account. In such cases, cheques and demand drafts will be used to make payments to the investors.

The redemption proceeds will be paid in favour of the sole/first holder of the folio. If the

proceeds are paid by cheque, then the same will be sent to the unitholders address.

For units held in dematerialized form, the redemption proceeds will be paid into the bank account registered with the DP.

It may be noted that for non-resident investors, payment is made by the AMC in rupees. In case the investment has been made on a repatriable basis, and the investor wishes to transfer the money abroad, the costs associated with converting the rupees into any foreign currency would be to the account of the investor. Proceeds of investments made on a repatriable basis can be credited to an NRE or FCNR account, as required by the investor. In case of redemptions by NRIs there will also be tax deducted at source as applicable.

Mutual funds provide investors the facility to register multiple bank accounts to facilitate receiving the redemption, dividends and any other payouts from the fund. An individual investor can register up to five bank accounts and a non-individual investor, ten. The first holder of the folio must be an account holder in each of the accounts that are registered. One of the accounts is designated as the default account, and unless otherwise specified all credits are made to this account by the mutual fund. Investors can change the default bank account at any time by instructing the AMC to do so.

In case of NRI investments, if the payment for the investment was made through an NRO account, then the registered account should also be of the same type. If payment was routed through an NRE account, then the registered accounts can be an NRO or NRE account.

A redemption request may be accompanied by a request to credit the amount to an account other than the default bank account registered with the mutual fund. If this account is among the bank accounts that have already been registered with the mutual fund under the facility to register multiple bank accounts, then the credit will be made to the desired account. If the account has not been registered, then the amount will be credited to the default bank account and the request for change in the bank account will not be processed.

Instant Access Facility

IAF facilitates credit of redemption proceeds in the bank account of the investor on the same day of the redemption request. The MFs/AMCs can offer IAF only in Liquid schemes of the mutual fund. The monetary limit under the IAF is Rs. 50,000 or 90 percent of the latest value of an investment in the scheme, whichever is lower. This limit is applicable per day per scheme per investor. Also, there can be repurchase transactions through the stock exchange platform or MFU platform.[i]

9.9 Cut-off Time and Time Stamping

As seen earlier, the sale and re-purchase prices are a function of the applicable NAV. In order to ensure fairness to investors, SEBI has prescribed cut-off timing to determine the applicable

NAV. The provisions, which are uniformly applicable for all mutual funds, are as follows:

Type of Scheme	**Transaction**	**Cut off time**	**Applicable NAV**
Equity oriented funds and debt funds (except liquid and overnight funds) in respect of transaction of any amount[77]	Purchases and Switch ins	3.00 pm	Irrespective of the time of receipt of application, NAV of the business day on which the funds are available for utilisation without availing of any credit facility before the cut-off time of that day is applicable.
Type of Scheme	**Transaction**	**Cut off time**	**Applicable NAV**
Liquid fund and Overnight Funds	Purchases and Switch ins	1.30 pm	If application received up to the cut off on a day and funds are available for utilisation before the cut-off time, without availing any credit facility, whether intra-day or otherwise then closing NAV of the day immediately preceding the day of the receipt of application is applicable.
			If application received after cut off time on a day and funds are available for utilisation on the same day whether intra- day or otherwise, the closing NAV of the day immediately preceding the next business day is applicable. [Mutual funds shall calculate NAV for each calendar day for their liquid fund schemes and plans.]
			Irrespective of the time of receipt of applications, where the funds are not available for utilisation before the cut-off time, without availing any credit facility, whether intra- day or otherwise, the closing NAV of the day immediately preceding the day on which the funds are available for utilisation.
Equity Oriented Funds, Debt funds (Other than Liquid funds)	Redemptions and Switch outs	3.00pm	Same day NAV if received before cut off time.
			Next business day NAV for applications received after cut off time.

[77] Vide SEBI circular dated September 17, 2020, it was decided that with respect to purchase of units of MF schemes (except liquid and overnight schemes), closing NAV of the day shall be applicable, on which the funds are available for utilisation irrespective of the size and time of receipt of such application. Until now, investors who gave a cheque for below Rs 2,00,000 got the same day's NAV, while those putting more got the NAV of the day when the cheque was realised. This comes into effect from February 1, 2021.

Type of Scheme	Transaction	Cut off time	Applicable NAV
Liquid funds	Redemptions and Switch outs	3.00 pm	NAV of day immediately preceding the next business day, if received before cut off time. If redemption request is received through Instant Access Facility (IAF)up to the cut off time, then the lower of: (a) NAV of previous calendar day and (b) NAV of calendar day on which application is received
			Next business day NAV for applications received after cut off time. If redemption request is received through Instant Access Facility (IAF)after the cut off time, then the lower of: (a) NAV of calendar day on which such application is received and (b) NAV of next calendar day
Overnight funds[78]	Redemptions and Switch outs	Applications received up to 3:00 PM	Closing NAV of the day immediately preceding the next business day will apply.
		Applications received after 3:00 PM	Closing NAV of the next business day will apply.
		Online applications	Cut-off timing extended to **7:00 PM** for overnight fund schemes.

The above cut-off timing is not applicable for NFOs and International Schemes.
These are explained with some examples below:
Consider the following case as an example:

Assume that in a particular week, Monday, Wednesday, Thursday and Friday are business days, whereas all the other days are non-business days. The week would look as under:

- Sunday – non-business day
- Monday – business day
- Tuesday – non-business day
- Wednesday – business day
- Thursday – business day
- Friday – business day

[78]https://www.sebi.gov.in/legal/circulars/apr-2025/change-in-cut-off-timings-to-determine-applicable-nav-with-respect-to-repurchase-redemption-of-units-in-overnight-schemes-of-mutual-funds_93541.html

- Saturday – non-business day

Given the above details, the following are some examples of transactions to understand what NAV would be applicable:

1. An investor submits an application on Monday to buy units of an equity mutual fund scheme for Rs. 3,00,000.

If an application is made on Monday and the fund is realized on Wednesday by 2 pm, it will be Wednesday's NAV. If funds are realized or available for utilisation on Wednesday by 5 pm, then it will be Thursday's NAV.

2. An investor makes an application to purchase units of a liquid fund

If an application is made on Monday and the fund is realized by 1 p.m. on Monday, it will be Sunday's NAV. If it is realized by 3 pm on Monday, it will be Tuesday's NAV. If it is realized by 10 am on Wednesday, it will be Tuesday's NAV.

3. An investor makes an application for redemption of units of equity fund on Monday

If the application is submitted before the cut-off time, the redemption would be processed at Monday's NAV. However, if the application were submitted after the cut-off time, the applicable NAV would be of Wednesday. (Remember: Tuesday is a non- business day).

4. Redemption from the liquid fund, application submitted on Monday

If the application were submitted before the cut-off time, the redemption would be processed at Tuesday's NAV. However, if the application were submitted after the cut-off time, the applicable NAV would be of Wednesday. (Remember: Tuesday is a non- business day).

Time Stamping

The precision in setting cut-off timing makes sense only if there is a foolproof mechanism of capturing the time at which the sale and re-purchase applications are received. This is ensured through the following:
Mutual funds disclose Official Points of Acceptance (OPoAs) and their addresses in the SID and their website. All transaction requests need to be submitted at the OPoAs. The time stamping on the transaction requests is done at the official points of acceptance.

As a convenience, the distributor may accept the transaction request from the investor, but this would need to be sent to an OPoA at the earliest. When the cut-off timing is applied, the time when it is submitted to the OPoA is relevant–not the time when the investor submits the transaction request to the distributor.

These points of acceptance have time-stamping machines with a tamper-proof seal. Opening the machine for repairs or maintenance is permitted only by vendors or nominated persons

of the mutual fund. Such opening of the machine has to be properly documented and reported to the Trustees.

Applications are sequentially numbered from the first number of the machine to the last number of the machine before a new numbering cycle is started for the machine. The daily time stamping of the application does not start with serial 1.

Application for purchase of units is stamped with automatically generated location code, machine identifier, serial number, date and time; the reverse of the payment instrument has to be similarly stamped with the same number; the acknowledgement issued to the investor gets a similar stamp.

Application for re-purchase and investor's acknowledgement are stamped with the same information.

Similarly, applications for non-financial transactions like the change of address, and investor's acknowledgement are stamped. However, here stamping of time is not relevant; the date stamping is pertinent.

For online transactions, the time as per the web server to which the instruction goes is used in determining the NAV for sale/re-purchase transactions.

9.10 KYC Requirements for Mutual Fund Investors

All investors, both individual and non-individual, including joint holders, NRIs, PoA holders and its issuers, and guardians in the case of minors have to be KYC compliant, irrespective of the investment value. This applies for transactions such as new/additional purchases, switch transactions, new systematic investment plan (SIP)/micro-SIP registrations received from the effective date, new systematic transfer plan (STP) registrations from the effective date, new Transfer of Income Distribution cum capital withdrawal plan (or Dividend Transfer Plan – DTP) registrations from effective date.

The KYC process involves establishing the identity and address of the investor as required under the Anti-Money Laundering Laws. The application for investment must be accompanied by the acknowledgement for having completed the KYC process issued by the KYC Registration Agency (KRA).
Broadly, mutual fund investors need to submit the following documents to the distributor or other capital market intermediary registered with SEBI, such as stock broker and depository participant. The information is updated in the central system of the KRA.

9.10.1 KYC Documents

For the KYC process (for establishing proof of identity and address), the following documents are required:

- **Permanent Account Number (PAN) Card** with photograph is mandatory for all applicants except those who are specifically exempt from obtaining PAN. *This serves as the proof of*

identity. With a view to bring about operational flexibility and in order to ease the PAN verification process, SEBI has provided that market intermediaries may verify the PAN of their clients online at the Income Tax website without insisting on the original PAN card, provided that the client has presented a document for Proof of Identity other than the PAN card.

- There are some PAN exempted mutual fund investment. See Box 9.2 for details.
- The following categories of investors are exempt from producing PAN:
    - In case of transactions undertaken on behalf of the Central/State government and by officials appointed by the court.
    - Investors residing in the state of Sikkim.
    - UN entities/Multilateral agencies exempt from paying taxes/filing tax returns in India.
    - Investments (including SIPs and lump sum investments) in Mutual Fund schemes up to Rs. 50,000/- per investor per year per mutual fund.

These categories of investors however have to provide an alternate document such as the Aadhaar card, Passport, Voter's Id, Driving License or other photo-identity card which serve as the **proof of identity**.

- **Proof of Address** such as Passport, Voter's Id, Ration card, Driving License, bank account statement, utility bill and other specified documents. If the address for communication and permanent address are different then documentary proofs have to be provided for both. The proof of address in the name of the spouse may be accepted.

The copies of the documents produced have to be self-attested and the originals have to be provided for verification purpose. In case, the originals are not produced for verification then the copies of the documents must be attested by persons authorized to do so. The KYC formats have been prescribed by SEBI[79].

[79] https://www.amfiindia.com/kyc

Box 9.2: PAN Exempt Investments in Mutual Funds

Providing Permanent Account Number (PAN) is compulsory for all mutual fund investments. An exception has been made for Micro-SIPs i.e., SIPs where annual investment (12 month rolling or April-March financial year) does not exceed Rs 50,000. Similarly, as discussed earlier in this chapter, small investors investing up to Rs. 50,000 per mutual fund per financial year do not need to provide PAN Card. Rs. 50,000 is a composite limit for the small investor's Micro-SIP and lump sum investments together.

Investment by individuals, minors and sole-proprietary firms within the limits specified above are exempted from the requirement of PAN card. However, the KYC norms have to be complied with a SEBI registered KRA. Investors must quote the PAN Exempt KYC Reference Number (PEKRN) issued by the KRA and submit a copy of the letter with the application form.

Instead of the PAN, the investors (including joint holders) can submit any one of the following PHOTO IDENTIFICATION documents for KYC verification:

- Voter Identity Card
- Driving License
- Government / Defense identification card
- Passport
- Photo Ration Card
- Photo Debit Card (Credit card not included because it may not be backed up by a bank account)
- Employee ID cards issued by companies registered with the Registrar of Companies
- Photo Identification issued by Bank Managers of Scheduled Commercial Banks / Gazetted Officer/Elected Representatives to the Legislative Assembly / Parliament
- ID card issued to employees of Scheduled Commercial / State /District Co-operative Banks
- Senior Citizen / Freedom Fighter ID card issued by Government
- Cards issued by Universities/deemed Universities or institutes under statutes like Institute of Chartered Accountants of India, Institute of Cost Accountants of India and Institute of Company Secretaries of India
- Permanent Retirement Account Number (PRAN) card issued to National Pension System (NPS) subscribers by CRA (NSDL)
- Any other photo ID card issued by Central Government / State Governments /Municipal authorities / Government organizations like ESIC / EPFO.

The Document must be current and valid and the copy shall be self-attested by the investor/attested by the ARN holder mentioning the AMFI Registration Number (ARN).

9.10.2 KYC Registration Agencies

Centralised KYC Registration Agencies

SEBI has instituted a centralised KYC process for the capital market, including mutual funds. This is a significant benefit for the investor. Based on the completion of the KYC process with one capital market intermediary, the investor can invest across the capital market. KYC Registration Agencies (KRAs) facilitate this centralised KYC process.

Once a capital market intermediary has performed an In-Person Verification (IPV) of the investor and other documentation requirements are in place, and the intermediary uploads the investor's data to the database of a KRA, the KYC is valid across the capital market. The investor can benefit from that KYC to invest in any part of the capital market (not limited to mutual funds).

SEBI circulars dated August 22, 2011, October 5, 2011, and December 26, 2013, on uniform KYC norms prescribed a standard account opening form (AOF). Part I of the form contains the basic KYC details of the investor used by all SEBI registered intermediaries and Part II of the form contains additional information specific to dealing in the stock exchanges.

Vide Notification dated November 26, 2015, the Government of India authorised the Central Registry of Securitisation and Asset Reconstruction and Security Interest of India (CERSAI) to act as and to perform the functions of the Central KYC Record Registry under the PML Rules 2005, including receiving, storing, safeguarding and retrieving the KYC records in digital form of all the clients in the financial sector.[80]

The KYC template finalised by CERSAI has to be used by the registered intermediaries as Part I of the AOF for individuals. The registered intermediaries shall upload the KYC data with Central KYC Records Registry (cKYCR) in respect of all individual accounts opened on or after August 1, 2016, where KYC is required to be carried out as per the circulars issued by SEBI from time to time. Some of the key functions of the Central KYC Registry have been mentioned below:

- It shall be responsible for electronically storing, safeguarding and retrieving the Know Your Customer (KYC) records and making such records available online to reporting entities or Director.
- Central KYC Registry shall disseminate information updated about a customer on request to any reporting entity that avail the services of the Central KYC Registry in respect of the customer.

[80]Client as defined in clause (ha) sub section (1) of Section 2 of the Prevention of Money Laundering Act, 2002 dated November 2015.

- The services of the Central KYC Registry will be available on payment of the prescribed fee, in advance.
- It shall process the KYC records received from a reporting entity for de-duplication and issue a unique KYC Identifier for each client to the reporting entity.

Where a customer submits a KYC identifier to a reporting entity, then such reporting entity shall download the KYC records from the Central KYC Registry by using the KYC Identifier and shall not require a customer to submit the documents again unless:

- There is a change in the information of the customer as existing in the records of the Central KYC Registry.
- The current address of the client is required to be verified.
- The reporting entity considers it necessary in order to verify the identity or address of the client, or to perform enhanced due diligence or to build an appropriate risk profile of the client.

KYC through e-KYC service of UIDAI

In consultation with the Unique Identification Authority of India (UIDAI) and the market participants, the e-KYC service launched by UIDAI has also been accepted as a valid process for KYC verification. The information containing relevant client details and photograph made available from UIDAI as a result of the e-KYC process shall be treated as sufficient proof of Identity and Address of the client. However, the client shall have to authorize the intermediary to access his data through the UIDAI system.

Entities in the securities market, as may be notified by the Central Government, shall be allowed to undertake Aadhaar Authentication under section 11A of the PMLA. These entities would be registered with UIDAI as KYC user agency (KUA) and shall allow all the SEBI registered intermediaries/mutual fund distributors to undertake the Aadhaar Authentication of their clients for the purpose of KYC through them.

The SEBI registered intermediaries/mutual fund distributors, who want to undertake Aadhaar authentication services through KUAs, shall enter into an agreement with any one KUA and get themselves registered with UIDAI as sub-KUAs. The agreement in this regard shall be prescribed by UIDAI. Upon notification by the Central Government/registration with UIDAI, the KUAs and sub- KUAs shall adopt the following process for the Aadhaar e-KYC of investors (resident) in the securities market.

KYC through Intermediaries

Where the investors choose to hold the units in demat form or for applicants who choose to invest through the stock exchange infrastructure, the KYC performed by the Depository

Participant will be considered in compliance with the KYC norms.
Additional details of the investor, namely occupation, Gross Annual Income/ Net worth and Politically Exposed Persons (PEP) status are also captured in the application form by mutual funds. This is mandatory information and has to be provided both by individuals and non-individuals.

Centralised KRAs have made the KYC process simpler for investors. Mutual funds, depositories, registrars and transfer agents, KYD compliant mutual fund distributors and brokers are authorised to facilitate the KYC documentation of investors.

9.10.3 KYC Process

KYC Process entails the following:

- The requisite form has to be filled-in along with supporting documents. The supporting documents (identity and address proof) are verified with the original documents. Alternatively, the investor can provide a True Copy attested by a Notary Public, Gazetted Officer or Manager of a Scheduled Commercial Bank.
- The original documents of the identity and address proof are returned to the investor after verification while the forms and supporting documents are uploaded in the server of any centralised KRA.
- The intermediaries mentioned above are also authorised to perform an In-Person Verification (IPV) of the investor, which is mandatory. The name, designation and organisation of the person conducting the IPV has to be recorded on the KYC form. An IPV performed by Scheduled Commercial Bank is also acceptable for mutual fund investments.

Once these processes are completed and the details are uploaded on the KRA's servers, the KYC process is complete. The investor does not need any further KYC for dealing in any part of the securities market (depository, stock exchange transactions, mutual fund transactions etc.).

Similarly, in the event of change of address or any other information, the mutual fund investor needs to fill the standard form and follow the prescribed process only once, with any of the intermediaries mentioned above. Based on that, the information will be updated with all the mutual funds and other capital market related parties where the investor has invested.

SEBI has eased the Know Your Client (KYC) Process by enabling Online KYC, use of Technology/ App by the registered intermediary. The use of technological innovations that can facilitate online KYC has been allowed. This facilitates the investors to complete the KYC without the requirement of physically visiting the office of the intermediary. SEBI has enabled the usage of eSign, Digi locker and electronic signature as permitted by the Government of India under the Information Technology Act, 2000 and the Rules made thereunder.

The process involves the investor visiting the app or the online website of the Registered Intermediary (RI) and then filling up the KYC form online along with the submission of documents too online. Details like the name, photograph, address, mobile number, email id, bank details of the investor are captured online along with the PAN, signed cancelled cheque which is provided through eSign. This is then verified through various means. The mobile number and email are verified through a One Time Password (OTP) or other verifiable mechanism. The Aadhar number is verified through the UIDAI authentication system, PAN is verified through the online Tax database, bank account system is verified through penny drop mechanism or some other mechanism using API of the bank. Any other officially verified documents have to be submitted through Digi locker or eSign mechanism. Once this is done the online process can be completed by the investor taking a printout of the KYC form and submitting this along with their wet-signature through a scanned copy under eSign or affixing the online cropped signature and submitting the same to the RI by eSign.

The enablement has been done to facilitate investor to submit their Officially Valid Documents (OVDs) for the purpose of KYC to the SEBI intermediary's online/digital platform, App, through e-mail or electronic means.

The Hon'ble Supreme Court in its judgement dated April 30, 2025, emphasized the need for equal and accessible inclusion of persons with disabilities for availing financial services and directed to ensure that the process of digital KYC is accessible to persons with disabilities. In order to make the digital KYC process inclusive and accessible, FAQ on Account opening by Persons with Disabilities has been revised and is available on 'SEBI Website → FAQs → Know Your Client Requirements, Demat / Trading Account Opening → FAQ on Account Opening by Persons with Disabilities.[81]

KYC for Minors

Where a minor makes an investment, KYC requirements have to be complied with by the Guardian. The proof of age of the minor has to be provided.

KYC for Power of Attorney holder on behalf of an investor

In the case of investments by a Power of Attorney (PoA) holder on behalf of an investor, KYC requirements have to be complied with, by both, investor and PoA holder. A PoA holder cannot apply for KYC compliance on behalf of the issuer of the PoA.

KYC for NRIs

For NRI investors PAN is the sole identification number for KYC compliance. A copy of the passport/PIO card/OCI card and overseas address proof is mandatory.

[81] https://www.sebi.gov.in/sebi_data/faqfiles/may-2025/1747995205392.pdf

9.10.4 Additional Requirements applicable for Institutional Investors

Since institutional investors are not natural persons, authorised individuals invest on behalf of the institution. Therefore, the following additional documents are essential:

- Eligibility for the investing institution to invest. For instance, a company/trust is eligible to invest under the laws of the country, but the company's own incorporation documents (Memorandum of Association and Articles of Association or Trust Deed) may not have provided for such investments. The company/trust cannot invest if its incorporation documents do not provide for investments of this type. Similarly, in some states, permission of the Charity Commissioner is necessary, before Religious and Charitable Trusts can invest.
- Authorisation for the investing institution to invest. This is typically in the form of a Board Resolution.
- Authorisation for the official to sign the documents on behalf of the investing institution. This again is provided for in the Board Resolution. In case of other non- individual investors, too the list of authorised signatories would be required. The mutual fund can allow transactions only if the transaction form/slip carries the signature of any (one or more, as required) of the authorised signatories.
- SEBI has mandated that investor other than individuals have to provide details of the 'Ultimate Beneficial Owner' (UBO) of the investments and submit documents to establish their identity of such UBOs through any of the identity proofs acceptable under the KYC norms. An UBO of a company is one who owns or is entitled to more than 25 percent of its shares or profits, more than 15 percent in case of partnerships and body of persons. In case of a trust, this includes the settler, the trustees, and the beneficiaries who are entitled to 15 percent or more of the benefits. The UBO requirements are not applicable to listed companies or subsidiaries of the same.

These documentation requirements for institutional investors are in addition to the normal KYC documentation, discussed earlier.[82]

Legal Information and Mandatory Declarations

As part of the Client Due Diligence (CDD) process under the Prevention of Money Laundering Act, all categories of investors of SEBI registered intermediaries, which includes mutual funds, except individual investors and a company that is listed on a stock exchange or is a majority owned subsidiary of such a company is required to provide the information to establish and verify the identity of the persons who beneficially own or control the securities account. The proof of identity of the Ultimate Beneficial Owner (UBO) such as Name/s, Address, PAN/Passport together with self-attested copy and the UBO declaration form has to be

[82]Candidates are advised to refer to the FREQUENTLY ASKED QUESTIONS ON KYC NORMS FOR THE SECURITIES MARKET issued by SEBI on June 14, 2024.
https://www.sebi.gov.in/sebi_data/faqfiles/may-2024/1715694256793.pdf

submitted to the AMC/RTA. In case there is a change in the UBO then the same should be intimated to the AMC/RTA.

9.10.5 Foreign Account Tax Compliance Act and Common Reporting Standards

To comply with the requirements of the Foreign Account Tax Compliance Act (FATCA) and Common Reporting Standards (CRS) provisions, financial institutions, including mutual funds, are required to undertake a due diligence process to identify foreign reportable accounts and collect such information as required under the said provisions and report the same to the US Internal Revenue Service/any other foreign government or to the Indian Tax Authorities for onward transmission to the concerned foreign authorities. The application form requires information to be provided if the citizenship/nationality/place of birth/tax residency are places other than India for all categories of investors. The countries of tax residency and respective taxpayer reference ID has to be provided. Once an investor is identified as covered under the said regulation, the entire investment value of all the folios held will be reported. The identity of the investors and their direct and indirect beneficiaries and controlling persons will be reported. If there is a change in the status of the investor after the information is first provided, then the same has to be reported to the mutual fund within 30 days.

9.11 Systematic Transactions

Mutual funds provide transactional facilities that allow investors to tailor investments and structure pay-outs to suit their specific needs and goals. Systematic transactions, such as systematic investments, withdrawals and transfers, enable periodic investments and withdrawals that investors can align to the available investible surplus, need for regular funds or rebalancing the investments to manage risks. Signing up for systematic transactions also enables these transactions to be executed without the intervention of the investor everytime, thus protecting the portfolio from investor inertia.

9.11.1 Systematic Investment Plan (SIP)

It is considered a good practice to invest regularly, particularly in volatile markets such as equity markets. SIP is an approach where the investor invests constant amounts at regular intervals. A benefit of such an approach, particularly in equity schemes, is that it averages the unitholder's cost of acquisition since more units are bought for the same amount of investment when the price/markets are down and fewer units when the price/markets are up.

Suppose an investor were to invest Rs 1,000 per month for 6 months. If, in the first month, the NAV is Rs 10, the investor will be allotted Rs 1,000 ÷ Rs 10 i.e., 100 units. In the second month, if the NAV has gone up to Rs 12, the allotment of units will go down to Rs 1,000 ÷ Rs.12 i.e., 83.333 units. If the NAV goes down to Rs 9 in the following month, the unit-holder will be allotted a higher number of Rs 1,000 ÷ Rs 9 i.e., 111.111 units.
Thus, the investor acquires his units at lower than the average of the NAV on the 6 transaction

dates during the 6 months – a reason why this approach is also called *Rupee Cost Averaging*. Systematic investing allows investors to buy into a volatile market overtime at an average price without having to predict market movements.

It is easier for investors to generate the smaller amounts required to invest through a periodic investment plan than the large sums required to make lump sum investments. Saving for goals becomes easier when investible surpluses are periodically invested.

Mutual funds make it convenient for investors to lock into SIPs by investing through Post-Dated Cheques (PDCs), NACH or Standing Instructions (SI).

An SIP can be used to initiate a fresh purchase in a scheme and open a folio or make additional purchases in an existing folio. The initial investment to initiate an SIP purchase is typically lower than that for a lump-sum purchase. An SIP can also be initiated during a New Fund Offer (NFO).

9.11.2 Systematic Withdrawal Plan (SWP)

Just as investors do not want to buy all their units at a market peak, they do not want to risk redeeming all their units in a market trough. Investors can therefore opt for the safer route of offering for re-purchase a constant value of units over a period of time.

Suppose an investor registers to withdraw Rs. 1,000 per month for 6 months. If in the first month, the NAV is Rs 10, the investor's unit-holding will be reduced by Rs. 1,000 ÷ Rs. 10 i.e., 100 units. In the second month, if the NAV has gone up to Rs. 12, the unit-holding will go down by fewer units viz. Rs. 1,000 ÷ Rs. 12 i.e., 83.333 units. If the NAV goes down to Rs 9 in the following month, the unit-holder will be offering for re-purchase a higher number of units viz. Rs 1,000 ÷ Rs 9 i.e., 111.111 units.

Thus, the investor gets his/her units redeemed at an average NAV during the 6-month period. The investor does not end up in the unfortunate position of exiting all the units in a market trough. Since units are being redeemed, exit loads and taxes will apply. The effect of exit loads will increase the number of units that needs to be redeemed to withdraw a fixed amount of money since it reduces the effective price for the investor.

In the earlier example, if there was an exit load of 1 percent then the first tranche of withdrawal when the NAV is at Rs.10 will be for 101.0101 units since the exit load of 1 percent reduces the applicable NAV for the investor to Rs.9.90 from the Rs.10. In order to get Rs.1000 the investor, therefore, has to redeem 101.0101 units.

Mutual funds make it convenient for investors to manage their SWPs by registering the amount, periodicity (generally, monthly) and period for their SWP. Some schemes even offer the facility of transferring only the appreciation or the dividend.
In this option, the withdrawal is not fixed but will vary depending upon the availability of

appreciation in the specific investment chosen by the investor. The advantage of a variable SWP relative to a fixed amount of withdrawal is that the capital invested will not be withdrawn. Depending upon the type of SWP chosen the mutual fund will re-purchase or redeem the appropriate number of units of the unit-holder, without the formality of having to give a re-purchase instruction for each transaction. An investor may opt for SWP for several reasons:

- To minimise the risk of redeeming all the units during a market trough.
- Meet liquidity needs for regular expenses e.g. during retired phase of life.
- Assuming the scheme is profitable, the re-purchase ensures that some of the profits are being regularly encashed by the investor.

9.11.3 Systematic Transfer Plan (STP)

This is a variation of SWP. While in a SWP the constant amount is paid to the investor at the pre-specified frequency, in a STP, the amount that is withdrawn from a scheme (called the source scheme) is re-invested in some other scheme (called the target scheme) of the same mutual fund. Thus, it operates as a SWP from the source scheme, and a SIP into the target scheme. Since the investor is effectively switching between schemes, it is also called "switch" if it is just one transaction or tranche. If there are multiple tranches over a fixed period on pre-defined date of an amount that is defined ahead, then it is an STP. The transfer of funds from the source scheme is equivalent to redemption. Exit loads and taxes will apply like any other redemption transactions. The minimum investment and redemption limits specified by the mutual fund for the schemes will not apply to an STP. The mutual fund will also specify the source schemes from which the switch/transfer can be made and the target schemes into which the switch/transfer can be made. If the unit-holder were to do this SWP and SIP as separate transactions.

- The Unit-holder ends up waiting for funds during the time period that it takes to receive the re-purchase proceeds, and has idle funds, during the time it takes to re-invest in the second scheme. During this period, the market movements can be adverse for the unit-holder.

- The Unit-holder has to do two sets of paper work (Redeem and Purchase) for every period.

The STP offered by mutual funds is a cost-effective and convenient facility. It can be used by investors to make periodic investments into a volatile market such as equity, or to rebalance a portfolio, or to book profits. Investors can choose to transfer a fixed amount each period or to transfer the appreciation in a scheme.

Example

An investor who holds lump sum amount of Rs.10 lakhs in a short-term debt fund and registers for an STP to transfer Rs.1,00,000 each month over 10 instalments to a diversified

equity scheme of the same mutual fund. There is an exit load of 0.25 percent on redemption from the short-term debt fund up to three months from the date of allotment and no exit load thereafter.

The first 3 instalments of Rs.1,00,000 transferred will be after the exit load of 0.25 percent. The load chargeable on each instalment will be Rs.250 and the amount transferred to the equity scheme will be Rs. 99750. After the third instalment, there will be no exit load and the full amount of Rs.1,00,000 will be transferred. Any return earned on the short-term debt fund will be taxed as applicable. The returns earned on the residual amount remaining after the STPs are the returns for the unit-holder, which would be subject to tax.

The AMC may offer systematic transactions such as SIP, SWP and STP for the investment strategies launched under the SIF, while ensuring compliance with the minimum investment threshold.

9.11.4 Switch

A *switch* is a redemption from one scheme and a purchase into another combined into one transaction. For example, investors who believe that equity markets have peaked and want to book profits can switch out from an equity scheme and switch into a short-term debt fund.

9.11.5 Transfer of Income Distribution cum capital withdrawal plan

Transfer of Income Distribution cum capital withdrawal plan (DTP) is a facility that allows investors to invest the dividend earned in a mutual fund investment into another scheme of the same mutual fund. Investors with a low risk profile can get some benefits of diversification by transferring dividends earned from debt funds into equity funds. Similarly, dividends earned in equity funds can be transferred into debt funds to rebalance the portfolio and manage risks. Mutual funds decide the schemes, plans and options from which the dividends can be transferred and the target schemes to which they can be transferred.

The investor must hold units in the Income distribution cum capital withdrawal (dividend) option of a scheme to sign up for this facility. Once the investor registers a Transfer of Income Distribution cum capital withdrawal plan, any existing instruction for Pay-out of Income Distribution cum capital withdrawal plan or Re-investment of income distribution cum capital withdrawal will be overridden. All the units held under the scheme, plan and option selected for Transfer of Income Distribution cum capital withdrawal plan will be covered under the transfer. The investor has to clearly identify the source scheme, plan and option from which the transfer has to be made and the target scheme, plan and option to which the dividend should be transferred. The units in the target scheme will be held in the same folio as the source scheme. The minimum application amount specified for the target scheme will not apply to investments made under a Transfer of Income Distribution cum capital withdrawal plan. The mutual fund may specify a minimum amount of dividend that can be transferred.

The dividend is invested in the target scheme on the next business day after the record date for the Pay-out of Income Distribution cum capital withdrawal plan in the source scheme.

Mutual funds may require the Transfer of Income Distribution cum capital withdrawal plan enrolment form to be registered a specific number of days before the record date for the dividend. The Transfer of Income Distribution cum capital withdrawal plan mandate will stand automatically terminated when the unit holding in the source scheme becomes nil. It can also be terminated by sending a written request to the mutual fund.

9.12 Operational aspects of Systematic Transactions

Mutual funds specify the schemes in which systematic transactions are offered. The fund also specifies the minimum investment for each tranche, the dates on which the transactions can be conducted and the minimum period for which the investor can sign up. From the available options, the investor can choose the amount of the periodic transaction, the frequency (monthly, quarterly, semi-annual, annual), the period over which the transaction will be done and the dates. In case of a minor investor, however, the SIP will be registered only till the date of the minor attaining majority even though the instructions may be for a period beyond the date of majority. A default SIP date, frequency, end date may be specified by the scheme which will be applied in case the investor does not make a selection. Mutual funds may also offer the facility to increase the instalment amount periodically.

A new investor has to submit both the application form as well as the SIP enrollment form to register for an SIP. The information provided in both forms have to tally. In case of an existing investor only the SIP enrollment form has to be submitted. The enrollment form requires the names, PAN and KYC compliance of all the holders of the folio and their signatures. For existing investors only, the folio number needs to be provided. The enrollment form has to be signed as per the mode of holding of the existing folio. The investment details to be provided in the form includes the scheme, plan and option selected. The SIP details to be provided are the SIP amount, frequency, SIP date and the start and end date for the SIP period. The details of the bank account that is registered for NACH/Direct Debit/Standing Instructions for the SIP should be provided in the form. The information available under the folio, such as unitholder details and mode of holding, will apply to the SIP investments also. The signature of the investor in the application form/folio records and enrollment form has to be the same. In case the existing folio is operated jointly then the SIP form has to be signed by all the holders.

The enrollment form has to be submitted to the mutual fund a specified number of days before the first instalment, typically 15 to 30 days. For example, assume a mutual fund requires a registration time of 30 days for an SIP enrollment. An investor submits an enrollment form on 5th September and selects 15th as the SIP date. The first instalment will be 15th of October since 30 days are required for registration. The enrollment time may come down if investors already have a One-Time Mandate (OTM) registered in the folio for making

payments.

The payment modes accepted for SIPs include post-dated cheques and electronic payment modes such as NACH, direct debit and standing instructions (SI). The cheque numbers, date and amount for each cheque have to be provided. An authorization to the bank to execute the electronic payment has to be signed which will be registered with the bank by the mutual fund. To avail of the NACH facility of the RBI, the applicant should have an account with a bank in a city where RBI approves the facility and the bank should participate in the local MICR clearing. Direct debit and Standing Instructions are facilities that the investor can use if they hold an account with a bank and in a branch that has a tie-up with the mutual fund. The first instalment should accompany the enrollment form. This can either be through a cheque drawn on the bank which is registered for NACH/Direct Debit/SI for the SIP, or any other bank provided a photocopy of a cheque drawn on the bank registered for the electronic payment is also enclosed with the enrollment form. Alternatively, the first instalment need not be paid by cheque, if the enrollment form is attested by the bank which is registered for debiting the instalments.

SIP Top-up Facility

Mutual funds provide an additional facility through an SIP to enhance the disciplined savings of investors. It is called the SIP Top-Up facility. Investors have the option to increase the SIP amount at intervals chosen by them. The increase can be of a fixed amount or a percentage of the existing SIP amount. For example, assume an investor has registered for a monthly SIP of Rs.2500 for a 3-year period and has also signed up to top-up the SIP at an annual frequency by Rs.500. In the first year the SIP instalment will be Rs. 2500. The second-year each monthly instalment will be increased by Rs. 500 to Rs. 3000 and in the third year it will go up to Rs.3500. If the investor had instead signed up for a 10 percent annual increase, then the SIP instalment goes up to Rs.2750 (2500 +10 percent of 2500) in the second year and Rs.3025 (2750+ 10 percent of 2750) in year 3. The top-up facility helps investors increase their savings with time as income and investible surpluses go up. Investors have the option to either set an upper limit for the SIP with the Top-up facility or the date from which the SIP Top-Up amount will cease. Once it reaches the pre-defined upper limit or the pre-defined date, the Top-up facility is discontinued. However, the SIP amount along with the Top-up amount will remain constant until the end of the SIP tenure.

Investors register for the Top-up facility at the time of enrolling for the SIP. An existing SIP investor can also register for a Top-up facility. The details of the existing SIP, such as scheme/plan, frequency, duration and amount have to be correctly provided while registering for the top-up facility. Mutual funds may not offer the Top-up facility for Micro-SIPs or it may be subject to the condition that the SIP amount and the Top-Up together does not exceed Rs. 50,000 in a rolling 12-month period or financial year.

Renewal and Cancellation of SIP

To renew an SIP, a renewal form has to be submitted giving details of the scheme, plan and option, SIP amount, SIP date and period.

An SIP can be cancelled by giving due notice of the same to the AMC by providing details of the SIP such as folio number, scheme name, option, bank details and mode of payment. The period of notice required will be specified by the AMC. The bank mandate, in case of electronic payment mode, also has to be cancelled. An SIP may also stand cancelled if there are insufficient funds in the bank account when payment is due.

The same can be done online or offline through Asset Management Company (AMC) website/ app, with the help of MFDs, through investment platforms and bank standing instructions etc.

Registration and Cancellation of SWP

In case of systematic withdrawals, the investor has to register the SWP with the mutual fund and specify details such as the scheme, plan, option, amount of withdrawal, frequency and the period of the SWP. The selections have to be made from the options provided by the mutual fund. The mutual fund may specify a minimum period before the first withdrawal before which the enrollment form has to be submitted. The credits will be made to the default bank account, or any other account as required by the investor and registered with the mutual fund. The mutual fund may specify the minimum amounts for each tranche of a systematic withdrawal transaction. Typically, this is lower than what is specified for a redemption from the scheme.

An SWP will stand cancelled when all the units are redeemed. Investors can choose to cancel SWP by giving notice in writing to the mutual fund giving full details of the mandate such as scheme name, plan, option, folio details, SWP amount, frequency and period.

Registering and Cancellation of STP and Switches

In case of systematic transfers and switches, the source and target schemes have to be selected at the time of registering the STP or Switch. The schemes from and to which transfers and switches can be made are defined by the mutual fund. The minimum amount of transfer is also fixed by the mutual fund. The investor in the form for registering the STP selects the frequency, number of instalments and the dates of the transfer. Mutual funds will require a notice period for registering and cancelling the STP.

The investor using the Transaction slip will give a Switch instruction. The investor has to provide the folio number, scheme, plan and option from which the switch will be made. The switch can be defined in rupees or the number of units. The scheme, plan and option into which the switch has to be made should be provided. The units of the target scheme acquired under a switch or transfer will be under the same folio as the source scheme.

Execution of Systematic Transactions

Each tranche of a systematic transaction will be executed at the applicable NAV on the date of the transaction. In case of transfers, each leg of the transfer (redemption and purchase) will be executed at the applicable NAV for each scheme. The investor will have to bear the loads and taxes as applicable. A systematic transaction can be cancelled at any time by giving the mutual fund notice in writing.

Triggers

It is not uncommon for investors to rue missed opportunities of buying or selling because they could not give the requisite instructions in time. This is addressed through the trigger option that is offered by some mutual funds.

For instance, an investor can book profits by specifying that the units would be re-purchased if the market reaches a particular level. In that case, once the market reaches that level, the units would be re-purchased, without the need for going through a separate re-purchase documentation. It stands to reason that if the market continues to go up after the trigger is activated, the investor loses on the further gain. A date trigger instructs the mutual fund to redeem the units specified on a particular date. Alternatively, the investor could set a stop-loss trigger by identifying the level of the NAV or the percentage depreciation in the value of the investment at which the investment should be redeemed so that the investment is protected from a further fall in value.

Similarly, an investor can set a trigger to transfer money into an equity scheme when the market goes down, say 20 percent, or the transfer can be triggered by a fall in the NAV of the equity scheme by a defined percentage. This would help the investor conveniently increase his position in equities, when the markets decline. Typically, triggers are set on the value of indices or the investment. Investors can choose to redeem just the appreciation or the entire holding value on the activation of the trigger or a percentage of the current value of the investment. Investors will choose this depending upon the type of trigger. For example, a stop loss trigger may go with redeeming the entire investment value while an appreciation trigger may be paired with redeeming the amount of appreciation. Investors may also choose to switch to another scheme on the activation of the trigger. Mutual funds decide the type of triggers that will be offered and the schemes on which they will be offered. For each investment under a folio, a separate trigger facility request has to be made. A notice period may be specified by the mutual fund for registering and cancelling a trigger facility. A trigger is a one-time facility that extinguishes when the trigger is activated and the corresponding action is completed.

9.13 Non-Financial Transactions in Mutual Funds

9.13.1 Nomination

Most investors like clarity about what would happen to their unit-holding, in the unfortunate event of their demise. This clarity can be achieved by executing a Nomination Form, where the nominee's name is specified. The nomination made in a folio applies to all the investments held under the folio. Nomination can be made in favour of number of nominees and in the manner as prescribed by SEBI. Where there are multiple nominees, the unitholder(s) must define the percentage holding for each nominee making a total of 100 percent.

If the percentages are not clearly indicated, then the nomination will be made equally among the nominees. In case of a folio held in the name of a single individual, the nomination is required unless the holder specifically confirms their intent not to nominate at the time of making the application. In the case of joint holding, every unit-holder will have to sign the nomination form, irrespective of the mode of holding. Only individual investors can make a nomination. Investments by minors cannot have a nomination. A Power of Attorney holder cannot make a nomination.

Nominees

The nominee can be an individual, including minors and NRIs, central and state governments and local authorities. If the nominee is a minor, then a guardian too can be specified. A nomination cannot be made in favour of a trust (except a religious or charitable trust), society, body corporate, partnership, Karta of a HUF or a Power of Attorney holder.

Change in Nomination

A nomination can be changed or cancelled at any time. The change or cancellation has to be made by all the unitholders who made the original nomination, irrespective of the mode of holding. When a new nomination is registered with the AMC, the earlier nomination made, if any, stands automatically superseded. The death of a nominee will cancel the nomination made, if it is a single nominee. If there are multiple nominees, in the event of the death of one or more nominees the transmission of units will be made in favour of the remaining nominee(s).

Nomination in case of demat holdings of mutual fund

For units held in dematerialized mode, the nominee made for the demat account will apply. Such nominations will be governed by the bye-laws of the depository.

Nominee to act on behalf of incapacitated investors[83]

Mutual fund investors have the option to empower any one of the nominees (excluding minor nominees) to operate the investor's account / folio, if the investor is physically incapacitated, but still has the capacity to contract. Further, the investor can specify either percentage or absolute value of assets in the account / folio that can be encashed by such nominee. The investor can change such mandate any number of times without any restriction.

In case of joint accounts / holdings, upon demise of one or more joint holder(s):

The regulated entity shall transmit the assets held to the surviving holder(s) vide name deletion. The surviving member(s) shall receive the assets as owner(s) and not as a trustee. Regulated entities shall not place any restrictions on the number of instances an investor can make, change or cancel his/her nomination. Investors can nominate up to 10 persons in the account / folio.

9.13.2 Pledge/Lien of Units

Banks, NBFCs and other financiers often lend money against the pledge of Units by the Unitholder. This is affected through a *Pledge Form* executed by the unit-holder (*pledger*). The form has a provision for specifying the party in whose favour the units are pledged (*pledgee*). The units that are offered as security for a loan should have completed the lock-in period if any. All the unit-holders, irrespective of the mode of holding, of the folio, must sign the form requesting the marking of the lien in favour of the lender. The form should clearly state the name of the unit-holder(s) as it appears in the folio, identify the scheme, plan and option and the number of units on which the lien should be marked. A non-individual entity must enclose a board resolution and other authorization for the person pledging the units. Once units are pledged, the Unit-holder/s cannot sell or switch out the pledged units, until the pledgee gives a written no-objection to release the pledge. As long as the lien is marked, the lender will have the authority to enforce the pledge and redeem units after providing the documents necessary for the same. The minimum redemption requirement for a scheme will not apply in these cases. The Pay-out of Income Distribution cum capital withdrawal plan declared on units under lien may be paid to the unit- holder or the lender depending upon the agreement.

9.13.3 Demat Account

Dematerialisation is a process whereby an investor's holding of investments in physical form (paper), is converted into a digital record. The benefit of holding investments in demat form is that investors' purchase and sale of investments get automatically added or subtracted from their investment demat account, without having to execute cumbersome paperwork. Settlement of most transactions in the stock exchange needs to be compulsorily done in

[83] SEBI circular no. SEBI/HO/OIAE/OIAE_IAD-3/P/ON/2025/01650

demat form.

In order to avail this facility, the investor needs to open a demat account with a depository participant. The access of demat facility for mutual fund investors has increased, with National Stock Exchange and Bombay Stock Exchange making available screen-based platforms for purchase and sale of mutual fund schemes.

Mutual funds are required to provide investors the option to hold the units in demat form. The mutual fund has to obtain an ISIN for each option of a scheme and make the information available in all the account statements sent to the investor. The application form for mostly all schemes has an option to provide the demat account details in case the investor chooses to hold the units in demat form. The demat facility is typically initiated by the mutual fund, which would tie up with a Depository (like National Securities Depository Ltd or Central Depository Services (India) Ltd). Based on this tie-up, investors can open a demat account with a Depository Participant and dematerialize their investment holdings i.e., convert their physical units into demat units. Usual KYC documentation is required for opening the account. However, once the KYC including IPV is performed for opening a demat account; no separate KYC is required to be done by the AMC or distributor or any other capital market intermediary. If any other capital market intermediary has already done KYC, then the DP will not insist on another KYC.

The option to apply for the units in dematerialized form is provided in the application form. The name of the Depository Participant with whom the investor holds the account, DP ID number and Beneficiary Account Number has to be provided. A copy of the DP statement enclosed with the application form may help the mutual fund verify the information provided in the application form. The name(s), mode of holding of the demat account and PAN of the holders are matched with the application for units and the units will be directly credited to the demat account after the realization of funds. If the data provided in the application form does not match the depository data, then the application will be considered as invalid for processing under demat mode and instead, the investor may be issued units in physical mode, provided the application is otherwise valid. All details such as an address, bank account details, nomination for the units held in demat form is according to the information available in the depository's records. Any changes to the said information have to be made by contacting the depository. Redemption requests for units held in demat mode have to be submitted to the depository or through the stock exchange platform.

Investors can also choose to get their existing units (as represented by the statement of account) dematerialized. On dematerialisation, the investor's unit holding will be added to his/her demat account. As and when the investor sells the unit holding, the relevant number of units will be reduced from the investor's demat account. The proceeds of redemptions as well as the dividend payouts will be credited to the bank account linked to the demat account.

The investor benefits from a demat account are as follows:

- Less paperwork in buying or selling the mutual fund units, and correspondingly, accepting or giving delivery of the units.
- Direct credit of bonus and rights units that the investor is entitled to, into the investor's demat account.
- Change of address or other details needs to be given only to the Depository Participant, instead of separately providing it to every company/mutual fund where the investor has invested and holds demat units.
- Consolidate all investments in mutual funds, direct equity, debentures and others under one account.

The investor also has the option to convert the demat units into physical form. This process is called *re-materialisation.*

9.13.4 Change in Folio Details

The personal information of the investor captured under the folio is liable to changes that have to be updated in the records. Some of the information, such as name, address, status and contact details, are provided during the KYC compliance process. Any changes have to be updated with the KRA using the change form. The KRA will communicate the updated information to all the mutual funds. Others, such as a change in bank accounts, change in the mode of holding in operating a folio, or the nominations made in an investment, have to be updated with each mutual fund.

Change in Personal Information

The KYC Registration Agency (KRA) prescribes a change form to be used to register change, if any, in the information provided at the time of the Know Your Customer (KYC) process. These include:

- Change in Name
- Change in Status/ Nationality
- Change in PAN
- Change in permanent address or address for correspondence
- Change in Contact Details
- Change in name of spouse/father

In the Change Form the individual has to provide the name, date of birth, PAN or PERN (PAN Exempt Reference Number), and Aadhaar number, as per the original KYC records to identify themselves in the records of the KRA. A self-attested copy of the PAN, where available, has to accompany a change request. The new or changed information has to be provided in the space provided for the same in the form. Any change has to be supported by documents and the details provided in the form should match the documentary proofs provided. The documents have to be self-attested and the originals have to be produced for verification. If the originals are not available for verification, then the copies have to be attested by entities

authorized to do so.

If the units are held in dematerialized form, the procedure for a change in address would be as determined by the depository participant.

A **change in the guardian** in a minor's folio will require the new guardian to comply with KYC and PAN requirements, provide bank account details and a no-objection certificate from the existing guardian.

The **change in the status of an investor from minor to major** will require the PAN and KYC compliance of the investor to replace that of the guardian. The signature of the investor and the new bank account details have to be updated in the records. The guardian will then cease operating the account.

Change in Bank Account Details

A change in bank account details has to be directly registered with each mutual fund. Investors can register up to five bank accounts with a mutual fund for individual investors and 10 for non-individuals. One of the registered accounts will be designated as the default account into which all the dividend and redemption proceeds will be credited. Investors can instruct the mutual fund to credit the proceeds to any of the other accounts too at the time of executing a redemption transaction. The investor can add or delete accounts within the limits specified. If the default bank account is being deleted from the list of registered accounts, then before that another account has to be designated as the default bank account in Part B of the Multiple Bank Registration Form. Details to be provided for adding a bank account are the name of the bank, account number and type, branch address, IFSC and MICR code. The form should be accompanied by a cancelled cheque of the said account with the name of the first holder of the mutual fund folio pre-printed on it. If the name is not pre- printed on it then a bank statement, passbook or bank certificate that gives the name, account number and address should be enclosed. If photocopies are submitted, then the original should be produced for verifications. The form for registering the change has to be signed according to the mode of holding of the folio.

If the investor has not used the facility to register multiple bank accounts, then the Change of Bank details form can be used to change the existing bank account linked to the folio and provide details of the new bank account.

9.13.5 Transmission of Units

Transmission is the process of transferring units to the person entitled to receive them in the event of the death of the unitholder. The person entitled to receive it depends upon the folio conditions of joint holding and nomination. If the first holder passes away, the second holder is substituted as the first holder. In a singly held folio with nominations, the units are transferred to the nominee. If a folio is jointly held and has nominations, the right of the joint

holder will take precedence. If there are no nominations in the folio, the units are transmitted to the legal successors. See Box 9.3 for understanding nomination in the context of mutual fund investments.

Box 9.3: Nomination in mutual fund investments

It is important to note here that nomination is only an authorization for the mutual fund to transfer the units to the nominee in the event of demise of the unit-holder.

The nominee holds the units in trust for the legal heirs of the investor. It does not create any title or beneficial interest in the units in favour of the nominee after the death of the unit-holder. The inheritance laws applicable to the unit-holder too need to be considered by the investor if they are looking at nomination as a way of passing on their wealth to their heirs.

As per new SEBI rules, investors subscribing to mutual fund units on or after August 1, 2022 will have the choice of either provide nomination or opt out of nomination by providing a signed declaration.

Before the transfer is affected, the mutual fund will insist on the KYC documentation from the nominee, the death certificate of the deceased unit-holder, and an indemnity against future problems for the mutual fund arising out of the transfer.

SEBI had directed the AMCs to adopt a standard Transmission Request Form and a common set of documents for transmission of units as prescribed by AMFI and to make the same available on the websites of AMCs, RTAs and AMFI.

Pursuant to the above, AMFI, in consultation with AMFIs Standing Committee on Operations/Compliance and Risk, has reviewed and updated the existing AMFI guidelines for

Transmission of Units including the supporting documents and has introduced the Transmission Request Forms to be used under different situations.[84]

A request for transmission has to be made in the Transmission Request form and an NOC form has to be submitted. The documents that are required for a valid transmission claim will depend upon the situation.[85]

9.14 Change in Status of Special Investor Categories

Minors, NRIs, HUFs investing through a constituted attorney constitute a special category of individual investors. Some of these investors do not make investments directly instead

[84] To check the updated guidelines for Transmission of Units under various scenarios along with the standard formats of Transmission Request Forms and supporting documents please refer to https://www.amfiindia.com/investor/become-mf-distributor?zoneName=deathOfUnitHolder

[85] For Procedure for Transmission of Units on Death of a Unitholder refer: https://www.amfiindia.com/investor/become-mf-distributor?zoneName=deathOfUnitHolder

investments are made by designated entities on their behalf. These categories of individual investors require additional documentation and process, due to their differential status with respect to taxation and mode of operation of investments or restrictions on certain components of investment activity.

9.14.1 Minor turned Major

Once the minor becomes major, financial transactions are disallowed in their account. No debits or redemptions can be made in bank accounts; mutual funds folios or demat account of minors-turned-major. Minors are not eligible to sign documents, enter into contracts, or issue third party cheques. However, after a minor becomes major, they can conduct such transactions, only after their signature is attested by their banker.

KYC: Minors attaining the majority will have to complete all the KYC process by submitting proof of identity and address. Banks and depositories may also insist on personal verification of the minor-turned-major. On becoming a major, the erstwhile minor investor has to complete the KYC details, provide updated bank account details including the cancelled original cheque leaf of the new account. No further transactions shall be allowed till the status of the minor is changed to major.

PAN Card: The PAN issued to a minor will have to be resubmitted to the Income Tax authorities, for issuance of a new card, with the same number, but the new signature of the minor-turned-major.

Demat Account: Since demat accounts of minors can be held only on a single-name basis, the account opening process has to be redone for a minor-turned-major. This involves the opening of a new demat account. Securities held in the old demat account with minor status are transferred to the new demat account.

Mutual Fund Investments: When the units are held on behalf of the minor, the ownership of the units, vest with the minor. The guardian may operate the minor's account only until the minor attains the age of majority. As per SEBI circular no. SEBI/HO/IMD/DF3/CIR/P/2019/166 dated December 24, 2019[86], upon the minor attaining the status of a major, the minor in whose name the investment was made is required to provide all the KYC details, updated bank account details including cancelled original cheque leaf of the new account. No further transactions shall be allowed till the status of the minor is changed to major.

Accordingly, when a minor turns a major, he/she needs to submit an application for change in status from Minor to Major in a prescribed form (hereinafter referred to as MAM form), along with the prescribed documents.

[86] The circular has been partially modified, for more details read at https://www.sebi.gov.in/legal/circulars/may-2023/investment-in-units-of-mutual-funds-in-the-name-of-minor-through-guardian_71148.html

The guardian is then not allowed to undertake any financial or non-financial transactions from the date of the minor attaining majority. All existing standing instructions like SIP, SWP & STP, if registered for a period beyond the date on which the minor attains majority will cease to be executed from the date of the minor attaining majority.

In short, the minor's account is frozen for operation by the guardian on the day the minor attains the age of majority and no further customer-initiated transactions shall be permitted till the status is changed from minor to major. (Note: Pay-out of Income Distribution cum capital withdrawal option or Reinvestment of Income Distribution cum capital withdrawal option, where applicable, shall continue to be processed. In such cases, dividend amount, net of TDS (wherever applicable), shall be credited to the unitholder's registered bank account or reinvested in the folio, as the case may be.)[87]

Before submitting the MAM application form for change in status from Minor to Major, the unitholder is required to –

i. Apply for PAN and obtain a PAN card;

ii. Complete the KYC process; and

iii. Change his/her status in his/her existing bank account from Minor to Major OR open a new bank account immediately upon becoming a major and procure a new cheque book with his/her name pre-printed thereon.

Only after fulfilling the above steps, the applicant should submit the prescribed MAM form duly completed to the AMC/ Registrar along with the requisite supporting documents.
Documents required for change in status from Minor to Major:

1) The prescribed MAM form duly filled in all respects.[88]

2) Copy of PAN Card of the applicant

3) KYC Acknowledgment or a duly completed KYC form.

4) A cancelled cheque leaf with the applicant's name pre-printed or the applicant's latest Bank Statement/Passbook.

5) Signature attestation by the bankers.
6) Nomination Form.

7) A fresh SIP, STP, SWP mandate in the prescribed form (in order to continue the SIP, STP,

[87]For more details refer to: https://www.amfiindia.com/investor/become-mf-distributor?zoneName=MinorAttainingMajority
[88] Note: Signature of the applicant (minor who has turned major) in the MAM form shall be duly attested in the space provided therein by the parent/guardian whose signature is registered in the records of the mutual fund against the folio of the minor unitholder or by a Notary or a Judicial Magistrate First Class (JMFC).

SWP, if applicable.)

Systematic Transactions (SIP, SWP, STP and others): Standing instructions like Systematic Investment Plans (SIP), Systematic Withdrawal Plans (SWP), Systematic Transfer Plans (STP) are registered in a minor folio only till the date of the minor attaining majority, even though the instructions may be for an extended period. When the minor is approaching the age of majority, AMCs usually send letters advising the guardian and the minor to submit the form along with prescribed documents to change the status of the account/folio to "major". All SIP, STP, SWP and any other standing instruction registered in the minor's account are suspended if the documents are not received by the date when the minor attains majority. The folio is frozen for operation by the guardian on the day the minor attains the age of majority and no transactions shall be permitted till the documents related to minor turned major are received.

9.14.2 NRI to Resident Indian

If a person returns to India and forgoes the NRI status, he needs to carry out certain procedures with respect to his investments and bank accounts.

Bank Account: Once an NRI becomes a RI, he cannot operate his NRO/NRE/FCNR (B) accounts. He needs to inform to the bank about the change of status to resident Indian and needs to open a Resident Rupee Account. Account opening documents such as address proof, identity proof, photographs need to be submitted. A Resident Foreign Currency (RFC) account may be opened by a returning Indian to transfer balances from NRE /FCNR (B) accounts. This account can hold foreign currency and continue to receive funds in foreign currency from investments abroad.

Demat Account: Just like a bank account, the returning NRI needs to inform change of status to the designated authorised dealer branch through which the investor had made investments in the Portfolio Investment Scheme, as well as the DP with whom he has opened a demat account. A new demat account with ‘Resident’ status needs to be opened. All the balances held in the NRI demat account shall be transferred to the new ‘Resident’ demat account. After transfer, the NRI demat account will get closed.

Mutual Fund Investments: The NRI needs to inform the relevant AMCs about the change of status, change of address and bank details with respect to mutual fund investments. KYC change form needs to be sent to the KYC registration agency for change of status, address and bank details. An acknowledgement shall be issued by the KYC registration agency on submission of request and will carry out the necessary changes in its records.

9.14.3 Change in Karta of HUF

For change in 'Karta' of a HUF, a letter is required from the new Karta stating the reason for change of Karta in mutual fund records. The respective AMC may have a specific form. Name of the deceased Karta, folio number, scheme, unit details may be mentioned in the letter signed by the new Karta. KYC documents of the new Karta and the HUF need to be provided. If the HUF is already KYC compliant, the HUF KYC need not be furnished. Along with the letter and KYC documents, the following must be enclosed:

- Attested copy of death certificate
- Bank certificate stating signature and details of new Karta
- Indemnity bond signed by all co-parceners and new Karta

9.15 Investor transactions – turnaround times

SEBI's guidelines prescribe the turnaround times for investors' transactions with the mutual fund.

Service provided by Mutual Funds	**Turnaround Time**
NAV Calculation and disclosure	On a daily basis[89]
Mutual Fund Schemes (other than NFO of ELSS) to remain open for subscription	Maximum of 15 days
Mutual Fund Schemes to allot units or refund money	Within 5 business days of closure of NFOs[90]
Re-opening for ongoing sale/re-purchase of open- ended scheme (other than ELSS)	Within 5 business days of allotment
Transfer of Dividend warrants to investors	as may be specified by the Board from time to time
Transfer to the unitholders the redemption or repurchase proceeds	within such period as may be specified by the Board from time to time.[91]
Scheme-wise Annual Report or an abridged summary to all unitholders	Four months from the date of closure of the relevant account's year in the manner specified by the Board
Statement of portfolio to be sent to all unitholders	Before the expiry of 10 days from the close of each half year (i.e., 31st Mar and 30th Sep) in the manner specified by the Board

[89] This should be disclosed in the manner specified by SEBI from time to time.

[90] In the event of delays in refunds (in case of NFOs), investors need to be paid interest at the rate of 15 percent p.a. for the period of the delay. This interest cannot be charged to the scheme.

[91] In the event of failure to transfer the redemption or repurchase proceeds or dividend payments, the AMC has to pay the unit-holder, interest at the rate as may be specified by SEBI for the period of such delay. This expense has to be borne by the AMC i.e., it cannot be charged to the scheme.

Half Yearly Disclosures (unaudited financial results) by mutual fund and an AMC on their website	Within 1 month from the close of each half year (i.e., 31st Mar and 30th Sep) [this is applicable for schemes other than debt and money market schemes] In order to further enhance transparency, it is now decided that the details of debt and money market securities transacted (including inter scheme transfers) in its scheme's portfolio shall be disclosed on daily basis with a time lag of 15 days[92]
A Consolidated Account Statement (CAS) by post/email.	CAS for each calendar month: As per the timeline specified by SEBI from time to time[93] CAS for half year: As per the timeline specified by SEBI from time to time.
Unit certificate	To be issued within 5 working days of the receipt of request for the certificate. For close ended schemes, units in demat form to be issued to unitholders within 2 working days of the receipt of the request from unitholders.

Statement of Account in case of SIP/ STP / SWP

SEBI directive concerning statement of accounts or unit certificates indicates that an applicant in a scheme **whose application has been accepted** has the option either to receive the statement of accounts or to hold the units in dematerialised form. In this regard, the asset management company is required to issue to such applicant, a statement of accounts specifying the number of units allotted to the applicant or issue units in the dematerialized form as soon as possible but not later than five working days from the date of closure of the initial subscription list or from the date of receipt of the application. Further, the asset management company shall issue units in dematerialized form **to a unit holder in a mutual fund scheme** within two working days of the receipt of request from the unit holder.[94]

Statement of Account shall also be sent to dormant investors i.e., investors who have not transacted during the previous 6 months. This can be sent along with the Portfolio Statement/Annual Return, with the latest position on number and value of Units held. If required by the investor, soft copy shall be e-mailed to investor every month.

AMCs (and also some distributors) offer various other services for investors. Some of these

[92]SEBI circular no. SEBI/HO/IMD/DF4/CIR/P/2020/163 dated September 1, 2020. This circular comes into effect from October 1, 2020.

[93]https://www.sebi.gov.in/legal/circulars/mar-2021/circular-on-mutual-funds_49393.html, https://www.sebi.gov.in/legal/regulations/aug-2021/securities-and-exchange-board-of-india-mutual-funds-regulations-2026-last-amended-on-november-09-2021-_41350.html

[94]Source: https://www.sebi.gov.in/legal/regulations/nov-2022/securities-and-exchange-board-of-india-mutual-funds-regulations-1996-last-amended-on-november-16-2022-_65274.html?

are as follows:

- Online access to information on investments, including a consolidated view of various folios that relate to different family members.
- Sharing of information on portfolio valuation, income booked, returns earned, capital gains workings for income tax purposes etc.

9.16 Unclaimed Assets

In line with its core mandate of investor protection and safeguarding investor interests, SEBI has directed its efforts towards minimizing the creation of unclaimed assets in the securities market. To address this issue in the Indian securities market, SEBI has implemented several measures, including:

a) Stipulation of norms for inactive / dormant accounts and folios,

b) Mandating furnishing of contact and bank details by investors,

c) Mandating investors to either provide nomination or expressly opt-out from making a nomination,

d) Simplification of norms for transmission,

e) Centralized mechanism for reporting demise of investor.

In line with the above, the RTAs have developed a platform to trace inactive and unclaimed mutual fund folios. The platform is named Mutual Fund Investment Tracing and Retrieval Assistant (MITRA). This platform would allow search at the industry level and empower the investors in the following manner:

1 Enable investors to identify the overlooked investments or any investments made by any other person for which he / she may be rightful legal claimant,

2 Encourage investors to do KYC as per the current norms, thus reducing the number of non-KYC compliant folios,

3 The MITRA platform will lead to the reduction in the unclaimed mutual fund folios,

4 Contribute towards building a transparent financial ecosystem and will be reliable medium for investors to find their inactive and unclaimed mutual fund investments,

5 Build and incorporate mitigants against fraud risk

The MITRA platform will be hosted by the two Qualified RTAs (QRTAs), viz., CAMS and K-Fintech, as agents of AMCs. The platform can be accessed through a link on the websites of

the AMCs, the two QRTAs, AMFI and SEBI.

Another measure to reduce unidentified unclaimed assets is to harness the power of the digital infrastructure: both publicly available DigiLocker and infrastructure of the SEBI registered KRAs. DigiLocker is a digital document wallet of the Government of India facilitating the citizens in obtaining and storing documents like Aadhar, PAN, driving licence, death certificate, etc. Government of India has stipulated those institutions delivering citizen services shall integrate their system with DigiLocker. Bank account statements, insurance policies and statements of NPS are already available in the DigiLocker. The inclusion of mutual fund and demat holding statements within DigiLocker can make available the entire financial holdings of individuals in a single account.

DigiLocker also provides nomination facility to its users. The nominee or the nominees specified by the user are authorized to access the digital information of the user upon the demise of the user. For this purpose, while specifying the nominee, the user is required to provide the mobile number and email address of the nominee.

9.17 Voluntary Lock-in / Debit freeze facility to Mutual Fund folios

SEBI allows investors to voluntarily lock-in units as a precaution against any unauthorized redemption. A voluntary debit freeze facility to be introduced for Mutual Fund investors across demat and non-demat (i.e., Statement of Account) folios to ensure that no units are debited from such folios till the time they are unlocked. In the first phase, the facility to lock the folio will be provided to mutual fund investors by the RTAs through MF Central platform.[95]

[95] https://www.sebi.gov.in/legal/circulars/mar-2026/introduction-of-voluntary-lock-in-debit-freeze-facility-to-mutual-fund-folios_100159.html

Chapter 9: Sample Questions

1. **What term is used to describe the Net Asset Value (NAV) of the scheme after the dividend is paid out (Remember the NAV would have dropped to the extent of the dividend paid)?**

    a. **Ex-Dividend NAV**
    b. Cum-Dividend NAV
    c. Lower NAV
    d. Dividend NAV

2. **At what price are the bonus units issued to the unitholder?**

    a. The price is decided by the AMC in consultation with the trustees
    b. **The bonus units are allotted free of cost**
    c. At the prevailing NAV
    d. At the prevailing NAV divided by the bonus ratio

3. **Which of the following statements is True?**

    a. Hindu Undivided Families (HUFs) are not allowed to invest in mutual fund schemes
    b. Minors cannot invest in mutual fund schemes
    c. **Foreign investors can invest in Indian mutual fund schemes, provided they have completed the Know-Your-Client (KYC) formalities**

4. **Whose KYC needs to be completed in case of an application by a minor?**

    a. The minor
    b. **The guardian**
    c. Any family member of the minor
    d. No KYC is required in case of applications by minors

5. **How many (maximum) bank accounts can a resident individual investor register with a mutual fund folio?**

    a. 1
    b. 2
    c. 3
    d. **5**

6. **Which of the following is true regarding nominees of mutual fund investors?**
    a. The nominee can be an individual, including minors and NRIs
    b. The nominee can be central and state governments and local authorities.
    c. Both a and b
    d. Neither a nor b

7. **Mutual Fund Investors are required to provide which of the following documents for KYC verification?**
    i. Voter Identity Card
    ii. Driving License
    iii. Government / Defense identification card
    iv. Passport

    a. Only i
    b. Only ii and iii
    c. Only ii and iv
    d. Any of the above

8. **Minimum investment threshold for investment strategies launched under ____would be Rs. 10 lakhs.**

    a. **Specialized Investment Funds (SIF)**
    b. Alternative Investment Find (AIF)
    c. REITs
    d. Close-ended Mutual Funds

CHAPTER 10: RISK, RETURN AND PERFORMANCE OF FUNDS

Learning Objectives:

After studying this chapter, you should know about:

- General and Specific risk factors
- Factors affecting mutual fund performance of different schemes
- Drivers of returns and risk in a scheme
- Measures of returns
- SEBI norms regarding return representation of returns by mutual funds in India
- Risks in fund investing with a focus on investors
- Various risk measure
- Certain Provisions with respect to Credit risk

10.1 General and Specific Risk Factors

Chapter 1 covered various asset categories and the risks associated with those. This chapter would go deeper in understanding the risks involved in investing with mutual funds. The risk would be categorized between standard/general risks and those specific to individual asset categories. Investment, per se, involves taking and managing various risks. In such a case, it is important to understand which risks one is exposed to and how to manage those risks. It is also important for one to decide which risks one needs to take and for what purpose.

When the investor chooses to invest through mutual funds, the fund manager manages some part of the risks, whereas some of the others are controlled due to the structure of mutual funds. And still, some risks remain to be managed by the investor separately.

The Scheme Information Document (SID) highlights two broad categories of risks, (1) standard risk factors, and (2) specific risk factors. The standard risk factors are the risks that all mutual fund investments are exposed to whereas there are certain risks specific to the individual asset category. For example, credit risk or interest rate risk are associated with debt securities, whereas currency risk would be associated with investments in foreign securities, or even in shares of companies exposed to foreign currency.

The Scheme Information Document (SID) contains a list of all these risks. The SID also contains a discussion on various risk mitigation strategies. A snapshot from a Scheme Information Document is presented below:

10.1.1 General Risk Factors:

- Investment in mutual fund units involves investment risks such as trading volumes,

settlement risk, liquidity risk, default risk, including the possible loss of principal.

- As the price/value/interest rates of the securities in which the scheme invests fluctuates, the value of an investment in the scheme may increase or decrease. In addition to the factors that affect the value of individual investments in the Scheme, the NAV of the Scheme can be expected to fluctuate with movements in the broader equity and bond markets and may be influenced by factors affecting capital and money markets in general, such as, but not limited to, changes in interest rates, currency exchange rates, changes in governmental policies, taxation, political, economic or other developments and increased volatility in the stock and bond markets.

- Past performance of the Sponsor/AMC/Mutual Fund does not guarantee the future performance of the Scheme.

- The name of the Scheme does not in any manner indicate either the quality of the Scheme or its future prospects and returns.

- The Sponsors are not responsible or liable for any loss resulting from the operation of the Scheme beyond the initial contribution made by it towards setting up the Mutual Fund.

Some of the general risk factors are explained below:

Liquidity Risk

The liquidity of investments made in the Scheme may be restricted by trading volumes, settlement periods and transfer procedures. Although the investment universe constitutes securities that will have high market liquidity, there is a possibility that market liquidity could get impacted on account of company/sector/general market-related events and there could be a price impact on account of portfolio rebalancing and/or liquidity demands on account of redemptions.

Different segments of the Indian financial markets have different settlement periods and such periods may be extended significantly by unforeseen circumstances. There have been times in the past, when settlements have been unable to keep pace with the volume of securities transactions, making it difficult to conduct further transactions. Delays or other problems in the settlement of transactions could result in temporary periods when the assets of the Scheme are un-invested and no return is earned thereon. The inability of the Scheme to make intended securities purchases, due to settlement problems, could cause the Scheme to miss certain investment opportunities. By the same token, the inability to sell securities held in the Scheme' portfolios, due to the absence of a well-developed and liquid secondary market for debt securities would result at times, in potential losses to the Scheme, should there be a subsequent decline in the value of securities held in the Scheme' portfolios.
Money market securities, while fairly liquid, lack a well-developed secondary market, which may restrict the selling ability of the Scheme and may lead to the Scheme incurring losses till

the security is finally sold.

The liquidity of a bond may change, depending on market conditions leading to changes in the liquidity premium attached to the price of the bond. At the time of selling the security, the security can become illiquid, leading to a loss in the value of the portfolio.

Even though the Government securities market is more liquid compared to other debt instruments, on occasions, there could be difficulties in transacting in the market due to extreme volatility leading to constriction in market volumes. The liquidity of the Scheme may suffer in case any relevant guideline issued by RBI undergoes any adverse changes.

Interest Rate Risk

Fixed income securities such as government bonds, corporate bonds, money market instruments and derivatives run price-risk or interest-rate risk. Generally, when interest rates rise, prices of existing fixed-income securities fall and when interest rates drop, such prices increase. The extent of fall or rise in the prices depends upon the coupon and maturity of the security. It also depends upon the yield level at which the security is being traded.

Derivatives carry the risk of adverse changes in the price due to changes in interest rates.

Re-investment Risk

The investments made by the Scheme are subject to reinvestment risk. This risk refers to the interest rate levels at which cash flows received from the securities in the Scheme are reinvested. The additional income from reinvestment is the 'interest on interest' component. The risk is that the rate at which interim cash flows can be reinvested may be lower than that originally assumed.

Political Risk

Investments in mutual fund Units in India may be materially adversely impacted by Indian politics and changes in the political scenario in India either at the central, state or local level. Actions of the central government or respective state governments in the future could have a significant effect on the Indian economy, which could affect companies, general business and market conditions, prices and yields of securities in which the Scheme invest.

The occurrence of selective unrest or external tensions could adversely affect the political and economic stability of India and consequently have an impact on the securities in which the Scheme invests. Delays or changes in the development of conducive policy frameworks could also have an impact on the securities in which the Scheme invests.

Economic Risk

A slowdown in economic growth or macro-economic imbalances such as the increase in the central and state level fiscal deficits may adversely affect investments in the country. The underlying growth in the economy is expected to have a direct impact on the volume of new investments in the country.

Foreign Currency Risk

The Scheme may be denominated in Indian Rupees (INR) which is different from the home currency for Foreign Portfolio Investors in the mutual fund units. The INR value of investments when translated into home currency by Foreign Portfolio Investors could be lower because of the currency movements. The AMC does not manage currency risk for Foreign Portfolio Investors and it is the sole responsibility of the Foreign Portfolio Investors to manage or reduce currency risk on their own. The Sponsor/Fund/Trustees/ AMC are not liable for any loss to Foreign Investors arising from such changes in exchange rates.

Settlement Risk (Counterparty Risk) - Specific floating rate assets may also be created by swapping a fixed return into a floating rate return. In such a swap, there is the risk that the counterparty (who will pay floating rate return and receive fixed rate return) may default.

Risks associated with transaction in Units through stock exchange(s)

In respect of a transaction in Units of the Scheme through stock exchanges, allotment and redemption of Units on any Business Day will depend upon the order processing /settlement by BSE/NSE and their respective clearing corporations on which the Fund has no control.

10.1.2 Specific Risk Factors

Risk related to equity and equity related securities

Equity and equity related securities are volatile and prone to price fluctuations on a daily basis. The liquidity of investments made in the scheme can get restricted by trading volumes and settlement periods. Settlement periods may be extended significantly by unforeseen circumstances. The inability of the scheme to make intended securities purchases, due to settlement problems, could cause the Scheme to miss certain investment opportunities. Similarly, the inability to sell securities held in the scheme portfolio would result at times, in potential losses to the scheme, if there is a subsequent decline in the value of securities held in the scheme portfolio. Also, the value of the scheme investments may be affected by interest rates, currency exchange rates, changes in law/policies of the government, taxation laws and political, economic or other developments which may have an adverse bearing on individual securities, a specific sector or all sectors.

Risk associated with short selling and Stock Lending

Securities Lending is lending of securities through an approved intermediary to a borrower under an agreement for a specified period with the condition that the borrower will return equivalent securities of the same type or class at the end of the specified period along with the corporate benefits accruing on the securities borrowed. There are risks inherent in securities lending, including the risk of failure of the other party. Such failure can result in a possible loss of rights to the collateral, the inability of the approved intermediary to return the securities deposited by the lender and the possible loss of corporate benefits accruing thereon. Short-selling is the sale of shares or securities that the seller does not own at the time of trading. Instead, he borrows it from someone who already owns it. Later, the short seller buys back the stock/security he shorted and returns the stock/security to the lender to close out the loan. The inherent risks are Counterparty risk and liquidity risk of the stock/security being borrowed. The security being short sold might be illiquid or become illiquid and covering of the security might occur at a much higher price level than anticipated, leading to losses.

Risks associated with mid-cap and small-cap companies

The market capitalization spectrum has been defined as follows:

• Large-Cap Stocks: 1st -100th company in terms of full market capitalization

• Mid-Cap Stocks: 101st -250th company in terms of full market capitalization

• Small-Cap Stocks: 251st company onwards in terms of full market capitalization

Investment in mid-cap and small-cap companies are based on the premise that these companies have the ability to increase their earnings at a faster pace as compared to large-cap companies and grow into larger, more valuable companies. However, as with all equity investments, there is a risk that such companies may not achieve their expected earnings results, or there could be an unexpected change in the market, both of which may adversely affect investment results.

Historically, it has been observed that as you go down the capitalization spectrum i.e., from large- cap stocks to mid-cap stocks and beyond, there are higher risks in terms of volatility and market liquidity. Scheme also invests in mid-cap and small-cap companies and hence is exposed to associated risks.

Risk associated with Dividend

Dividend is due only when declared and there is no assurance that a company (even though it may have a track record of payment of dividend in the past) may continue paying dividend in future. As such, the schemes are vulnerable to instances where investments in securities may not earn dividend or where lesser dividend is declared by a company in subsequent years in which investments are made by schemes. As the profitability of companies are likely to vary

and have a material bearing on their ability to declare and pay dividend, the performance of the schemes may be adversely affected due to such factors.

Risk associated with Derivatives

The mutual fund schemes may invest in derivative products in accordance with and to the extent permitted under the SEBI MF Regulations and by RBI. Derivative products are specialized instruments that require investment techniques and risk analysis different from those associated with stocks and bonds. The use of a derivative requires an understanding not only of the underlying instrument but of the derivative itself. Trading in derivatives carries a high degree of risk although they are traded at a relatively small amount of margin which provides the possibility of great profit or loss in comparison with the principal investment amount. Thus, derivatives are highly leveraged instruments. Even a small price movement in the underlying security could have an impact on their value and consequently, on the NAV of the Units of the Scheme. The risks associated with the use of derivatives are different from or possibly greater than, the risks associated with investing directly in securities and other traditional investments.

Some of the risks associated with derivatives are discussed below:

- Counterparty Risk occurs when a counterparty fails to abide by its contractual obligations and therefore, the scheme is compelled to negotiate with another counter party, at the then prevailing (possibly unfavorable) market price. For exchange traded derivatives, the risk is mitigated as the exchange provides the guaranteed settlement but one takes the performance risk on the exchange.

- Market Liquidity Risk occurs where the derivatives cannot be transacted due to limited trading volumes and/or the transaction is completed with a severe price impact.

- Model Risk is the risk of mis-pricing or improper valuation of derivatives.

- Basis Risk arises due to a difference in the price movement of the derivative vis-à-vis that of the security being hedged.

- The Scheme may find it difficult or impossible to execute derivative transactions in certain circumstances. For example, when there are in sufficient bids or suspension of trading due to price limit or circuit breakers, the Scheme may face a liquidity issue.

- Investments in index futures face the same risk as the investments in a portfolio of shares representing an index. The extent of loss is the same as in the underlying stocks.

- Derivative products are leveraged instruments and can provide disproportionate gains as well as disproportionate losses to the investor / unitholder. Execution of investment strategies depends upon the ability of the fund manager(s) to identify such opportunities

which may not be available at all times. Identification and execution of the strategies to be pursued by the fund manager(s) involve uncertainty and decision of fund manager(s) may not always be profitable. No assurance can be given that the fund manager(s) will be able to identify or execute such strategies.

- There are certain additional risks involved with use of fixed income derivatives such as interest rate risk, and liquidity risk.

Risks related to debt funds

Reinvestment Risk: Investments in fixed income securities carry re-investment risk as interest rates prevailing on the coupon payment or maturity dates may differ from the original coupon of the bond.

Rating Migration Risk: Fixed income securities are exposed to rating migration risk, which could impact the price on account of change in the credit rating. For example: One notch downgrade of a AAA rated issuer to AA+ will have an adverse impact on the price of the security and vice-versa for an upgrade of an AA+ issuer.

Term Structure of Interest Rate Risk: The NAV of the Scheme' Units, to the extent that the Scheme are invested in fixed income securities, will be affected by changes in the general level of interest rates. When interest rates decline, the value of a portfolio of fixed income securities can be expected to rise. Conversely, when interest rates rise, the value of a portfolio of fixed income securities can be expected to decline.

Credit Risk: Fixed income securities (debt and money market securities[96]) are subject to the risk of an issuer's inability to meet interest and principal payments on its debt obligations. The Investment Manager will endeavour to manage credit risk through in-house credit analysis.

Different types of securities in which the Scheme would invest as given in the SID carry different levels of credit risk. Accordingly, the Scheme' risk may increase or decrease depending upon their investment patterns. E.g., corporate bonds carry a higher amount of risk than Government securities. Further, even among corporate bonds, bonds which are rated AAA are comparatively less risky than bonds which are AA rated.

The credit risk is the risk that the counter party will default in its obligations and is generally small as in a Derivative transaction there is generally no exchange of the principal amount.

[96] Sebi has introduced credit risk-based single issuer limits for investment in money market and debt instruments for Actively-managed mutual fund (MF) schemes. For details read: https://www.livemint.com/money/personal-finance/sebi-caps-exposure-to-single-issuer-debt-securities-for-active-mutual-funds-11669724877736.html

Risk associated with floating rate securities

Spread Risk: In a floating rate security the coupon is expressed in terms of a spread or mark up over the benchmark rate. In the life of the security this spread may move adversely leading to loss in value of the portfolio. The yield of the underlying benchmark might not change, but the spread of the security over the underlying benchmark might increase leading to loss in value of the security.

Basis Risk: The underlying benchmark of a floating rate security or a swap might become less active or may cease to exist and thus may not be able to capture the exact interest rate movements, leading to loss of value of the portfolio.

Risk factors associated with repo transactions in Corporate Bonds

The Scheme may be exposed to counter party risk in case of repo lending transactions in the event of the counterparty failing to honour the repurchase agreement. However, in repo transactions, the collateral may be sold and a loss is realized only if the sale price is less than the repo amount. The risk is further mitigated through over-collateralization (the value of the collateral being more than the repo amount).

Risks associated with Creation of Segregated portfolio

Investor holding units of segregated portfolio may not able to liquidate their holding till the time recovery of money from the issuer. Security comprises of segregated portfolio may not realise any value. Listing of units of segregated portfolio on recognised stock exchange does not necessarily guarantee their liquidity. There may not be active trading of units in the stock market. Further trading price of units on the stock market may be significantly lower than the prevailing NAV.

Risks associated with investments in Securitized Assets:

A securitization transaction involves sale of receivables by the originator (a bank, non-banking finance company, housing finance company, or a manufacturing/service company) to a Special Purpose Vehicle (SPV), typically set up in the form of a trust. Investors are issued rated Pass-Through Certificates (PTCs), the proceeds of which are paid as consideration to the originator. In this manner, the originator, by selling his loan receivables to an SPV, receives consideration from investors much before the maturity of the underlying loans. Investors are paid from the collections of the underlying loans from borrowers. Typically, the transaction is provided with a limited amount of credit enhancement as stipulated by the rating agency for a target (rating), which provides protection to investors against defaults by the underlying borrowers.

Some of the risk factors typically analysed for any securitization transaction are as follows:

Risks associated with asset class:

Underlying assets in securitised debt may assume different forms and the general types of receivables include commercial vehicles, auto finance, credit cards, home loans or any such receipts. Credit risks relating to these types of receivables depend upon various factors including macro-economic factors of these industries and economies. Specific factors like nature and adequacy of collateral securing these receivables, adequacy of documentation in case of auto finance and home loans and intentions and credit profile of the borrower influence the risks relating to the asset borrowings underlying the securitised debt.

Risks associated with pool characteristics:

Size of the loan: This generally indicates the kind of assets financed with loans. While a pool of loan assets comprising of smaller individual loans provides diversification, if there is excessive reliance on very small ticket size, it may result in difficult and costly recoveries.

Loan to Value Ratio: This indicates how much percentage value of the asset is financed by borrower's own equity. The lower LTV, the better it is. This ratio stems from the principle that where the borrowers own contribution of the asset cost is high, the chances of default are lower. To illustrate for a Truck costing Rs. 20 lakhs, if the borrower has himself contributed Rs.10 lakh and has taken only Rs. 10 lakhs as a loan, he is going to have lesser propensity to default as he would lose an asset worth Rs. 20 lakhs if he defaults in repaying an installment. This is as against a borrower who may meet only Rs. 2 lakhs out of his own equity for a truck costing Rs. 20 lakhs. Between the two scenarios given above, the latter would have higher risk of default than the former.

Original maturity of loans and average seasoning of the pool: Original maturity indicates the original repayment period and whether the loan tenors are in line with industry averages and borrower's repayment capacity. Average seasoning indicates whether borrowers have already displayed repayment discipline. To illustrate, in the case of personal loans, if a pool of assets consists of those who have already repaid 80 percent of the installments without default, this certainly is a superior asset pool than one where only 10 percent of installments have been paid. In the former case, the portfolio has already demonstrated that the repayment discipline is far higher.

Default rate distribution: This indicates how much percent of the pool and overall portfolio of the originator is current, how much is in 0-30 DPD (days past due), 30-60 DPD, 60-90 DPD and so on.[97] The rationale here is very obvious, as against 0-30 DPD, the 60-90 DPD is certainly a higher risk category.

[97]Days Past due or DPD means, that for any given month, how many months' worth of payment isunpaid.

Credit Rating and Adequacy of Credit Enhancement

Unlike in plain vanilla instruments, in securitisation transactions, it is possible to work towards a target credit rating, which could be much higher than the originator's own credit rating. This is possible through a mechanism called "Credit enhancement". The process of "Credit enhancement" is fulfilled by filtering the underlying asset classes and applying selection criteria, which further diminishes the risks inherent for a particular asset class. The purpose of credit enhancement is to ensure timely payment to the investors, if the actual collection from the pool of receivables for a given period is short of the contractual pay-out on securitisation. Securitisation is normally non- recourse instruments and therefore, the repayment on securitisation would have to come from the underlying assets and the credit enhancement. Therefore, the rating criteria centrally focus on the quality of the underlying assets.

The Schemes predominantly invest in those securitisation issuances which have AA and above rating indicating high level of safety from credit risk point of view at the time of making an investment. However, there is no assurance by the rating agency either that the rating will remain at the same level for any given period of time or that the rating will not be lowered or withdrawn entirely by the rating agency.

- **Limited Liquidity & Price Risk**: The secondary market for securitised papers is not very liquid. There is no assurance that a deep secondary market will develop for such securities. This could limit the ability of the investor to resell them. Even if a secondary market develops and sales were to take place, these secondary transactions may be at a discount to the initial issue price due to changes in the interest rate structure.
- **Limited Recourse to Originator & Delinquency**: Securitised transactions are normally backed by pool of receivables and credit enhancement as stipulated by the rating agency, which differ from issue to issue. The Credit Enhancement stipulated represents a limited loss cover to the Investors. These Certificates represent an undivided beneficial interest in the underlying receivables and there is no obligation of either the Issuer or the seller or the originator, or the parent or any affiliate of the seller, issuer and originator. No financial recourse is available to the Certificate Holders against the Investors Representative. Delinquencies and credit losses may cause depletion of the amount available under the credit enhancement and thereby the investor pay-outs may get affected if the amount available in the credit enhancement facility is not enough to cover the shortfall. On persistent default of an obligor to repay his obligation, the servicer may repossess and sell the underlying Asset. However, many factors may affect, delay or prevent the repossession of such asset or the length of time required to realize the sale proceeds on such sales. In addition, the price at which such asset may be sold may be lower than the amount due from that Obligor.
- **Risks due to possible prepayments**: Asset securitisation is a process whereby

commercial or consumer credits are packaged and sold in the form of financial instruments. Full prepayment of underlying loan contract may arise under any of the following circumstances:

- Obligor pays the receivable due from him at any time prior to the scheduled maturity date of that receivable; or
- Receivable is required to be repurchased by the seller consequent to its inability to rectify a material misrepresentation with respect to that Receivable; or
- The servicer recognizing a contract as a defaulted contract and hence repossessing the underlying asset and selling the same.
- In the event of prepayments, investors may be exposed to changes in tenor and yield.

- **Bankruptcy of the Originator or Seller**: If originator becomes subject to bankruptcy proceedings and the court in the bankruptcy proceedings concludes that the sale from originator to trust was not a sale then an Investor could experience losses or delays in the payments due. All possible care is generally taken in structuring the transaction so as to minimize the risk of the sale to Trust not being construed as a 'True Sale'. Legal opinion is normally obtained to the effect that the assignment of Receivables to Trust in trust for and for the benefit of the Investors, as envisaged herein, would constitute a true sale.

- **Bankruptcy of the Investor's Agent**: If Investor's agent becomes subject to bankruptcy proceedings and the court in the bankruptcy proceedings concludes that the recourse of Investor's Agent to the assets/receivables is not in its capacity as agent/Trustee but in its personal capacity, then an Investor could experience losses or delays in the payments due under the agreement. All possible care is normally taken in structuring the transaction and drafting the underlying documents so as to provide that the assets/receivables if and when held by Investor's Agent is held as agent and in Trust for the Investors and shall not form part of the personal assets of Investor's Agent. Legal opinion is normally obtained to the effect that the Investors Agent's recourse to assets/ receivables is restricted in its capacity as agent and trustee and not in its personal capacity.

- **Risk of co-mingling**: The servicers normally deposit all payments received from the obligors into the collection account. However, there could be a time gap between collection by a servicer and depositing the same into the collection account especially considering that some of the collections may be in the form of cash. In this interim period, collections from the loan agreements may not be segregated from other funds of the servicer. If the servicer fails to remit such funds due to Investors, the Investors may be exposed to a potential loss. Due care is normally taken to ensure that the Servicer enjoys highest credit rating on standalone basis to minimize co-mingling risk.

Risk Factors Associated with Investments in REITs and InvITs:

ReITs and InvITs are exposed to price-risk, interest rate risk, credit risk, liquidity or marketability risk, reinvestment risk. Also, there is a risk of lower-than-expected distributions. The distributions by the REIT or InvIT will be based on the net cash flows available for distribution. The amount of cash available for distribution principally depends upon the amount of cash that the REIT/InvITs receives as dividends or the interest and principal payments from portfolio assets.

However, various risk management strategies are employed to manage the different types of risks. These are mentioned below:

Managing Market Liquidity Risk

The liquidity risk is managed by creating a portfolio which has adequate access to liquidity. The Investment Manager selects fixed income securities, which have or are expected to have high secondary market liquidity. There is good secondary market liquidity in government securities. As far as other long dated fixed income securities are concerned, the endeavour is to invest in high quality securities, for example bonds issued by public sector entities. Market Liquidity Risk will be managed actively within the portfolio liquidity limits. The first access to liquidity is through cash and fixed income securities.

Managing Credit Risk

Credit Risk associated with fixed income securities is managed by making investments in securities issued by borrowers, which have a good credit profile. The credit research process includes a detailed in-house analysis and due diligence. Limits are assigned for each of the issuer (other than government of India); these limits are for the amount as well as maximum permissible tenor for each issuer. The credit process ensures that issuer level review is done at inception as well as periodically by taking into consideration the balance sheet and operating strength of the issuer.

Managing Term Structure of Interest Rates Risk

The Investment Manager actively manages the duration based on the ensuing market conditions. As the fixed income investments of the Scheme are generally short duration in nature, the risk is expected to be small.

Managing Rating Migration Risk

The endeavour is to invest in high grade/quality securities. The due diligence performed by the fixed income team before assigning credit limits and the periodic credit review and monitoring should address company-specific issues.

Re-investment Risk

Re-investment Risk is prevalent for fixed income securities, but as the fixed income investments of the Scheme are generally short duration in nature, the impact can be expected to be small.

Market Risk related to equity and equity related securities

The Investment Manager endeavours to invest in companies, where adequate due diligence and research have been performed by the Investment Manager. As not all third-party research companies conduct adequate research on these companies, the Investment Manager also relies on its own research. This involves one-to-one meetings with the management of companies, attending conferences and analyst meets and tele-conferences. The company– wise analysis will focus, amongst others, on the historical and current financial condition of the company, potential value creation/unlocking of value and its impact on earnings growth, capital structure, business prospects, policy environment, strength of management, responsiveness to business conditions, product profile, brand equity, market share, competitive edge, research, technological know- how and transparency in corporate governance.

Risk associated with floating rate securities

There is very low liquidity in floating rate securities, resulting in lack of price discovery. Hence, incremental investments in floating rate securities are going to be very limited.

Managing Risk associated with favourable taxation of equity-oriented Scheme

This risk is mitigated, as there is a regular monitoring of equity exposure of each of the equity-oriented Scheme of the Fund.

10.2 Factors that affect mutual fund performance

Different asset classes have different characteristics. At the same time, different fund managers may adopt different approaches and strategies, which may also impact the performance of the schemes. Having said that, fund managers take certain risks in order to outperform the respective benchmark's performance. This means that the schemes may be subject to the risks that an asset class is exposed to, as well as the risks that the fund manager may choose or avoid. The various risks as applicable to the various scheme categories have been discussed earlier in this chapter.

10.2.1 Difference between market/systematic risk and company specific risk

Various investments are exposed to a number of risk factors. For example, stock prices move

up or down based on various factors that impact the business performance of the company, or the whole economy. Out of these, the risks that impact the specific company are called company specific or firm specific risks. The risks that impact the entire economy are known as systematic risks. The company specific risks are also known as unsystematic risks. For example, a labour strike in a manufacturing plant is a company specific risk, whereas rise in inflation in the economy is a systematic risk that impacts all the businesses within the country. Hence, the systematic risk is also called the market risk.

The company specific risks can be reduced through diversification across diverse set of companies. However, the systematic risks cannot be reduced through such diversification. Since the unsystematic risk can be reduced through diversification, it is also called the diversifiable risk. On the other hand, the systematic risk is known as non-diversifiable risk.

Fund managers cannot reduce the systematic risk except by staying out of the market. Thus, some fund managers may tactically move between equity and cash depending on their view on the broader market. However, SEBI regulations impose certain limits on the permissible cash allocation in various scheme categories. The fund manager would need to operate within that and to that extent, the scheme may not be able to control the systematic risk beyond a certain level. At the same time, certain fund managers do not take such cash calls and stay fully invested at all times. They do not try to reduce the systematic risk, as they believe that the investor would have chosen the scheme after understanding the risks involved in the scheme. On the other hand, the unsystematic risk is reduced through diversification.

Finance theory states that one is rewarded for taking the non-diversifiable risk only, and not for taking the diversifiable risk.

The fund managers adopt active management strategy in order to outperform the scheme's benchmark index. For that purpose, the manager would have no choice but to take certain unsystematic risks by taking a view on the individual securities.

Mutual fund investments are subject to market risks

"Mutual fund investments are subject to market risks. Please read the scheme related documents carefully before investing." – These lines are part of any marketing communication by mutual fund companies. This is a regulatory requirement. It is important to understand the meaning of this line, to be able to take the advantages of the mutual funds.

Let us understand this. Unlike most other products, mutual fund is a pass-through vehicle, in which all the investment risks are passed onto the investor since the investor/unit-holder is the owner of the fund. This is not the case when one invests in say a fixed deposit. Let us take the case of a company fixed deposit. An investor is promised a certain return on investment in such fixed deposits. What the company does with the money collected determines the return the company earns – in most cases, the company raise money through this route for their investment in the business or their working capital requirements. The company is

supposed to pay the investor only the promised return – nothing more, nothing less. If the company is unable to earn more than what it has promised the depositors, there is a risk that the promise may not be honoured. This is known as credit risk for the depositors. In case of a mutual fund, the ownership of the fund is with the fund's investors. The fund may be subject to this risk as the investments made by the fund may default on their commitments.

Is it possible to manage some of the risks? Is it possible to avoid some? Well, diversification is a proven strategy that can be used as protection against credit risk. A diversified mutual fund, as the name suggests, automatically offers diversification.

However, the one risk that a mutual fund portfolio cannot do anything about is the risk of market-wide price fluctuations. If the fund invests in a market where prices fluctuate a lot, the NAV of the fund is likely to witness huge fluctuations (e.g., growth funds investing in equity market); however, if it invests in a market where prices do not fluctuate, the NAV of the fund would be quite stable (e.g., overnight funds. This shall be discussed later.

When we talk about price fluctuations, it is important to separate the market price fluctuation from fluctuation in the price of the individual securities. There are certain factors that influence the broader market and prices of most securities fluctuate at the same time – this is called market price fluctuation; whereas some factors only affect individual securities, resulting into fluctuation in the price of an individual security. Diversification can help reduce the latter, but cannot reduce the former.

As can be seen from the above discussion, it is not the mutual fund that carries the risk, but the underlying investments where the mutual fund has invested. Mutual funds simply pass on some of the risks and reduce some others. As discussed above, the market risk cannot be reduced through diversification.

10.3 Drivers of Returns and Risk in a Scheme

The portfolio is the main driver of returns in a mutual fund scheme. The asset class in which the fund invests, the segment or sectors of the market in which the fund will focus on, the styles adopted to select securities for the portfolio and the strategies adopted to manage the portfolio determines the risk and return in a mutual fund scheme. The underlying factors are different for each asset class.

10.3.1 Factors Affecting Performance of Equity Schemes

Equity as an asset class represents growth investment. The returns to an investor are primarily from appreciation in the value of the asset. The risk to the investor arises from the absence of defined and fixed returns from these investments that can be volatile from period to period. The returns from equity are linked to the earnings of the business. Not all businesses are successful and manage to earn return for its equity investors. It is therefore important to analyse the business and its prospects before investing in its equity. Moreover, investors have

to continue to evaluate the business to ensure that it remains profitable and worthy of investment.

In order to generate returns superior to the benchmark, the fund manager must construct a portfolio that is different from the benchmark – either entire portfolio or a part of it, and either always or at least some times. Two primary strategies adopted by the portfolio managers are security selection and market timing.

Security selection is an attempt to select good quality securities that are likely to perform well in the future, as well as avoid those securities where the future may be bleak. Market timing, on the other hand, is an attempt to time the entry and exit into a market or timing the purchase and sale of a security in order to capture the upside in prices and to avoid the downside.

For these purposes, two types of analysis may be used–fundamental analysis and technical analysis.

Fundamental and Technical analysis

Fundamental analysis is a study of the business and financial statements of a firm in order to identify securities suitable for the strategy of the schemes as well as those with high potential for investment returns and where the risks are low. Fundamental analysis normally ties in well with the security selection strategy and mostly used for identifying long term investment avenues.

The discipline of ***Technical Analysis*** has a completely different approach. Technical Analysts believe that price behaviour of a share over a period throws up trends for the future direction of the price. Along with past prices, the volumes traded indicate the underlying strength of the trend and are a reflection of investor sentiment, which in turn will influence future price of the share. Technical Analysts therefore study price-volume charts (a reason for their frequently used description as "*chartists*") of the company's shares to decide support levels, resistance levels, breakouts, and other triggers to base their buy/sell/hold recommendations for a share.

Both types of analysts swear by their discipline. It is generally agreed that longer-term investment decisions are best taken through a fundamental analysis approach, while technical analysis comes in handy for shorter-term speculative decisions, including intra-day trading. Even where a fundamental analysis-based decision has been taken on a stock, technical analysis might help decide when to implement the decision i.e., the timing.

Fundamental Analysis entails review of the company's fundamentals viz. financial statements, quality of management, competitive position in its product / service market etc. The analyst sets price targets, based on financial parameters. Some of these financial parameters are listed below:

Earnings per Share (EPS): Net profit after tax ÷ No. of equity shares outstanding

This tells investors how much profit the company earned for each equity share that they own.

Price to Earnings Ratio (P/E Ratio): Market Price per share ÷ Earnings Per Share (EPS)

When investors buy shares of a company, they are essentially buying into its future earnings. P/E ratio indicates how much investors in the share market are prepared to pay (to become owners of the company), in relation to the company's earnings. The forward P/E ratio is normally calculated based on a projected EPS for a future period (also called *forward EPS)*

A company's shares are seen as expensive or otherwise by comparing its P/E ratio to the market P/E and peer group P/E ratios. A simplistic (but faulty) view is that low P/E means that a share is cheap, and therefore should be bought; the corollary being that high P/E means that a share is expensive, and therefore should be sold. In reality, the P/E may be high because the company's prospects are indeed good, while another company's P/E may be low because it is unlikely to replicate its past performances. The validity of this parameter will depend upon the robustness of the future estimates of the earnings of the company. The P/E ratio needs to be recalculated every time there is a change in the earnings and its estimates.

The **Price Earnings to Growth (PEG) ratio** relates the P/E ratio to the growth estimated in the company's earnings. A PEG ratio of one indicates that the market has fairly valued the company's shares, given its expected growth in earnings. A ratio less than one indicates the equity shares of the company are undervalued, and a ratio greater than one indicates an overvalued share.

Book Value per Share: Net Worth ÷ No. of equity shares outstanding

This is an indicator of how much each share is worth, as per the company's own books of accounts. The accounts represent a historical perspective, and are a function of various accounting policies adopted by the company.

Price to Book Value: Market Price per share ÷ Book Value per share

An indicator of how much the share market is prepared to pay for each share of the company, as compared to its book value. The drawback with this is that the book value is an accounting measure and may not represent the true value of the assets of the company.

Such financial parameters are compared across companies, normally within a sector. Accordingly, recommendations are made to buy/hold/sell the shares of the company.

As in the case of P/E ratio, most financial indicators cannot be viewed as stand-alone numbers. They need to be viewed in the context of unique factors underlying each company. The fundamental analyst keeps track of various companies in a sector, and the uniqueness of each company, to ensure that various financial indicators are understood in the right perspective.

Dividend Yield: Dividend per share ÷ Market price per share

This is used as a measure of the payouts received from the company, in percentage, for each rupee of investment in the share. Since dividends are not guaranteed or fixed, investors who are particular about receiving payouts look at the trend in dividend yields over a period of time. Dividend yield is considered as a parameter by conservative investors looking to identify steady and lower risk equity investments. A high dividend yield is the result of higher payout and/or lower market prices, both of which are preferred by such conservative investors.

Another way of looking at a high Pay-out of Income Distribution cum capital withdrawal plan is that the company may have lower investment prospects and therefore pays out the profits instead of re-investing it into the company.

Dividend yields tend to go down across stocks in a bull market and rise in a bear market.

Investment Styles – Growth and Value

Growth investment style entails investing in high growth stocks i.e., stocks of companies that are likely to grow much faster than the market. Many market players are interested in accumulating such *growth stocks*. Therefore, valuation of these stocks tends to be on the higher side. Further, in the event of a market correction, these stocks tend to decline more. Such stocks typically feature high P/E and PEG ratios and lower dividend yield ratio.

Value investment style is an approach of picking up stocks, which are priced lower than their intrinsic value, based on fundamental analysis. The belief is that the market has not appreciated some aspect of the value in a company's share – and hence it is cheap. When the market recognizes the intrinsic value, then the price would shoot up. Such stocks are also called *value stocks.* Investors need a longer investment horizon to benefit from the price appreciation in such stocks.

Value investors maintain a portfolio of such value stocks. In the stocks where their decision is proved right, they earn very high returns, which more than offset the losses on failed decisions.

It is important to note that 'high valuation' is not the equivalent of 'high share price', just as 'low valuation' is not the same as 'low share price'. Fundamental analysts look at value in the context of some aspect of the company's financials. For example, how much is the share price as compared to its earnings per share (*Price to Earnings Ratio*); or how much is the share price as compared to its book value (*Price to Book Value Ratio*).

Thus, a company's share price may be high, say Rs. 100, but still reasonably valued given its earnings; similarly, a company may be seen as over-valued, even when its share price is Rs. 5, if it is not matched by a reasonable level of earnings.

Investments of a scheme can thus be based on growth, value or a blend of the two styles. In

the initial phases of a bull run, growth stocks deliver good returns. Subsequently, when the market heats up and the growth stocks get highly valued or costly, value picks end up being safer.

Portfolio building approach – Top down and Bottom up

In analysing the factors that affect the earnings of company, analysts consider the *EIC framework* i.e., the economy, the industry and the company-specific factors. Economic factors include inflation, interest rates, GDP growth rates, fiscal and monetary policies of the government, balance of payment etc. Industry factors that are relevant include regulations that affect investment and growth decisions of the companies, level of competition, availability of raw materials and other inputs and cyclical nature of the industry. Company-specific factors include management and ownership structure, financial parameters, products and market shares and others.

In a *top-down* approach, the portfolio manager evaluates the impact of economic factors first and narrows down on the industries that are suitable for investment. Thereafter, the companies are analysed and the good stocks within the identified sectors are selected for investment.

A *bottom-up* approach on the other hand analyses the company-specific factors first and then evaluates the industry factors and finally the macro-economic scenario and its impact on the companies that are being considered for investment. Stock selection is the key decision in this approach; sector allocation is a result of the stock selection decisions.

Both the approaches have their merit. Top-down approach minimizes the chance of being stuck with large exposure to a poor sector. Bottom-up approach ensures that a good stock is picked, even if it belongs to a sector that is not so hot. What is important is that the approach selected should be implemented professionally.

Therefore, it can be said that equity returns are a function of sector and stock selection. Investors can also hope for a secular growth in a diversified mix of equity stocks when the economy does well.

10.3.2 Factors affecting performance of Debt Schemes

Risks associated with marketable debt securities have been covered earlier. Primarily there are two risks impacting the debt securities, viz., interest rate risk and credit risk. The yields on debt securities tend to move up as the maturity rises (interest rate risk rises), or as the credit risk is increased.

Investment in a debt security, entails a return in the form of interest (at a pre-specified frequency for a pre-specified period), and repayment of the invested amount at the end of the pre-specified period.

The pre-specified period is called *tenor.* At the end of the tenor, the securities are said to

mature. The process of repaying the amounts due on maturity is called *redemption.* An investor may earn capital gains or incur capital losses by selling the debt security before its maturity period.

Debt securities that are to mature within a year are called money market securities.

The total return that an investor earns or is likely to earn on a debt security is called its *yield.* Yield to maturity (YTM) is the return that the investor gets provided the security is held till maturity.

The holding period return (HPR) is a combination of interest paid by the issuer and capital gain (if the sale proceeds are higher than the amount invested) or capital loss (if the sale proceeds are lower than the amount invested) relative to the price paid to buy the security.

Central Government, State Governments, Banks, Financial Institutions, Public Sector Undertakings (PSU), Private Companies, Municipalities, etc. may issue debt securities.

- Securities issued by the Government are called *Government Securities* or *G-Sec* or *Gilt*.
- *Treasury Bills* are short term debt instruments issued by the Reserve Bank of India on behalf of the Government of India.
- *Certificates of Deposit* are issued by Banks (for 7 days to 1 year) or Financial Institutions (for 1 to 3 years)
- *Commercial Papers* are short term securities (up to 1 year) issued by companies.
- *Bonds/Debentures* are generally issued for tenors beyond a year. Governments and public sector companies tend to issue bonds, while private sector companies issue debentures.

Since the government is unlikely to default on its obligations, Gilts are viewed as safe as there is no credit risk associated with them. The yield on Gilt is generally the lowest in the market for a given tenor. Since non-Government issuers can default, they tend to offer higher yields for the same tenor. The difference between the yield on Gilt and the yield on a non-Government Debt security is called its *credit spread.*

The possibility of a non-government issuer defaulting on a debt security i.e., its credit risk is measured by Credit Rating companies such as CRISIL, ICRA, CARE and Fitch (now India Ratings). They assign different symbols to indicate the credit risk in a debt security. For instance, 'AAA' is rating agencies' indicator of highest safety in a debenture. Higher the credit risk, higher is likely to be the yield on the debt security.

The interest rate payable on a debt security may be specified as a fixed rate, say 6 percent. Alternatively, it may be a floating rate i.e., a rate linked to some other rate that may be prevailing in the market, say the rate that is applicable to Gilt. Interest rates on floating rate securities (also called *floaters)* are specified as a "Base + Spread". For example, 5-year G-Sec

+ 2 percent, this means that the interest rate that is payable on the debt security would be 2 percent above whatever is the rate prevailing in the market for Government Securities of 5-year maturity.

The returns in a debt portfolio are largely driven by interest rates and credit spreads.

Interest Rates

Suppose an investor has invested in a debt security that yields a return of 8 percent. Subsequently, yields in the market for similar securities rise to 9 percent. It stands to reason that the security, which was bought at 8 percent yield, is no longer such an attractive investment. It will therefore lose value. Conversely, if the yields in the market go down, the debt security will gain value. Thus, there is an inverse relationship between yields and value of such debt securities, which offer a fixed rate of interest.

Let us look at another example:

Suppose Company X issued a debenture for a period of 5 years carrying a coupon rate of 9.5 percent p.a. The debenture carried credit rating of AAA, which denotes highest safety.

Two years later, the debenture has residual maturity of 3 years, i.e., the debenture will mature after 3 years. At this stage, the interest rate for AAA rated debentures having 3-year maturity is 8.5 percent p.a. In such a case, the Company X debenture would fetch premium in the secondary market over its face value.

A security of longer maturity would fluctuate a lot more, as compared to short tenor securities. Debt analysts' work with a related concept called *modified duration* to assess how much a debt security is likely to fluctuate in response to changes in interest rates. Higher the modified duration of a debt security, greater is the volatility in its prices in response to changes in interest rates in the market.

In a floater, when yields in the market go up, the issuer pays higher interest; lower interest is paid, when yields in the market go down. Since the interest rate itself keeps adjusting in line with the market, these floating rate debt securities tend to hold their value, despite changes in yield in the debt market.

If the portfolio manager expects interest rates to rise, then the portfolio is switched towards a higher proportion of floating rate instruments; or fixed rate instruments of shorter tenor (which have lower modified duration). On the other hand, if the expectation is that interest rates would fall, then the manager increases the exposure to longer term fixed rate debt securities (which have higher modified duration).

The calls that a fund manager takes on likely interest rate scenario are therefore a key determinant of the returns in a debt fund – unlike equity, where the calls on sectors and stocks are important.

Credit Spreads

Suppose an investor has invested in the debt security of a company. Subsequently, its credit rating improves. The market will now be prepared to accept a lower credit spread. Correspondingly, the value of the debt security will increase in the market.

The investment objective of a debt will define whether the focus of the fund manager will be on earning interest income (Accrual) or on appreciation or gains in the value of the securities held. A money market or liquid fund, an Ultra short-term debt fund or a Floating rate fund will focus only on accrual or interest income. The portfolio will hold only securities with short-term maturities which have low modified duration so that there is no risk of volatility in the values of securities held. A fund that seeks to earn a combination of coupon income and gains in the value of the securities will hold a portfolio of both short-term maturities and long-term securities. Higher the proportion of long-term securities in the portfolio, greater will be the volatility in the returns of the fund since the securities with higher duration will see a greater volatility in their values in response to changes in interest rates in the market.

Duration management is the strategy adopted by funds with the mandate to do so where the fund manager alters the duration of the portfolio in anticipation of changes in interest rate scenario. The fund manager will increase the duration of the portfolio by moving into long term maturities if interest rates are expected to go down and vice versa. The risk in the strategy arises from the possibility that the expectation on interest rate movements may not materialize.

A debt portfolio manager also explores opportunities to earn gains by anticipating changes in credit quality, and changes in credit spreads between different market benchmarks in the market place. Including securities in portfolio whose credit rating is expected to go up will translate into gains for the portfolio when the value appreciates in response to the re-rating of the security. The risk is that the default risk in the portfolio will go up if the expected re-rating does not materialize.

Depending on the investment strategy, the fund managers may take or avoid these risks. If the asset allocation for the category is tightly defined by SEBI or through the scheme document, there is not much room for the fund manager. For example, in case of overnight funds, the fund manager must invest only in overnight securities. Hence, there is no question of taking the interest rate risk. On the other hand, when the limits are not tightly defined, the fund manager may assume an active role in managing the risk, e.g., an ultra-short term debt fund may take credit risk, since the SEBI regulations only define the permitted maturity profile, which indicates how much interest rate risk the scheme can take.

Dynamic bond fund is a category where the fund manager may take a view on the interest rate movements and positions the portfolio to benefit out of it. When the view is that the rates are likely to move down, the manager may increase the maturity of the portfolio (or buy long maturity securities and sell short maturity papers), and vice versa.

10.3.3 Factors Affecting Performance of Gold Funds

Gold, as an asset class does not generate any current income. This was discussed in Chapter 1. In such a case, the only way an investor in gold makes money is when one is able to sell the gold at prices higher than one's cost of purchase. The gold prices move on account of the demand-supply balance or imbalance as well as the general view on the price of the asset.

Gold is a truly international asset, whose quality can be objectively measured. The value of gold in India depends on the international price of gold (which is quoted in foreign currency), the exchange rate for converting the currency into Indian rupees, and any duties on the import of gold.

Therefore, returns in gold as an asset class depends on the following factors:

Global price of gold

Gold is seen as a safe haven asset class. Therefore, whenever there is political or economic turmoil, gold prices shoot up.

Most countries hold a part of their foreign currency reserves in gold. Similarly, institutions like the International Monetary Fund have large reserves of gold. When they come to the market to sell, gold prices weaken. Purchases of gold by large countries tend to push up the price of gold.

Strength of the Rupee

Economic research into inflation and foreign currency flows helps analysts anticipate the likely trend of foreign currency rates.

When the rupee becomes stronger, the same foreign currency can be bought for fewer rupees. Therefore, the same gold price (denominated in foreign currency), translates into a lower rupee value for the gold portfolio. This pushes down the returns in the gold fund. A weaker rupee, on the other hand, pushes up the rupee value of the gold portfolio, and consequently the returns in gold would be higher.

Since the gold funds are passive in nature, the fund manager does not take a view on the movement of gold prices. Such funds simply invest in gold and hence there is no risk related to the decisions taken by the fund management team.

10.3.4 Factors affecting performance of Real Estate funds

Unlike gold, real estate is a local asset. It cannot be transported – and its value is driven by local factors. Some of these factors are:

Economic scenario

At times of uncertainty about the economy (like recessionary situation), people prefer to

postpone real estate purchases and consequently, real estate prices weaken. As the economy improves, real estate prices also tend to keep pace.

Infrastructure development

Whenever infrastructure in an area improves, real estate values increase.

Interest Rates

When money is cheap and easily available, more people buy real estate. This pushes up real estate prices. Rise in interest rates therefore softens the real estate market.

The behaviour of real estate is also a function of the nature of real estate viz. residential or commercial; industrial, infrastructural, warehouse, hotel or retail.
Similarly, a lot of innovation is possible in structuring the real estate exposure. Real estate analysts are experts in assessing the future price direction of different kinds of real estate, and structuring exposure to them.

The composition of the portfolio is the most important driver of returns in a scheme. The factors that drive the return of some of the asset classes are discussed above. The factors that cause fluctuation in the returns of these asset classes, and the schemes that invest in them, are discussed in a later section on risk drivers.

Real estate investments can generate returns in two ways, viz. rental income and capital appreciation. While the former could accrue regularly, the latter is difficult to determine as the same may happen over a period of time and it is difficult to ascertain the same in the short term.

SEBI has mandated that the mutual funds employ neutral valuation agencies to determine the current valuation of the real estate investments. Currently, there are no mutual fund schemes investing in real estate.

Real Estate Investment Trusts (REITs) are gradually becoming popular, and SEBI is supporting REITs through regulatory measures.

10.4 Measures of Returns

The returns from an investment are calculated by comparing the cost paid to acquire the asset (outflow) or the starting value of the investment to what is earned from it (inflows) and computing the rate of return. The inflows can be from periodic payouts such as interest from fixed income securities and dividends from equity investments and gains or losses from a change in the value of the investment. The calculation of return for a period will take both the income earned and gains/loss into consideration, even if the gains/loss have not been realized.

10.4.1 Simple Return

Suppose you invested in a scheme at a NAV of Rs. 12. Later, you found that the NAV has grown to Rs. 15. How much is your return?

The *Simple Return* can be calculated with the following formula:

$$\frac{(\textbf{LaterValue}\ \textit{minus}\ \textbf{InitialValue}) \times 100}{\textbf{InitialValue}}$$

$$\frac{(\textbf{Rs15}\ \textit{minus}\ \textbf{Rs12}) \times 100}{\textbf{Rs12}}$$

i.e., **25 percent**

Thus, simple return is simply the change in the value of an investment over a period of time.

10.4.2 Annualized Return

Two investment options have indicated their returns since inception as 5 percent and 3 percent respectively. If the first investment was in existence for 6 months, and the second for 4 months, then the two returns are obviously not comparable. Annualisation helps us compare the returns of two different time periods.

The *Annualized Return* can be calculated as:

$$\frac{\textbf{Simple Return} \times 12}{\textbf{Period of Simple Return}\ (\text{in months})}$$

Investment 1	**Investment 2**
$\frac{5\ \text{percent} \times 12}{6}$	$\frac{3\ \textit{percent} \times 12}{4}$
i.e., **10**	i.e., **9**

10.4.3 Compounded Return

If the two investment options mentioned above were in existence for 6 years and 4 years respectively, then it is not possible to calculate the annualised return using the above formula as it does not consider the effect of *compounding*.

What is compounding? Suppose you deposited Rs. 10,000 in a cumulative bank deposit for 3 years at 10 percent interest, compounded annually.

The bank would calculate the interest in each of the 3 years as follows:

Year	**Opening Balance** (Rs)	**Interest** (10 percent on opening balance)	**Closing Balance** (Rs)
1	10,000	1,000	11,000
2	11,000	1,100	12,100
3	12,100	1,210	13,310

Thus, at the end of the 3-year period, your principal of Rs. 10,000 would have grown to Rs. 13,310. If, on the other hand, the bank had calculated interest on simple basis, it would have calculated interest at Rs. 1,000 for each of the 3 years, and given you Rs. 13,000.

The difference between Rs 13,310 and Rs 13,000 is the effect of compounding. Longer the period of investment holding, higher would be the difference, if compounding is not considered.

Compounded return can be calculated using a formula:

(Later Value / Initial Value) ^(1/n) - 1

Where: 'n' is the period in years.

Thus, if Rs. 1,000 grew to Rs. 4,000 in 2 years, Later Value= Rs 4,000; Initial Value = Rs 1,000; n = 2 years, then the compounded return is given by the formula:

Thus, compounded return= ((4000/1000) ^ (1/2))-1

MS Excel will calculate the answer to be 1. This is equivalent to 1 X 100 i.e., 100 percent. Thus, the investment yielded a 100 percent compounded return during the 2 years.

Logically, for a return of 100 percent, the initial value of Rs. 1,000 should have grown by 100 percent i.e., doubled to Rs. 2,000 in the first year; and further doubled to Rs. 4,000 in the second year. Thus, LV had to reach a value of Rs. 4,000, which indeed was the case. It is possible to do the above calculations, by using the concerned NAVs of a scheme. Thus, to calculate the returns from a scheme over a specific period of time, then:

- NAV at the beginning of the period is Initial Value
- NAV at the end of the period is Later Value and
- Exact number of days during the period, divided by 365 is 'n'

Conceptually, these calculations give you only the return in the form of change in NAV. Another form of return for an investor in a mutual fund scheme is dividend. NAV goes down after a dividend is paid. Therefore, in the above examples, if dividend was paid, then that has

not been captured in any of the three kinds of returns calculated viz. Simple, Annualised and Compounded.

The above three formulae are thus applicable only for growth schemes, or for Income distribution cum capital withdrawal (dividend) scheme that have not paid a dividend during the period for which return is being calculated.

Whenever a dividend is paid – and compounding is to be considered - the CAGR technique (or the reinvestment method, as some call it) prescribed by SEBI is used.

10.4.4 Compounded Annual Growth Rate

The CAGR calculation is based on an assumption that the dividend would be re-invested in the same scheme at the ex-dividend NAV. The following example will clarify the calculation.

You invested Rs. 10,000 in a scheme at Rs. 10 per unit on June 30, 2019

On January 1, 2020, the scheme paid out a dividend of Re. 1 per unit. The ex-dividend NAV was Rs. 12.50.

On January 1, 2021, the scheme paid out another dividend of Re. 1 per unit. The ex-dividend NAV was Rs. 15.

Let us calculate the CAGR, which we know captures the impact of both dividend payments and compounding.

We know that the **initial value of investment is Rs. 10,000**.

If Rs. 10,000 was invested at Rs. 10 per unit, then you would have 1,000 units (i.e., Rs. 10000/Rs. 10).

The first dividend of Re. 1 per unit on 1,000 units would amount to Rs. 1,000. If this amount was re-invested in the same scheme at the ex-dividend NAV, then you would have 80 additional units (i.e., Rs. 1000/Rs. 12.50, where the reinvestment happens at the ex-dividend NAV of Rs. 12.50).

Thus, your unit-holding would have gone up from 1,000 to 1,080 units.

The second dividend of Re. 1 per unit, on the revised unit-holding of 1,080 units would amount to Rs. 1,080. If this amount were re-invested in the same scheme at the ex-dividend NAV, then you would have 72 additional units (Rs. 1,080/Rs. 15, reinvestment at the ex-dividend NAV).

Thus, your unit-holding would have gone up from 1,080 to 1,152 units. At Rs. 15 per unit, this would be valued at Rs. 17,280.

Therefore, the **later value of units is Rs. 17,280**.

The impact of dividend has been captured in the form of increase in the number of units.

You now need the time period in years, to compute the compounded returns. The period of June 30, 2019 to January 1, 2021 has 551 days. Dividing by 365, it translates to 1.51 years.

Thus, the **investment period in years (n) is 1.51 years**.

Now the compound interest formula can be applied. (Later Value/Initial Value) ^(1/n) - 1
Where 'n' is the period in years.

Here, Rs. 10,000 grew to Rs. 17,280 in 1.51 years, LV = Rs. 17,280; IV = Rs. 10,000; n = 1.51 years.

= ((17280/10000) ^ (1/1.51))-1

MS Excel will calculate the answer to be 0.4365. This is equivalent to 0.4365 X 100 i.e., 43.65 percent. Thus, the investment yielded a 43.65 percent CAGR between June 30, 2019 and January 1, 2021. To be noted, this calculation does not take taxation into account.

Scheme Returns and Investor Returns

The discussion so far focused on scheme returns. Investors might have a return profile that is different, on account of the role of loads.

In the earlier example, the CAGR was calculated with the closing NAV as Rs. 15. However, if an exit load of 1 percent was applicable, then the investor will receive only 99 percent of Rs. 15 i.e., Rs. 14.85 on re-purchase. Thus, your return as investor would be lower than the scheme returns.

Similarly, if the original investment had suffered an entry load of 2 percent, you would have bought the units at 102 percent of Rs. 10 i.e., Rs. 10.20. This would have brought down the returns. (Note: Entry load is no longer permitted).

Loads thus drag down the investor's return below the scheme return. Even taxes would pull down the investor's post-tax returns.

While calculating investor returns for a period, the same formulae can be used, with the following changes:

- Instead of the initial value of NAV (which is used for calculating scheme returns), the amount actually paid by the investor (i.e., NAV plus Entry Load, if any) would need to be used.
- Instead of the later value of NAV (which is used for calculating scheme returns), the amount actually received/receivable by the investor (i.e., NAV minus Exit Load, if any) would need to be used.

Investor returns might vary from the scheme returns also on account of choices regarding investment schedule, i.e., additional investment being made during the period or redeeming

a portion of the investment. In such a case, for the same period investor's returns may be different from the published returns of the scheme.

The returns published in a mutual fund advertisement would be without factoring the entry or exit load, as may be applicable.

Holding period returns is calculated for a fixed period such as one month, three months, one year, three years or since inception. The return is calculated using CAGR if the holding period is over one year and simple absolute returns for less than one year. Holding period returns may not present an accurate picture of the returns from a fund if the initial value or the end value used for calculation was too high or low. To eliminate this impact rolling returns are calculated. Rolling returns is the average annualized return calculated for multiple consecutive holding periods in an evaluation period. For example, all consecutive one year returns in a three-year period with a daily/weekly/monthly rollover is calculated and averaged.

Pros and Cons of Evaluating Funds only on the Basis of Return Performance

The primary factor that investors use for selecting a mutual fund for investment is the return that it has generated. To make the selection more robust, it is important to consider the consistency of the return performance and the performance relative to the benchmark of the scheme and its peer group funds. It is important for an actively managed fund to perform well in rising markets and fall less than the benchmark in a declining market.

However, the return number alone is not adequate to make a decision to invest in a scheme or exit from a scheme. The suitability of the scheme to an investor's needs must also consider the risk associated with the scheme. This includes evaluating factors like the volatility in returns over time. The extent of volatility indicates the riskiness of the scheme.

10.5 SEBI Norms regarding Representation of Returns by Mutual Funds in India

Mutual funds are not permitted to promise any returns, unless it is an assured returns scheme. Assured returns schemes call for a guarantor who is named in the SID. The guarantor will need to write out a cheque, if the scheme is otherwise not able to pay the assured return. So far, there has not been any assured return or guaranteed product; we have had capital protection-oriented funds.

Advertisement Code and guidelines for disclosing performance related information of mutual fund schemes are prescribed by SEBI. The same has been discussed earlier.

10.6 Risks in fund investing with a focus on investors

Section 10.1 of this book covered the discussion on various general and specific risk factors in mutual fund schemes. The same must be seen from the point of view of the investors. It is understood that the investor is taking some risks while investing in mutual funds. However,

in order to sell schemes suitable for the investor's situation, the distributor needs to understand the impact of these risks. The risks discussed in section 10.1 must be seen in light of the objective for which an investor has invested the money.

Risks in Equity Funds

An investor would be exposed to the risk of price fluctuations in an equity fund. The risk is likely to go up when one moves from large-cap to mid-cap to small-cap schemes. In the same manner, the business risk or the risk of failure of a company's business also tends to be higher in case of small-cap companies in comparison to mid-caps, and higher in case of mid-caps in comparison to large caps. The liquidity risk is another risk that an equity fund investor must be careful of, although equity investments are suitable for long term. All these risks increase in a focused fund due to portfolio concentration.

The result of these risks could be that the investor's objective of long-term growth from the equity fund may not materialize due to the possibility of lower-than-expected returns. At the same time, the presence of these risks also increases the return potential.

An investor should invest in equity funds in line with one's risk profile. It would also be prudent to ensure adequate liquidity in the portfolio through liquid funds so that one does not have to resort to selling equity funds, if one needs money when the stock markets are down.

10.6.1 Risks in Debt Funds

Debt funds or income funds are often used for providing stability to the portfolio or for the purpose of generating regular income. A large number of investors are not exposed to fluctuations in prices of their debt instruments, especially majority of Indians who invest in non-marketable debt instruments, such as fixed deposits or small savings schemes. On the other hand, debt fund NAVs may fluctuate due to change in interest rates or due to credit migration. That means the debt fund portfolio may not be as stable as one expected.

Some investors opt for the Income distribution cum capital withdrawal (dividend) option in order to receive regular income. However, such income is not guaranteed and there have been instances in the past where some schemes have skipped paying the dividends during certain periods, due to non-availability of distributable surplus (See Section 7.3 in the book).

The liquid, ultra-short term, or low duration funds are often used for parking of money for short term. If gating provisions are applied or segregated portfolio is created, only partial liquidity may be available. Section 10.8 explains gating provisions and segregated portfolio in details

In case the segregated portfolios are not created, and some other investors exit from the

scheme, the investors who stay invested would be exposed to even greater risks. This is explained in the below example:

Assume that XYZ Debt Fund investment in debentures of ABC Ltd. is to the extent of 5 percent of scheme's NAV. Sometime later the said debenture defaulted on repayment. If the segregated portfolio was not created, the debenture would continue to remain part of the portfolio. If various investors due to this credit default withdraw 50 percent of the money from the scheme, the scheme would be required to sell the debentures that potential buyers are ready to buy. That means the scheme would end up holding debenture of ABC Ltd. and sell some other papers. In such a case, the exposure to ABC Ltd.'s debenture on the remaining portfolio would be 10 percent. The investors, who continued to stay invested got a bigger problem.

In 2018 and 2019 there have been a few credit events that hit even the liquid funds, ultra-short-term debt funds, and low duration funds. This highlighted once again that while these scheme categories may be safe in terms of interest rate risk, these are not absolutely safe when it comes to credit risk. The critical point to understand is "low risk" does not mean "zero risk".

Currently according to the SEBI (Mutual Funds) Regulations, 2026 and SEBI circular dated December 28, 2018, every close-ended scheme (other than ELSS) and units of segregated portfolio are required to be listed on recognized stock exchanges. As per MF Regulations, there are several steps envisaged with respect to winding up of Mutual Fund schemes before the scheme ceases to exist. During this process, such units can be listed and traded on a recognized stock exchange, which may provide an exit to investors. Accordingly, the units of Mutual Fund schemes which are in the process of winding-up in terms of Clause 37(d) of MF Regulation, shall be listed on recognized stock exchange, subject to compliance with listing formalities as stipulated by the stock exchange.

10.6.2 Risks in Hybrid Funds

SEBI circular on mutual fund scheme categorization defined the asset allocation between equity and debt in case of certain categories within the hybrid funds. The distributor must be careful in evaluating and selecting the schemes.

It is widely believed that the arbitrage funds are very safe since they employ arbitrage strategies that nullify the exposure to any security or the stock markets. However, some arbitrage funds have the provision to invest in debt securities, as well as to employ strategies like "paired arbitrage", or "alpha hedging", or "merger arbitrage". In all these cases, the fund manager is taking a view on the price movement and not employing pure arbitrage. If the judgment turns out to be wrong, the investor could lose some money, or earn low returns.

10.6.3 Risk in Gold Funds

As an international commodity, gold prices are difficult to manipulate. Therefore, there is better pricing transparency.

Further, gold does well when the other financial markets are in turmoil. Similarly, when a country goes into war, and its currency weakens, gold funds generate excellent returns.

These twin benefits make gold a very attractive risk proposition. An investor in a gold fund needs to be sure what kind of gold fund it is – Gold Sector Fund or Gold ETF. Gold funds have the risk that if the value or price of gold falls then the investor could end up making a loss too.

10.6.4 Risk in Real Estate Funds

Investment in real estate is subject to various kind of risks. Every real estate asset is different; therefore, its valuation is highly subjective. Real estate is a less liquid asset class. The intermediation chain of real estate agents is largely unorganized in India. Transaction costs, in the form of stamp duty, registration fees, etc. are high. Regulatory risk is high in real estate, as is the risk of litigation and other encumbrances. The transparency level is low even among the real estate development and construction companies.

Many real estate groups are family-owned and family-driven, therefore there is poor corporate governance standards which also increases the risks of investing in their securities. Thus, real estate funds are quite high in risk, relative to other scheme types. Yet, they are less risky than direct investment in real estate.

10.7 Measures of Risk

Fluctuation in returns is used as a measure of risk. Therefore, to measure risk, generally the periodic returns (daily/weekly/fortnightly/monthly) are first worked out, and then their fluctuation is measured against the average return. The fluctuation or variation may be to the higher or lower side. Both are taken as risky. The fluctuation in returns can be assessed in relation to itself, or in relation to some other index. Accordingly, the following risk measures are commonly used.

10.7.1 Variance

Suppose there are two schemes, with monthly returns as follows:

Month	Returns (%)	
	Scheme 1	**Scheme 2**
1	5	5
2	4	-5
3	5	10

Month	Returns (%)	
	Scheme 1	**Scheme 2**
4	6	5
Average Return	**5**	**3.75**
Variance	**0.67**	**39.58**

Variance measures the fluctuation in periodic returns of a scheme, as compared to its own average return.

This can be easily calculated in MS Excel using the following function:
= var (range of cells where the periodic returns are calculated)[98]
Variance as a measure of risk is relevant for both debt and equity schemes.

10.7.2 Standard Deviation

Like Variance, Standard Deviation too measures the fluctuation in periodic returns of a scheme in relation to its own average return. Mathematically, standard deviation is equal to the square root of variance.

Standard deviation is a measure of total risk in an investment. As a measure of risk, it is relevant for both debt and equity schemes.

A high standard deviation indicates greater volatility in the returns and greater risk. Comparing the standard deviation of a scheme with that of the benchmark and peer group funds gives the investor a perspective of the risk in the scheme. Standard deviation along with the average return can be used to estimate the range of returns that the investment will take.

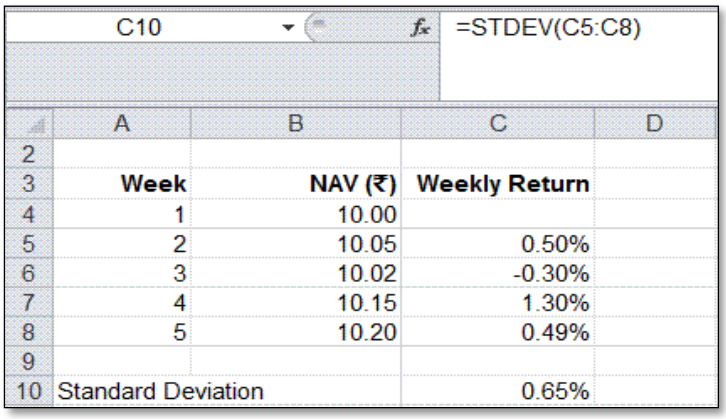
Since standard deviation is calculated using historic numbers it has limited use in predicting future performance.

The NAV of any scheme would keep fluctuating in line with changes in the valuation of securities in its portfolio. The change in NAV of the growth option of a scheme captures the scheme's return, as already discussed. The return can thus be calculated at different points of time, keeping the time period constant.

The standard deviation of the periodic returns can be calculated, using the '=stdev' function in MS Excel, as =stdev (range of cells where the periodic returns are calculated). This is exhibited below in illustration 10.1.

[98]At least 30 observations are required in the series in order to compute an accurate statistical value of standard deviation.

Illustration 10.1: Calculating standard deviation



C10 | =STDEV(C5:C8)

	A	B	C	D
2				
3	**Week**	**NAV (₹)**	**Weekly Return**	
4	1	10.00		
5	2	10.05	0.50%	
6	3	10.02	-0.30%	
7	4	10.15	1.30%	
8	5	10.20	0.49%	
9				
10	Standard Deviation		0.65%	

Standard deviation is a statistical measure of how much the scheme's return varies as compared to its own past standard. It is a measure of total risk in the scheme. Higher the standard deviation, riskier the scheme is.

The standard deviation has been calculated above, based on weekly returns. 52 weeks represent a year. Therefore, the standard deviation can be annualised by multiplying the weekly number by the square root of 52 [written in excel as 'sqrt (52)'].

The annualised standard deviation would therefore be 0.65 X sqrt (52) i.e., 4.70 percent (rounded).

While working with monthly returns, the standard deviation would be multiplied by sqrt (12); in the case of daily returns, it would be multiplied by sqrt (252), because there are 252 trading days in a year, after keeping out the non-trading days (Saturdays, Sundays, holidays).

10.7.3 Beta

Beta is based on the *Capital Asset Pricing Model (CAPM)*, which states that there are two kinds of risk in investing in equities – *systematic risk* and *non-systematic risk*. This has been explained in the earlier section. Since non-systematic risk can be diversified away, investors need to be compensated only for systematic risk, according to CAPM. This systematic risk is measured by its *Beta.*

Beta measures the fluctuation in periodic returns in a scheme, as compared to fluctuation in periodic returns of a diversified stock index (representing the market) over the same period.

The diversified stock index, by definition, has a Beta of 1. Companies or schemes, whose beta is more than 1, are seen as riskier than the market. Beta less than 1 is indicative of a company or scheme that is less risky than the market.

An investment with a beta of 0.8 will move 8 percent when markets move by 10 percent. This

applies to increase as well as fall in values. An investment with a beta of 1.2 will move by 12 percent both on the upside and downside when markets move (up/down) by 10 percent.

Beta as a measure of risk is relevant only for equity schemes.

10.7.4 Modified Duration

Modified duration measures the sensitivity of value of a debt security to changes in interest rates. Higher the modified duration, higher is the interest sensitive risk in a debt portfolio.

A professional investor would rely on modified duration as a better measure of sensitivity to interest rate changes.

10.7.5 Weighted Average Maturity

Broadly, it can be said that the extent of fluctuation in value of the fixed rate debt security is a function of its time *to maturity* (*balance tenor*). Longer the balance tenor, higher would be the fluctuation in value of the fixed rate debt security arising out of the same change in interest rates in the market.

This has led to the concept of *weighted average maturity* in debt schemes. If a scheme has 70 percent of its portfolio in a 4-year security, and balance 30 percent in a 1-year security, the weighted average maturity can be calculated to be (70 percent X 4 years) + (30 percent X 1 year) i.e., 3.1 years. The NAV of such a scheme can be expected to fluctuate more than another debt scheme with a weighted average maturity closer to 1.5 years.

While modified duration captures interest sensitivity of a security better, it can be reasoned that longer the maturity of a debt security, higher would be its interest rate sensitivity. Extending the logic, weighted average maturity of debt securities in a scheme's portfolio is indicative of the interest rate sensitivity of a scheme.

Being simpler to comprehend, weighted average maturity is widely used, especially in discussions with lay investors. However, a professional debt fund manager would rely on modified duration as a better measure of interest rate sensitivity.

10.7.6 Credit Rating

The credit rating profile indicates the credit or default risk in a scheme. Government securities do not have a credit risk. Similarly, cash and cash equivalents do not have a credit risk. Investments in corporate issuances carry credit risk. Higher the credit rating, lower is the default risk.

Better the credit rating of an issuer, lower is the spread. Issuers with a poor credit rating need to offer higher yields to attract investors. Therefore, the spread on such securities is higher.

Credit rating too changes over time. A security that was rated 'AAA', can get downgraded to say, 'AA'. In that case, the yield expectations from the security would go up, leading to a decline in its market value. Thus, a shrewd investor who anticipates an improvement in credit rating on an instrument can benefit from the increase in its value that would follow.

10.8 Certain Provisions with respect to Credit risk

In the debt markets, the credit risk arises on account of three things, viz., default, delay in payments, or rating downgrade. Any of these may result in fall in prices of the concerned debt securities. Such an event is also called a credit event. Whenever a credit event happens, it may lead to reduction in the trading volume of the respective paper. In such a case, mutual funds may come under stress, if a large part of the scheme is redeemed. Here is an example to understand this:

Assume that a scheme worth Rs. 10,000 crores hold 8 percent exposure in a single debt paper–debenture 'M'. If this paper is downgraded, the investors in the scheme may get concerned and would want to redeem their investments. Assume that roughly 20 percent of the scheme's size, i.e., Rs. 2,000 crores are redeemed. Since debenture 'M' has been downgraded, there may be no takers for the same in the debt market. In such a case, the fund manager of the scheme may be forced to sell other securities, which would mean that while the corpus of the scheme drops to Rs. 8,000 crores. Thus, the exposure of the scheme to debenture M increases to 10 percent.

Original corpus of the scheme = Rs. 10,000 crores

Exposure to debenture M = 8 percent of the portfolio = Rs. 800 crores Reduced corpus of

the scheme after 20 percent redemption = Rs. 8,000 crores Now the scheme's exposure to

debenture M = Rs. 800 crores/Rs. 8,000 crores
= 10 percent

If some other investors panic after seeing a larger exposure to debenture M and they also redeem their investments, and if the corpus size reduces by half, the exposure to debenture M doubles from here, which means now the scheme holds debenture M worth 20 percent of the scheme's NAV. This can go on and on. The problem with this is that the scheme's exposure to the affected paper keeps going up and that exposes the scheme's investors to a greater risk of potential loss of capital. As per regulation, a scheme can hold maximum 10 percent in securities issued by a single issuer.

On the other hand, there could be situations when the market-wide liquidity dries up, such that the scheme is unable to liquidate some of the positions it holds in certain securities. This may also mean that while the scheme may continue to hold a well- diversified portfolio across good quality securities, it is unable to liquidate the same and hence cannot fund the

redemptions.

In order to reduce the impact of such risks, SEBI has allowed two provisions:

1. Gating or restriction on redemption in mutual funds
2. Segregated portfolios or side-pocketing

10.8.1 Gating or restriction on redemption in mutual funds

As a philosophy, restriction on redemption should apply during excess redemption requests that could arise in overall market crisis situations rather than exceptional circumstances of entity specific situations. The circumstances calling for restriction on redemption should be such that illiquidity is caused in almost all securities affecting the market at large, rather than in any issuer specific securities.

In order to protect the interest of the investors, the following requirement shall be observed before imposing restriction on redemptions:

Such restrictions may be imposed only when there are circumstances leading to a systemic crisis or event that severely constricts market liquidity or the efficient functioning of markets such as:

a. Liquidity issues – when the market at large faces illiquidity affecting almost all securities. This means that such a measure cannot be employed during illiquidity in case of any particular security. AMCs should have sound internal liquidity management systems and tools in place for the mutual fund schemes. The restriction cannot be used as a tool to manage the liquidity of a scheme. Similarly, such restriction is not allowed in case of illiquidity of a specific security in the portfolio due to poor investment decision.
b. Market failure or exchange closure–when markets are affected by unexpected events which impact the functioning of exchanges or the regular course of transactions. Such unexpected events could also be related to political, economic, military, monetary or other emergencies.
c. Operational issues–when exceptional circumstances are caused by force majeure, unpredictable operational problems and technical failures (e.g., a black out). Such cases can only be considered if they are reasonably unpredictable and occur in spite of appropriate diligence of third parties, adequate and effective disaster recovery procedures and systems.

According to SEBI regulations, such restrictions may be imposed only for a specified period not exceeding 10 working days in any 90-day period. Any imposition of restriction would require specific approval of Board of AMCs and Trustees and the same is required to be informed to SEBI immediately. When restriction on redemption is imposed, the following procedure shall be applied:

- No redemption requests up to Rs. 2 lakhs shall be subject to such restriction;
- When redemption requests are above Rs. 2 lakhs, AMCs shall redeem the first Rs. 2 lakhs

without such restriction and remaining part, i.e., amounts over and above Rs. 2 lakhs shall be subject to the restriction.

The above information to investors shall be disclosed prominently and extensively in the scheme related documents regarding the possibility that their right to redeem may be restricted in such exceptional circumstances and the time limit for which it can be restricted.

10.8.2 Segregated portfolio or side pocketing

To ensure fair treatment to all investors in case of a credit event and to deal with the liquidity risk, in December 2018, SEBI permitted creation of segregated portfolio of debt and money market instruments by mutual funds schemes. "Segregated portfolio" means a portfolio, comprising of debt or money market instrument affected by a credit event, that has been segregated in a mutual fund scheme. "Main portfolio" means the scheme portfolio excluding the segregated portfolio. Asset Management Company (AMC) were allowed to create segregated portfolio in a mutual fund scheme in case of a credit event at issuer level i.e., downgrade in credit rating by a SEBI registered Credit Rating Agency (CRA). Vide the December 28, 2018 circular, creation of segregated portfolio was made optional and at the discretion of the AMC.

In partial modification to SEBI circular issued in December 2018, SEBI permitted to create segregated portfolio of unrated debt or money market instruments by mutual fund schemes of an issuer that does not have any outstanding rated debt or money market instruments subject to the following:

- Segregated portfolio of such unrated debt or money market instruments may be created only in case of actual default of either the interest or principal amount. As per SEBI circular dated December 28, 2018, credit event is considered for creation of segregated portfolio, however vide SEBI circular dated November 7, 2019, 'actual default' by the issuer of such instruments was considered for creation of segregated portfolio.
- The respective AMC is required to inform AMFI immediately about the actual default by the issuer. Upon receiving such information, AMFI is required to immediately inform the same to all AMCs. Pursuant to dissemination of information by AMFI about actual default by the issuer, AMCs may segregate the portfolio of debt and money market instruments of the said issuer in terms of SEBI circular dated December 28, 2018.
- SEBI has mandated that all new schemes launched after November 7, 2019 shall have the enabling provisions included in the SID for creation of segregated portfolio.
- AMCs shall have a detailed written down policy on creation of segregated portfolio and the same shall be approved by the trustees.

Once trustee's approval is received by the AMC:

- Segregated portfolio shall be effective from the day of credit event.

- AMC shall issue a press release immediately regarding details about segregated portfolio.
- NAV of both segregated and main portfolio shall be disclosed from the day of the credit event.
- All existing investors shall be allotted equal number of units in the segregated portfolio as held in the main portfolio as on the day of the credit event.
- No redemption or subscription is allowed in the segregated portfolio. However, in order to facilitate exit to unitholders in segregated portfolio, AMC shall enable listing of units of segregated portfolio on the recognized stock exchange within 10 working days of creation of segregated portfolio and also enable transfer of such units on receipt of transfer requests.

Upon trustee's approval to create a segregated portfolio, the investors redeeming proceeds based on the NAV of main portfolio will continue to hold the units of segregated portfolio. However, investors subscribing to the scheme, will be allotted units only in the main portfolio based on its NAV. In case trustees do not approve the proposal of segregated portfolio, subscription and redemption application will be processed based on the NAV of the total portfolio.

TER for Segregated Portfolio

1) AMC will not charge investment and advisory fees on the segregated portfolio. However, TER (excluding the investment and advisory fees) can be charged, on a pro-rata basis only upon recovery of the investments in segregated portfolio.

2) The TER so levied shall not exceed the simple average of such expenses (excluding the investment and advisory fees) charged on daily basis on the main portfolio (in percent terms) during the period for which the segregated portfolio was in existence.

3) The legal charges related to recovery of the investments of the segregated portfolio may be charged to the segregated portfolio in proportion to the amount of recovery. However, the same shall be within the maximum TER limit as applicable to the main portfolio. The legal charges in excess of the TER limits, if any, shall be borne by the AMC.

4) The costs related to segregated portfolio shall in no case be charged to the main portfolio.

Net Asset Value of Segregated Portfolio

The Net Asset Value (NAV) of the segregated portfolio is required to be declared on a daily basis. Adequate disclosure of the segregated portfolio shall appear in all scheme related documents, in monthly and half-yearly portfolio disclosures and in the annual report of the mutual fund and the scheme.

Risks Associated with Segregated Portfolio

1) Investor holding units of segregated portfolio may not able to liquidate their holding till

the time of recovery of money from the issuer.

2) Securities comprising segregated portfolio may not realize any value.
3) Listing of units of segregated portfolio in recognized stock exchange does not necessarily guarantee their liquidity. There may not be active trading of units in the stock market. Further trading price of units on the stock market may be significantly lower than the prevailing NAV.

The following case illustrates the concept of segregated portfolios.

Illustration of Segregated Portfolio:

Portfolio on the date of credit event						
Security		**Rating**	**Type of security**	**Qty**	**Price Per Unit (INR)**	**Market Value(INR)**
*8.00 % XYZ Ltd.**	*(A)*	*CRISIL A-*	*Non-Convertible Debenture*	*25000*	*49.552*	*12,38,800*
7.80% AVC Ltd.	(B)	CRISIL AAA	Non-Convertible Debenture	25000	101.021	25,25,525
7.65% UYV Ltd.	(C)	CRISIL AAA	Non-Convertible Debenture	21000	100.022	21,00,462
8.10% MNO Ltd.	(D)	CRISL A-	Non-Convertible Debenture	30000	99.548	29,86,440
Cash and Cash Equivalent (E)						11,50,000
Net Assets (A+B+C+D+E)						1,00,01,227
Unit Capital (no. of units)						10,000
NAV per unit (INR)						1000.1227
Downgraded security						

Portfolio Date: 30 September 2019

Downgrade event date: 30 September 2019

Downgrade Security: 8 percent XYZ ltd. from A- to C

Valuation marked down: 50 percent

Before marked down, the security was valued at Rs.99.105/- per unit. On the date of credit event i.e., on 30 September 2019, NCD of 8 percent XYZ Ltd will be moved to a segregated portfolio.

Main portfolio as on 30th September 2019 **Security**		**Rating**	**Type of security**	**Qty**	**Price Per Unit (INR)**	**Market Value (INR)**
7.80% AVC Ltd.	(B)	CRISIL AAA	Non-Convertible Debenture	25,000	101.021	25,25,525
7.65% UYV Ltd.	(C)	CRISIL AAA	Non-Convertible Debenture	21,000	100.022	21,00,462
8.10% MNO Ltd.	(D)	CRISL A-	Non-Convertible Debenture	30,000	99.548	29,86,440
Cash and Cash Equivalent (E)						11,50,000
Net Assets (B+C+D+E)						87,62,427
Unit Capital (no. of units)						10,000
NAV per unit (INR)						876.2427

Segregated Portfolio as on 30th September 2019					
8.00 % XYZ Ltd.# (A)	*CRISIL C*	*Non-Convertible Debenture*	*25,000*	*49.552*	*12,38,800*
Net Assets (A only since this					
comprises of only this security)					12,38,800
Unit Capital (no. of units)					10,000
NAV per unit (INR)					123.88

This security was marked down by 50 percent on the date of credit event.

Total Portfolio value after creation of segregated portfolio			
Particular	**Main Portfolio**	**Segregated Portfolio**	**Total Value (INR lakhs)**
Number of Units	10,000	10,000	
Total Value	87,62,427	1,238,800	1,00,01,227
NAV per unit (INR)	876.2427	123.88	1000.1227

Risk mitigation

We have discussed the various aspects of risks in MF investments. However, there are mitigants as well.

Equity: Adequately long holding period is a great leveller. While price fluctuations in the market do happen, history shows that the longer your holding period, the lower is the volatility in your returns. As an example, if your holding period is one year in an equity fund, you stand to earn highly positive, moderate or deeply negative returns, depending on market movement. If your holding period is five years, the extremes i.e., highly positive or highly negative would be more in a range. You are likely to earn positive or moderate returns. If your investment horizon is ten years, then, as per history, the probability of earning negative returns is next to nil. Higher probability is, you will earn decent positive returns.

The rationale is, market cycles do happen, prices move up and down. Over a long horizon, cycles take care of themselves i.e., It settles down in a range. Over a short holding period, you risk facing the “waves” in the market.

Debt: Credit risk can be gauged from the credit rating of the securities in the portfolio. Certain portfolios e.g., Government Securities Funds, Target Maturity Funds or Corporate Bond Funds run better quality portfolios. For the interest rate risk, it is again your holding period. As a ballpark guidance, if you match your holding period with the portfolio maturity of the fund, you are reasonably protected from market fluctuations.

Chapter 10: Sample Questions

1. **Unsystematic risk can be reduced through diversification. State whether True or False.**

    a. **True**
    b. False

2. **Which of the following type of analysis tracks the price and volume data related to trading in the security?**

    a. Quantitative analysis
    b. Fundamental analysis
    c. **Technical analysis**
    d. Situation analysis

3. **An investor invested in scheme A when the scheme's NAV was Rs. 120 per unit. The investor redeemed the investments at the NAV of Rs. 135. Calculate the simple return.**

    a. 10.00 percent
    b. 11.11 percent
    c. **12.50 percent**
    d. 15.00 percent

4. **Which of the following is a measure of fluctuation in periodic returns in an equity mutual fund scheme?**

    a. **Variance**
    b. Sharpe ratio
    c. Modified duration
    d. Jensen's Alpha

CHAPTER 11: MUTUAL FUND SCHEME PERFORMANCE

Learning Objectives:

After studying this chapter, you should know about:

- Concept of Benchmarks and Performance in case of mutual funds
- Difference between Price Returns Index versus Total Returns Index
- Basis of Choosing an appropriate performance benchmark
- Benchmarks for Equity Schemes
- Benchmark for Debt Schemes
- Benchmark for Other Schemes
- Quantitative measures of fund manager performance
- Sources to track mutual fund performance
- Sources of Scheme Performance Disclosures

11.1 Benchmarks and Performance

Benchmarks

Mutual fund schemes invest in the market for the benefit of Unit-holders. How well did a scheme perform? An approach to assess the performance is to pre-define a comparable—a benchmark—against which the scheme can be compared.

- A credible benchmark should meet the following requirements: It should be in sync with (a) the investment objective of the scheme (i.e., the securities or variables that go into the calculation of the benchmark should be representative of the kind of portfolio implicit in the scheme's investment objective); (b) asset allocation pattern; and (c) investment strategy of the scheme.
- The benchmark should be calculated by an independent agency in a transparent manner, and published regularly. Most benchmarks are constructed by stock exchanges, credit rating agencies, securities research houses or financial publications.

Choice of benchmark is simplest for an index fund. The investment objective is clear on the index that the scheme would track. That index would then be the benchmark for the scheme.

For other schemes, choice of benchmark is subjective. The benchmark for a scheme is decided by the AMC in consultation with the trustees. The Scheme Information Document has to mention the benchmark. Further, along with the past performance of the scheme, the performance of the benchmark during the same period has to be mentioned.

At a later date, the fund may choose to change the benchmark. This could be for various reasons. For instance, the investment objective of the scheme may change, or the construction of the index may change, or a better index may become available in the market. AMCs can change the benchmark in consultation with the trustees. Further, the change needs to be justified and documented. Mutual fund schemes are required to disclose the name(s) of benchmark index/indices with which the scheme performance is compared.

11.2 Price Return Index or Total Return Index

Earlier, the Mutual Fund schemes were benchmarked to the Price Return variant of an Index (PRI). PRI only captures capital gains of the index constituents. With effect from February 1, 2018, the mutual fund schemes are benchmarked to the Total Return variant of an Index (TRI). The Total Return variant of an index takes into account all dividends/interest payments that are generated from the basket of constituents that make up the index in addition to the capital gains.[99]

Such a change was required to ensure that the performance comparison is fair. The scheme performance would be calculated after adding the dividends that the scheme has earned from the investments. Even in case of Income distribution cum capital withdrawal (dividend) option, the scheme performance is calculated using the Reinvestment of Income Distribution cum capital withdrawal option method[100]. In such a case, if the scheme performance is compared with that of PRI, it would give a slight advantage to the scheme. The shift to TRI has been another one in the direction of increasing transparency of mutual funds.

In other words, this would make it appear that fewer schemes are able to beat their benchmark indices. While the reality has not changed, the presentation of the same has changed. The gap between the returns between PRI and TRI is the amount of dividend. Historically, in the Indian markets, the dividend yields at the index levels have ranged from 1.5 percent to 2.5 percent, most of the times.

11.3 Basis of choosing an appropriate performance benchmark

The selection of the benchmark for performance comparison must also be done keeping these in mind. With an objective to enable the investors to compare the performance of a scheme vis-à-vis an appropriate benchmark, SEBI has mandated: [101]

- Selection of a benchmark for the scheme of a mutual fund to be in alignment with the investment objective, asset allocation pattern and investment strategy of the scheme.
- The performance of the schemes of a mutual fund to be benchmarked to the Total Return

[99]For details regarding computation of composite CAGR, refer to SEBI Circular No. – SEBI/HO/IMD/DF3/CIR/P/2018/04 dated January 4, 2018.

[100] Mutual funds use this method of reinvestment i.e., the cash from the dividend received is used to buy more shares with no fee or commission charged.

[101] SEBI has clarified this via the circular no. SEBI/HO/IMD/DF3/CIR/P/2018/4 dated January 4, 2018.

variant of the Index chosen as a benchmark.

- Mutual funds should use a composite CAGR figure of the performance of the PRI benchmark (until the date from which TRI is available) and the TRI (subsequently) to compare the performance of their scheme in case TRI is not available for that particular period.

Thus, the scheme's benchmark must be chosen based on Scheme's investment objective, Investment strategy of the scheme, and the scheme's asset allocation pattern. All the three can be seen in the Scheme Information Document.

11.4 Benchmarks for equity schemes

The following aspects of the investment objective (scheme type, choice of investment universe, portfolio concentration, underlying exposure) drive the choice of benchmark in equity schemes.

Scheme Type

A sector fund would invest in only the concerned sector; while there are some funds that invest in all sectors. Therefore, funds investing in different sectors need to have a diversified index as a benchmark index, like S&P BSE Sensex or Nifty 50 or S&P BSE 200 or S&P BSE 500 or Nifty 100 or Nifty 500 as a benchmark; sectoral/thematic funds select sectoral/ thematic indices such as S&P BSE Bankex, S&P BSE FMCG Index, Nifty Infrastructure Index and Nifty Energy Index.

Choice of Investment Universe

Some equity funds investing in different sectors invest in large companies; while there are others that focus on mid-cap stocks or small cap stocks. S&P BSE Sensex and Nifty 50 indices are calculated based on 30 (in the case of Sensex) / 50 (in the case of Nifty) large companies. Thus, these indices are appropriate benchmarks for those equity funds that invest in large companies. For midcap funds midcap indices such as Nifty Midcap 50 or S&P BSE Midcap are considered as better benchmarks.

Choice of Portfolio Concentration

Some equity funds investing in different sectors prefer to have fewer stocks in their portfolio. For such schemes, appropriate benchmarks are narrow indices such as S&P BSE Sensex and Nifty 50, which have fewer stocks. Schemes that propose to invest in more number of companies will prefer broader indices like S&P BSE 100/Nifty 100 (based on 100 stocks), S&P BSE 200/Nifty 200 (based on 200 stocks) and S&P BSE 500/Nifty 500 (based on 500 stocks).

11.5 Benchmarks for Debt Schemes

As per the SEBI guidelines, the benchmark for debt (and balanced schemes) should be developed by research and rating agencies recommended by AMFI. CRISIL, ICICI Securities and NSE have developed various such indices.

NSE has indices for the Government Securities Market. These are available for different variations such as Nifty composite G-sec index, Nifty 4-8 Year G-sec index, Nifty 10-year benchmark G-sec index etc. BSE also has certain indices for Government securities such as the S&P BSE India Sovereign Bond Index, S&P BSE India Government Bill Index etc.

ICICI Securities' Sovereign Bond Index (I-Bex) is based on government securities. It consists of an umbrella index covering the entire market, and sub-indices catering to three contiguous maturity buckets. The three sub-indices are—Si-Bex (1 to 3 years), Mi-Bex (3 to 7 years) and Li-Bex (more than 7 years). CRISIL also has a set of indices for debt schemes:[102]

Category	Fund Category	NSE Index Name	BSE Index	CRISIL Index Name
Debt	Overnight Fund	NIFTY 1D Rate Index	--	CRISIL Liquid Overnight Index
Debt	Liquid Fund	NIFTY Liquid Index A-I	--	CRISIL Liquid Debt A-I Index
Debt	Money Market Fund	NIFTY Money Market Index A-I	--	CRISIL Money Market A-I Index
Debt	Ultra Short-Term Debt Fund	NIFTY Ultra Short Duration Debt Index A-I	--	CRISIL Ultra Short Duration Debt A-I Index
Debt	Low Duration Debt Fund	NIFTY Low Duration Debt Index A-I	--	CRISIL Low Duration Debt A-I Index
Debt	Short Duration Debt Fund	NIFTY Short Duration Debt Index A-II	--	CRISIL Short Duration Debt A-II Index

[102] Source: https://www.amfiindia.com/otherdata/listofbenchmarkindices?tab=debtSchemes

Category	Fund Category	NSE Index Name	BSE Index
Equity	Multi Cap Fund	Nifty 500 Multicap 50:25:25	BSE 500
Equity	Large Cap Fund	NIFTY 100	BSE 100
Equity	Large & Mid Cap Fund	NIFTY Large Midcap 250	BSE 250 Large MidCap
Equity	Mid Cap Fund	NIFTY Midcap 150	BSE Midcap 150
Equity	Small Cap Fund	NIFTY Smallcap 250	BSE 250 SmallCap
Equity	ELSS	NIFTY 500	BSE 500
Equity	Flexi Cap Fund	NIFTY 500	BSE 500
Equity	Dividend Yield Fund	Nifty 500	BSE 500

The following aspects such as scheme type; choice of investment universe drive the choice of benchmark in debt schemes.

Scheme Type

Liquid schemes invest in securities of up to 91 days' maturity. Therefore, a short-term money market benchmark such as NSE's Liquid or CRISIL Liquid Fund Index is suitable.
Non-liquid schemes can use one of the other indices mentioned above, depending on the nature of their portfolio.

Choice of Investment Universe

Gilt funds invest only in Government securities. Therefore, indices based on Government Securities are appropriate. Debt funds that invest in a wide range of Government and Non-Government securities need to choose benchmarks that are calculated based on a diverse mix of debt securities.

11.6 Benchmarks for Other Schemes

Hybrid Funds

Hybrid funds invest in a mix of debt and equity. Therefore, the benchmark for a hybrid fund is a blend of an equity and debt index.

For instance, a hybrid scheme with asset allocation of about 65 percent in equity and balance in debt can use a synthetic index that is calculated as 65 percent of S&P BSE Sensex and 35 percent of I-Bex.

Table 11.2: Blended indices for hybrid funds

Category	Fund Category	NSE Index Name
Hybrid	Conservative Hybrid Fund	NIFTY 50 Hybrid Composite Debt 15:85 Index
Hybrid	Balanced Hybrid Fund	NIFTY 50 Hybrid Composite debt 50:50 Index
Hybrid	Aggressive Hybrid Fund	NIFTY 50 Hybrid Composite Debt 65:35 Index
Hybrid	Aggressive Hybrid Fund	NIFTY Mid Small cap 400 TRI: 70%
Hybrid	Arbitrage Fund	NIFTY 50 Arbitrage
Hybrid	Dynamic Asset Allocation / Balanced Advantage Fund	NIFTY 50 Hybrid Composite debt 50:50 Index

Gold ETF

Gold price would be the benchmark for such funds.

Real Estate Funds

A few real estate services companies have developed real estate indices. These have shorter histories, and are yet to earn the wider acceptance that the equity indices enjoy.

International Funds

The benchmark would depend on where the scheme proposes to invest. Thus, a scheme seeking to invest in China might have the Shanghai Composite Index (Chinese index) as the benchmark. S&P 500 may be appropriate for a scheme that would invest largely in the US market. A scheme that seeks to invest across a number of countries, can structure a synthetic index that would be a blend of the indices relevant to the countries where it proposes to invest.

Standard benchmarks

For the sake of standardization, schemes need to disclose return in INR and by way of CAGR for the following benchmarks apart from the scheme benchmarks:

Scheme Type	**Benchmark**
Equity scheme	Sensex or Nifty
All Debt Schemes having duration / maturity up to 1 year and arbitrage Funds	1 year T-Bill
All Debt Schemes which are not covered in point 2	10 years dated GoI security
Conservative Hybrid Fund	10 years dated GoI security

Balanced Hybrid Fund / Aggressive Hybrid Fund / Dynamic Asset Allocation or Balanced Advantage /Multi Asset Allocation	Sensex / Nifty
Equity Savings	10 years dated GoI security
Retirement Fund / Children's Fund	Sensex / Nifty
Index Funds / ETFs & FoFs (Overseas/ Domestic)	Appropriate benchmark based on the underlying asset allocation as per above

This was proposed in order to bring standardization to the process of benchmarking as well as comparing the scheme performance with easily available indices. These disclosures shall form part of the Statement of Additional Information and all advertisements of Mutual Funds.

Principles concerning Benchmarks of Mutual Fund Schemes[103]

To standardize and bring-in uniformity in the benchmarks of mutual fund schemes, vide SEBI circular dated October 27, 2021, it has been notified that there will be a two-tiered structure for benchmarking of certain category of schemes. The first-tier benchmark will be reflective of the category of the scheme, and the second-tier benchmark will be demonstrative of the investment style/strategy of the Fund Manager within the category. All the benchmarks followed will necessarily be Total Return Indices.[104]

Type of Scheme	**Type of Benchmark**	
	Tier-1	**Tier-2**
Income / Debt Oriented Schemes	One Broad Market Index per Index provider for each category such as NIFTY Ultra Short Duration Debt Index or CRISIL Ultra Short Term Debt Index for Ultra Short Duration Fund Category	Bespoke according to Investment Style/Strategy of the Index like AAA Bond Index
Growth / Equity Oriented Schemes	One Broad Market Index per Index Provider for each category e.g.: S&P BSE100 Index or NSE 100 Index for Large Cap Fund Category	Bespoke according to Investment Style/Strategy of the Index e.g.: Nifty 50 Index
Hybrid and Solution Oriented Schemes	There would be a single benchmark, i.e., Broad Market Benchmark wherever available or bespoke to be created for schemes, which would then be applicable across industry	
Thematic/ Sectoral schemes	There would be a single benchmark as characteristics of the schemes are already tapered according to the theme/sector	
Index Funds and Exchange Traded Funds (ETFs)	There would be a single benchmark as these schemes replicate an underlying index	

[103] https://www.sebi.gov.in/legal/circulars/oct-2021/guiding-principles-for-bringing-uniformity-in-benchmarks-of-mutual-fund-schemes_53539.html. This shall come into force with effect from January 1, 2022

[104] The first tier benchmarks for open ended debt schemes as per the Potential Risk Class and the same will be implemented by the AMCs with effect from April 1, 2022. Source: https://www.sebi.gov.in/legal/circulars/dec-2021/circular-on-mutual-funds_54542.html

Fund of Funds Schemes (FoFs)	If a FoF scheme is investing in a single fund, then benchmark of the underlying scheme will be used for corresponding FoF. However, in case a FoF scheme invests in multiple schemes, then Broad Market Index will be applied.

11.7 Quantitative Measures of Fund Manager Performance

In the section on calculation of returns, the focus was on absolute returns i.e., returns earned by the scheme. Having understood the concept of benchmarks, one can also do relative comparison viz. how did a scheme perform vis-à-vis its benchmark or peer group. Such comparisons are called *relative return* comparisons.

If a comparison of relative returns indicates that a scheme earned a higher return than the benchmark, then that would be indicative of *outperformance* by the fund manager. In the reverse case, the initial premise would be that the fund manager *under-performed.* Such premises of outperformance or under-performance need to be validated through deeper performance reviews.

AMCs and trustees are expected to conduct such periodic reviews of relative returns, as per the SEBI Guidelines.

Relative returns comparison is one approach towards evaluating the performance of the fund manager of a scheme. A weakness of this approach is that it does not differentiate between two schemes that have assumed different levels of risk in pursuit of the same investment objective. Though the two schemes may share the benchmark, their risk levels are different. Evaluating performance, purely based on relative returns, may be unfair towards the fund manager who has taken lower risk but generated the same return as a peer.

An alternative approach to evaluating the performance of the fund manager is through the risk reward relationship. The underlying principle is that return ought to be commensurate with the risk taken. A fund manager, who has taken higher risk, ought to earn a better return to justify the risk taken. A fund manager who has earned a lower return may be able to justify it through the lower risk taken. Such evaluations are conducted through *Risk-adjusted Returns*.

There are various measures of risk-adjusted returns. This workbook focuses on three metrics, which are more commonly used in the market.

11.7.1 Sharpe Ratio

Sharpe ratio is a very commonly used measure of risk-adjusted returns.

An investor can invest with the government and earn a risk-free rate of return (R_f). T-Bill index is a good measure of this risk-free return.

Through investment in a scheme, a risk is taken, and a return is earned (R_s).

The difference between the two returns i.e., R_s – R_f is called *risk premium.* It is like a premium that the investor has earned for the risk taken, as compared to government's risk-free return.

This risk premium is to be compared with the risk taken. Sharpe Ratio uses Standard Deviation as a measure of risk. It is calculated as:

Sharpe Ratio = (R_s minus R_f) ÷ Standard Deviation

Thus, if risk free return is 5 percent, and a scheme with standard deviation of 0.5 percent earned a return of 7 percent, its Sharpe Ratio would be (7 percent - 5 percent) ÷ 0.5 percent i.e., 4.

Sharpe Ratio is effectively the risk premium generated by assuming per unit of risk. Higher the Sharpe Ratio, better the scheme is considered to be.

Sharpe Ratio comparisons can be undertaken only for comparable schemes. For example, Sharpe Ratio of an equity scheme cannot be compared with the Sharpe Ratio of a debt scheme.

11.7.2 Treynor Ratio

Like Sharpe Ratio, Treynor Ratio too is a risk premium per unit of risk.

Computation of risk premium is the same as was done for the Sharpe Ratio. However, for risk, Treynor Ratio uses Beta.

Treynor Ratio is thus calculated as:

Treynor Ratio = (R_s minus R_f) ÷ Beta

Thus, if risk free return is 5 percent, and a scheme with Beta of 1.2 earned a return of 8 percent, its Treynor Ratio would be (8 percent - 5 percent) ÷ 1.2 i.e., 2.5.

Higher the Treynor Ratio, better the scheme is considered to be. Since the concept of Beta is more relevant for diversified equity schemes, Treynor Ratio comparisons should ideally be restricted to such schemes.

11.7.3 Alpha

Non-index schemes too would have a level of return, which is in line with its higher or lower beta as compared to the market. Let us call this the *optimal return.*

The difference between a scheme's actual return and its optimal return is its *Alpha*—a measure of the fund manager's performance. Alpha, therefore, measures the performance of the investment in comparison to a suitable market index. Positive alpha is indicative of out-performance by the fund manager; negative alpha might indicate under-performance.

Since the concept of Beta is more relevant for diversified equity schemes, Alpha should ideally be evaluated only for such schemes.[105]

These quantitative measures are based on historical performance, which may or may not be replicated.

Such quantitative measures are useful pointers. However, blind belief in these measures, without an understanding of the underlying factors, is dangerous. While the calculations are arithmetic—they can be done by a novice; scheme evaluation is an art—the job of an expert.

11.7.4 Information Ratio

Information ratio is an established financial ratio to measure the risk-adjusted return of any scheme portfolio. It is often used as a measure of a portfolio manager's level of skill and ability to generate excess returns adjusted for risk, relative to a benchmark and also attempts to identify the consistency of the performance by incorporating standard deviation (risk) into the calculation.

It is mandatory for the AMCs to disclose the Information Ratio as a financial metric to measure the risk-adjusted return of a portfolio. This is the only measure of risk-adjusted returns that is mandatory to disclose.

The information ratio must be disclosed by the AMCs on their website on a daily basis. It would also be available on AMFI website in a comparable format.

Information Ratio is calculated as under:

$$Information\ Ratio\ (IR) = (Portfolio\ Return - \ Benchmark\ Return)\ /\ Standard\ Deviation\ of\ Excess\ Return$$

For the purpose of the above calculation, the benchmark must be the tier-I benchmark used for the scheme (as disclosed in the SID). The standard deviation of excess returns shall be calculated on the basis of daily return values.
By specifying the above method of calculation and disclosure norms, SEBI[106] has standardized both.

[105] Beta is a measure of a stock's volatility in relation to the market. By definition, the market has a beta of 1.0, and individual stocks are ranked according to how much they deviate from the market. A stock that swings more than the market over time has a beta above 1.0. If a stock moves less than the market, the stock's beta is less than 1.0. High-beta stocks are supposed to be riskier but provide a potential for higher returns; low-beta stocks pose less risk but also lower returns. (Source: Investopedia.com)
[106] SEBI circular no. SEBI/HO/IMD/IMD-PoD-2/P/CIR/2025/6 dated January 17, 2025

11.8 Tracking Error

The Beta of the market, by definition is 1. An index fund mirrors the index. Therefore, the index fund too would have a Beta of 1, and it ought to earn the same return as the market. The difference between an index fund's return and the market return is the *tracking error*.

Tracking error is a measure of the consistency of the out-performance of the fund manager relative to the benchmark. Earlier it was used as a measure of how closely an index fund tracked the returns from the benchmark to which it was indexed. The tracking error was expected to be zero. Now, the tracking error is used to measure how consistently a fund is able to out-perform its benchmark. It is not enough if the fund is able to generate a high excess return, it must do so consistently.
Tracking error is calculated as the standard deviation of the excess returns generated by the fund. The tracking error has to be low for a consistently out-performing fund.

11.9 Scheme Performance Disclosure

SEBI has mandated disclosure of performance data by all the asset management companies (AMCs). These disclosures can be accessed through certain scheme documents and website of the fund house.

The Scheme Information Document (SID) of each scheme needs to updated twice every year, accordingly, the scheme performance numbers have to be updated as a part of this exercise. That is where the fund fact sheet plays a vital role which is published on a monthly basis by all the fund houses. Factsheet is not a statutory requirement.

There are various portals that also could be used to access the scheme performance data. Many of these portals also carry various other scheme related performance measures. Mutual funds also make available product literature that can be used by distributors and investors to evaluate schemes. This information is made available in physical and online mode. The information and data found in such literature is updated and current, and typically includes information about suitability, returns and portfolio description. These are explained below.

Suitability: A snapshot of the suitability of the product can be assessed from the product labels that have to be provided with any product literature. It identifies the objective of the scheme as wealth creation, regular income generation or providing liquidity, and also the asset class in which the scheme will invest to achieve the objective. The suitable investment holding period is also indicated. The risk-o-meter identifies the risk to the capital invested and helps match the investor's risk-taking ability to that of the scheme.

Returns: The cumulative returns that the scheme has generated over different holding periods helps assess if the fund is able to generate returns to meet the investment objectives. The comparison of the returns with that of the scheme's benchmark helps assess the ability of the portfolio manager to out-perform the markets. The discreet annual returns help in assessing the consistency of the fund's performance over different market scenarios.

Portfolio Description: The description of the way the portfolio will be managed in terms of how assets will be allocated and securities selected will help investors assess the suitability of the scheme to investors. In case of equity funds the extent of diversification across sectors and securities and the strategy adopted to select and manage securities based on the market capitalisation (large vs. mid vs. small) and valuation (growth vs. value) among others, will determine the risk and returns of the scheme. In case of debt funds, the tenor and credit quality of the securities as well as strategies adopted will determine the risk and return. In case of hybrid funds the allocation to different asset classes and the way each is managed will indicate the risk and return.

Fund Factsheets

Apart from information about the schemes themselves, AMCs may also provide periodic updates on markets and the economy. These are typically part of the factsheets or may be issued as separate notes.
The fund factsheets are an official source of information of the fund's objective, performance, portfolio and basic investment requirements issued by the fund house each month. The factsheet is also used by the fund manager to communicate their views on the economy and the markets to the investors and other observers such as research analysts, rating agencies and media.

It is not mandatory for fund houses to publish factsheets. But most fund houses do so as a way to reach out to the existing and new investors.

The information disclosed in the factsheets and other product literature is subject to the advertising guidelines of SEBI.

The purpose of these updates is to help investors understand the performance of their schemes and to make plans for their investments based on expectations for different asset classes. Typically, these notes provide information on market and economic data. Some important points are analysed in the factsheet (see Table 11.3).

Table 11.3: Metrics of Analysis in Factsheet

Metrics of Analysis	Purpose
Level of market indices and yields	To assess the performance of the schemes
Corporate results (during earning seasons), Earning upgrades and downgrades, Analysis of profit margins and revenues, Industry-wise analysis of earnings and demand forecasts.	To reflect the tone for equity markets.

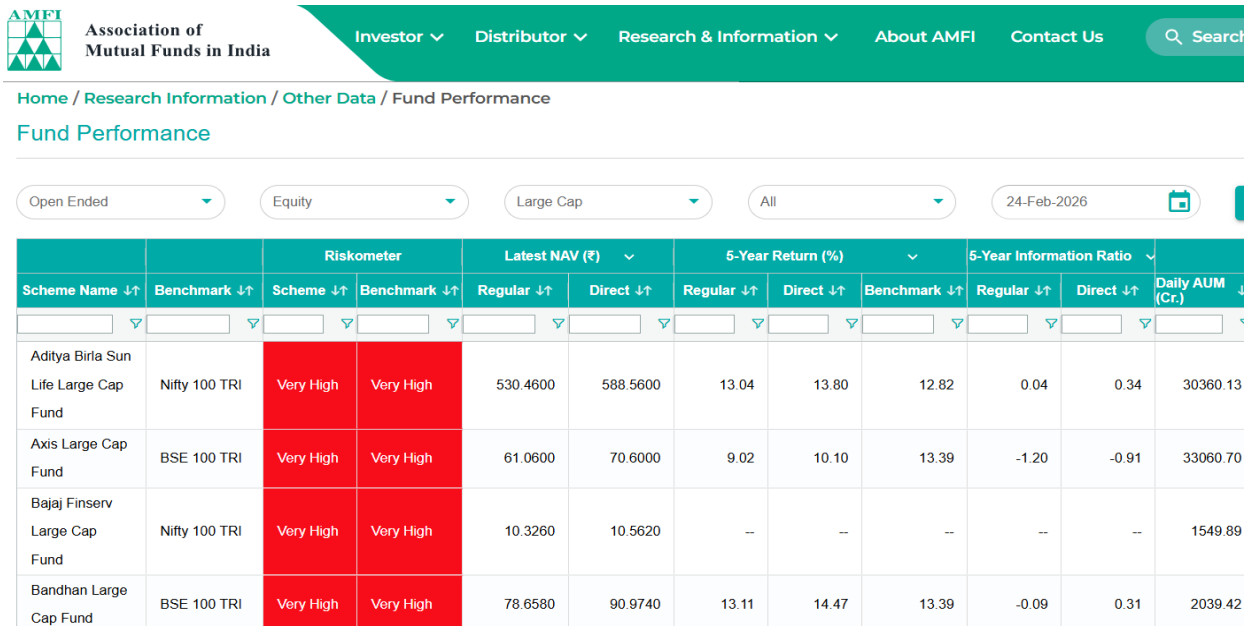
Government spending	Government spending is generally positive for economic growth. But a high fiscal deficit can have negative impact on interest levels and economic activity. It translates into higher borrowings by the government and pushes up the interest costs in the market. It also limits the ability of the government to provide fiscal impetus to the economy.
Inflation Level	To analyse effect on demand as well as costs of production and profitability of companies. If inflation goes beyond levels of comfort, then there may be monetary action taken to cool it, such as reducing availability of money and credit. This will affect demand and the ability of companies to grow.
Changes in the level of interest rates	To provide clue to changes in consumption and the demand for goods and services. Interest rate levels also affect the ability of companies to expand and grow.
Activity of domestic and foreign portfolio investors	Reflects expectations from Indian markets.
GDP Numbers	To track economic cycle and growth in economy
Economic and interest rate data from overseas economies	To evaluate the likely impact on demand for India's exports as well as fund flows into and out of Indian markets. Lower interest rates in international markets will bring funds flow to emerging markets in search for better yields.
Commodity prices and prices of other inputs such as raw materials and labour.	To track the impact on profitability of companies. Prices of oil affect the currency levels and thereby exports and imports.

Scheme performance available on AMFI website:

AMFI website carries the performance data of all the mutual fund schemes[107]. This is an exhaustive resource and one can access the same for various different periods, and fund categories. A sample screen shot of the report is shown below:

[107]https://www.amfiindia.com/otherdata/fund-performance

Box 11.1 Scheme performance data on AMFI website.[108]



		Riskometer		Latest NAV (₹)		5-Year Return (%)			5-Year Information Ratio		
Scheme Name	Benchmark	Scheme	Benchmark	Regular	Direct	Regular	Direct	Benchmark	Regular	Direct	Daily AUM (Cr.)
Aditya Birla Sun Life Large Cap Fund	Nifty 100 TRI	Very High	Very High	530.4600	588.5600	13.04	13.80	12.82	0.04	0.34	30360.13
Axis Large Cap Fund	BSE 100 TRI	Very High	Very High	61.0600	70.6000	9.02	10.10	13.39	-1.20	-0.91	33060.70
Bajaj Finserv Large Cap Fund	Nifty 100 TRI	Very High	Very High	10.3260	10.5620	--	--	--	--	--	1549.89
Bandhan Large Cap Fund	BSE 100 TRI	Very High	Very High	78.6580	90.9740	13.11	14.47	13.39	-0.09	0.31	2039.42

Investors, who wish to access the raw data of NAVs, dividends etc. in a systematic manner – and distributors who wish to integrate such information into their investor-management systems and processes can subscribe to the data from different vendors. Based on the subscription, data updates can be easily downloaded every day through the internet. There are some agencies that are active in this field.[109]

[108] Note: This is just a sample, the intent is not to recommend any specific scheme

[109] For example: www.morningstar.in, https://www.valueresearchonline.com/ etc. The listing of websites is only a piece of information for the reader. Users need to convince themselves before subscribing to, or using any of this information. Neither SEBI nor NISM nor the author certifies the data or information or tools that these agencies offer.

Chapter 11: Sample Questions

1. **Which amongst the following is a measure of risk-adjusted returns of mutual fund scheme?**
    a. Standard deviation
    b. Beta
    c. Variance
    d. Sharpe ratio

2. **Which of the following cannot be considered for the purpose of selecting a scheme's benchmark?**
    a. Mutual fund scheme's investment objective
    b. Investment strategy of the MF scheme
    c. Scheme's asset allocation pattern
    d. Scheme's past returns

3. **_____ takes into account all dividends generated from the basket of constituents that make up the index in addition to the capital gains.**
    a. Total return index
    b. Price return index
    c. Dividend return index

4. **Which is the most appropriate measure of evaluating how closely an index fund is tracking its benchmark?**
    a. Treynor ratio
    b. Tracking error
    c. Total Expense Ratio (TER)
    d. Assets Under Management (AUM)

CHAPTER 12: MUTUAL FUND SCHEME SELECTION

Learning Objectives:

After studying this chapter, you should know about scheme selection based on:

- Scheme Selection based on Investor's need, preferences and risk-profile
- Risk level in mutual fund schemes
- Scheme Selection based on Investment Strategy of Mutual Fund
- Fund performance, fund portfolio, fund age, fund size, portfolio turnover and scheme expenses.
- Selection of Mutual Fund scheme offered by different AMCs or within the scheme category
- Selecting options in mutual fund schemes
- Do's and Don'ts while selecting mutual fund schemes

12.1 Scheme Selection based on Investor needs, preferences and risk-profile

Investor Need

The selection of a mutual fund scheme for an investor will depend upon the need that the investor has from the investment. The investor may need long-term appreciation in the value of his investment, the investor may need periodic income from the investment, or the investor may be looking for an avenue to park funds and need an investment with high liquidity. Therefore, understanding mutual fund schemes should eventually help one to build a robust investment portfolio that helps to achieve the investor's investment objectives. It is in this context that this chapter would look at various approaches for building a portfolio of mutual fund schemes.

At the outset, a portfolio of investments (or a portfolio of mutual funds) is a means to an end– a vehicle to achieve some objective. The objective could be a financial goal like reaching a certain level of wealth in a specified period; or it could be funding a major expense related to an important life event like education of one's children or funding one's retirement. The sight of the goal must never be missed.

Therefore, the first step is to set one's financial goals. The second step is to understand the investor's situation and assess the risk appetite.

Risk Profile of the investor

The investor's risk appetite is a function of three things—the need to take risks, the ability to take risks, and the willingness to take risks. Thus, an understanding of the risk profile and the investment risks associated with various mutual fund schemes would be essential for deciding the asset allocation in an investor's portfolio. This was discussed in detail in Chapter 1.

Asset allocation

The investor's need from the investment will determine the asset class that is most suitable for the investor. Along with the need from the investment, the investor's ability to take risk and the investor's investment horizon is equally important to select the appropriate asset class. An investor may be seeking growth and may be willing to take the risk, but unless there is an adequately long investment horizon, equity may not be suitable for investment. This is because equity markets tend to be volatile in the short-term. Over the long-term, the volatility gets smoothened out. An investor may have a long-term investment horizon but may be unwilling to take the risks associated with equity investing. Such an investor may prefer the lower returns from debt than the higher returns with higher risk from equity.

An investor looking for growth will find equity the best suited to meet their needs. The need for income will be best met by a debt scheme.

The investor's asset allocation is a decision regarding how much money should be allocated to which scheme category (asset class). This decision can be taken only after assessing the investor's risk profile and analysing investor's goals and situation. These aspects were discussed in Chapter 1.

Age of the investor

One of the common factors that many people use to evaluate the investor's risk profile is the investor's age. It is popularly believed that younger investors have the potential for taking higher risks compared to old people. However, this may not be correct as different investors have different financial goals at different age levels. In fact, investors in the same age group may also have different goals. Their financial situations may also differ. At the same time, many of the financial goals may pertain to the whole families and not just an individual. In such cases, it may not be prudent to categorize investors based on age alone.

Investment time horizon

As against the investor's age, one may consider the time horizon to the respective financial goal for which one is investing. Longer the horizon to the goal, the ability to take risk is higher, whereas one may avoid risks when the goal is in the near future. An investor may need liquidity in the portfolio for various reasons, even when the investments are meant for long periods.

Core and satellite portfolio

At this stage, it is also good to consider the role that the scheme will play in the investor's portfolio. Ideally, the portfolio should be divided into core and satellite portfolios. The core portfolio will be invested according to the long-term needs and goals of the investor. The satellite portfolio will be invested to take advantage of expected short-term market movements. For example, a diversified equity fund, large cap, mid-cap funds, among others

may form part of the core portfolio since they generate long-term returns in broad alignment with the markets. Sector funds on the other hand do well cyclically, and investors will consider investing in them when the economic factors are positive for a particular sector will be suitable. Similarly, long term gilt funds will do well when interest rates are expected to decline. The exposure to gold funds can be increased when inflation is high or when there are political, economic and fiscal uncertainties. These are all tactical investments and are held for the period when the conditions are suitable. The division between core and satellite portfolios will depend upon each investor's profile. Conservative investors may like a very small proportion of their overall portfolio to be managed tactically. A moderate investor may be comfortable with an 80 percent allocation to core investments and a 20 percent exposure to satellite or tactical portfolio. An investor comfortable with taking higher risk may have an even higher exposure to tactical investments.[110]

In addition to the above, it is essential to understand the risk-return levels in various categories of mutual fund schemes (section 12. 2). Further, the selection of a mutual fund scheme is done through analysis of fund performance, fund portfolio, age and other parameters (section 12.3).

12.2 Risk levels in mutual fund schemes[111]

In order to evaluate and select various mutual fund schemes, it is important to look at the risk-return profile of the various scheme categories. The mutual fund scheme categorization was covered in Chapter 2. The following discussion covers the risk-return characteristics of different types of mutual fund schemes.

Illustration 12.1.1: Risk-Return Hierarchy of mutual funds

Liquid funds – Debt funds – Hybrid funds – Equity funds

In illustration 12.1.1, as one moves from liquid funds to debt funds to hybrid funds to equity funds, the potential returns as well as the investment risks increases. Broadly, one can say that moving from left to right, the risk as well as potential return would go up.

Illustration 12.1.2 Risk-Return Hierarchy of debt funds

Overnight funds – Liquid funds – Ultra short duration funds – Low duration funds – Short duration funds – Medium duration funds – Medium to long duration funds – Long duration funds

The risk-return profile of debt funds may be seen in light of two separate risks—credit risk

[110]These are only indicative allocations shown in order to understand the point, and in no way, these should be taken as recommendations.

[111]In this discussion, certain categories are not covered since it is difficult to comment without looking at the total risk. In fact, the interest rate risk and credit risk are also discussed separately. One would be required to carefully evaluate the schemes on both these risks.

and interest rate risk. While comparing the schemes on credit risk, the assumption would be to assume that the schemes are taking similar interest rate risk. Similarly, while comparing the schemes on interest rate risk, it would be prudent to assume that credit risk is similar.

Illustration 12.1.2 shows that as we move from left to right, the potential returns as well as the interest rate risk increases. The assumption here is that the credit risk is more or less similar in each of the categories.

Illustration 12.1.3: Hierarchy of Credit risk in debt funds

Gilt fund – Banking and PSU fund – Corporate bond fund – Credit risk fund

Illustration 12.1.3 shows that as we move from left to right, the potential returns as well as the credit rate risk move up. This can be seen in illustration 12.1.3. The assumption here is that the interest rate risk is more or less similar in each of the categories.

Illustration 12.1.4: Risk-Return Hierarchy of equity mutual funds

Small cap funds – Mid-cap funds – Multi cap funds – Large and mid-cap funds – Large cap funds

Smaller companies are riskier than their larger counterparts, and hence small cap funds carry higher risk than mid cap funds, which in turn are riskier than the large cap funds. Illustration 12.1.4 shows that as we move from left to right, the risk decreases.

In a similar manner, a concentrated portfolio is riskier than a more diversified one. That means a sector fund or a thematic fund would be riskier than the diversified funds. Having said that, the risks of concentration in a sector fund investing only in large cap stocks within the sector cannot be compared with a diversified small cap fund, since both are exposed to very different risks. While the former takes risk of concentration, the latter is exposed to the risk of the size of companies the scheme has invested in.

Illustration 12.1.5: Risk-Return Hierarchy of Diversified to Concentrated funds

Diversified funds – Focused funds – Thematic funds – Sector funds

A focused fund is riskier than a diversified fund. Here too, one must carefully evaluate the other risks the scheme would be exposed to. Broadly, one may say that the risk goes up as One move from diversified funds to focused funds to thematic funds to sector funds. Illustration 12.1.5 shows that the risk and potential return increases as one moves from left to right. However, it may be noted that different sector funds may have different risk profiles.

Illustration 12.1.6 Risk Return Hierarchy of hybrid funds

Arbitrage fund – Conservative hybrid fund - Equity savings fund –– Dynamic asset allocation fund – Multi asset allocation fund – Balanced hybrid fund – Aggressive hybrid fund

The SEBI circular on categorisation of mutual fund schemes, specifies different categories of hybrid funds, viz., conservative hybrid fund, balanced hybrid fund or aggressive hybrid fund, dynamic asset allocation fund (or balanced advantage fund), multi asset allocation fund, arbitrage fund and equity savings fund. Illustration 12.1.6 shows that the risk and potential return rise as one moves from left to right.

The risk levels in different categories of mutual fund schemes can be understood with the help of product labelling of Mutual Funds. In 2013, SEBI had introduced product labelling of mutual funds to address the issue of mis-selling and to provide investors an easy understanding of the kind of product/scheme they are investing in and its suitability to them.

All the mutual funds were required to 'Label' their schemes

a) A disclaimer that investors should consult their financial advisers if they are not clear about the suitability of the product.

The risk-o-meter has been explained in Chapter 5.

12.3 Scheme Selection based on investment strategy of mutual funds

For the purpose of selection of mutual fund schemes, the investment objective, the investment strategy and the portfolio characteristics are important factors. As seen earlier, each mutual fund scheme starts with an investment objective. The investment strategy of the schemes is devised in order to achieve the investment objective. The portfolio is constructed in line with the investment strategy. Thus, there is a relation between the three. At the same time, someone evaluating would need to evaluate each one, since there could be multiple strategies in order to achieve the same broad investment objective, and different fund managers may construct different portfolios even within the same investment strategy.

Investors must select the product category based on the strategy and style adopted. Each of them has a different risk and return characteristics. An investor who wants to invest in low-risk equity will consider an index fund or a value fund. On the other hand, an investor willing to take additional risk for better returns will choose a growth fund. An investor in debt who wants better returns will consider a mutual fund generating regular income or a long-term gilt fund, if they have a view that interest rates will decline.

The below discussion looks at the investor's selection of different kinds of mutual fund schemes based on portfolio characteristics, investment strategies and investment objectives.

Active Fund v/s Passive Funds

Passive funds are suitable for investors looking for exposure to an asset class without the risks associated with fund manager selection and strategies. Index funds are passive funds and they are not traded on exchanges. They are expected to offer a return in line with the market

because they invest in a portfolio that mimics a market index in the securities it invests in and in the weightages allotted to each security in the portfolio. There is no selection risk in index funds because the fund manager has no role in creating the portfolio. For this reason, the costs that an index fund is allowed to charge is also lower since there are no research or other fund management expenses. Exchange Traded Funds (traded on exchanges) are also passive funds that generate returns in line with the index or benchmark. There are no investment strategies used to generate higher returns other than what the index does.

An investor in an active fund is bearing a higher cost for the fund management, and a higher risk to earn returns better than the benchmark. The returns ought to be higher i.e., the scheme should beat the benchmark, to make the investor believe that choice of active scheme was right. This, in no way, means that the higher return is guaranteed. Hence, the quantum of risk is higher in such investments.

Investors who are more interested in the more modest objective of having an equity growth component in their portfolio, rather than the more aggressive objective of beating the equity market benchmark, would be better off investing in an index fund. This again does not mean that the NAV of an index fund will not decline in value. If the benchmark index goes down, then the NAV of the index fund too will go down. However, as suggested earlier, if the investor has a long enough horizon, then his investment will do well, in line with the overall market.

Open-ended funds v/s close-ended funds

The big difference between the open-ended funds and close-ended funds may not be about the investment objective, or strategy, but about an operational feature i.e., the exit option.

The significant benefit that open-ended funds offer is liquidity viz. the option of getting back the current value of the unit-holding from the scheme.

In the case of an open-ended scheme, the units will be bought back by the scheme at the NAV less exit load, if any. In order to provide liquidity facility to investors, open-ended schemes maintain a part of their portfolio in liquid assets. The liquid assets component in the portfolio of an equity fund can dilute the returns that would otherwise have been earned in the equity market.

Open-end schemes are also subject to the risk of large fluctuations in net assets, because of heavy sales or re-purchases. This can put pressure on the fund manager in maintaining the investment portfolio.

A close-ended scheme offers liquidity through its listing on a stock exchange. However, mutual fund units are not that actively traded in the market. A holder of units in a close-ended scheme will need a counterparty in the stock exchange in order to be able to sell his units and recover its value.

The price of units of a closed-end scheme in the stock exchange may be lower than the NAV. There is no limit to this discount. Typically, towards the maturity of the scheme, the market

price converges towards the NAV. A closed-ended equity fund allows the fund manager to target better returns by investing in stocks of companies that may realize its potential in some time, or in relatively illiquid stocks with prospects of good returns without the pressure of investor redemptions. Investors may invest in such schemes for the higher returns that such a strategy may provide. However, they do not have the facility of exiting the scheme if they find that the scheme's performance is not as expected. Moreover, investors need to match the maturity of the scheme with when they may require the funds invested since exiting prior to maturity by selling on the stock exchange might not be a viable option.

Investors may choose the close-ended funds only if they can keep the money locked-in such schemes. Anyone, who prefers liquidity option, may want to consider investing in open-ended funds.

The difference between Diversified (Multi-cap, Large-cap, Mid-cap, Large and Mid-cap) Funds, Sector Funds and Thematic Funds

The critical difference between diversified funds and sector funds is that the multi-sector exposure in a diversified fund makes it less risky. Further, in an actively managed diversified fund, the fund manager performs the role of ensuring higher exposure to the better performing sectors.

Among the equity funds, some schemes may have a portfolio concentrated in a few stocks. Such scheme category is known as "Focused funds". These schemes carry higher risk than a diversified fund, due to higher concentration among smaller number of stocks. However, these are less risky than a sector fund.

The sector funds invest in stocks belonging to just one sector of the economy, in order to take advantages within the said sector. The examples of such funds are: Pharma fund, or banking fund.

Sector funds are risky because of the concentration in one sector. If the sector under-performs then the scheme's returns is likely to be poor. Such funds require the investor to have the skill to understand and interpret the factors that signal that a sector is ready for investment or exit. The returns earned will depend upon entering before the up-cycle in the sector starts and exiting before the downturn begins. Timing is the key to investing in such funds. The higher risk, monitoring and timing involved in such funds make them suitable for the satellite portfolio of the investor.

As someone has aptly put, "Diversification is a protection against ignorance." In other words, if one is not sure, diversification is always a good idea.

Having said that, one may use the sector funds to increase allocation in certain sectors. This is similar to the core and satellite strategy discussed earlier. In this case, a diversified portfolio may be the core portfolio, whereas the sector funds may be used tactically as the satellite portion.

Some investors are more comfortable identifying promising investment themes (for example, infrastructure), rather than specific sectors (like cement, steel etc.). Such investors can decide on investment themes they would like to buy. Thematic funds invest in stocks across a specific theme, and to that extent, they fall between the diversified fund that can invest across the market and sector funds that invest only within one sector. The examples of such funds are MNC funds, PSU funds, Infrastructure funds, etc.

Large-cap v/s Mid-cap v/s Small Cap Funds

Equity mutual fund schemes are also categorized based on the market capitalization of the companies the scheme invests in. The portfolio characteristics are evident from the scheme category names, e.g., large cap funds invest in large cap stocks, whereas large and mid-cap funds invest in both large cap stocks and mid-cap stocks.

Large-cap stocks are of established companies that have stable revenues and profitability and the financial strength to withstand competition and economic downturn. Unlike such companies, mid and small caps represent companies that are in the initial stages of growth. When the economy is doing well, such companies see a tremendous growth in revenues and profitability, making them extremely attractive investment options. When industry scenario is difficult, many mid-cap/small cap companies fall by the way side during economic turmoil, because they lack the resources to survive. As the economy recovers, and investors start investing in the market, the valuations in front-line stocks turn expensive. At this stage, the mid-cap/small cap funds offer attractive investment opportunities. Over a long period, some of the mid-cap and small-cap companies will become large companies, whose stocks are re-rated in the market. The healthy returns on such stocks can boost the returns on mid- cap and small-cap portfolios.

Mid and small cap stocks require careful evaluation and selection. It can therefore be risky to invest a large portion of the investor's portfolio in mid-cap/small cap funds.

Multi cap funds spread the investments across the market capitalization spectrum in order to try and benefit from the opportunities across the market, even while keeping the risk lower than mid-cap and small-cap funds. Similarly, large and mid-cap funds are riskier than large cap funds, but less risky than mid-cap funds. Flexi-cap funds give the fund manager the freedom to invest across market caps.

The investor's need to generate high returns, as well as the risk-taking ability and time horizon are important factors to determine the allocation between the respective scheme categories.

One may consider investing in a multi cap fund and have a near similar allocation within various market capitalization. Such a decision would be in the hands of the fund manager in case of flexi-cap funds. Alternatively, one may pick up schemes from large cap, mid-cap, and small-cap separately and manage the portfolio allocation in one's own way.

Growth or Value funds

Equity fund managers adopt various different styles of selection of stocks. The most popular among these are the growth style and the value style.

Funds that follow the growth strategy seek to identify companies that are expected to grow at rates higher than the average economic growth rate. Stocks of such companies tend to do well in a bull phase in the markets. However, in a market downturn the price of such stocks tends to fall much more too, making them riskier.

Value strategy seeks to identify stocks that are available at a price that is seen as cheap relative to the value that could be unlocked in the future. Over time, if the fund has been able to select the right stocks and the stock is recognized in the market, the value appreciates.

A growth fund outperforms in a bull market, while the value orientations help a value fund outperform in a falling market, or over a long period of time. Depending on the risk-profile of the investor, both these types of funds can find a place in the core portfolio of the investor in suitable proportions. Investments in value funds yield benefits over longer holding periods.

International Equity funds

When an Indian investor invests in equities abroad, he is essentially taking two exposures:

- An exposure on the international equity market.
- An exposure to the exchange rate of the rupee. If the investor invests in the US, and the US Dollar becomes stronger during the period of his investment, s/he benefits; if the US Dollar weakens (i.e., Rupee becomes stronger), s/he loses or the portfolio returns will be lower.

Taking this kind of exposure is possible and convenient through the international equity funds, which invest in stocks of companies listed in stock exchanges located outside of India.

Investors might consider investing abroad, for any of the following reasons:

- overall returns (international equity plus exchange rate movement) will be attractive.
- an asset allocation calls for diversifying investments to reduce the risk.
- such schemes provide a way to benefit from a particular opportunity and therefore are best suited to be part of the satellite portfolio of the investor, or a very small exposure in the core portfolio to benefit from the diversification benefits.

Fixed Maturity Plans

These are close-ended debt funds. Fixed Maturity Plan is ideal when the investor's investment horizon is in sync with the maturity of the scheme, and the investor is looking for a more predictable return than any conventional debt scheme, and a return that is generally superior to what is available in a fixed deposit. The credit risk of the portfolio must be considered.

Investment in FMPs cannot be redeemed before the maturity of the scheme, except through the stock exchanges. Thus, keeping the liquidity aspect in mind, it is important for an investor to understand the extent of credit risk that one may want to take.

An investor, who is likely to require the funds anytime, would be better off investing in a normal open-ended debt fund.

Target Maturity Funds (TMFs)

TMFs are gradually replacing FMPs. There are multiple maturity options available from various AMCs, which the investor can choose from. Portfolio comprises Government Securities / State Government Securities / AAA rated PSU companies i.e., top notch. TMFs following an index can be purchased from or redeemed with the AMC in the normal course, like open ended funds. Liquidity is an advantage of TMFs over FMPs.

Short Duration Fund

Short Duration Funds invest in securities with maturities between 1 year and 3 years. As such they earn returns in line with the market yields. Some funds may take a small exposure to longer term securities to benefit from a gain in value if interest rates are expected to decline.

If it is expected that interest rates in the market would increase it is safer to increase allocation to short duration funds. As the rates rise, the short-term bonds would mature, allowing the fund manager to deploy the proceeds at higher rates. These funds feature low volatility and can form part of the core portfolio of an investor with low risk-taking ability. The liquidity in the schemes makes them suitable for parking funds for the short-term.

Liquid Funds

An investor seeking the lowest risk ought to go for a liquid scheme. However, the returns in such instruments are low. The comparable for a liquid scheme in the case of retail investors is a savings bank account. These schemes are suitable for investors looking for a product to park their funds for very short periods (up to 91 days). The schemes are highly liquid and there is negligible volatility, which protects the value of the money parked. Using these schemes for longer periods is not advised since the investor will be needlessly losing out on returns.

Ultra-short term debt funds hold securities with slightly longer tenor than liquid funds, 3 to 6 months, but play a similar role in an investor's portfolio. The funds have the feature of low volatility and high liquidity.

Floater Funds

Floater funds, invest in floating rate instruments. Since floating rate debt securities tend to hold their investment, even if interest rates fluctuate, the NAV of floaters tend to be steady.

The strategy adopted by the debt fund to generate returns may define the suitability for the

investor's needs. Certain debt funds focus on earning interest income. The returns from such schemes are likely to be steady and are expected to have low volatility.

However, some funds may be willing to lower the quality of the securities held to earn higher interest income and prospective investors need to be comfortable with this strategy.

Other funds may focus on earning total returns from both coupon income and appreciation in the value of the securities. The fund manager manages the duration of the portfolio depending upon the expectation of interest rate movements. When interest rates are expected to go down, the modified duration of the portfolio is increased so that there are greater gains to the value of the portfolio. The returns from such schemes are likely to be more volatile. There is also the risk of the fund manager's call on interest rate direction being wrong, leading to loss in values. Investors must select the fund strategy that they are comfortable with.

Hybrid Schemes

An investor desirous of having a mix of debt and equity exposures has two options—invest in a mix of equity schemes and debt schemes or investing in any of the hybrid schemes as discussed in Chapter 2 such as conservative hybrid fund, balanced hybrid fund, aggressive hybrid fund etc.

The first option obviously implies more decisions on scheme selection that the investor would need to take. But the benefit is that the investor has a wide array of scheme options, within both equity and debt scheme categories. Further, the investor would be in a position to work towards a mix of debt and equity that is most appropriate for him.

Investing in a hybrid scheme makes things simpler for the investor, because fewer scheme selection decisions need to be taken. However, the investor would need to go by the debt-equity mix in the investment portfolio of the schemes.

The equity component in a hybrid fund provides the appreciation in value, while the regular returns from the debt component provide the stability to the returns.

Such funds are suitable for investors who want equity exposure but with lower risk. Evaluate the type and extent of equity exposure that the fund takes as a norm to assess the risk in the fund.

Apart from the asset allocation between equity and debt, one must also evaluate the risk taken in the equity component and debt component separately. (Refer the discussion earlier in the chapter). The word "conservative" in the name of conservative hybrid funds category only refers to the equity allocation. Hence, investors should evaluate how the equity portion of the fund is managed i.e., whether the fund invests in large, mid or small cap stocks, if the stocks represent diverse sectors and so on. Based on this the investor can decide on the suitability of the investment. At the same time, one must also check the credit quality of the

debt portfolio as well as the duration risk the scheme is exposed to.

Investors need to be cautious of the risk of a variant of hybrid schemes that are structured as dynamic asset allocation schemes.

Further, balanced schemes may be taxed as a non-equity-oriented scheme or an equity scheme depending on the scheme's investment portfolio.

Gold Funds

Investors need to differentiate between Gold ETF and Gold Sector Funds. The latter are schemes that invest in shares of gold mining and other gold processing companies. The performance of these gold sector funds is linked to the profitability of these gold companies – unlike Gold ETFs whose performance would track the price of gold. When gold metal price increases, gold mining companies with large reserves of gold can appreciate a lot more than the gold metal. Conversely, they can also fall more when gold metal prices decline. The prices of shares of gold mining and other such companies will be also driven by factors other than purely the price of gold. For example, if there are concerns about a company's management the share prices may see a decline irrespective of the price of gold. On the other hand, ETF NAVs closely track the price of gold since it reflects the value of gold held in custody for the units issued. It makes it a more efficient way to take exposure to gold. Investors therefore need to understand the structure of the gold schemes more closely, before investing.

12.4 Selection of Mutual Fund scheme offered by different AMCs or within the scheme category

Different AMCs have different approaches, styles and value systems in doing business. An investor has to be comfortable with the AMC, before investing in any of its schemes.

Matching fund's portfolio with its investment objective

An investor buying into a scheme is essentially buying into its portfolio. Most AMCs share the portfolio of all their schemes on their website on a monthly basis. Investors should evaluate whether the fund's portfolio reflects its investment objective, and that the fund managers follow the strategy and style that the scheme intends to follow according to its SID. Experienced researchers can also identify how true the fund manager is, to the promised investment style.

For example, a large proportion of fully-valued front-line stocks in the portfolio of a 'value fund' is indicative of the fund manager not being true to the promised investment style. A 'short-term debt fund' that takes significant exposure to long-term debt instruments to generate better returns may be taking on more risk than what the investors are comfortable with. A 'hybrid fund' that takes aggressive equity positions, e.g., higher allocation to small cap stocks, or a concentrated portfolio; or takes aggressive positions in debt securities, e.g., investing in securities with high credit risk, or longer maturity for better returns may be

exposing the investors to higher risk than what they signed up for. Similarly, if a liquid fund or ultrashort term debt fund takes high credit risk, the investor may or may not be comfortable with the same. Investors in non-gilt debt schemes should track the credit quality of the portfolio
– and watch out for sector concentration in the portfolio, even if the securities have a high credit rating.

Fund Manager

Long-term watchers of mutual fund performance also develop views on AMCs/Fund Managers that are more prescient in identifying changes in market trends. They believe that it is the portfolio manager that makes a huge difference to the scheme's performance.

Fund Performance

The fund's performance is a primary criterion in its selection from amongst other schemes.

The returns that the fund has generated relative to its benchmark are evaluated over a period of time. The fund should ideally have consistently outperformed the benchmark. Typically, not only should it have out-performed in a bull market, but in a falling market it should have been able to protect the downside. In case of equity funds, the performance should be seen for longer periods, at least last 5 years. While for long-term debt funds at least 3 years performance need to be considered, for short-term debts funds, shorter performance period is suitable. The fund's performance against the peer group should also be considered to make the right selection.

The mutual fund provides the cumulative performance of the scheme (i.e., in terms of CAGR), the benchmark and the additional benchmark, depending upon the type of scheme, for the last 1 year, 3 years, 5 years and since inception.[112]

For shorter term debt funds like Liquid funds, the return data is made available for shorter periods such as 7 days, 15 days and 1 month also which are more relevant given the likely holding period of investors in such schemes.

The cumulative returns data helps evaluate how the fund performed for various holding periods. These returns help evaluate the consistency with which the mutual fund was able to generate returns over different periods and market situations. While looking at historical returns, it would be important to note the following:

- Check the scheme's performance relative to the scheme's benchmark
- Compare the scheme's performance with the peer group

[112] To disclose the performance of mutual fund schemes since inception, SEBI has clarified that such disclosure of performance shall be made since the date of allotment of units in the scheme.

- Do both the above comparisons over multiple periods of time, e.g., over rolling periods. One may also consider comparing the scheme performance over various bull and bear market cycles.

Fund Portfolio

The fund's portfolio has to be evaluated to determine the risk and return in the scheme. In case of equity funds, the level of diversification across sector and stocks, the market segment in which the fund invests, the extent of cash held and the conviction showed in terms of the length of holding in stocks and churn in the portfolio, the strategy adopted for selecting securities for the portfolio and managing it, have to be considered. In case of debt funds, the average maturity and duration of the portfolio, the credit risk profile, the contribution of interest and capital gains to the total returns of the fund, liquid holding in the portfolio, need to be evaluated before making an investment decision.

Fund Age

A fund with a long history has a track record that can be studied. A new fund managed by a portfolio manager with a lackluster track-record is definitely avoidable. A new fund that offers a new investment opportunity should be evaluated for its suitability.

Fund age is especially important for categories of schemes, where there are more investment options, and divergence in performance of schemes within the same category tends to be more. For example, with the SEBI circular on scheme categorization, there may not be large differences in performance across large cap funds, however, there could be major differences in performance across multi-cap funds, since the investment universe is much larger in the latter.

Fund Size

The size of funds needs to be seen in the context of the proposed investment universe. For an equity fund that intends to invest in large cap stocks, a large fund size may be an advantage, while for a sector fund or a mid-cap fund with limited investment options, a large fund size may be a disadvantage. A large fund size will allow better diversification and economies of scale. A small sized fund on the other hand is more flexible and better able to take advantage of market opportunities.

Portfolio Turnover

Purchase and sale of securities entail broking costs for the scheme. Frequent churning of the portfolio would not only add to the broking costs, but also be indicative of unsteady investment management.

Portfolio Turnover Ratio is calculated as Value of Purchase or Sale of Securities during a period (whichever is lower) divided by the average size of net assets of the scheme during the period. Thus, if the sale and purchase transactions for a year amounted to Rs. 10,000 crores, and the

average size of net assets is Rs. 5,000 crores, then the portfolio turnover ratio is Rs. 10,000 crores ÷ Rs. 5,000 crores i.e., 2 or 200 percent. This means that investments are held in the portfolio, on an average for 12 months ÷ 2 i.e., 6 months.

The portfolio turnover needs to be viewed in the light of the investment style. Six month holding period may be too short for a value investment style, but perfectly acceptable for a scheme that wants to benefit from shifts in momentum. A short holding period may indicate that the fund manager is looking for tactical investments to take advantage of short-term market opportunities rather than identifying and investing in fundamentally strong companies for the long-term.

Scheme Running Expenses

Any cost is a drag on investor's returns. Investors need to be particularly careful about the cost structure of debt schemes, because in the normal course, debt returns can be much lower than equity schemes. Similarly, since index funds follow a passive investment strategy, a high-cost structure is questionable in such schemes.

Risk, return and risk-adjusted returns as parameters to evaluate schemes were discussed earlier in this chapter. These form the basis for mutual fund research agencies to assign a rank to the performance of each scheme within a scheme category (ranking). (See Box 12.1) Some of these analyses cluster the schemes within a category into groups, based on well-defined performance traits (rating).

Box 12.1: Evaluation of mutual fund schemes by Research Agencies

Every research agency has its distinctive methodology for ranking/rating, which are detailed on their websites. Investors should understand the broad parameters, before taking decisions based on the ranking/rating of any agency.

Some research agencies follow a star system for the rating. Thus, a 5-star scheme is better than a 4-star scheme; 4-star scheme is better than 3-star, and so on and so forth. However, in such a case, it is important to understand the rating methodology, and to also check whether the rating agency claims of ratings are an assessment of the past performance or indicative of the future performance of the scheme. In almost all cases, the rating assigned to a scheme is the former, i.e., assessment of the past performance, and has no predictive ability.

Quarterly performance ranking of schemes over a period of time shows that the best ranking fund in a quarter is not necessarily the best ranking fund in the next quarter. Therefore, seeking to be invested in the best fund in every category in every quarter is neither an ideal objective, nor a feasible target proposition. Indeed, the costs associated with switching between schemes are likely to severely impact the investors' returns.

The investor may therefore aim to stay invested in schemes that are in the top "few" in their category on a consistent basis. The "few" could mean 3 to 5, in categories that have few schemes; or the top 10-15percent, in categories where there are more schemes. Investors need to bear in mind that these rankings and categories are based on historical performance, which may or may not be repeated in future.

The investor also needs to remember that beyond performance of the scheme, taxes and exit loads make a big difference to the investor's return.

12.5 Selecting options in mutual fund schemes

The underlying returns in a scheme, arising out of its portfolio and cost economics, is what is available for investors in its various options viz. Income distribution cum capital withdrawal (Dividend) payout, Income distribution cum capital withdrawal (dividend) re-investment and growth options.

Income distribution cum capital withdrawal (*Dividend) payout option* has the benefit of money flow to the investor; growth option has the benefit of letting the money grow in the fund on gross basis (i.e., without annual taxation).

Re-purchase transactions are treated as a sale of units by the investor. Therefore, there can be an element of capital gain (or capital loss), if the re-purchase price is higher (or lower) than the cost of acquiring those units. Some investors may like to book such a capital gain (or capital loss) to set it off against some other capital loss (or capital gain), where such set off is permitted. The broad set-off rules, including the differential treatment of long term and short term, were discussed earlier.

The Income distribution cum capital withdrawal (dividend) pay-out option seems attractive for investors wanting a regular income. It should however be kept in mind that even in a mutual fund scheme with a monthly pay-out option, dividend declaration is a function of distributable surplus. If there is no surplus to distribute, dividend cannot be declared. Therefore, the investor is not assured of dividend in the scheme even when there is a monthly dividend option. It is for this reason, that the need for regular income is better met through a SWP for the requisite amount. Sale of units under an SWP may have STT implication (equity schemes) and capital gains tax implication (equity and debt schemes).

Dividend income is subject to tax as per the applicable tax slab of the respective investor. The tax on dividend reduces the returns for the investor. Thus, Income distribution cum capital withdrawal (dividend) option is not preferable, except in case of tax-exempt investors. As seen earlier, SWP can take care of any need for a regular income. The capital gains tax impact however, would need to be checked.

Thus, taxation and liquidity needs are a factor in deciding between the options. The distributor needs to understand the investor's situation before deciding on the suitability of the option.

12.6 Do's and Don'ts while selecting mutual fund schemes

While selecting the mutual fund schemes, there are few things that a mutual fund distributor must keep in mind. Some of them are listed below:

Ensuring suitability

SEBI regulation on Fraudulent and Unfair Trade Practices also apply to sale of mutual fund units. In order to comply with this regulation, the distributor is required to ensure the scheme's suitability to the investor's needs and situation.

Sticking to investor's asset allocation

As discussed earlier in the chapter, the asset allocation for the investor is based on the investor's situation and goals. Therefore, it is a prudent approach to keep the asset allocation at the core of selection of schemes sold to the investor.

Chasing past performance

The mutual fund advertisements use the disclaimer: "Past performance may or may not be sustained in future". There is a reason for that. As experience has shown time and again, the top performers during one period may not necessarily remain as a top performer forever or near the other top performers and vice versa. In such a case, simply buying into a scheme due to good returns in the recent past may not be a wise approach.

Understanding the investment objective and investment strategy of the scheme

In order to evaluate various mutual fund schemes, it is important to consider the scheme's

investment objective and strategy. Both of these can help one understand what to expect from the scheme

Keeping an eye on the taxes and loads

Both taxes and loads reduce investment returns. Therefore, it is important for the distributor to consider these two aspects during repurchases/redemptions. This means that when there is a need to withdraw money from a scheme, the distributor must assess the implications of capital gains tax and exit loads.

Likewise, one must also compare the taxation aspects in case of dividend and growth options periodically to evaluate the impact of tax on returns.

Developing a consistent methodology for scheme selection

It would help a mutual fund distributor to have a consistent approach in scheme selection. It is also important to keep this methodology in writing so that one stays on course.

Chapter 12: Sample Questions

1. **Which of the following scheme categories would be considered the least risky in terms of credit risk?**
    a. Credit risk fund
    b. Corporate bond fund
    c. Dynamic bond
    d. Gilt fund

2. **For an investor to get a quick sense of the level of risk involved in a mutual fund scheme, SEBI suggested a simplified framework known as_____.**
    a. Risk-o-meter
    b. Risk factors
    c. Fact sheet
    d. Investor's risk profile

3. **Passive funds are safe, as the NAV of such funds do not go down even when the respective markets fall. State whether this is True or False.**
    a. True
    b. False

4. **Which among the following schemes would have lower risk of concentration?**
    a. Multi-cap fund
    b. Focused fund
    c. Thematic fund
    d. Sector fund

5. **_____are close-ended debt funds.**
    a. Fixed maturity plans (FMPs)
    b. Overnight funds
    c. Dynamic debt funds
    d. Arbitrage funds

6. **A focused mutual fund is riskier than a diversified mutual fund. State whether true or false.**
    a. True
    b. False

7. **Which of the following is true regarding the risk-return profile of mutual fund schemes?**
    a. Moving from liquid funds to debt funds, investment risk increases
    b. Moving from liquid funds to equity funds, potential return increases
    c. Both a and b
    d. Neither a nor b

Appendix 1: *Fourth Schedule of Securities and Exchange Board of India (Mutual Funds) Regulations, 2026*

CODE OF CONDUCT

For the asset management company and trustees

1) The trustees and the asset management company shall maintain high standards of integrity and fairness in all their dealings and in the conduct of their business.
2) Mutual funds schemes should not be organised, operated, managed or the portfolio of securities should not be selected, in the interest of sponsors, directors of asset management companies, directors of Trustee Company and their associates.
3) Mutual funds schemes should be organised, operated, managed and the portfolio of securities should be selected, to provide equitable and fair treatment to all classes of unitholders of the scheme. Decisions taken to favor or to benefit one set of investors over other shall not be considered as equitable and fair treatment to all class of unitholders.
4) The trustees and asset management companies must ensure that adequate, accurate, explicit and timely information about the investment policies, investment objectives, financial position and general affairs of the scheme is dissemination in a simple language to all unitholders of the scheme.
5) The trustees and asset management companies must avoid excessive concentration of business with broking firms, associates and also excessive holding of mutual fund units of a scheme among few investors. (6) The trustees and asset management companies must avoid conflicts of interest in managing the affairs of the schemes and keep the interest of all unitholders paramount in all matters.
6) The trustees and asset management companies shall ensure that the assets and liabilities of each scheme are segregated and ring-fenced from other schemes of the mutual fund; and bank accounts and securities accounts of each scheme are segregated and ring-fenced.
7) The trustees and asset management companies shall carry out the business and invest in accordance with the investment objectives stated in the offer documents and take investment decision solely in the interest of unitholders.
8) The trustees and asset management companies must not use any unethical means to sell, market or induce any investor to invest in their mutual fund schemes.
9) The trustees and the asset management company shall render at all times high standards of service, exercise due diligence, ensure proper care and exercise independent professional judgment.
10) The asset management company shall not make any exaggerated statement, whether oral or written, either about their qualifications or capability to render investment management services or their achievements.
11) The trustees and asset management company shall ensure that:
    (a) the sponsor of the mutual fund, the trustees or the asset management company or

any of their employees do not render, directly or indirectly any investment advice about any security in the publicly accessible media, whether real-time or non-real-time, unless a disclosure of his interest including long or short position in the said security has been made, while rendering such advice.

(b) in case an employee of the sponsor, the trustees or the asset management company is rendering such advice, he shall also disclose the interest of his dependent family members and the employer including their long or short position in the said security, while rendering such advice.

Regulated entities and their agents (mutual fund distributors, distributors of portfolio management services etc.) shall prominently disclose their registered name and registration number on the home page of their social media handles as well as at the beginning of each of the videos/content (which relate to the securities market) uploaded by them.

Appendix 2: AMFI Code of Ethics

1.0 INTEGRITY

1.1 Members and their key personnel, in the conduct of their business shall observe high standards of integrity and fairness in all dealings with investors, issuers, market intermediaries, other members and regulatory and other government authorities.

1.2 Mutual Fund Schemes shall be organized, operated, managed and their portfolios of securities selected, in the interest of all classes of unit holders and not in the interest of:

- sponsors
- directors of Members
- members of Board of Trustees or directors of the Trustee company
- brokers and other market intermediaries
- associates of the Members
- a special class selected from out of unitholders

2.0 DUE DILIGENCE

2.1 Members in the conduct of their Asset Management business shall at all times

- Render high standards of service.
- Exercise due diligence.
- Exercise independent professional judgment.

2.2 Members shall have and employ effectively adequate resources and procedures that are needed for the conduct of Asset Management activities.

3.0 DISCLOSURES

3.1 Members shall ensure timely dissemination to all unitholders of adequate, accurate, and explicit information presented in a simple language about the investment objectives, investment policies, financial position and general affairs of the scheme.

3.2 Members shall disclose to unitholders investment pattern, portfolio details, ratios of expenses to net assets and total income and portfolio turnover wherever applicable in respect of schemes on annual basis.

3.3 Members shall in respect of transactions of purchase and sale of securities entered into with any of their associates or any significant unitholder.

- Submit to the Board of Trustees details of such transactions, justifying its fairness to the scheme.
- Disclose to the unitholders details of the transaction in brief through annual and half-yearly reports.

3.4 All transactions of purchase and sale of securities by key personnel who are directly involved in investment operations shall be disclosed to the compliance officer of the member at least on half yearly basis and subsequently reported to the Board of Trustees if found having conflict of interest with the transactions of the fund.

4.0 PROFESSIONAL SELLING PRACTICES

4.1 Members shall not use any unethical means to sell, market or induce any investor to buy their products and schemes

4.2 Members shall not make any exaggerated statement regarding performance of any product or scheme.

4.3 Members shall endeavor to ensure that at all times

- Investors are provided with true and adequate information without any misleading or exaggerated claims to investors about their capability to render certain services or their achievements in regard to services rendered to other clients,
- Investors are made aware of attendant risks in members' schemes before any investment decision is made by the investors,
- Copies of prospectus, memoranda and related literature is made available to investors on request,
- Adequate steps are taken for fair allotment of mutual fund units and refund of application moneys without delay and within the prescribed time limits and,
- Complaints from investors are fairly and expeditiously dealt with.

4.4 Members in all their communications to investors and selling agents shall

- Not present a mutual fund scheme as if it were a new share issue
- Not create unrealistic expectations
- Not guarantee returns except as stated in the SID, and in such case, the Members shall ensure that adequate resources will be made available and maintained to meet the guaranteed returns.
- Convey in clear terms the market risk and the investment risks of any scheme being offered by the Members.
- Not induce investors by offering benefits that are extraneous to the scheme.
- Not misrepresent either by stating information in a manner calculated to mislead or by omitting to state information that is material to making an informed investment decision.

5.0 INVESTMENT PRACTICES

5.1 Members shall manage all the schemes in accordance with the fundamental investment objectives and investment policies stated in the SID and take investment decisions solely in the interest of the unit-holders.

5.2 Members shall not knowingly buy or sell securities for any of their schemes from or to
- any director, officer, or employee of the member
- any trustee or any director, officer, or employee of the Trustee Company

6.0 OPERATIONS

6.1 Members shall avoid conflicts of interest in managing the affairs of the schemes and shall keep the interest of all unit-holder's paramount in all matters relating to the scheme.

6.2 Members or any of their directors, officers or employees shall not indulge in front running (buying or selling of any securities ahead of transaction of the fund, with access to information regarding the transaction which is not public and which is material to making an investment decision, so as to derive unfair advantage).

6.3 Members or any of their directors, officers or employees shall not indulge in self- dealing (using their position to engage in transactions with the fund by which they benefit unfairly at the expense of the fund and the unit-holders).

6.4 Members shall not engage in any act, practice or course of business in connection with the purchase or sale, directly or indirectly, of any security held or to be acquired by any scheme managed by the Members, and in purchase, sale and redemption of units of schemes managed by the Members, which is fraudulent, deceptive or manipulative.

6.5 Members shall not, in respect of any securities, be party to-
- creating a false market,
- price rigging or manipulation
- passing of price sensitive information to brokers, Members of stock exchanges and other players in the capital markets or take action which is unethical or unfair to investors.

6.6 Employees, officers and directors of the Members shall not work as agents/ brokers for selling of the schemes of the Members, except in their capacity as employees of the Member or the Trustee Company.

6.7 Members shall not make any change in the fundamental attributes of a scheme, without the prior approval of unitholders except when such change is consequent on changes in the regulations.

6.8 Members shall avoid excessive concentration of business with any broking firm, and excessive holding of units in a scheme by few persons or entities.

7.0 REPORTING PRACTICES

7.1 Members shall follow comparable and standardized valuation policies in accordance with the SEBI Mutual Fund Regulations.

7.2 Members shall follow uniform performance reporting on the basis of total return.

7.3 Members shall ensure scheme-wise segregation of cash and securities accounts.

8.0 UNFAIR COMPETITION

Members shall not make any statement or become privy to any act, practice or competition, which is likely to be harmful to the interests of other Members or is likely to place other Members in a disadvantageous position in relation to a market player or investors, while competing for investible funds.

9.0 OBSERVANCE OF STATUTES, RULES AND REGULATIONS

Members shall abide by the letter and spirit of the provisions of the Statutes, Rules and Regulations which may be applicable and relevant to the activities carried on by the Members.

10.0 ENFORCEMENT

Members shall:

- widely disseminate the AMFI Code to all persons and entities covered by it
- make observance of the Code a condition of employment
- make violation of the provisions of the code, a ground for revocation of contractual arrangement without redress and a cause for disciplinary action
- require that each officer and employee of the Member sign a statement that he/she has received and read a copy of the Code
- establish internal controls and compliance mechanisms, including assigning supervisory responsibility
- designate one person with primary responsibility for exercising compliance with power to fully investigate all possible violations and report to competent authority
- file regular reports to the Trustees on a half yearly and annual basis regarding observance of the Code and special reports as circumstances require
- maintain records of all activities and transactions for at least three years, which records shall be subject to review by the Trustees
- dedicate adequate resources to carrying out the provisions of the Code

11.0 DEFINITIONS

When used in this code, unless the context otherwise requires

(a) AMFI

"AMFI" means the Association of Mutual Funds in India

(b) Associate

The meaning of term "Associate" is defined in regulation 2(d) of SEBI (Mutual Fund) Regulations 2026.

(c) Fundamental investment policies

The “fundamental investment policies” of a scheme managed by a member means the investment objectives, policies, and terms of the scheme, that are considered fundamental attributes of the scheme and on the basis of which unitholders have invested in the scheme.

(d) Member

A “member” means the member of the Association of Mutual Funds in India.

(e) SEBI

“SEBI” means Securities and Exchange Board of India.

(f) Significant Unit holder

A “Significant Unit holder” means any entity holding 5 percent or more of the total corpus of any scheme managed by the member and includes all entities directly or indirectly controlled by such a unit holder.

(g) Trustee

A “trustee” means a member of the Board of Trustees or a director of the Trustee Company.

(h) Trustee Company

A “Trustee Company” is a company incorporated as a Trustee Company and set up for the purpose of managing a mutual fund.

Appendix 3: AMFI's Code of Conduct for Intermediaries of Mutual Funds

Code of Conduct for Mutual Fund Distributors

I. Purpose and Scope of the Code

a. This Code of Conduct ("**Code**") requires Mutual Fund Distributors to demonstrate the core values of being a fiduciary by establishing professional standards in their dealings with the investors, Asset Management Companies ("**AMCs**"), and other distributors so as to exemplify the values of transparency, competency, fairness, integrity and thereby seek to inspire and maintain trustworthiness in the profession of distribution of Mutual Fund schemes.

b. This Code applies to all persons and entities who are registered with the Association of Mutual Funds in India (AMFI) as mutual fund distributors i.e., holders of AMFI Registration Number ("**ARN**") (referred to as "**MFDs**" in this Code) and is binding on all the Directors/partners, members, sub-distributors, employees and representatives of the MFDs (collectively referred to as "**Representatives**" in this Code). The term "MFDs" is deemed to include the sales personnel of the MFDs engaged in marketing, sale and distribution of mutual fund products.

II. Obligations of the MFDs

1. Fiduciary Duty

a. MFDs must consider investor's interest as paramount and exercise due diligence, take proper care and exercise independent professional judgment in the best interest of the investor.

b. MFDs should try to avoid conflict of interest as far as possible, and when it cannot be avoided, they shall ensure that appropriate disclosures are made to the investors, and that the investors are treated fairly. Further, while selling Mutual Fund products of their group/affiliate/associates, MFDs shall make appropriate disclosures to the investors regarding the conflict of interest arising from distribution of such Mutual Fund scheme.

c. MFDs shall ensure that financial incentive should not form the basis for recommending any particular scheme or transaction to any investor. MFDs shall promote a culture of ethics and integrity within the organization, so as to dissuade unfair practices, conflicts, aggressive sales tactics and other inappropriate conduct directed to achieve sales targets in disregard of its fiduciary duty of care, diligence and loyalty.

d. MFDs shall not rebate or pass-back commission to investors and shall refrain from attracting investors through inducement of rebate or gifts / gift-vouchers etc.

e. MFDs shall not collude or undertake malpractices such as:

   i. encouraging over transacting and churning of investments to earn higher commissions.

ii. splitting applications to earn higher transaction charges / commissions[113].
iii. participating in payment defaults (such as dishonoring of cheques) or diversion of funds.
iv. making false claims for or participating in wrongful dividend / redemption payouts.
v. carrying out unethical practices such as churning, selling unsuitable products to clients, selling of units of schemes of any mutual fund, directly or indirectly, by making false or misleading statements, concealing or omitting material facts of the scheme, concealing the associated risk factors of the schemes, etc.

2. Compliance related obligations

a. MFDs shall adhere to Securities and Exchange Board of India (Mutual Funds) Regulations, 2026 ("**Mutual Fund Regulations**") and guidelines/circulars issued by Securities and Exchange Board of India ("**SEBI**") and AMFI, from time to time, pertaining to distributors, selling, distribution and advertising practices (including the preparation of sales promotional literature and content) and code of conduct. Performance disclosures should also comply with the requirements specified by SEBI. MFDs must also adhere to restrictions prescribed under other SEBI Regulations as may be applicable to their marketing, selling and distribution activities, for example, obligation on segregation of distribution and advisory services mandated under SEBI (Investment Advisers) Regulations, 2013.

b. MFDs shall comply with the Know Your Distributor ("**KYD**") norms prescribed by AMFI. MFDs shall be diligent in attesting / certifying investor documents and performing In-Person Verification ("**IPV**") of investors for the KYC process in accordance with the guidelines prescribed by AMFI / KYC Registration Agency ("**KRA**") from time to time.

c. MFDs should endeavor to be fully conversant with the key provisions of the Scheme Information Document ("**SID**"), Statement of Additional Information ("**SAI**") and Key Information Memorandum ("**KIM**") as well as the operational requirements of various schemes and should explain to the investors the key features (including fundamental attributes) of the schemes and any risk associated therein.

d. In order to assess suitability of the Mutual Fund scheme being marketed, the MFDs should seek information from their clients about their financial status, investment experience and investment objectives.

e. MFDs shall ensure that their Representatives have the necessary education and experience to perform their respective services.

f. MFDs and their Representatives shall maintain confidentiality of all information relating to the AMCs and investors, and shall not:

[113] SEBI has withdrawn the transaction charges: https://www.sebi.gov.in/legal/circulars/aug-2025/transaction-charges-paid-to-mutual-fund-distributors_95950.html

i. share or publish such information in any private or public forum without prior written consent of the concerned AMC/investor

ii. share or make any disclosure to any third party except pursuant to any filings or disclosures as may be required under applicable law or order of any court or regulatory body.

iii. share data with Group Companies for cross marketing.

g. MFDs and their Representatives shall comply with the Data Sharing Principles prescribed by AMFI and the applicable laws on Personal Data Protection.

h. MFDs shall adhere to contractual agreements with AMC relating to data privacy to ensure that the data is always protected, used only for the purpose for which it was obtained and purged as soon as the data is no longer required to be stored for rendering services for which it was collected or stored securely.

i. MFDs shall ensure that they and their sub-distributors are compliant with SEBI regulations, AMFI guidelines and code of conduct at all times and also that all their sub-distributors have a valid ARN. In other words, principal MFD should not engage or continue to engage a sub- distributor whose ARN is rendered invalid.

3. Infrastructure, record keeping and other related obligations

a. **Physical Infrastructure**: MFDs should maintain necessary infrastructure to support the AMCs in maintaining high service standards to investors and ensure that critical operations such as forwarding /submission of forms and cheques etc. to AMCs/RTAs are appropriately supported.

b. **Digital Infrastructure**: In view of increased initiatives towards digitization of mode of performance of services, including new client on-boarding, transaction processing and ongoing servicing for investors, MFDs should adopt adequate information technology related infrastructure, including in relation to cyber security measures to maintain confidentiality of electronic data during collection, transmission and storage as well as to mitigate risks related to execution of Mutual Fund transactions through digital platforms.

c. **Internal control, financial and operational resources:** The MFDs should have internal control procedures and financial and operational systems and processes which can be reasonably expected to detect and prevent mis-selling as well as mitigate financial loss arising from fraud and other dishonest acts, professional misconduct or omissions, theft, or force majeure events. MFDs are encouraged to take up appropriate insurance coverage for their activities.

d. **Record keeping**: MFDs should maintain adequate records in relation to clients, whether in physical or digital form, as applicable, in compliance with the applicable laws and SEBI regulations, including KYC records as well as correspondence with the investors on particular scheme or transaction suitability and consent/dissent of the investors.

4. Client related obligations

a. MFDs shall provide full and updated information on schemes, as provided to them by the AMCs, to the investors including SAI, SID, addenda, performance reports, fact sheets, portfolio disclosures and brochures. MFDs shall not deliberately withhold or omit any material fact or information supplied to them by the AMCs from any investor that the investor should know or may want to know, including information about particular scheme or transaction not being appropriate for the investor.

b. MFDs shall highlight risk factors of each scheme to their investors, desist from making any misrepresentation or exaggerated statements or conceal associated risk factors of a scheme and shall advise and urge their investors to go through SAI/SID/KIM before deciding to make investments.

c. MFDs shall disclose to the investors all material information including all commissions (in the form of trail commission or any other mode) received or receivable by them for the different competing schemes of various Mutual Funds from amongst which the scheme is being recommended to the investor.

d. MFDs shall disclose to their clients the list of mutual funds they are affiliated with and inform to the clients that the information provided is limited to the mutual fund products that are being distributed/promoted by the MFDs and also inform the clients that the clients may also consider other alternate products, which are not being offered by the MFDs before making investment decision.

e. If the MFD is an associate/group company/ sponsor of AMC of a mutual fund, the MFD shall, while providing suggestions to investor, disclose all material information about its association with the concerned AMC and the total amount of commission received/receivable.

f. In terms of SEBI letter no. SEBI/IMD1/DoF-1/SK/2021/25517/1 dated September 06, 2021, MFDs cannot deal in Direct Plans. MFDs shall ensure that on any digital platform provided by MFD for offering investment facility to investor, it is categorically disclosed that the scheme the investor is subscribing to is of Regular Plan which involves payment of commission to MFD. The link for the rate of commission received or receivable by the MFD for the different competing schemes of various Mutual Funds shall be prominently displayed on the platform indicating the same as a hyperlink. Further, a link to the

scheme offer documents (SID/SAI/KIM) shall also be prominently displayed on the concerned page.

g. MFDs shall (i) not provide any indicative portfolio or indicative yield or indicative return for any particular scheme or transaction and (ii) abstain from indicating or assuring returns for any particular scheme or transaction.

h. MFDs engaged in providing other financial services in addition to distribution of mutual fund products, where other financial products with assured return are being offered to clients, MFDs and their employees shall ensure that they do not mis-sell mutual fund products on the basis of indicative or assured return or regular income to the customers seeking to make investments. It shall be explained to the clients that MF investments are not guaranteed or assured return products and that the principal amount may be exposed to risk of loss.

i. To prevent submission of fraudulent, incomplete, tampered or incorrect forms or applications, MFDs shall set up adequate training and processes to ensure that:

   (i) information in the application forms (including address and contact details) is filled diligently with the investor's own, accurate and complete information. Whether requested by the investor or not, the contact details / information of the MFDs' Representatives or any other third party is not filled in the application forms, so as to pass-off as the information relating to the investor;

   (ii) any additions, revisions to the investor's contact details /information is done only upon receipt of such information from the investor or the investor's authorized person,

   (iii) application forms submitted by the investor are not tampered with, whether by inserting, deleting or modifying any information / field in the application forms,

   (iv) EUIN of the concerned employee of the MFD is written on the application forms for identification.

j. MFDs shall endeavor to resolve investor grievances/ complaints arising out of marketing, sale and distribution activities and shall provide complete assistance to the AMCs for redressal of grievances/ complaints.

k. MFDs shall use marketing material as is provided to them by the AMCs and shall not design their own marketing materials in respect of any scheme or display the name, logo, mark of any AMC without the prior written approval of the AMC.

l. MFDs shall draw attention of their clients to the disclosures made in the SID/SAI/ /KIM relating to general risks of investing through mutual fund schemes as well as scheme specific risks such as (i) returns being subject to market risk including loss of capital on account of market volatility, force majeure events, changes in political and economic environment, default by issuers of securities to mutual funds, bankruptcy or insolvency of

issuers and potential segregation of portfolio by AMC in such circumstances; (ii) suspension of redemption facility in case the scheme faces liquidity crisis; (iii) risks associated with subscription to new fund offering of the scheme such as price volatility risk, liquidity risk and delisting risk; (iv) winding up of schemes on account of illiquid instruments, higher volume of redemption requests from the investors or on account of unforeseen market events.

m. MFDs shall ensure that comparisons, if any, are made with similar and comparable schemes/ products along with complete facts.

5. Other obligations

a. Individual MFDs shall obtain NISM certification and register themselves with AMFI and obtain ARN and Employee Unique Identification Number (EUIN) from AMFI. The NISM certification and AMFI registration shall be renewed on a timely basis. Non-individual MFDs shall register themselves with AMFI and obtain the ARN, and shall ensure that their sales personnel or Representatives engaged in marketing, sale and distribution of mutual fund products hold a valid NISM certificate and AMFI registration / EUIN. Employees of the MFD in other functional areas should also be encouraged to obtain appropriate NISM certification. MFDs shall quote a valid ARN and EUIN in the client's application / transaction feed, in order to place transactions in Regular Plan and receive commissions

b. MFDs shall ensure that their Representatives undergo training on proper conduct for their sales, marketing and distribution activities and focusing on (i) awareness and understanding of their fiduciary obligations towards investors, (ii) adequate procedures to be followed in performance of their functions so as to prevent and detect any frauds and errors, and (iii) responsible usage of social media platform with respect to content standards, authenticity and approval for the information , frequency of usage and other ethical practices.

c. MFDs shall co-operate with and provide assistance, to AMCs, AMFI, SEBI, competent authorities, due diligence agencies appointed by AMFI/AMCs (as applicable) in relation to their services to the AMCs including by providing copies of relevant documents of the investors in their possession as may be required by AMCs from time to time or as may be called for by SEBI/AMFI / competent authority pursuant to any investigation or other proceeding.

d. MFDs shall promptly intimate the AMC and AMFI any change in the MFD's status, constitution, address, contact details or any other information provided at the time of obtaining ARN.

e. MFDs shall refund to the AMCs, (either by set off against future commissions or by payment) all incentives of any nature, including commissions received, that are subject to clawback as per SEBI regulations or the terms and conditions issued by the respective AMC.

f. MFDs shall immediately notify the AMC and AMFI, in writing, if any of its Representatives has committed any act amounting to moral turpitude, financial irregularities or has been arrested by the police or whose employment/service has been terminated on account of any of the aforesaid bad acts.

g. Pursuant to Regulation 3 (3) of the SEBI (Investment Advisers) Regulations, 2013, MFDs shall not use terms such as Adviser / Advisor / Financial Adviser/ Investment Adviser/ Wealth Adviser/Wealth Manager/Wealth Managers, Consultant/s, etc. or any other similar name in their name, unless registered with SEBI as an Investment Adviser. The name of an MFD should reflect the registration held by the entity and should not in any way create an impression of performing a role for which the entity is not registered. The registered name of the MFD shall not contain any misleading phrase about the role of the entity. Thus, every MFD, while dealing in distribution of mutual fund schemes/products, should clearly specify to the client that he /she is acting as a MFD.

MFDs shall mention/display a tagline, "AMFI-registered Mutual Fund Distributor" along with / below their name, in a clear and legible font of at least font size 12, in all forms of printed communication. MFD shall display their name and tagline in a clear and legible font in all forms of communication i.e., website, mobile app, printed or electronic materials, business card, sign board etc.

6. Obligations towards integrity of the Mutual Fund industry

a. MFDs shall not indulge in fraudulent or unfair trade practices of any kind while marketing, selling or distributing any Mutual Fund scheme. MFDs and their Representatives must observe high standards of integrity and consistently conduct their dealings in a manner to uphold the professional image of the Mutual Fund industry.

b. MFDs, shall refrain from making false or defamatory statements about any AMC, AMFI, Mutual Fund schemes or other MFDs in any private or public forum (including chat groups, social media, print or electronic press, conferences etc.). MFDs shall maintain professional decorum, provide fair and balanced perspective and not participate in transmitting untrue statements or rumors so as to malign any AMC or Mutual Fund scheme or bring disrepute to any AMC, AMFI or the Mutual Fund industry. Any written or oral communication should be based on facts and be presented in an unbiased manner so as not to mislead the public.

Appendix 4: Additional knowledge resources

1. Format of Scheme Information Document: https://www.sebi.gov.in/legal/circulars/nov-2023/simplification-and-streamlining-of-offer-documents-of-mutual-fund-schemes_78665.html and

2. https://www.sebi.gov.in/legal/master-circulars/mar-2026/master-circular-for-mutual-funds_100491.html

3. Formats of Statement of Additional Information and Key Information Memorandum: https://www.sebi.gov.in/legal/master-circulars/jun-2024/master-circular-for-mutual-funds_84441.html

4. KYC related information and forms: https://www.amfiindia.com/kyc

5. Indian and Global mutual fund industry: https://www.amfiindia.com/research-information/other-data/industry-data-analysis

6. Worldwide and US trends and data https://www.ici.org/statistics

7. Draft new fund offers
   https://www.sebi.gov.in/sebiweb/home/HomeAction.do?doListingAll=yes&sid=3&

8. Scheme Information Document filed by mutual funds for their schemes https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doMutualFund=yes&mftype=2

9. Key Information Memorandum of Mutual funds
   https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doMutualFund=yes&mftype=3

10. Statement of Additional Information of Mutual funds
    https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doMutualFund=yes&mftype=1

11. Mutual fund basics to educate investors https://www.amfiindia.com/investor

12. Data about mutual funds and flows https://www.amfiindia.com/research-information/amfi-monthly

13. Mutual fund scheme performance data
    https://www.amfiindia.com/research-information/other-data/mf-scheme-performance-details

MODULE 2: EQUITY DERIVATIVES

CHAPTER 13: BASICS OF DERIVATIVES

CHAPTER 14: UNDERSTANDING INDEX

CHAPTER 15: INTRODUCTION TO FORWARDS AND FUTURES

CHAPTER 16: INTRODUCTION TO OPTIONS

CHAPTER 17: STRATEGIES USING EQUITY FUTURES AND EQUITY OPTIONS

CHAPTER 13: BASICS OF DERIVATIVES

Learning Objectives:

After studying this chapter, you should know about:

- Meaning of derivatives and types of derivatives products
- History of derivatives market
- Significance of derivative markets
- Risks in derivatives trading

13.1 Basics of Derivatives

A derivative is a contract or a product whose value is derived from the value of some other asset known as the underlying. Derivatives are based on a wide range of underlying assets. These include:

- Metals such as Gold, Silver, Aluminium, Copper, Zinc, Nickel, Tin, Lead, etc.
- Energy resources such as Oil (crude oil, products, cracks), Coal, Electricity, Natural Gas, etc.
- Agri commodities such as Wheat, Sugar, Coffee, Cotton, Pulses etc., and
- Financial assets such as Shares, Bonds and Foreign Exchange.

13.2 Derivatives Market – History & Evolution

The history of derivatives may be mapped back to several centuries. Some of the specific milestones in evolution of the derivatives market worldwide are given below:

12th Century - In European trade fairs, sellers signed contracts promising future delivery of the items they sold.

13th Century - There are many examples of contracts entered into by English Cistercian Monasteries, who frequently sold their wool up to 20 years in advance, to foreign merchants.

1634-1637 - Tulip Mania in Holland: Fortunes were lost after a speculative boom in tulip futures burst.

Late 17th Century - In Japan at Dojima, near Osaka, a futures market in rice was developed to protect rice producers from bad weather or warfare.

In 1848, The Chicago Board of Trade (CBOT) facilitated trading of forward contracts on various commodities.

In 1865, the CBOT went a step further and listed the first “exchange traded” derivative contract in the US. These contracts were called “futures contracts”.

In 1919, Chicago Butter and Egg Board, a spin-off of CBOT, was reorganised to allow futures trading. Later its name was changed to Chicago Mercantile Exchange (CME).

In 1972, Chicago Mercantile Exchange introduced International Monetary Market (IMM), which allowed trading in currency futures.

In 1973, Chicago Board Options Exchange (CBOE) became the first marketplace for trading listed options.

In 1975, CBOT introduced Treasury bill futures contract. It was the first successful pure interest rate futures.

In 1977, CBOT introduced T-bond futures contract.

In 1982, CME introduced Eurodollar futures contract.

In 1982, Kansas City Board of Trade launched the first stock index futures.

In 1983, Chicago Board Options Exchange (CBOE) introduced option on stock indices with the S&P 100® (OEX) and S&P 500® (SPXSM) Indices.

Factors influencing the growth of derivative market globally

Over the last five decades, the derivatives market has seen a phenomenal growth. Many derivative contracts were launched at exchanges across the world. Some of the factors driving the growth of financial derivatives are:

- Increased fluctuations in underlying asset prices in financial markets.
- Integration of financial markets globally.
- Use of latest technology in communications has helped in reduction of transaction costs.
- Enhanced understanding of market participants on sophisticated risk management tools to manage risk.
- Frequent innovations in derivatives market and newer applications of products.

13.3 Indian Derivatives Market

As the initial step towards introduction of derivatives trading in India, SEBI set up a 24–member committee under the Chairmanship of Dr. L. C. Gupta on November 18, 1996 to develop appropriate regulatory framework for derivatives trading in India. The committee submitted its report on March 17, 1998 recommending that derivatives should be declared as 'securities' so that regulatory framework applicable to trading of 'securities' could also govern trading of derivatives. Subsequently, SEBI set up a group in June 1998 under the Chairmanship of Prof. J. R. Varma, to recommend measures for risk containment in derivatives market in India. The committee submitted its report in October 1998. It worked out the operational details of margining system, methodology for charging initial margins, membership details and net-worth criterion, deposit requirements and real time monitoring of positions requirements.

In 1999, The Securities Contract Regulation Act (SCRA) was amended to include "derivatives" within the domain of 'securities' and a regulatory framework was developed for governing derivatives trading. In March 2000, the government repealed a three-decade-old notification, which prohibited forward trading in securities.

The exchange traded derivatives started in India in June 2000 with SEBI permitting BSE and NSE to introduce the equity derivatives segment. To begin with, SEBI approved trading in index futures contracts based on Nifty and Sensex, which commenced trading in June 2000. Later, trading in Index options commenced in June 2001 and trading in options on individual stocks commenced in July 2001. Futures contracts on individual stocks started in November 2001. Metropolitan Stock

Exchange of India Limited (MSEI) started trading in derivative products in February 2013.

Products in the Derivatives Market

Forwards

It is a contractual agreement between two parties to buy/sell an underlying asset at a certain future date for a particular price that is pre-decided on the date of contract. Both the contracting parties are committed and are obliged to honour the transaction irrespective of the price of the underlying asset at the time of delivery. Since forwards are negotiated between two parties, the terms and conditions of contracts are customized. These are Over-the-counter (OTC) contracts.

Futures

A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Futures are also standardized contracts (in terms of their lot size, maturity date, etc.) so that they can be traded on the exchange. Indeed, we may say futures are exchange traded forward contracts.

Options

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying on or before a stated date and at a stated price. While the buyer of an option pays the premium and buys the right, the writer/seller of an option receives the premium with the obligation to sell/ buy the underlying asset, if the buyer exercises his right.

Swaps

A swap is an agreement made between two parties to exchange cash flows in the future according to a prearranged formula. Swaps are, broadly speaking, a series of forward contracts. Swaps help market participants manage risks associated with volatile interest rates, currency exchange rates and commodity prices.

13.4 Market Participants

There are broadly three types of participants in the derivatives market - hedgers, traders (also called speculators) and arbitrageurs. An individual may play different roles in different market circumstances.

Hedgers

They face risk associated with the prices of underlying assets and use derivatives to reduce their risk. Corporations, investing institutions and banks all use derivative products to hedge or reduce their exposures to market variables such as interest rates, share prices, bond prices, currency exchange rates and commodity prices.

Speculators/Traders

They try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts. Derivatives are preferred over underlying asset for trading purpose, as they offer leverage, are less expensive (cost of transaction is generally lower than that of the underlying) and are faster to execute in size (high volumes market).

Arbitrageurs

Arbitrage is a deal that produces profit by exploiting a price difference in a product in two different

markets. Arbitrage originates when a trader purchases an asset cheaply in one location and simultaneously arranges to sell it at a higher price in another location. Such opportunities are unlikely to persist for very long, since arbitrageurs would rush into these transactions, thus closing the price gap at different locations.

13.5 Types of Derivatives Market

In the modern world, a huge variety of derivatives products are available. They are either traded on organised exchanges (called exchange traded derivatives) or agreed directly between the contracting counterparties over the telephone or through electronic media (called Over-the-counter (OTC) derivatives). A few complex products are constructed on simple building blocks like forwards, futures, options and swaps to cater to the specific requirements of customers.

The over-the-counter market is not a physical marketplace but a collection of broker-dealers scattered across the country. The main idea of the market is more a way of doing business than a place. Buying and selling of contracts are matched through negotiated bidding process over a network of telephone or electronic media that link thousands of intermediaries. OTC derivative markets have witnessed a substantial growth over the past few years, very much contributed by the recent developments in information technology. The OTC derivative markets have banks, financial institutions and sophisticated market participants like hedge funds, corporations and high net-worth individuals. OTC derivative market is a less regulated market because these transactions occur in private among qualified counterparties, who are supposed to be capable enough to take care of themselves.

In the OTC derivatives markets, transactions among the dealing counterparties, have the following features compared to exchange traded derivatives:

- Contracts are tailor made to fit in the specific requirements of dealing counterparties.
- The management of counter-party (credit) risk is decentralized and located within individual institutions.
- There are no formal centralized limits on individual positions, leverage, or margining.
- There are no formal rules or mechanisms for risk management to ensure market stability and integrity, and for safeguarding the collective interest of market participants.
- Transactions are private with little or no disclosure to the entire market.

On the contrary, exchange-traded contracts are standardized, traded on organized exchanges with prices determined by the interaction of buyers and sellers through anonymous auction platform. A clearing corporation guarantees contract performance (settlement of transactions).

13.6 Significance of Derivatives

Like other segments of Financial Market, the derivatives market serves the following specific functions:

- It helps in improving price discovery based on actual valuations and expectations.
- It enables the transfer of various risks from those who are exposed to risk but have a low risk appetite to participants with a high-risk appetite. For example, hedgers want to give away the risk whereas traders are willing to take risk.

- It enables the shift of speculative trades from the unorganized market to the organized market. Risk management mechanism and surveillance of activities of various participants in the organized space provide stability to the financial system.

13.7 Various risks faced by the participants in derivatives

Market participants must understand that derivatives, being leveraged instruments, have risks like counterparty risk (default by counterparty), price risk (loss on position because of price move), liquidity risk (inability to exit from a position), legal or regulatory risk (enforceability of contracts), operational risk (fraud, inadequate documentation, improper execution, etc.) and may not be an appropriate avenue for someone of limited resources, or having limited trading experience, or with low risk tolerance. A market participant should therefore carefully consider whether such trading is suitable for him/her based on these parameters. Market participants, who trade in derivatives are advised to carefully read the Model Risk Disclosure Document, given by the broker to his clients at the time of signing agreement.

A Model Risk Disclosure Document is issued by the members of Exchanges and contains important information on trading in Equities and F&O Segments of exchanges. All prospective participants should read this document before trading on Capital Market/Cash Segment or F&O segment of the Exchanges.

Chapter 13: Sample Questions

1. An index option is a _____.

(a) Debt instrument

(b) **Derivative product**

(c) Cash market product

(d) Money market instrument

2. The purchase of a share in one market and the simultaneous sale in a different market to benefit from price differentials is known as _____.

(a) Mortgage

(b) **Arbitrage**

(c) Hedging

(d) Speculation

3. Financial derivatives provide the facility for _____.

(a) Trading

(b) Hedging

(c) Arbitraging

(d) **All of the above**

4. Operational risks include losses due to _____.

(a) **Inadequate disaster planning**

(b) Too much of management control

(c) Income tax regulations

(d) Government policies

CHAPTER 14: UNDERSTANDING THE INDEX

Learning Objectives:

After studying this chapter, you should know about:

- The Index and its significance
- Different types of stock market indices
- Index management and maintenance
- Applications of indices

14.1 Introduction to an Index

An index is a statistical indicator that measures changes in the economy in general or specific areas. In case of financial markets, an index is a portfolio of securities that represent a particular market or a portion of a market. Each index has its own calculation methodology and usually is expressed in terms of a change from a base value. The base value might be as recent as the previous day or many years in the past. Thus, the percentage change is more important than the actual numeric value. Financial indices are created to measure price movement of stocks, bonds, T-bills and other type of financial securities. More specifically, a stock index is created to provide market participants with the information regarding the average share price movement in the market. Broad indices are expected to capture the overall behaviour of equity market and need to represent the return obtained by typical portfolios in the country.

14.2 Significance of the stock index

- A stock index is an indicator of the performance of the overall market or a particular sector.
- It serves as a benchmark for portfolio performance - Managed portfolios, belonging either to individuals or mutual funds, use the stock index as a measure for evaluation of their performance.
- It is used as an underlying for financial application of derivatives – Various products in OTC and exchange traded markets are based on indices as the underlying asset.

14.3 Types of Stock Market Indices

Indices can be designed and constructed in various ways. Depending upon their methodology, they can be classified as under:

Market capitalization weighted index

In this method of calculation, each stock is given a weight according to its market capitalization. So higher the market capitalization of a constituent, higher is its weight in the index. Market capitalization is the market value of a company, calculated by multiplying the total number of shares outstanding to its current market price. For example, ABC company with 5,00,00,000 shares outstanding and a share price of Rs 120 per share will have market capitalization of 5,00,00,000 x 120 = Rs 6,00,00,00,000 i.e., 600 Crores.

Let us understand the concept with the help of an example: There are five stocks in an index. Base value of the index is set to 100 on the start date which is January 1, 1995. Calculate the current value of index based on following information:

Sr. No.	Stock Name	Stock price as on January 1, 1995 (in Rs.)	Number of shares in lakhs	Today's stock price (in Rs.)
1	AZ	150	20	650
2	BY	300	12	450
3	CX	450	16	600
4	DW	100	30	350
5	EU	250	8	500

The market capitalization of the index on January 1, 1995 is Rs. 18,800 which is the sum of the market price multiplied by the quantity of shares for each stock in the index. With the change in market prices, the market capitalization of these stocks increases from Rs.18,800 lakhs to Rs.42,500 lakhs. The market capitalization on January 1, 1995 is equated to 100. Hence, the new value of the index is calculated as (42500 lakhs / 18800 lakhs) * 100, which works out to 226.06. Since the index has risen from a base of 100 to a new value of 226.06, the change in the index value is 126.06 per cent.

Stock Name	Old Price (Rs)	No. of Shares (in lakhs)	Old M.Cap. (in Rs lakhs)	Old Weights	New Price (Rs)	New M.Cap. (in Rs lakhs)	New Weights
AZ	150	20	3000	0.16	650	13000	0.31
BY	300	12	3600	0.19	450	5400	0.13
CX	450	16	7200	0.38	600	9600	0.23
DW	100	30	3000	0.16	350	10500	0.25
EU	250	8	2000	0.11	500	4000	0.09
			18800	1.00		42500	1.00

Popular indices in India, Sensex and Nifty, were earlier designed on market capitalization weighted method.

Free-Float Market Capitalization Index

In various businesses, equity holding is divided differently among various stakeholders – promoters, institutions, corporates, individuals, etc. The market has started to segregate this on the basis of what is readily available for trading and what is not. The one available for immediate trading is categorized as free float. And, if we compute the index based on weights of each security based on free float market cap, it is called free float market capitalization index. A majority of the stock indices globally, over a period of time, have moved to free float basis, including the Indian equity indices - Sensex, Nifty and SX40.

Price-Weighted Index

This is a stock index in which each stock influences the index in proportion to its price. Stocks with a higher price will be given more weight and therefore, will have a greater influence over the performance of the Index.

Let us take the same data as above for calculation of price-weighted index:

Sr. No.	Stock Name	Stock price as on January 1, 1995 (in Rs.)	Number of shares in lakhs	Today's stock price (in Rs.)
1	AZ	150	20	650
2	BY	300	12	450
3	CX	450	16	600
4	DW	100	30	350
5	EU	250	8	500

The formula for calculating the value of a price-weighted index is as follows:
Price index = (Sum of the prices of all stocks included in Index) / (No. of stocks in Index)
Hence, the price index on January 1, 1995 = (150+300+450+100+250)/5 = 250.
The current value of the index is the sum of the current prices of all stocks included in the index divided by the number of stocks. The current value of the index = (650+450+600+350+500) / 5 = 510. Thus, the increase in the value of the index is (510 - 250) / 250, i.e. 104%. This can be verified as follows:

Stock Name	Price on Jan 1, 1995	Weights	Current price	Percent Change in price	Percent change in price * weight
AZ	150	0.12	650	333.33%	40.00%
BY	300	0.24	450	50.00%	12.00%
CX	450	0.36	600	33.33%	12.00%
DW	100	0.08	350	250.00%	20.00%
EU	250	0.20	500	100.00%	20.00%
	1250	1.00	2550		104.00%

Dow Jones Industrial Average and Nikkei 225 are popular price-weighted indices.

Equal Weighted Index

An equal-weighted index is one in which all stocks included in the index have the same weightage. The number of shares of each stock is adjusted in such a way that the weight of each stock in the index is the same. Subsequently, if there is any change in the market price of each stock, the weight of each stock will change. To maintain the same equal weights as earlier, the fund manager needs to sell those stocks that have increased in price and buy the stocks that have fallen in price.

The following is an example of the computation of an equal weighted index:

Stock name	**Price on Jan 1, 1995**	**Quantity as on Jan 1, 1995**	**Value as on Jan 1, 1995**	**Weight on Jan 1, 1995**	**Current price**	**Current value (= Qty * Price)**	**Price change**	**Price change * Old weight**
P	100	300	30000	0.25	150	45000	50.00%	12.50%
Q	150	200	30000	0.25	130	26000	-13.33%	-3.33%
R	125	240	30000	0.25	200	48000	60.00%	15.00%
S	200	150	30000	0.25	180	27000	-10.00%	-2.50%
			120000	1.00		146000		21.67%

Consider an index constructed on January 1, 1995 with 4 stocks. The number of shares of each stock is adjusted in such a manner that the value of all stocks in the index is equal. Thus, each stock has the same weight in the index. With a change in the stock prices, the current value of the stocks in the index has changed from 120,000 to 146,000. If the old index value is equated to 100, the new index value will be 146000/120000*100, i.e. 121.67. As can be seen from the last column in the above table, this is simply the percentage change in the stock price multiplied by the original weight of each stock, which equals to a rise of 21.67%.

With the changed prices, stock P and stock R have a weight greater than 25% while stock Q and stock S have a weight lower than 25%. The fund manager will then have to rebalance the index to restore equal weights. This can be done by selling appropriate quantities of stocks P and R and buying required quantities of stocks Q and S.

14.4 Attributes of an Index

A good market index should have following attributes:

- It should reflect the market behaviour.
- It should be computed by independent third party and be free from influence of any market participant.
- It should be professionally maintained.

Impact Cost

Liquidity in the context of stock market means a market where large orders are executed without moving the prices.

Let us understand this with help of an example. The order book of a stock at a point in time is as follows:

Buy			Sell		
Sr. No.	Quantity	Price (in Rs.)	Price (in Rs.)	Quantity	Sr. No.
1	1000	4.00	4.50	2000	5
2	1000	3.90	4.55	1000	6
3	2000	3.80	4.70	500	7
4	1000	3.70	4.75	100	8

In the order book given above, there are four buy orders and four sell orders. The difference between the best buy and the best sell orders is 0.50 - called bid-ask spread. If a person places a market buy order for 100 shares, it would be matched against the best available sell order at Rs. 4.50. He would buy 100 shares for Rs. 4.50. Similarly, if he places a market sell order for 100 shares, it would be matched against the best available buy order at Rs. 4 i.e. the shares would be sold at Rs. 4. Hence, if a person buys 100 shares and sells them immediately, he is poorer by the bid-ask spread i.e., a loss of Rs 50. This spread is regarded as the transaction cost which the market charges for the privilege of trading (for a transaction size of 100 shares).

Now, suppose a person wants to buy and then sell 3000 shares. The sell order will hit the following buy orders:

Sr. No.	Quantity	Price (in Rs.)
1	1000	4.00
2	1000	3.90
3	1000	3.80

While the buy order will hit the following sell orders:

Quantity	Price (in Rs.)	Sr. No.
2000	4.50	5
1000	4.55	6

There is increase in the transaction cost for an order size of 3000 shares in comparison to the transaction cost for order for 100 shares. The "bid-ask spread" therefore conveys the transaction cost for a small trade.

Now, we come across a term called impact cost. We must start by defining the ideal price as the average of the best bid and offer price. In our example it is (4+4.50)/2, i.e., Rs. 4.25. In an infinitely liquid market, it would be possible to execute large transactions on both buy and sell at prices that are very close to the ideal price of Rs.4.25. However, while trading, you will pay more than Rs.4.25 per share while buying and will receive less than Rs.4.25 per share while selling. The percentage degradation, which is experienced vis-à-vis the ideal price, when shares are bought or sold, is called impact cost. Impact cost varies with transaction size. Also, it would be different for buy side and sell side.

Buy Quantity	Buy Price (in Rs.)	Sell Price (in Rs.)	Sell Quantity
1000	9.80	9.90	1000
2000	9.70	10.00	1500
3000	9.60	10.10	1000

To buy 1500 shares, Ideal price = (9.8+9.9)/ 2 = Rs.9.85
Actual buy price = [(1000*9.9)+(500*10.00)]/1500 = Rs.9.9333
Impact cost for (1500 shares) = {(9.9333 - 9.85)/9.85}*100 = 0.84 %

14.5 Index management

Index construction, maintenance and revision process is generally done by specialized agencies. For instance, BSE indices are managed by Asia Index Pvt Ltd and NSE indices are managed by NSE Indices Limited.

Index construction is all about choosing the index stocks and deciding on the index calculation methodology. Maintenance means adjusting the index for corporate actions like bonus issue, rights issue, stock split, consolidation, mergers etc. Revision of an index deals with change in the composition of index as such i.e., replacing some existing stocks by the new ones because of a change in the trading paradigm of the stocks, or a shift in the interest of market participants.

Index Construction

A good index is a trade-off between diversification and liquidity. A well-diversified index reflects the behaviour of the overall market/economy. While diversification helps in reducing risk, it may not help beyond a point. Going from 10 stocks to 20 stocks leads to a sharp reduction in risk. Going from 50 stocks to 100 stocks enables very little reduction in risk. Going beyond 100 stocks causes almost zero decline in risk. Hence, there is little to gain by diversifying beyond a point.

Stocks in the index are chosen based on certain pre-determined qualitative and quantitative parameters, laid down by the Index Construction Managers. Once a stock satisfies the eligibility criteria, it is entitled for inclusion in the index. Generally, the final decision of inclusion or removal of a security from the index is taken by a specialized committee known as the Index Committee.

Implementation of eligibility criteria for derivatives on existing Non-Benchmark Indices

As per SEBI Circular[114] dated October 30, 2025, Stock Exchanges shall follow the following prudential norms for derivatives on existing non-benchmark indices:

a) Minimum of 14 constituents
b) Top constituent weight ≤ 20%
c) Combined weight of the top 3 constituents ≤ 45%
d) Descending weight structure

Implementation Timeline & Method:

Non- Benchmark Indices	Timeline	Mode of Implementation
BANKEX (BSE) and FINNIFTY (NSE)	up to Dec 31, 2025	Single tranche
BANKNIFTY (NSE)	up to Mar 31, 2026	Four monthly tranches

Illustration: Four- Tranche Weight Adjustment:

Tranche	Start Weight	Calculation	Adjusted Weight
Month 1	28%	(Actual weight - desired weight)/4 (28 - 20)/4 = 2%	26%
Month 2	25.5%	(Actual weight - desired weight)/3 (25.5 - 20)/3 = 1.83%	23.67%
Month 3	23%	(Actual weight - desired weight)/2 (23 - 19.5*)/2 = 1.75%	21.25%
Month 4	20.9%	(Actual weight - desired weight)/1 (20.9 - 18.5*)/1 = 2.4%	18.5%

**It is assumed that based on relative price movement of the constituents and hence their free float market cap, the target weight of the instant constituent changed.*

As illustrated above, assume the present weight of a constituent at Rank 1 by weight is 28% and the target weight is 20% (i.e. weight adjustment is 8%). In the first tranche, the weight would be adjusted by 2% (i.e. 8% divided in 4 tranches) to 26%. At the beginning of the next tranche, weights of all the

[114] https://www.sebi.gov.in/legal/circulars/oct-2025/implementation-of-eligibility-criteria-for-derivatives-on-existing-non-benchmark-indices_97564.html

constituents would be re-evaluated for confirmation with prudential norms. Let's assume that the weight of Rank 1 constituent by weight drifted to 25.5% because of inter tranche price movement of constituents. Now, the remaining weight i.e. 25.5 – 20 = 5.5% would be adjusted by 1.83% in the instant tranche (i.e. 5.5/3) and so on.

Index Maintenance and Index Revision

Maintenance and revision of the indices is done with the help of various mathematical formulae. In order to keep the index comparable across time, the index needs to take into account corporate actions such as stock splits, share issuance, dividends and restructuring events. While index maintenance issue gets triggered by a corporate action, index revision is a continuous exercise to ensure that the index captures the most vibrant lot of securities in the market and continues to correctly reflect the market.

14.6 Major Indices in India

These are some of the popular equity indices in India:

• S&P BSE Sensex • S&P BSE Sensex Next 50 • S&P BSE 100 • S&P BSE 200 • S&P BSE 500	• Nifty 50 • Nifty Next 50 • Nifty 100 • Nifty 200 • Nifty 500	• SX 40

14.7 Application of Indices

Traditionally, indices were used as a measure to understand the overall direction of the stock market. However, a few applications have emerged in the investment field which are explained below:

Index Funds

These types of funds invest in a specific index with an objective to generate returns equivalent to the return on index. These funds invest in index stocks in the proportions in which these stocks exist in the index. For instance, Sensex index fund would get similar returns as that of Sensex index (except for a small "tracking error" which occurs due to fund management related expenses and cash holdings maintained to take care of redemptions). Since the Sensex has 30 shares, the fund will also invest in these 30 companies in the proportion in which they exist in the Sensex. Similarly, a Nifty index fund would invest in the 50 component companies of Nifty index in the same proportion in which they exist in the Nifty index and therefore generates similar returns as that of Nifty index (adjusted for tracking error).

Index Derivatives

Index Derivatives are derivative contracts which have the index as the underlying asset. Index Options and Index Futures are the most popular derivative contracts worldwide. Index derivatives are useful as a tool to hedge against the market risk.

Exchange Traded Funds

Exchange Traded Funds (ETFs) is basket of securities that trade like individual stocks, on an

exchange. They have a number of advantages over other mutual funds as they can be bought and sold on the exchange. Since, ETFs are traded on exchanges, intraday transaction is possible. Further, ETFs can be used as basket trading in terms of the smaller denomination and low transaction cost.

Chapter 14: Sample questions

1. State whether TRUE or FALSE: Impact cost is low when the liquidity in the system is poor.
(a) True
(b) **False**

2. Which of the following costs is not actually paid by the market participants but arises due to lack of liquidity?
(a) Securities Transaction Tax
(b) **Impact cost**
(c) SEBI charges
(d) Brokerage

CHAPTER 15: INTRODUCTION TO FORWARDS AND FUTURES

Learning Objectives:

After studying this chapter, you should know about:

- Meaning of forward and futures contracts
- Terminology related to futures contracts
- Payoff for a futures contract
- Pricing of a futures contract
- Applications of a futures contract by speculators, hedgers and arbitrageurs

15.1 Introduction to forward contracts

A forward contract is an agreement made directly between two parties to buy or sell an asset on a specific date in the future, at the terms decided today. Forwards are widely used in commodities, foreign exchange, equity and interest rate markets.

Let us understand with the help of an example. What is the basic difference between cash market and forwards? Assume that on May 11, 2024 you want to purchase gold from a goldsmith. The market price for gold on this day is Rs. 62,130 for 10 grams of 24 carat gold and the goldsmith agrees to sell you gold at this price. You pay him Rs. 62,130 for 10 grams of gold and take delivery of the gold. This is a cash market transaction at a price (in this case Rs. 62,130) referred to as spot price.

Now suppose you do not want delivery of the gold on May 11, 2024, but only after 1 month. The goldsmith quotes you Rs. 62,337 for 10 grams of gold. You agree to the forward price for 10 grams of gold and go away. Here, in this example, you have "bought a forward contract" or you are "long forward", whereas the goldsmith has "sold a forward contract" or he is "short forward". There is no exchange of money or gold at this point of time. After 1 month, you come back to the goldsmith pay him Rs. 62,337 and take 10 grams of gold from him. This is a forward, where both the parties are obliged to go through with the contract irrespective of the value of the underlying asset (in this case gold) at the time of delivery.

Essential features of a forward are:

- It is a contract between two parties (a bilateral contract).
- All terms of the contract like price, quantity and quality of underlying, delivery terms like place, settlement procedure, etc. are fixed on the day of entering into the contract.

In other words, forwards are bilateral over-the-counter (OTC) transactions where the terms of the contract, such as price, quantity, quality, time and place are negotiated between two parties to the contract. Any alteration in the terms of the contract is possible if both parties agree to it. Corporations, traders and investing institutions extensively use OTC transactions to meet their specific requirements. The essential idea of entering into a forward is to fix the price and thereby avoid the price risk. Thus, by entering into forwards, one is assured of the price at which one can buy/sell an underlying asset.

In the above-mentioned example, if after one month the gold trades at Rs. 62,700 in the cash

market, the forward contract becomes favourable to you because you can then purchase gold at Rs. 62,337 under this forwards contract and sell that gold in the spot market at Rs. 62,700 i.e., net profit of Rs. 363 per 10 grams. Similarly, if the spot price is 62,100 on that day, then you incur a loss of Rs. 237 per 10 grams (= buy price – sell price).

Major limitations of forwards

Liquidity Risk

Liquidity refers to the ability of the market participants to buy or sell the desired quantity of an underlying asset. As forwards are tailor-made contracts i.e., the terms of the contract are according to the specific requirements of the parties, other market participants may not be interested in these contracts. Forwards are not listed or traded on exchanges, which makes it difficult for other market participants to easily access these contracts or contracting parties. The tailor-made contracts and their non-availability on exchanges creates illiquidity in the contracts. Therefore, it is very difficult for parties to exit from the forward contract before the contract's maturity.

Counterparty risk

Counterparty risk is the risk of an economic loss from the failure of the counterparty to fulfil its contractual obligation. For example, A and B enter into a bilateral agreement, where A will purchase 100 kg of rice at Rs.40 per kg from B after 6 months. Here, A is counterparty to B and vice versa. After 6 months, if price of rice is Rs.50 in the market then B may decline his obligation to deliver 100 kg of rice at Rs.40 to A. Similarly, if price of rice falls to Rs.35 then A may purchase from the market at a lower price, instead of honouring the contract. Thus, a party to the contract may default on his obligation if there is incentive to default. This risk is also called default risk or credit risk.

In addition to the illiquidity and counterparty risks, there are several issues like lack of transparency, settlement complications as it is to be done directly between the contracting parties. A simple solution to all these issues is to bring these contracts to the centralized trading platform. This is what futures contracts do.

15.2 Futures contracts

Futures contracts were created to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. In simple terms, futures are standardised forward contracts that are traded on an exchange. The clearing corporation associated with the exchange guarantees settlement of these trades. A trader, who buys futures contract, takes a long position and the one, who sells futures, takes a short position. The words buy and sell are figurative only because no money or underlying asset changes hand, between buyer and seller, when the deal is originated.

Features of futures contracts

In a futures market, the exchange decides all the terms of the contract other than price. Accordingly, futures contracts have following features:

- Contract between two parties through Exchange
- Centralised trading platform (i.e., Exchange)

- Price discovery through free interaction of buyers and sellers
- Margins payable by both the parties
- Quality decided today (standardized)
- Quantity decided today (standardized)

Limitations of Futures Contract

- As futures are standardized contracts introduced by the exchanges, they too have certain limitations in the context of limited maturities, limited underlying set, lack of flexibility in contract design and increased administrative costs on account of MTM settlement, etc.

15.3 Contract specifications of futures contracts

The exchange decides all terms and conditions of futures contracts other than the price of the futures contract. These terms and conditions are known as 'contract specifications. Contract specifications include the salient features of a derivatives contract like contract maturity, contract multiplier or contract size, tick size, etc. Let us understand these contract specifications with an example of a Nifty futures contract traded on the NSE.

Quotes given on the NSE website for Nifty futures as on Oct 03, 2025

1. Instrument type	:	Index futures
2. Underlying asset	:	Nifty 50
3. Expiry date	:	Oct 28, 2025
4. Open price (in Rs.)	:	24950.40
5. High price (in Rs.)	:	25020
6. Low price (in Rs.)	:	24878.60
7. Closing price (in Rs.)	:	25006.60
8. Underlying value (in Rs.)	:	24894.25

Underlying instrument and underlying price: The underlying instrument refer to the index or stock on which the futures contract is traded. In the above example, the underlying asset is the Nifty 50 index. The underlying price is the spot price or the price at which the underlying asset trades in the cash market. In this example, the underlying price is the value of the Nifty index on October 03, 2025 which is 24894.25.

Contract multiplier or Contract Size: Futures contracts are traded in lots. The lot size or contract size for the index and stock futures is determined by the exchange. Contract sizes are different for each stock and index traded in the derivatives segment. The contract size can be changed by the exchange from time to time, depending upon the changes in the index level and stock prices. To arrive at the contract value, we must multiply the futures price with the contract multiplier (i.e., multiply the futures price with the lot size). Suppose, the contract size for the Nifty futures contract is 65. In the above example, the value of a Nifty futures contract can be calculated by multiplying the lot size with the closing futures price i.e., 65 * 24894.25 which works out to Rs. 16,18,126.25.

Clause 1.1.4 and Clause 2.1.4 of SEBI Master Circular for Stock Exchanges and Clearing Corporations dated October 16, 2023, stipulates contract size for index futures and index options respectively.

The current stipulation is for such contracts to have a value between Rs. 5 lakhs and Rs. 10 lakhs. This limit was last set in 2015. Since then, broad market values and prices have increased by around three times. Given this, SEBI has decided that a derivative contract shall have a value not less than Rs. 15 lakhs at the time of its introduction in the market. Further, the lot size shall be fixed in such a manner that the contract value of the derivative on the day of review is within Rs. 15 lakhs to Rs. 20 lakhs. This will lead to increase in Lot Size to the extent that the Contract value will fall between Rs. 15 lakhs to Rs. 20 lakhs. These changes will be effective from Nov 2024.[115]

Contract Cycle: It is a period over which a contract trade. Index and stock futures contracts traded on the NSE follow a three-month trading cycle. Thus, on Oct 03, 2025, index and stock futures contracts on the NSE are available for trading for the near month (Oct 2025), the next month (Nov 2025) and the far month (Dec 2025). The BSE offers trading on monthly as well as weekly futures contracts.

Expiration Day: This is the day on which a derivative contract ceases to exist. It is the last trading day of the contract. On expiry date, all the contracts are compulsorily settled. If a position is to be continued, then it must be rolled over to another futures contract of the same underlying. For a long position, this means selling the expiring contract and buying the next contract. Both the sides of a roll over should be executed at the same time. The Nifty and the Bank Nifty futures contracts and the stock futures contracts listed on the NSE expire on the last Tuesday of the respective month (or the day before if the last Tuesday is a trading holiday). In the above example, the Oct Nifty futures contract will cease to trade on Oct 28, 2025 and all open positions of the Oct series will be compulsorily settled by the exchange. A new contract (in this example - January 2025) is introduced on the trading day following the expiry day of the near month contract. The monthly futures contracts on the Nifty Financial Services Index expire on the last Tuesday of their expiry month. It will help to reduce market concentration risk and control expiry-day volatility in equity derivatives by regulating expiry days across stock exchanges.

Monthly and weekly futures contracts on the BSE Sensex and the BSE Bankex have different expiration dates.

🔻 Key Measures

- **Uniform Expiry Days**: Exchanges can **only choose either Tuesday or Thursday** as the expiry day for all equity derivatives contracts.
- **Weekly Contracts**: Each exchange can offer **only one benchmark index options contract per week**, and that too on the chosen expiry day.
- **Monthly Contracts**: All other equity derivative contracts (benchmark index futures, non-benchmark index derivatives, single stock futures/options) must have **a minimum 1-month tenor**.
- These should expire on the **last Tuesday or Thursday** of the month, based on the exchange's chosen day.

[115] SEBI Circular Ref: SEBI/HO/MRD/TPD-1/P/CIR/2024/132 Dated Oct 01, 2024

- **Change in Expiry Day Requires SEBI Approval**: Exchanges must seek prior SEBI approval before changing expiry days.

Example: If NSE chooses **Tuesday** as the expiry day:

- All monthly contracts (Nifty, Bank Nifty, single stocks) will expire on the **last Tuesday** of each month.
- NSE can offer **only one weekly benchmark index options** (say Nifty 50) expiring **every Tuesday**.

You may see the SEBI Circular[116] for more details.

NSE has chosen Tuesday as its expiry day, and BSE has chosen Thursday, with SEBI-mandated regulatory oversight on expiry changes.

Tick Size: It is the minimum move allowed in the price quotations. Exchanges decide the tick sizes on traded contracts as part of contract specification. Tick size for Nifty futures is 5 paisa. Bid price is the price the buyer is willing to pay and ask price is the price at which the seller is willing to sell.

Daily settlement price: The exchange follows a daily settlement procedure for open positions in equity index and stock futures contracts. All open positions are settled daily based on the daily settlement price of the futures contracts which is calculated by the exchange on the basis of the last half-an-hour weighted average price of that futures contract. Thus, the daily settlement price is different for each futures contract of a different expiry month. In the above example, the daily settlement price of the Oct Nifty futures contract on Oct 03 is its closing price which is 25006.60.

Final settlement price: This is the price at which all open positions in the near-month futures contracts are finally settled on the expiration day of the near-month futures contract. The final settlement price is the closing price of the relevant underlying index or stock in the cash segment on the last trading day of the futures contract. In the above example, the final settlement price for the Oct Nifty futures contract will be the closing spot value of Nifty on the expiration date, i.e., on Oct 28, 2025 which is the last Tuesday of the expiry month.

Trading hours: The equity futures contracts can be traded during the normal market hours between 9.15 am and 3.30 pm from Monday to Friday. The exchange publishes a list of annual trading holidays and clearing holidays for the information of the market participants. Trading holidays are days on which no trading is possible as the exchanges are closed while clearing holidays are days on which the exchanges are open, and trading is possible but no clearing and settlement takes place as banks are closed.

The BSE Sensex futures contracts are based on the underlying BSE Sensex. These contracts have specifications that are somewhat different from the Nifty futures contracts as follows:

Underlying asset	BSE Sensex
Contract size	20

[116] SEBI Circular Ref: SEBI/HO/MRD/TPD-1/P/CIR/2025/76 Dated May 26, 2025

Tick size	Rs. 0.05
Contract cycle	7 serial weekly and 3 serial monthly contracts
Trading hours	9:15 a.m. to 3.30 p.m.
Expiration day	Monthly contracts: last Thursday of the contract month Weekly contracts: Thursday expiry
Final settlement	Cash settlement based on the closing price of the underlying index on the expiration day

(Please refer to the exchange website for any change into the product specification.)

The high correlation between the movements of the Sensex and Nifty enables market participants to trade in Nifty and Sensex futures as part of a pairs trading strategy.

15.4 Some important terminology associated with futures contracts

Basis: The difference between the spot price and the futures price is called basis. If the futures price is greater than spot price, basis for the asset is negative. Similarly, if the spot price is greater than futures price, basis for the asset is positive. On Oct 03, 2025, spot price < futures price, thus basis for Nifty futures is negative (i.e., 24894.25 – 25006.60 = -112.35).

Importantly, basis for one-month contract would be different from the basis for two-or three-month contracts. Therefore, definition of basis is incomplete until we define the basis vis-a-vis a futures contract i.e., basis for one-month contract, basis for two-months contract, etc. It is also important to understand that the difference in the basis of a one month futures contract and two months futures contract should essentially be equal to the cost of carrying the underlying asset between first and second month. Indeed, this is the fundamental principle of linking various futures and underlying cash market prices together.

During the life of the contract, the basis may become negative or positive, as there is a movement in the futures price and spot price. Further, whatever the basis is, positive or negative, it becomes zero at maturity of the futures contract i.e., there should be no difference between futures price and spot price at the time of maturity / expiry of contract. This happens because final settlement of futures contracts on last trading day takes place at the closing price of the underlying asset.

Cost of Carry

Cost of Carry is the relationship between futures prices and spot prices. It measures the storage cost (in commodity markets) plus the interest that is paid to finance or 'carry' the asset till delivery, less the income earned on the asset during the holding period. For equity derivatives, carrying cost is the interest paid to finance the purchase less (minus) dividend earned.

For example, assume the share of ABC Ltd is trading at Rs. 100 in the cash market. A person wishes

to buy the share but does not have money. In that case he would have to borrow Rs. 100 at the rate of, say, 6% per annum. Suppose that he holds this share for one year and in that year, he expects the company to give 200% dividend on its face value of Rs. 1 i.e., dividend of Rs. 2. Thus his net cost of carry = Interest paid – dividend received = 6 – 2 = Rs. 4. Therefore, break even futures price for him should be Rs.104. It is important to note that cost of carry may be different for different participants.

Margin Account

As the exchange guarantees the settlement of all the trades, to protect itself against default by either counterparty, it charges various margins from brokers. Brokers in turn charge margins from their clients. Margins are briefly explained as follows:

Initial Margin

The amount one needs to deposit in the margin account at the time of entering into a futures contract is known as the initial margin. Let us take an example - On May 14, 2024 a person decided to enter into a futures contract. He expects the market to go up and so he takes a long Nifty Futures position for May expiry at Rs.22250.

The contract value = Nifty futures price * lot size = 22250 * 25 = Rs 5,56,250.

This is the contract value of the investor's long position in one Nifty Future contract expiring on May 30, 2024.

Assuming that the broker charges 10% of the contract value as initial margin, the investor has to give him Rs. 55,625 as initial margin. Both buyers and sellers of futures contract pay initial margin, as there is an obligation on both the parties to honour the contract.

The initial margin is dependent on price movement of the underlying asset. As high volatility assets carry more risk, the exchange would charge higher initial margin on them.

Marking to Market (MTM)

In futures market, while contracts have maturity of several months, profits and losses are settled on day-to-day basis – called mark to market (MTM) settlement. The exchange collects these margins (MTM margins) from the loss-making participants and pays to the gainers on day-to-day basis.

Let us understand MTM with the help of the example. Suppose a trader bought a futures contract on May 14, 2024 when the Nifty futures contract was trading at 22250. He paid an initial margin of Rs. 55,625 as calculated above. At the end of that day, Nifty futures contract closed at 22308.70. This means that the trader benefitted due to the 58.70 points gain on Nifty futures contract. Thus, the trader's MTM gain for the day was Rs 58.70 x 25 = Rs 1468. This money will be credited to the trader's account and next day the trader's position will start from 22308.70 (for the purpose of MTM computation).

Open Interest and Volumes Traded

The open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset. It is important to understand that number of long futures as well as number of short futures is equal to the Open Interest. This is because total number of long futures will always be equal to

total number of short futures. Only one side of contracts is considered while calculating/mentioning open interest. The level of open interest indicates depth in the market.

Volumes traded give us an idea about the market activity with regards to specific contract over a given period – volume over a day, over a week or month or over the entire life of the contract.

The following example explains the difference between open interest and traded volume.

Date	Trade	Open Interest as on date	Trading Volume for the day
March 1	A shorts 50 contracts B goes long in 50 contracts	50	50
March 2	C goes long in 100 contracts D goes short in 100 contracts	OI increases to 150 as new long and short position are created	100
March 3	A closes short position by buying back 50 contracts E shorts 50 contracts	OI remains at 150 because A's short position is replaced by E's short position	50
March 4	C closes long position by selling 100 contracts and D closes short position by buying back 100 contracts	OI falls to 50 as existing long and short positions are closed	100

Price band

Price Band is essentially the price range within which a contract is permitted to trade during a day. The band is calculated with respect to the previous day's closing price of a specific contract. For example, the previous day closing price of a contract is Rs.100 and the price band for the contract is 10%, then the contract can trade between Rs.90 and Rs.110 for next trading day. On the first trading day of the contract, the price band is decided based on the closing price of the underlying asset in cash market. For example, if today is first trading day of a futures contract for an underlying asset i.e., company A, the price band for the contract is decided on the previous day's closing price of company 'A' stock in cash market. Price band is clearly defined in the contract specifications so that all market participants are aware of the same in advance. Sometimes, bands are allowed to be expanded at the discretion of the exchanges with specific trading halts.

Positions in derivatives market

As a market participant, you will always deal with certain terms like long, short and open positions in the market. Let us understand the meanings of commonly used terms:

Long position

Outstanding / unsettled buy position in a contract is called "Long Position". For instance, if Mr. X buys 5 contracts on Sensex futures, then he would be long on 5 contracts of Sensex futures. If Mr. Y buys 4 contracts on Nifty futures, then he has a long position in 4 contracts of Nifty futures.

Short Position

Outstanding / unsettled sell position in a contract is called "Short Position". For instance, if Ms. P sells 5 contracts on Sensex futures, then she would be short on 5 contracts on Sensex futures. If Ms.

Q sells 4 contracts on Nifty futures, then she would be short on 4 contracts of Nifty futures.

Open position

Outstanding / unsettled either long (buy) or short (sell) position in various derivative contracts is called "Open Position". For instance, if Mr. X shorts 5 contracts on Infosys futures and goes long on 3 contracts of Reliance futures, he is said to be having open position, which is equal to short on 5 contracts of Infosys and long on 3 contracts of Reliance. If on the next day, he buys 2 Infosys contracts of same maturity, his open position would be – short on 3 Infosys contracts and long on 3 Reliance contracts.

Naked and calendar spread positions

Naked position in futures market simply means a long or short position in any futures contract without having any position in the underlying asset. Calendar spread position is a combination of two positions in futures on the same underlying - long on one maturity contract and short on a different maturity contract.

For instance, a short position in near month contract coupled with a long position in far month contract is a calendar spread position. Calendar spread position is computed with respect to the near month series and becomes an open position once the near month contract expires or either of the offsetting positions is closed.

A calendar spread is always defined with respect to the relevant months i.e., spread between August contract and September contract, spread between August contract and October contract, or spread between September contract and October contract, etc.

Opening a position

Opening a position means either buying or selling a contract, which increases client's open position (long or short).

Closing a position

Closing a position means either buying or selling a contract, which essentially results in reduction of client's open position (long or short). A client is said to be closed a position if he sells a contract which he had bought before, or he buys a contract which he had sold earlier.

15.5 Differences between Forwards and Futures

Feature	Forward contracts	Futures contracts
Operational mechanism	It is not traded on the exchanges.	It is an exchange-traded contract.
Contract specifications	Terms of the contracts differ from trade to trade (tailor made contract) according to the need of the participants.	Terms of the contracts are standardized. Except the price, all other terms of the contract are already fixed (standardized).
Counter-party risk	Exists, but at times gets reduced by a guarantor.	The clearing agency associated with exchange becomes the counter-party to all trades

		assuring guarantee on their settlement.
Liquidity profile	Low, as contracts are tailor-made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants.	High, as contracts are standardised and exchange traded.
Price discovery	Not efficient, as markets are scattered.	Efficient, centralised trading platform helps all buyers and sellers to come together and discover the price through common order book.
Quality of information and its dissemination	Quality of information may be poor. Speed of information dissemination is slow.	Futures are traded nationwide. Every bit of relevant information is quickly disseminated.

15.6 Payoff Charts for Futures contracts

Payoff Charts

Payoff on a position is the likely profit/loss that would accrue to a market participant with change in the price of the underlying asset at expiry. The payoff diagram is a graphical representation showing the price of the underlying asset on the X-axis and profits/losses on the Y-axis.

Payoff charts for futures

In case of futures contracts, long as well as short position has unlimited profit or loss potential. This results into linear payoffs for futures contracts. Futures payoffs are explained in detail below:

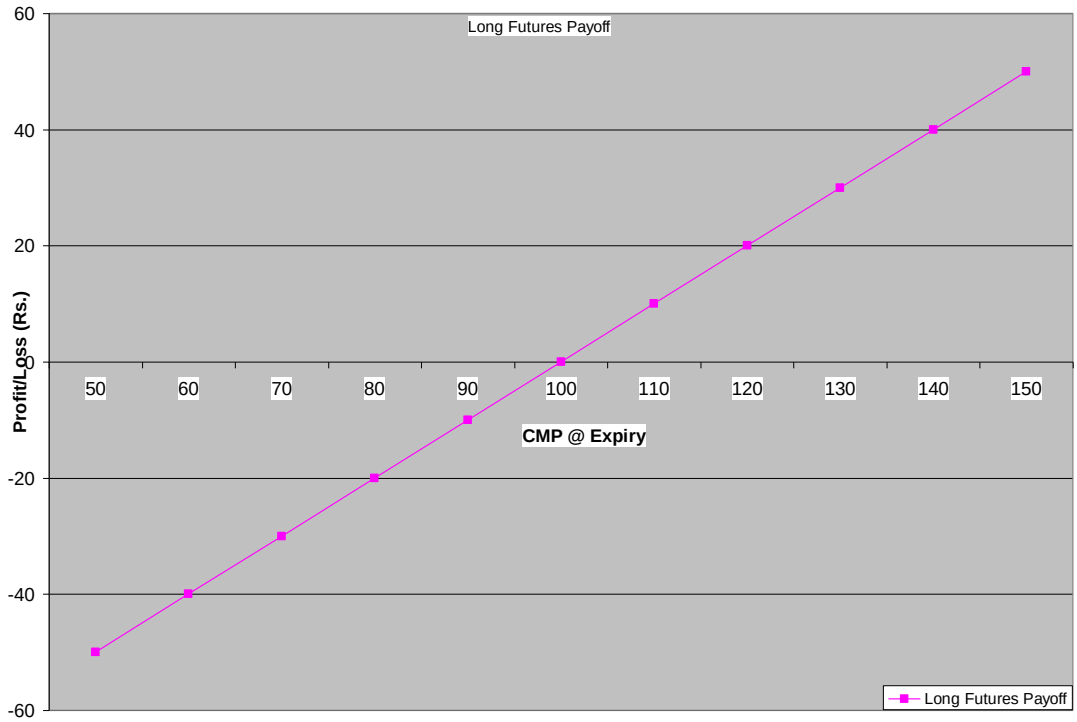
Payoff for buyer of futures: Long futures

Let us say a person goes long in a futures contract at Rs.100. This means that he has agreed to buy the underlying at Rs. 100 on expiry. Now, if on expiry, the price of the underlying is Rs. 150, then this person will buy at Rs. 100, as per the futures contract and will immediately be able to sell the underlying in the cash market at Rs.150, thereby making a profit of Rs. 50. Similarly, if the price of the underlying falls to Rs. 70 at expiry, he would have to buy at Rs. 100, as per the futures contract, and if he sells the same in the cash market, he will receive only Rs. 70, translating into a loss of Rs. 30.

This potential profit/loss at expiry when expressed graphically, is known as a payoff chart. The X Axis has the market price of the underlying at expiry. It increases on the Right-Hand Side (RHS). We do not draw the X Axis on the Left-Hand Side (LHS), as prices cannot go below zero. The Y Axis shows profit & loss. In the upward direction, we have profits and in the downward direction, we show losses in the chart.

The below table and payoff chart show long futures pay offs:

Long Futures at 100	
Market price at expiry	Long Futures Payoff
50	-50
60	-40
70	-30
80	-20
90	-10
100	0
110	10
120	20
130	30
140	40
150	50

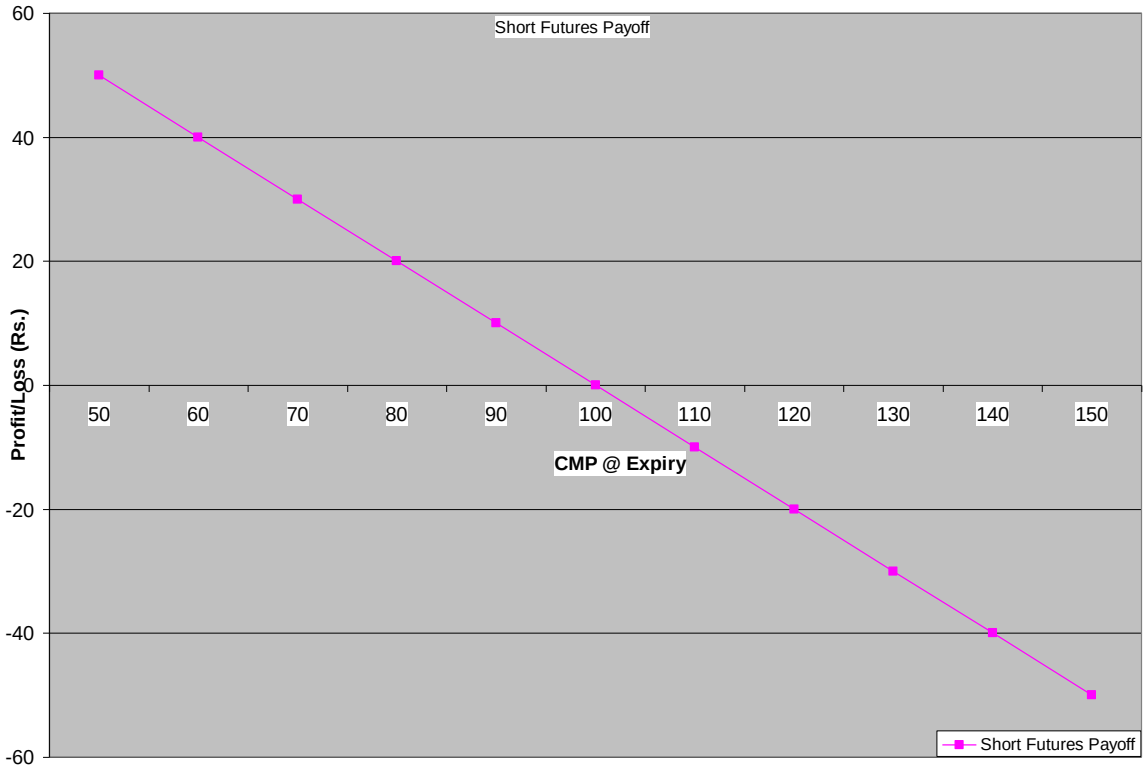


Short Futures payoff

As one person goes long, some other person must go short, otherwise a deal will not take place. The profits and losses for the short futures position will be exact opposite of the long futures position. This is shown in the table and chart below:

Short Futures at 100	
Market price at expiry	Short Futures Payoff
50	50

60	40
70	30
80	20
90	10
100	0
110	-10
120	-20
130	-30
140	-40
150	-50



As can be seen, a short futures position makes profits when prices fall. If prices fall to 60 at expiry, the person who has shorted at Rs.100 will buy from the market at 60 on expiry and sell at 100, thereby making a profit of Rs. 40. This is shown in the above chart.

15.7 Futures pricing

Pricing of a futures contract depends on the characteristics of underlying asset. There is no single way to price futures contracts because different assets have different demand and supply patterns, different characteristics and cash flow patterns. This makes it difficult to design a single methodology for calculation of prices of futures contracts. Market participants use different models for pricing futures. Here, our discussion is limited to only two popular models of futures pricing - Cost of Carry model and Expectations model.

Cost of Carry Model for Futures Pricing

Cost of Carry model is also known as the no-arbitrage model. This model assumes that in an efficient

market, arbitrage opportunities cannot exist. In other words, the moment there is an opportunity to make money in the market due to mispricing in the asset price and its replicas, arbitrageurs will start trading to profit from these mispricing and thereby eliminating these opportunities. This trading continues until the prices are aligned across the products/markets for replicating assets.

Let us understand the entire concept with the help of an example. Practically, forward/ futures position in a stock can be created in the following manner:

- Enter into a forward/futures contract, or
- Create a synthetic forward/futures position by buying that stock in the cash market and carrying it to the future date.

The price of acquiring the asset by a future date should be the same in both the cases i.e., cost of synthetic forward/futures contract (= spot price + cost of carrying the asset from today to the future date) should be equivalent to the present price of the forward/ futures contract. If these prices are not the same, then it will trigger arbitrage and will continue until prices in both the markets are aligned.

The cost of creating a synthetic futures position is the fair price of futures contract. Fair price of futures contract is nothing but the sum of spot price of underlying asset and cost of carrying the asset from today until delivery. Cost of carrying a financial asset from today to the future date would entail different costs like transaction cost, custodial charges, financing cost, etc. and for commodities, it would also include costs like warehousing cost, insurance cost, etc.

Let us take an example from the bullion market. Assume that the spot price of gold is Rs 62,130 per 10 grams. The cost of financing, storage and insurance for carrying the gold for a period of three months is Rs 100 per 10 grams. Now you purchase 10 grams of gold from the market at Rs 62,130 and hold it for three months. We may now say that the expected value of the gold after 3 months would be Rs 62,230 per 10 grams.

Assume the 3-month futures contract on gold is trading at Rs 62,280 per 10 grams. What should one do? Apparently, one should attempt to exploit the arbitrage opportunity present in the gold market by buying gold in the cash market and sell 3-month gold futures simultaneously. We borrow money to take delivery of gold in cash market today, hold it for 3 months and deliver it in the futures market on the expiry of our futures contract. Amount received on settling the futures contract could be used to repay the financier of our gold purchase. The net result will be a profit of Rs 50 without taking any risk. (Please note that we have not considered any transaction costs in this example).

Because of this mispricing, as more and more people come to the cash market to buy gold and sell in futures market, spot gold price will go up and gold futures price will come down. This arbitrage opportunity continues until the prices between cash and futures markets are aligned. Therefore, if futures price is more than the fair futures price, it will trigger “cash and carry arbitrage”, which will continue until the prices in both the markets are aligned.

Similarly, if the futures price is less than the fair futures price, it will trigger “reverse cash and carry arbitrage” i.e., market participants will start buying gold in futures markets and sell gold in cash market. To do this, traders will borrow gold and deliver it to honour the contract in the cash market

and earn interest on the cash market sales proceeds. After three months, they give gold back to the lender on receipt of the same in futures market. This reverse arbitrage will result in reduction of gold's spot price and increase of its futures price, until these prices are aligned and there is no further arbitrage left.

Cost of transaction and no-arbitrage bounds

Cost components of futures transaction like margins, transaction costs (commissions), taxes etc. create distortions and move the markets away from equilibrium. In fact, these cost components create no-arbitrage bounds in the market i.e., if the futures price is within these bounds around the fair futures price, arbitrage will not take place. In other words, because of the frictions in the market, for arbitrage to get triggered, it is important for the futures price to fall outside the no-arbitrage bounds in either direction for the arbitragers to make profit from the arbitrage opportunities.

No-arbitrage bounds

Practically, every component of carrying cost contributes towards widening of these no-arbitrage bounds. Here, we should appreciate that wider the no-arbitrage bounds, farther the markets are from the equilibrium. In other words, for the markets to be efficient, different costs of operating in the markets should be as low as possible. Lower costs would narrow the no-arbitrage bounds, which in turn would ensure the efficient price alignment across the markets.

Extension of Cost of Carry model to the assets generating returns

Let us extend the Cost of Carry model by adding the inflows during the holding period of underlying assets. For instance, underlying assets like securities (equity or bonds) may have certain inflows, like dividend on equity and interest on debt instruments, during the holding period. These inflows are adjusted in the computation of the fair futures price. Thus, modified formula of fair futures price or synthetic futures price is:

Fair futures price = Spot price + Cost of carry - Inflows

In mathematical terms, $F = S\ (1+r-q)^T$

Where F is fair price of the futures contract, S is the Spot price of the underlying asset, q is expected return during holding period T (in years) and r is cost of carry.

If we use the continuous compounding, we may rewrite the formula as: $F= Se^{(r-q)*T}$

Let us apply the above formula to the index futures market to find the fair futures price of an index. Suppose, you buy an index in cash market at 17500 level i.e., purchase of all the stocks constituting the index in the same proportion as they are in the index, cost of financing is 12% and the return on index is 4% per annum (spread uniformly across the year). Given this data, fair price of index three

months down the line should be:
= Spot price * (1 + cost of financing – holding period return) ^ (time to expiration / 365)
= 17500 * (1+0.12-0.04) ^ (90/365)
= Rs. 17835.26
[Alternatively, we could use exponential form for calculating the futures value as: Spot Price * $e^{(r-q)T}$. Value in that case would have been: $17500*e^{((0.12-0.04)*90/365)}$ = Rs. 17848.63].

If the index futures is trading above 17848.63, we can buy index stocks in the cash market and simultaneously sell index futures to lock the gains equivalent to the difference between futures price and fair futures price. Note that the cost of transaction, taxes, margins, etc. are not considered while calculating the fair futures price.

Note: Cost of borrowing of funds and securities, return expectations on the held asset, etc. are different for different market participants. Perhaps the different fair values of futures contracts and no-arbitrage bounds for different market participants is what makes the market and trading take place on a continuous basis.

Assumptions of the Cost of Carry model
This model of futures pricing works under certain assumptions. The important assumptions are stated below (*):

- The underlying asset is available in abundance in cash market.
- Demand and supply in the underlying asset are not seasonal.
- Holding and maintaining of the underlying asset is easy and feasible.
- The underlying asset can be sold short.
- There are no transaction costs.
- There are no taxes.
- There are no margin requirements.

[*This is not an exhaustive list of the assumptions of the model but is the list of important assumptions]

The assumption that the underlying asset is available in abundance in the cash market means that we can buy and/or sell as many units of the underlying assets as we want. This assumption does not work especially when the underlying asset has a seasonal pattern of demand and supply. The prices of seasonal assets (especially commodities) vary drastically in different demand-supply environments. For example, in case of agricultural commodities, when new supplies arrive in the marketplace, prices tend to fall, whereas prices tend to be high just before the arrival of that new supply.

When an underlying asset is not storable i.e., the asset is not easy to hold/maintain, then one cannot carry the asset to the future. The Cost of Carry model is not applicable to these types of underlying assets.

Similarly, many a time, the underlying may not be sold short. This is true in case of seasonal commodities.

Even though this simple model does not discount for transaction cost, taxes, etc., we can always upgrade the formula to reflect the impact of these factors in the model. Margins are not considered

while computing the fair value/ synthetic futures value. That is why this model is suitable for pricing forward contracts rather than futures contracts.

Thus, no generalized statement can be made with regard to the use of Cost of Carry model for pricing futures contracts. Assumptions of the model and characteristics of underlying asset can help us in deciding whether a specific asset can be priced with the help of this model or not. Further, suitable adjustments are made in the model to fit in the specific requirements of the underlying assets.

Convenience Yield

Let us touch upon one more concept in futures market called "Convenience Yield". We need to go back and have a look at the formula for fair price of futures contract.

Fair price of futures contract = Spot price + Cost of carry – Inflows

As seen earlier inflows may be in the form of dividend (in case of equity) and interest (in case of debt). However, sometimes inflows may also be intangibles. Intangible inflows essentially mean values perceived by the market participants by holding the asset. These values may be in the form of convenience or perceived mental comfort by holding the asset.

For instance, in case of a natural disaster like a flood in a particular region, people start storing essential commodities like grains, vegetables and energy products (heating oil), etc. As a human tendency, we store more than what is required for our real consumption during a crisis. If every person behaves in similar way, then suddenly a demand is created for an underlying asset in the cash market. This indirectly increases the price of underlying assets. In such situations people derive convenience, just by holding the asset. This is termed as convenience yield or convenience return.

Convenience yield for a commodity is likely to be different for different people, depending on the way they use it or perceive it. Further, it may vary over a period. In fact, convenience is a subjective issue and is very difficult to price.

Convenience yield sometimes may dominate the cost of carry, which leads futures to trade at a discount to the cash market. In this case, reverse arbitrage is also not possible because no one lends traders the assets to sell short in the cash market. In such situations, practically, the cash and carry model breaks down and cannot be applied for pricing the underlying assets.

Note that the convenience yield mainly arises when there is a scarcity of a commodity (for example, crop failure due to natural calamities) and its inventory is low. Hence, convenience yield is usually observed in case of consumption assets (i.e., commodities) and not in case of financial assets (such as equities, bonds or currencies).

Expectations model of futures pricing

According to the expectations hypothesis, it is not the relationship between spot and futures prices, but that of expected spot and futures prices, which moves the market, especially in cases when the asset cannot be sold short or cannot be stored. It also argues that futures price is nothing but the expected spot price of an asset in the future. This is why market participants would enter futures contract and they price the futures based upon their estimates of the future spot prices of the underlying assets. According to this model:

- Futures can trade at a premium or discount to the spot price of underlying asset.

- Futures price gives market participants an indication of the expected direction of movement of the spot price in the future.

For instance, if futures price is higher than spot price of an underlying asset, market participants may expect the spot price to rise in the near future. This expectedly rising market is called “Contango market”. Similarly, if futures price is lower than spot price of an asset, market participants may expect the spot price to fall in future. This expectedly falling market is called “Backwardation market”.

15.8 Price discovery and convergence of cash and futures prices on the expiry

It is important to understand what the expectations hypothesis means. For instance, if we say that the May 2024 index futures contract is trading at 22308.70 on May 14, 2024, what does it mean? According to the expectations model of futures pricing, it means that as on May 14, the market expects the spot index to settle at 22308.70 at the closure of the market on last Thursday of May 2024 (i.e., on the last trading day of the contract which is May 30, 2024). The point is that every participant in the market is trying to predict the spot index level at a single point in time i.e., at the closure of the market on last trading day of the contract, which is Thursday in our example. This results in price discovery of spot index at a specific point in time. Thus, the futures prices are essentially expected spot price of the underlying asset, at the maturity of the futures contract. Accordingly, both futures and spot prices converge at the maturity of futures contract, as at that point in time there cannot be any difference between these two prices. This is the reason why all futures contracts on expiry settle at the underlying cash market price. This principle remains the same for all the underlying assets.

15.9 Uses of futures

Role of different participants in derivatives markets

The participants in the derivatives markets can be categorized as hedgers, speculators and arbitrageurs.

Hedgers

Corporations, Investing Institutions, banks and governments all use derivative products to hedge or reduce their exposures to market variables such as interest rates, share values, bond prices, currency exchange rates and commodity prices. The classic example is the farmer who sells futures contracts to lock into a price for delivering a crop on a future date. The buyer might be a food-processing company, which wishes to fix a price for taking delivery of the crop in the future. Another example could be that of an investor with a diversified equity portfolio, who wants to protect his portfolio from any temporary correction in the stock market. Such an investor could sell index futures for this purpose.

Speculators/Traders

Futures contracts are very well suited to trading on the prices of financial assets and commodities. It is much less expensive to create a speculative position using futures than by actually trading the underlying asset. As a result, the potential returns are much greater. A classic application is the trader who believes that the announcement of better-than-expected quarterly results of a company

will boost the stock price of that company. He has two options: the first alternative is to buy and hold the equity shares of the company whereas the other alternative is to go long the futures contracts of that stock. If the trader chooses the second option to go long futures contract on the underlying stock and the stock price increases, the value of the contract will also rise, and he can square-off the position to book his profit. Of course, if the trader takes a long position and the stock price falls, the futures price will also fall, leaving the trader with a large loss. Leverage acts as a 'double-edged' sword. Therefore, positions in futures contracts, which are basically leveraged instruments, are riskier in nature than buying or selling the underlying asset itself.

Arbitrageurs

An arbitrage is a deal that produces risk-free profits by exploiting a mispricing in the market. A simple arbitrage occurs when a trader purchases an asset cheaply in one location/ exchange and simultaneously arranges to sell it at another location/ exchange at a higher price. Such opportunities are unlikely to persist for very long, since arbitrageurs would rush in to buy the asset in the cheaper market and simultaneously sell it in the expensive market, thus reducing the pricing gap.

As mentioned above, there are three major players in derivatives market – Hedgers, Traders, and Arbitrageurs. Hedgers aim to hedge their risk, traders take the risk which hedgers plan to offload from their exposure and arbitrageurs establish an efficient link between different markets.

Traders take naked positions in the futures market i.e., they go long or short in various futures contracts available in the market. Indeed, the capacity of derivatives market to absorb buying/selling by hedgers is directly dependent upon availability of traders, who act as counter-party to hedgers. Thus, traders form one of the most important participants of the derivatives market, providing depth to the market. Hedgers may not be able to hedge, if traders were not present in the system. Therefore, the presence of both hedgers and traders is essential for the growth of the futures market.

For instance, assume, a farmer expects the price of wheat to fall in near future. He wants to hedge his price risk on wheat produce for next 3 months till the time he has actual produce in his hands and so would like to lock in the forward/ futures price now. Accordingly, the farmer can sell futures contracts on the expected quantity of produce. In order to sell this futures contract, he needs a buyer. This buyer may be someone who needs wheat after three months, may be a flour mill or a bakery. However, most of the times, there is a demand supply mismatch in the market and the trader fills the gap between demand and supply.

Here the trader, who is a counterparty to the farmer, has a contrary view i.e., this buyer will buy only if he thinks that the actual price of wheat three months down the line is going to be higher than the three-month futures price today. Further, the profit of the trader would depend upon actual wheat price being more than the contracted futures price at the maturity of futures contract. If that happens, the trader will make money, else he would lose money.

In addition to hedgers and traders, to establish a link between various markets like spot and derivatives, we need a third party called the arbitrageur. These arbitragers continuously hunt for the profit opportunities across the markets and products and seize those by executing trades in different markets and products simultaneously. Importantly, arbitrageurs generally lock in their profits unlike traders who trade naked contracts.

For example, at the end of day:

Market price of underlying asset (in Rs.)	100
May futures	110
Lot size	50

Here an arbitrageur will buy in the cash market at Rs. 100 and sell in the Futures market at Rs. 110, thereby locking Rs. 10 as his profit on each share.

On the expiration date, suppose price (in Rs.) of the underlying asset is 108.

	Cash Market	Futures	
Buy	100	Sell	110
Sell	108	Buy	108
	+8		+2

Total profit would be Rs 2 + Rs 8 = Rs 10 per unit and Rs 10 * 50 = Rs 500 for the lot.

Suppose price (in Rs.) of the underlying asset is 95 on the expiration date.

	Cash Market	Futures	
Buy	100	Sell	110
Sell	95	Buy	95
	-5		+15

Total profit would be Rs 15 - Rs 5 = Rs 10 per unit and Rs 10 * 50 = Rs 500 for the lot.

Transaction costs and impact cost have not been considered in the above example. In real life, the transaction costs such as brokerage, Service Tax, Securities Transaction Tax, etc. must be considered.

Here, it may be interesting to look at the risks these arbitrageurs carry. As seen before, arbitrageurs execute positions in two or more markets/products simultaneously. Even if the systems are seamless and electronic and both the legs of transaction are liquid, there is a possibility of some time lag between the execution of both the orders. If either leg of the transaction is illiquid then the risk on the arbitrage deal is huge as only one leg may get executed and another may not, which would open the arbitrager to the naked exposure of a position. Similarly, if contracts are not cash settled in both or one of the markets, it would need reversal of trades in the respective markets, which would result in additional risk on unwinding position with regard to simultaneous execution of the trades.

These profit focused traders and arbitrageurs fetch enormous liquidity to the products traded on the exchanges. This liquidity in turn results in better price discovery, lesser cost of transaction and lesser manipulation in the market.

Uses of Index futures

Equity derivatives instruments facilitate trading of a component of price risk, which is inherent to investment in securities. Price risk is the price movement of the asset held by a market participant, in an unfavourable direction. This risk is broadly divided into two parts: (i) specific risk or unsystematic risk, and (ii) market risk or systematic risk.

Unsystematic Risk

Specific risk or unsystematic risk is the component of price risk that is unique to specific events

pertaining to the company and/or industry. Examples of specific risk include the risk of a fall in stock price due to a strike by factory workers which affects the production and sales, the risk of sudden departure of key managerial personnel, risk of loss of market share due to emergence of a strong competitor etc. Specific risk is inseparable from investing in the securities. This risk could be reduced to a certain extent by diversifying the portfolio.

Systematic Risk

An investor can diversify his portfolio and eliminate a major part of price risk i.e., the diversifiable/unsystematic risk. What is left is the non-diversifiable portion or the market risk, known as systematic risk. Variability in a security's total returns that are directly associated with overall movements in the general market or economy is called systematic risk. Examples of market risk or systematic risk include risk due to a sudden change in the monetary or fiscal policy, depreciation of domestic exchange rates, declaration of war, etc. Thus, every portfolio is exposed to market risk. This risk is separable from the investment and tradable in the market with the help of index-based derivatives. Therefore, the total price risk in a stock investment is the sum of systematic risk (i.e., market risk) and unsystematic risk (i.e., risk specific to that stock).

We can use single stock futures to manage the risk of the equity investment in the spot market. For instance, use of single stock futures would hedge the market participant against the total risk in the equity investment because these futures are comparable with underlying positions. The main difference between an underlying position and single stock futures is on the settlement front: in case of cash transactions, settlement takes place immediately and in case of futures contracts, settlement is deferred.

While single stock futures enable the investor to hedge the specific risk of a stock, index futures are required to mitigate the systematic risk of a stock portfolio. Before we get to the management of systematic risk with index futures, we need to understand beta - a measure of systematic risk of a security that cannot be avoided through diversification. It measures the sensitivity of a stock / portfolio vis-a-vis index movement over a period, on the basis of historical prices. Suppose a stock has a beta equal to 2. This means that historically this stock's price has moved 20% when the index moved 10%, indicating that this stock is more volatile than the index. Stocks (or portfolios) having beta more than 1 are called aggressive stocks (or aggressive portfolios) and those having beta less than 1 are called conservative stocks (or conservative portfolios).

Betas of individual stocks are used to calculate beta of a portfolio. Portfolio beta is a weighted average of betas of individual stocks in the portfolio based on their investment proportion. For example, if there are four stocks in a portfolio with betas 0.5, 1.1, 1.30 and 0.90 having weights 35%, 15%, 20% and 30% respectively, the beta of this portfolio would be 0.87 (= 0.5*0.35 +1.10*0.15 +1.30*0.20 +0.90*0.30).

A generalized formula for portfolio beta can be written as $W1\ \beta1+W2\ \beta2+\ldots+ Wn\ \beta n= \beta p$

Where, W1 is weight of stock 1, β1 is the β of stock 1, W2 is weight of stock 2, β2 is the β of stock 2, …, Wn is weight of stock n, βn is the β of stock n and βp is the β of portfolio. Please note that sum of the weights will be equal to 1 (i.e., W1+W2+…+Wn = 1).

Information on beta of individual stocks is readily available in various financial newspapers, magazines and information vending networks like Bloomberg, Reuters, etc.

When stock futures are used to hedge the risk of a single stock, we can use a hedge ratio of 1:1. For instance, suppose that an investor holds 550 shares of HDFC Bank and this is her only investment. If the investor is worried about a temporary fall in the stock price due to some company-specific news, she can use futures on HDFC Bank stock to hedge her shareholding. Since the contract size of HDFC Bank futures is 550, she can use 1 futures contract to hedge her holding of 550 shares. Thus, a 1:1 hedge ratio can be used to compute the number of futures contracts required to hedge the risk. But futures contracts are available only on a limited set of stocks and hence we can use index futures to hedge the remaining stocks which do not have their own futures contracts.

When index futures are used to manage the systematic risk of a portfolio, we cannot use a hedge ratio of 1:1. This is because the portfolio to be hedged is different from the hedging instrument, which is the index futures contract. Suppose that the investor holds a portfolio comprising of 10 large-cap stocks and wishes to hedge this portfolio with an index futures contract. Now, the index futures contract may represent an index comprising 30 or 50 stocks and hence it is not a perfect hedge for the investor's portfolio that includes just 10 stocks. Moreover, the beta of this portfolio may be different from that of the index. Hence, a 1:1 hedge ratio is not appropriate for this situation. To find the number of contracts of index futures required for hedging this portfolio's risk, the hedge ratio is calculated as follows:
Number of contracts for hedging portfolio risk = Vp * βp / Vi
Vp: Value of the portfolio
Bp: Beta of the portfolio
Vi: Value of index futures contract

Value of index futures contract or contract size = futures index level * contract multiplier. For simplification purpose, beta of futures index vis-a-vis spot index is taken as one.

Hedge against the systematic risk mainly depends upon the relationship of the portfolio with the index, which is measured by beta. A portfolio has different relationships with different indices used for hedge. Hence, the hedge ratio would change with the change in the index. Further, there is an assumption that the past relationship between the stock's or portfolio's movement and the index movement would continue in future. This may result in some difference between actual and expected numbers.

Hedging using single stock futures and index futures is explained in detail in Unit 5 with specific examples.

Important terms in hedging

Long hedge: Long hedge is the transaction when we hedge our position in cash market by going long in futures market. For example, we expect to receive some funds in future and want to invest the same amount in the securities market. We have not yet decided the specific company/companies, where investment is to be made. We expect the market to rise in the near future and bear a risk of acquiring the securities at a higher price. We can hedge by going long index futures today. On receipt of money, we may invest in the cash market and simultaneously unwind corresponding index

futures positions. Any loss due to acquisition of securities at higher price, resulting from the upward movement in the market over this intermediate period, would be partially or fully compensated by the profit made on our position in index futures.

Further, while investing, suitable securities at reasonable prices may not be immediately available in sufficient quantity. Rushing to invest all money is likely to drive up the prices to our disadvantage. This situation can also be taken care of by using the futures. We may buy futures today, gradually invest money in the cash market and unwind corresponding futures positions.

Short hedge: Short Hedge is a transaction when the hedge is accomplished by going short in futures market. For instance, assume, we have a portfolio and want to liquidate it in the near future but we fear that the prices will fall in near future. This may go against our plan and may result in reduction in the portfolio value. To protect our portfolio's value, today, we can short index futures of an equivalent amount. The amount of loss made in cash market will be partly or fully compensated by the profits on our futures positions.

Cross hedge: When a futures contract on an asset is not available, market participants look for an asset that is closely associated with their underlying and trade in the futures market of that closely associated asset, for hedging purpose. They may trade in futures of this related asset to protect the value of their actual asset. This is called cross hedge.

For instance, if futures contracts on jet fuel are not available in the international markets then hedgers may use contracts available on other energy products like crude oil, heating oil or gasoline due to their close association with jet fuel for hedging purpose. This is an example of cross hedge.

Indeed, in a crude sense, we may say that when we use index futures to hedge against the market risk on a portfolio, we are essentially establishing a cross hedge because we are not using the exact underlying to hedge the risk.

Hedge contract month: Hedge contract month is the maturity month of the contract through which we hedge our position. The thumb rule is to select that futures contract which expires just after the date on which we wish to unwind our exposure. For example, suppose that on May 10, an investor decides to sell his portfolio on June 20 to meet some financial obligation. He wants to hedge the market risk of his portfolio by shorting index futures. In this case, the investor should short the index futures contract expiring in June 2024, and not in May 2024.

Trading in futures market

Traders are risk takers in the derivatives market. And they take positions in the futures market without having any position in the underlying cash market. These positions are based upon their expectations on price movement of underlying asset. Traders either take naked positions or spread positions.

A trader takes a naked long position when he expects the market to rise. Profit is made by reversing the long position at a higher price later. Similarly, he takes a short position when he expects the market to fall and books a profit by reversing his position at a lower price in the future. For instance, if one month Sensex futures contract is trading at 61000 and a trader expects the spot index at the maturity of the one-month contract would settle at a level higher than this, he would take a long

position in index futures at a level of 61000. If his expectation comes true and index on maturity settles beyond 61000, this trader will make money to the extent of the difference between buy price and sell price (or, between buy price and settlement price) of the index.

Traders may also take long/short positions in single stock futures. When they expect the stock price to rise, they may take long position in these futures and when they expect the stock price to fall, they may take short position in single stock futures.

If the market or the stock moves in the expected direction, the trader would end up making profit. Here, it may be noted that if the market or stock does not move in the anticipated direction, the trader may also incur a loss. A futures position is as exposed to loss as to profit.

A naked position is long or short in any of the futures contracts but a spread position consists of two opposite positions (one long and one short), either in two contracts with the same maturity on different products, or in two contracts with different maturities on the same product. The former is termed an inter-commodity or inter-product spread and the latter is known as calendar spread/time spread or horizontal spread. Exchanges need to provide the required inputs to the trading system for it to recognize any kind of spread. At present, only calendar spreads are available for trading in the equity derivatives segment. Inter-commodity spreads between specific commodities like gold and silver; soybean, soybean meal and soybean oil, etc. are available for trading in the commodity derivatives segment.

A calendar spread position is always computed with respect to the near month series. For instance, if Mr. A has say 3 contracts short in one-month futures contract, 2 contracts long in two-months futures contract and 3 contracts long in three-months futures contract, he would be said to have 2 calendar spreads between first and second months and 1 calendar spread between first and third month. Further, his position in remaining 2 three-months contracts would be treated as naked. A calendar spread becomes a naked/open position, when the near month contract expires or either of the legs of spread is closed. As spread positions are hedged to a large extent because they are combinations of two opposite positions, they are treated as conservatively speculative positions.

Arbitrage opportunities in futures market

Arbitrage is the simultaneous purchase and sale of an asset or replicating asset in the market in an attempt to profit from discrepancies in their prices. Arbitrage involves activity on one or several instruments/assets in one or different markets, simultaneously. Important point to understand is that in an efficient market, arbitrage opportunities may exist only for a brief period, or not at all. The moment arbitragers spot an arbitrage opportunity, they initiate the arbitrage trades, thereby eliminating that arbitrage gap.

Arbitrage occupies a prominent position in the futures world as a mechanism that keeps the prices of futures contracts aligned properly with the prices of the underlying assets. The objective of arbitragers is to make profits without taking risk, but the complexity of this activity is such that it may result in losses as well. Well-informed and experienced professional traders, equipped with powerful calculating and data processing tools, normally undertake arbitrage trades.

Arbitrage in the futures market can typically be of three types:

- Cash and carry arbitrage: Cash and carry arbitrage refers to a long position in the cash or underlying market and a short position in futures market.
- Reverse cash and carry arbitrage: Reverse cash and carry arbitrage refers to long position in futures market and short position in the underlying or cash market.
- Inter-Exchange arbitrage: This arbitrage entails two positions on the same contract in two different markets/exchanges.

In the language of simple mathematics, Fair futures price F = S + C

where S stands for Spot price and C stands for Holding costs/carrying costs.

If cost of carry is defined in the percentage terms, we may redefine the formula as:

$F = S(1+r)^T$

Where r is the carrying cost (in percentage) and T is the Time to expiration (in years).

If we use continuous compounding for computation of the cost, the same formula reduces to:

$F= Se^{rT}$

If futures price is higher than fair/theoretical price, there would exist a profitable, risk-free, cash and carry arbitrage opportunity. On the other hand, if the futures price is lower than the fair futures price, there could be a profitable opportunity for reverse cash-carry arbitrage. Thus, unless there are obstacles to such arbitrage, the activities of the arbitrageurs would cause spot-futures price relationships to conform to that described by the cost of carry formula. On rare occasions, however, there is an arbitrage opportunity that exists for some time. Practically, an arbitrage is feasible and will be undertaken only if it provides net cash inflow after transaction costs, brokerage, margin deposits, etc. Arbitrage strategies are explained in detail in Unit 5 with examples.

Inter-market arbitrage

This arbitrage opportunity arises because of some price differences existing in the same underlying at two different exchanges. If August futures on stock Z are trading at Rs. 101 at NSE and Rs. 100 at BSE, the trader can buy a contract at BSE and sell at NSE. The positions could be reversed over a period of time when difference between futures prices squeeze. This would be profitable to an arbitrageur.

It is important to note that the cost of transaction and other incidental costs involved in the deal must be analysed properly by the arbitrageurs before entering into the transaction.

In the light of above, we may conclude that futures provide market participants with a quick and less expensive mode to alter their portfolio composition to arrive at the desired level of risk. As they could be used to either add risk to the existing portfolios or reduce risk of the existing portfolios, they are essentially risk management and portfolio restructuring tools.

Chapter 15: Sample questions

1. You sold one XYZ Stock Futures contract at Rs. 278 and the lot size is 1,200. What is your profit (+) or loss (-), if you purchase the contract back at Rs. 265?
(a) 16,600
(b) **15,600**
(c) -15,600
(d) -16,600

2. You have taken a short position of one contract in June XYZ futures (contract multiplier 50) at a price of Rs. 3,400. When you closed this position after a few days, you realized that you made a profit of Rs. 10,000. Which of the following closing actions would have enabled you to generate this profit? (You may ignore brokerage costs.)
(a) Selling 1 June XYZ futures contract at 3600
(b) Buying 1 June XYZ futures contract at 3600
(c) **Buying 1 June XYZ futures contract at 3200**
(d) Selling 1 June XYZ futures contract at 3200

3. A calendar spread contract in index futures attracts _____.
(a) Same margin as sum of two independent legs of futures contract
(b) **Lower margin than sum of two independent legs of futures contract**
(c) Higher margin than sum of two independent legs of futures contract
(d) No margin needs to be paid for calendar spread positions

4. Margins in 'Futures' trading are to be paid by _____.
(a) Only the buyer
(b) Only the seller
(c) **Both the buyer and the seller**
(d) The clearing corporation

5. When the near leg of the calendar spread transaction on index futures expires, the farther leg becomes a regular open position.
(a) **True**
(b) False

CHAPTER 16: INTRODUCTION TO OPTIONS

Learning Objectives:

After studying this chapter, you should know about:

- Concept of Options
- Payoffs in case of option contracts
- Difference between futures and options
- Fundamentals relating to option pricing
- Option Greeks and Implied volatility
- Analysis of options from the perspective of option buyers and sellers

16.1 Basics of options

As seen in earlier section, forward/futures contract is a commitment to buy/sell the underlying and has a linear payoff, which indicates unlimited losses and profits. However, some market participants desire to ride the upside but restrict the downside. Accordingly, options have emerged as a financial instrument, as they allow unlimited profits on buying or selling of the underlying asset with a provision of restricting the losses.

An option is a contract that gives the holder of the option the right, but not an obligation, to buy or sell the underlying asset on or before a stated date/day, at a predetermined price. This right can be bought for a price known as the option premium. The party taking a long position i.e., buying the option is called buyer/ holder of the option and the party taking a short position i.e., selling the option is called the seller/ writer of the option. The option buyer must pay the premium to the option seller upfront, i.e., at the time of buying the option.

The option buyer or holder has the right but no obligation with regards to buying or selling the underlying asset, while the option writer has the obligation in the contract. Therefore, the option buyer will exercise his option only when the situation is favourable to him. On the other hand, the option writer is legally bound to honour the contract whenever the option buyer decides to exercise his option.

Options may be categorized into two main types:

- Call Options
- Put Options

An option, which gives the buyer/holder a right to buy the underlying asset, is called a call option; and an option which gives the buyer/holder a right to sell the underlying asset, is called a 'put option'.

Option terminology

There are several terms used in the options market. Let us understand those terms with the help of the following example:

Quote for a Nifty **call** option as on May 10, 20XX:

1. Instrument type	:	Option Index
2. Underlying asset	:	Nifty 50
3. Expiry date	:	May 25, 20XX
4. Option type	:	Call European
5. Strike Price	:	18400
6. Open price	:	125
7. High price	:	130
8. Low price	:	93.65
9. Close price	:	124.50
10. Traded Volume	:	61,330 contracts
11. Open Interest	:	14,97,650
12. Underlying value	:	18315.10

Quote for a Nifty **Put** option as on May 10, 20XX:

1. Instrument type	:	Option Index
2. Underlying asset	:	Nifty 50
3. Expiry date	:	May 25, 20XX
4. Option type	:	Put European
5. Strike Price	:	18400
6. Open price	:	193.55
7. High price	:	236
8. Low price	:	171.50
9. Close price	:	177.60
10. Traded Volume	:	31,388 contracts
11. Open Interest	:	497950
12. Underlying value	:	18315.10

Index option: These options have a stock index as the underlying asset. For example, options on Nifty, Sensex, etc.

Stock option: These options have individual stocks as the underlying asset. For example, option on ONGC, NTPC, etc.

Buyer of an option: The buyer of an option is one who has a right but not the obligation in the contract. For owning this right, he pays a price called 'option premium' to the seller of this right. He has a right to buy the underlying asset in case of a call option and the right to sell the underlying asset in case of a put option.

Writer of an option: The writer of an option is one who receives the option premium and is thereby obliged to sell/buy the asset if the buyer of option exercises his right. He has a sell obligation in case

of a call option (i.e., when the call option holder exercises his right to buy) and a buy obligation in case of a put option (i.e., when the put option holder exercises his right to sell).

American option: The owner (buyer/holder) of an American option can exercise his right at any time on or before the expiry date/day of the contract.

European option: The owner (buyer/holder) of a European option can exercise his right only on the expiry date/day of the contract. In India, all index and stock options are European style options.

Option Premium: It is the price which the option buyer pays to the option seller. In our examples, the option premium is Rs. 124.50 for the call option and Rs. 177.60 for the put option, both having a strike price of 18400 and expiring on May 25, 20XX. The premium mentioned here is for a single unit of Nifty options and to arrive at the total premium for the contract, we must multiply this premium with the lot size.

Spot price (S): It is the price at which the underlying asset is trading in the spot market. In our examples, it is the value of underlying index (Nifty 50) which was 18315.10 at that point of time.

Strike price or Exercise price (X): Strike price is the price per share for which the underlying security may be purchased by the call option holder (or sold by the put option holder). In our examples, strike price for both call and put options is 18400.

Open Interest: As discussed in futures section, the open interest is the total number of option contracts outstanding for an underlying asset.

Exercise of Options: Option contracts traded on Indian exchanges are European style options. Hence, buyers can exercise their options only at the time of maturity of these contracts. All these options are exercised with respect to the settlement value/ closing price of the stock on the day of exercise of option.

Assignment of Options

Assignment of options means the allocation of exercised options to one or more option sellers.

Opening a Position

An opening transaction is one that adds to or creates a new trading position. It can be either a purchase or a sale. With respect to an option transaction, we will consider both:

- Opening purchase (Long on option): A transaction in which the purchaser's intention is to create or increase a long position in a given series of options.
- Opening sale (Short on option): A transaction in which the seller's intention is to create or increase a short position in a given series of options.

Closing a position

A closing transaction is one that reduces or eliminates an existing position by an appropriate offsetting purchase or sale. This is also known as "squaring off" the existing position. With respect to an option transaction:

- Closing purchase: A transaction in which the purchaser's intention is to reduce or eliminate a short position in a given series of options. This transaction is frequently referred to as "covering" a short position.

- Closing sale: A transaction in which the seller's intention is to reduce or eliminate a long position in a given series of options.

Note: A trader does not close out a long call position by purchasing a put (or any other similar transaction). A closing transaction for an option involves the sale or purchase of an option contract with the same terms (contract specifications), i.e., an option with the same strike price and same expiry date.

16.2 Contract specifications of exchange-traded options

Just as in the case of exchange-traded futures, the exchange decides all terms and conditions (except the option premium) for all exchange-traded index and stock options. The common contract specifications are discussed below:

Contract size or Lot size: Contract size is the number of units of the underlying asset in a contract. The contract size is different for option contracts on different stocks and indices. Suppose the contract size of Nifty option contracts is at 50. Accordingly, in our examples above, the total premium for call option contract would be Rs 124.50 * 50, i.e., Rs 6225 and that for the put option contract would be Rs 177.60* 50, i.e., Rs 8880.

Contract trading cycle: This is the period over which the option contract is traded. Index options in India are available for a wider range of expiration dates as compared to stock options. Option contracts on individual stocks traded on the NSE follow a three-month trading cycle. Thus, on May 10, 20XX, stock option contracts launched on the NSE are available for trading for the near month (May 20XX), the next month (June 20XX) and the far month (July 20XX).

Index option contracts on the NSE and BSE are available for trading with weekly as well as monthly maturities. Index options can be traded for 4 serial weekly cycles, excluding the monthly near-, mid- and far-month expiries. Thus, on May 10, 2023, we have weekly Nifty options expiring on May 11, May 18, June 1 and June 8, in addition to the monthly option contracts expiring on May 25, June 29 and July 27. Index options are also available for three quarterly expiries (March, June, September and December cycle). The exchanges also make available long-term index options having 8 half-yearly expiries (following the June-December cycle) after the three quarterly expiries.

Expiration Date: The day on which a derivative contract ceases to exist is known as the expiration date. It is the last trading date/day of the contract. The Nifty and Bank Nifty option contracts expire on the last Tuesday of the expiry month (or, on the previous trading day, if the last Tuesday is a trading holiday). BSE and NSE decides the contract expiry day of various indices offered by them and the same is subject to change after due notice to market participants. One must see the product specification of various indices offered by BSE and NSE to ascertain their monthly/ weekly expiry date.

As per recent SEBI Circular dated Oct 01, 2024, exchanges may provide derivatives contracts for only one of its benchmark indices with weekly expiry. This will be effective from Nov 20, 2024. For ex. BSE can only offer weekly Index derivative contract either on Sensex 30 or Bankex. Similarly, NSE also can offer weekly expiry on only one Index.

Tick size: It is the minimum move allowed in the price quotations. As in the case of stock and index futures contracts, the tick size for index contracts is 5 paisa.

Tick size for stock future contracts is the smallest amount a price can change. It is determined by the exchange where the asset is traded and depends on factors like the type of asset, its price, and the market it's traded in.

Here are some examples of tick sizes for stock future contracts:

NSE: The tick size for stocks trading below ₹250 is 0.01 paisa and for stocks trading above ₹250 is 0.05 paisa, and this change also applies to futures contracts of these stocks.

BSE: The usual tick size is 0.05 paisa but tick size is 0.01 for stocks trading below ₹100.

Tick size can affect margin requirements, risk management, and price fluctuations. A small tick size allows for better risk management because positions can be adjusted with small price movements. A large tick size may require higher margins due to the potential for larger price fluctuations.

One may look up the product specifications on the respective exchange website (NSE / BSE) to find the tick size for a particular derivative contract.

Final settlement price: Unlike the futures contracts, there is no daily settlement of options contracts. Also, since all exchange-traded index and stock options in India are European style options, the exercise and assignment of these options is permitted only on the expiration date. The final settlement price of index and stock options is the closing price of the relevant index or stock in the cash segment of the exchange on the last trading day of the contract.

Trading hours: The equity options contracts can be traded during the normal market hours between 9.15 am and 3.30 pm from Monday to Friday. The exchange publishes a list of annual trading holidays and clearing holidays for the information of the market participants.

The option contracts on the BSE Sensex have slightly different specifications as compared to the Nifty option contracts and are discussed here.

Underlying asset	BSE Sensex
Contract size	20
Tick size	Rs. 0.05
Contract cycle	7 serial weekly, 3 monthly, 3 quarterly and 8 semi-annually maturing contracts
Trading hours	9:15 a.m. to 3:30 p.m.
Exercise style	European
Expiration day	Monthly, Quarterly and Semi-annually – last Thursday of the contract

	Weekly contracts – Thursday expiry
Final settlement	Cash settlement based on the closing price of the underlying index on the expiration day

(Please refer to the exchange website for any change into the product specification.)

16.3 Moneyness of an option

Options can be classified into three categories, viz., in-the-money, at-the-money and out-of-the-money options.

In-the-money (ITM) option: This option would give the option holder a positive cash flow, if it were exercised immediately. A call option is said to be ITM, when spot price is higher than strike price. A put option is said to be ITM when spot price is lower than strike price. In our examples, the put option is in-the-money.

At-the-money (ATM) option: At-the-money option would lead to zero cash flow if it were exercised immediately. Therefore, for both call and put ATM options, strike price is equal to spot price. In reality, because the strike prices are at fixed intervals of say, Rs.5, Rs.10 or Rs.50, while the spot price moves in much smaller increments, the two prices may rarely be equal. Hence an ATM option can be defined as an option with a strike price which is closest to the spot price. For example, if the index is at 18415 and three options on the index with strike prices of 18350, 18400 and 18450 are available for trading, the option with the strike price of 18400 is an ATM option.

Out-of-the-money (OTM) option: An out-of-the-money option is one with a strike price worse than the spot price for the holder of option. In other words, this option would give the holder a negative cash flow if it were exercised immediately. A call option is said to be OTM, when spot price is lower than strike price. A put option is said to be OTM when spot price is higher than strike price. In our examples, the call option is out-of-the-money.

16.4 Intrinsic value and time value of an option

The option premium, defined above, consists of two components - intrinsic value and time value.

The intrinsic value of an option refers to the amount by which the option is in-the-money i.e., the amount an option buyer will realize, before adjusting for premium paid, if he exercises the option instantly. Therefore, only in-the-money options have intrinsic value whereas at-the-money and out-of-the-money options have zero intrinsic value. The intrinsic value of an option can never be negative because an option holder is not bound to exercise an option if such exercise will result in a loss to him.

For a call option which is in-the-money, the intrinsic value is the excess of spot price (S) over the exercise price (X). Thus, the intrinsic value of a call option can be calculated as S-X, with a minimum possible value of zero because no one would like to exercise his right under a disadvantageous condition. Similarly, the intrinsic value for an in-the-money put option is the excess of exercise price

(X) over the spot price (S). Thus, the intrinsic value of put option can be calculated as X-S, with a minimum possible value of zero.

Note that the put option in the earlier example is in-the-money. If the holder of this option could exercise it immediately, it would fetch him a positive cashflow equal to the difference between the option strike price (18400) and the Nifty spot price (18315.10). Hence the intrinsic value of the put option is Rs.84.90. The call option in our earlier example is out-of-the-money, since the option strike price (18400) is higher than the spot price (18315.10). Hence the call option has an intrinsic value of zero.

Time value: It is the difference between the premium and intrinsic value, if any, of an option. ATM and OTM options have only time value because the intrinsic value of such options is zero. In our example, the put option has a time value of Rs.92.70 which is the difference between the option premium (Rs.177.60) and the intrinsic value (Rs.84.90). In the case of the call option, the entire option premium of Rs.124.50 represents time value as the intrinsic value of the call is zero.

16.5 Payoff Charts for Options

Having gone through the basic terminology used in the options market, let us get to the payoff profile of various option positions.

Long option

Buyer of an option is said to be "long the option". As described above, he/she would have a right and no obligation with regard to buying/ selling the underlying asset in the contract. When you are long an equity option contract:

- You have the right to exercise that option.
- Your potential loss is limited to the premium amount you paid for buying the option.
- Profit would depend on the level of underlying asset price at the time of exercise/expiry of the contract.

Short option

Seller of an option is said to be "short the option". As described above, he/she would have an obligation but no right with regard to selling/buying the underlying asset in the contract. When you are short (i.e., the writer of) an equity option contract:

- Your maximum profit is the premium received.
- You can be assigned an exercised option any time during the life of option contract (in case of American options). All option writers should be aware that assignment is a distinct possibility.
- Your potential loss is theoretically unlimited as defined below.

Now, let us understand each of these positions in detail:

Long Call

Suppose that the stock index is quoted at 17562. You buy a near-month call option on the index with a strike price of 17500 at a premium of Rs.95. As you are aware, a call option gives the buyer the right, but not the obligation to buy the underlying at the strike price. So, in this example, you have the right to buy the index at 17500 on the expiration date of the call option. You may or may

not buy as there is no compulsion to exercise the option. If the index closes above 17500 at expiry, you will exercise the option, else you will let it expire worthless. If the index closes at 17400, you will NOT exercise the right to buy the underlying, as the index can be bought at a market price lower than your strike price. Why will you buy something at 17500 when you can have the same thing at 17400? So, you will forego the right. In such a situation, your loss will be equal to the premium you had paid, which in this case is Rs.95. Of course, since the underlying asset in this example is a stock index and not a single stock, it may be difficult or cumbersome to buy or sell it on the expiration date. Hence, long positions in index options are permitted to be 'cash-settled' on the expiration date. In other words, if the long call position on the index is in-the-money on the expiration date, the call holder receives the difference between the option strike price and the closing spot value of the index on the expiration date.

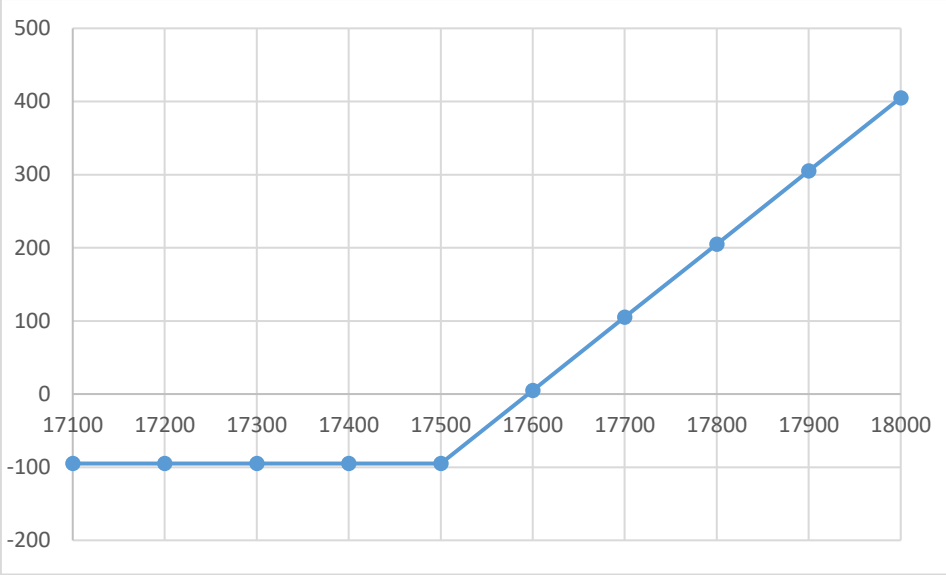
Let us try to find out using payoff charts what your maximum profits / losses will be at expiry at different closing levels of the index.

If the index were to close at 17595, the option will expire in-the-money. Since ITM index options are cash-settled on the expiration date, you will receive a payoff of Rs.95 when you exercise the option. This payoff is simply the difference between the spot value of the index on the expiration date (which is the closing price of the index on that day) and the strike price of the call option. In this transaction you will make a profit of Rs.95, but you have already paid an equal amount to the option seller right at the beginning, when you bought the option (as option premium), making your net gain equal to zero. Hence, 17595 is the Break-Even Point (BEP) for this option contract. A general formula for calculating BEP for call options is strike price plus premium (X + P).

If the index were to close at 18000, the call is again ITM. You will exercise the option and will receive a payoff of Rs.500 which is the difference between the spot closing price of the index on the expiration date and the strike price of the option. But since you have already paid Rs. 95 as option premium, your actual profit would be Rs 500 – Rs 95 = Rs 405.

The payoff table given below shows the profit on the long call position for different levels of the index on the expiration date. This table is used to draw the payoff chart given in the next page.

Strike price	**17500**		
Premium	**95**		
Index value at expiry	**Premium paid (A)**	**Payoff on expiry (B)**	**Profit on expiry (A)+(B)**
17100	-95	0	-95
17200	-95	0	-95
17300	-95	0	-95
17400	-95	0	-95
17500	-95	0	-95
17600	-95	100	5
17700	-95	200	105
17800	-95	300	205
17900	-95	400	305
18000	-95	500	405



The chart above shows some of the possible closing levels of the index on the expiration date on the X-axis. The Y-axis shows the net profit on the long call position at various closing levels of Nifty on the expiration date.

The contract value for an index option with lot size of 50 and strike price of 17500 is 17500 * 50 = Rs 8,75,000. The maximum loss for such an option buyer would be equal to Rs 95 * 50 = Rs 4,750.

When the index closes above 17595, you start making profit on exercising the option and if it stays below 17595, you as a buyer always have the freedom not to exercise the option. But as seen from table and chart, you can reduce your losses as soon as the index rises above 17500. A long call position helps you to limit your loss to a maximum of Rs. 4750 with potentially unlimited profit.

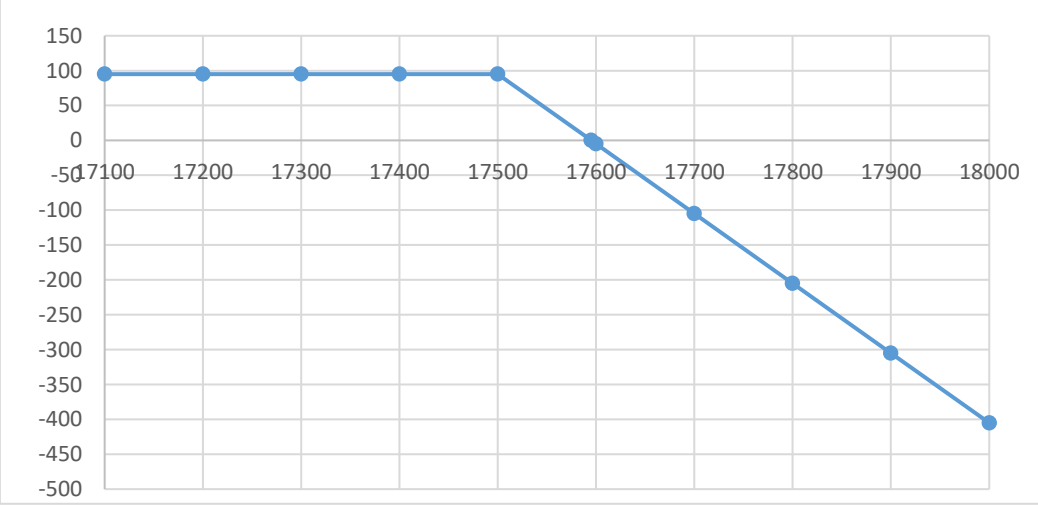
As a call option buyer, you need not pay any margin to the Exchange because your payment obligation is restricted to the option premium that you have already paid at the time of buying the call. You will not be subject to any further loss on your long call position and hence the Exchange does not require any margin payment from you.

Short Call

Whenever someone buys a call option, there has to be a counterparty, who has sold that call option. If the maximum loss for a long call position is equal to the premium paid, it automatically means that the maximum gain for the short call position will be equal to the premium received. Similarly, if maximum gain for long call position is unlimited, then the maximum loss for the short call position must be unlimited. Lastly, whenever, the long call position makes losses, the short call position will be profitable and vice versa. Hence, if we have understood long call payoff, short call payoff chart will be just a mirror image of the long call payoff. Thus, when the index is at 17000, the long call position makes a loss of Rs. 95 and the short call position makes a profit of Rs. 95. Similarly when the index closes at 17700, while the long call makes a profit of Rs.105, the short call position will lose Rs.105. As the index starts rising, the short call position will go deeper into losses.

Strike price	17500		
Premium	95		
Index value at expiry	Premium received (A)	Payoff on expiry (B)	Profit on expiry (A)+(B)
17100	95	0	95
17200	95	0	95
17300	95	0	95
17400	95	0	95
17500	95	0	95
17600	95	-100	-5
17700	95	-200	-105
17800	95	-300	-205
17900	95	-400	-305
18000	95	-500	-405

The payoff chart for a short call position is shown below. Maximum gain for an option seller, as explained earlier, will be equal to the premium received (as long as the index stays below strike price) whereas maximum loss can be unlimited (when the index starts rising above BEP). BEP for a short call position will also be equal to X + P. BEP is independent of position (long or short), it is instrument specific (call option).



The X-axis of the chart above shows the different possible closing levels of the index on the expiration date while the Y-axis shows the net profit on the short call position corresponding to each closing level of the index.

The contract value for an index option with lot size of 50 and strike price of 17500 is 17500 * 50 = Rs 8,75,000. The chart shows that the gain of the call seller is limited to Rs.95, which is the premium received initially for selling the option. The call seller's losses become larger and larger for higher closing values of the index on the expiration date. Thus, the short call position has limited gains in the form of premium received, while the losses are potentially unlimited. Although the call seller receives a premium initially for selling the option, he must pay a margin to the Exchange on the

short position. This is because the option seller has an obligation and since his losses can be unlimited, he can be a potential risk for the stability of the system.

Long Put

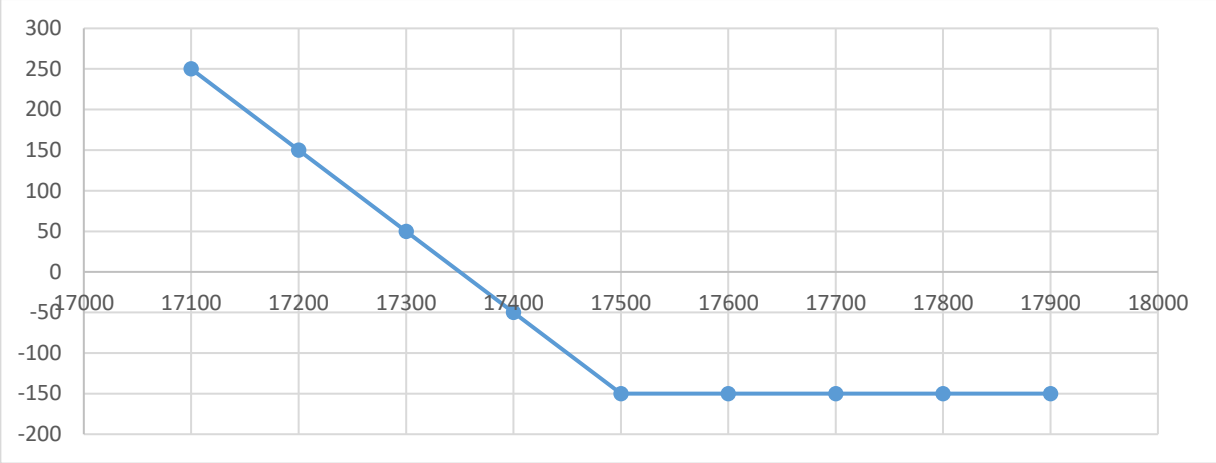
Suppose you buy a near-month put option with a strike price of 17500 at a premium of Rs 150. A put option gives the buyer of the option the right, but not the obligation, to sell the underlying at the strike price. In this example, you hold the right to sell the index at 17500. When will you do so? You will do so only when the index is at a level lower than the strike price. So, if the index falls below 17500 at expiry, you will buy the index from the market at the lower price and sell at your strike price. If the index stays above 17500, you will let the option expire worthless. The maximum loss in this case as well (like in long call position) will be equal to the premium already paid i.e., Rs 150. As discussed in the earlier section, the final settlement of all long positions in index options on the expiration date is in cash and not by physical delivery. Hence, if the long put is in-the-money on expiry, the put holder will receive the difference between the put strike price and the closing value of the index on the expiration date.

What can be the maximum profit? Theoretically, the index can fall only till zero. So, the maximum profit will be achieved when the index closes at zero on the expiration date! The profit in this case will be Rs 17500, but since you have already paid Rs 150 as premium, your net profit will be Rs 17350, which is 17500-150.

The breakeven point in this case will be equal to strike price – premium (X – P). In our example, the breakeven point will be equal to 17350. Thus, when the index starts falling below17350, you will start making profits.

The payoff chart for long put position is drawn using the table below:

Strike price	**17500**		
Premium	**150**		
Index value at expiry	**Premium paid (A)**	**Payoff on expiry (B)**	**Profit on expiry (A)+(B)**
17100	-150	400	250
17200	-150	300	150
17300	-150	200	50
17400	-150	100	-50
17500	-150	0	-150
17600	-150	0	-150
17700	-150	0	-150
17800	-150	0	-150
17900	-150	0	-150



The X-axis of the chart above shows the different possible closing levels of the index on the expiration date while the Y-axis shows the net profit on the long-put position corresponding to each closing level of the index.

The maximum loss for the option buyer is the premium paid, which is equal to 150 * 50 = Rs 7,500, where 50 is the lot size. Contract value for this put option is 17500 * 50 = Rs 8,75,000. As the chart shows, the put buyer's maximum loss is Rs 150. Losses start reducing as the index dips below 17500 and the put buyer starts making profits when the index falls below 17350.

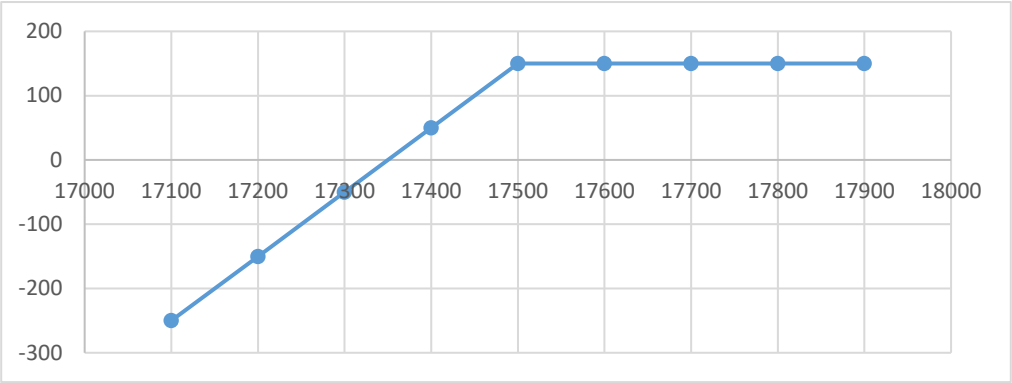
Just like the call option buyer, a put option buyer too need not pay any margin. This is because he has already paid the premium and there is no more risk that he can cause to the system. A margin is paid only if there is any obligation. An option buyer (either buyer of a call option or a put option) has no obligation.

Short Put

What will be the position of a put option seller/writer? Just the opposite of that of the put option buyer. When long put makes profit, short put will make loss. If maximum loss for long put is the premium paid, then maximum profit for the short put has to be equal to the premium received. If maximum profit for long put is when price of underlying falls to zero at expiry, then that also will be the time when short put position makes maximum loss. The table below shows the profit/ loss for short put position. The payoff chart is drawn using this table.

Strike price	**17500**		
Premium	**150**		
Index value at expiry	**Premium received (A)**	**Payoff on expiry (B)**	**Profit on expiry (A) + (B)**
17100	150	-400	-250
17200	150	-300	-150
17300	150	-200	-50
17400	150	-100	50
17500	150	0	150
17600	150	0	150
17700	150	0	150
17800	150	0	150

17900	150	0	150



The X-axis of the chart above shows the different possible closing levels of the index on the expiration date while the Y-axis shows the net profit on the short put position corresponding to each closing level of the index.

Contract value in this case will be equal to 17500 * 50 = Rs 8,75,000 and premium received will be equal to Rs 150 * 50 = Rs 7,500.

The chart above shows that the gain of the put seller is fixed at Rs 150, the premium received initially. However, the short put position starts making losses as the index dips below 17350, which is the break-even point. The seller of the put option receives the premium but he is required to pay a margin on his position as he has an obligation to deliver the underlying asset and his losses can be huge.

Risk and return profile of option contracts

A long option position has limited risk (premium paid) and unlimited profit potential. A short option position has unlimited downside risk, but limited upside potential (to the extent of premium received).

	Risk	Return
Long	Premium paid	Unlimited
Short	Unlimited	Premium received

16.6 Distinction between futures and options contracts

As can be seen from the examples above, options are products with asymmetric risk exposure i.e., the gains when the underlying asset moves in one direction are significantly different from the losses when the underlying asset moves in the opposite direction. For example, the loss incurred by the buyer of a call option on a stock is limited to the purchase price of the option, when the stock price declines. But if the stock price rises, the buyer of the call gains in proportion to the rise in the stock's value, thereby resulting in an asymmetric payoff. In contrast to this, futures have symmetric risk exposures (symmetric payoff).

Leverage

An option buyer pays a relatively small premium for market exposure in relation to the contract value. This is known as leverage. In our examples above (long call and long put), we have seen that

the premium paid (i.e., Rs 4750 for long call and Rs 7500 for long put) was only a small percentage of the contract value (Rs 875000 in both cases). Due to this leverage, a trader can see large percentage gains from comparatively small, favourable percentage moves in the underlying equity.

Leverage also has downside implications. If the underlying price does not rise/fall as anticipated during the lifetime of the option, leverage can magnify the trader's percentage loss. Though options offer their owners a predetermined level of risk, if those options expire with no value, the entire amount of the premium paid for those options is lost.

Futures and options contracts are both used for trading, hedging and arbitrage. The main points of difference between these two contracts in terms of rights and obligations of the counterparties can be summarized as follows:

Futures contracts	**Option contracts**
The buyer and seller both have the obligation to buy or sell the underlying asset.	The option buyer has the right to buy or sell the underlying asset without any obligation to do so; the option seller has the obligation to buy or sell the underlying asset, if the option buyer exercises his option.
The buyer and seller are required to pay initial margin as decided by exchanges for entering into futures contract.	The option buyer is required to pay to the option seller a price known as option premium for buying the option while the option seller needs to deposit initial margin with exchanges at the time of selling an option.
Both buyer and seller can make unlimited gains or losses.	The option buyer can make potentially unlimited gains, but his loss is limited to the premium already paid; the option seller can face unlimited losses, but his gain is limited to the premium already received.
Both buyer and seller are subject to payment / receipt of margins (MTM) on daily basis.	Only the option seller is subject to MTM margins on daily basis.

16.7 Basics of Option Pricing and Option Greeks

Option pricing fundamentals

In our above examples, we have seen that call option premium is Rs. 95 and put option premium is Rs. 150. The question is: from where did we get these values? On what basis did market participants arrive at these values of the premiums? What are the parameters that affect these values? Are these fixed by the stock exchanges or by SEBI?

The answer lies in understanding what affects options. Prices are never fixed by stock exchanges or SEBI or anybody for that matter. In fact, price discovery is a very critical and basic component of markets. Stock exchanges only provide a platform where buyers and sellers meet, and SEBI's role is to ensure smooth functioning of our markets.

Any option's value increases or decreases depending upon different variables. Each variable has its impact on an option. The impact can be the same or different for a call and a put option.

As explained in the earlier section, the option premium is the sum of intrinsic value and time value. If the option has not expired, it will always have some time value. The option may or may not have any intrinsic value depending upon whether it is ITM, ATM or OTM.

Time value of the option in turn depends upon how much time is remaining for the option to expire and how volatile is the underlying.

Thus, there are five fundamental parameters on which the option price depends upon:

1) Spot price of the underlying asset
2) Strike price of the option
3) Volatility of the underlying asset's price
4) Time to expiration
5) Interest rates

These factors affect the premium/ price of options (both American & European) in several ways.

Spot price of the underlying asset

The option premium is affected by the price movements in the underlying instrument. If price of the underlying asset goes up, the value of the call option increases, while the value of the put option decreases. Thus, when the underlying index rises from 17500 to 18000, the price of a call option with a strike price of 17500 will increase, while the price of a put option with the same strike price will fall. Similarly, if the price of the underlying asset falls, the value of the call option decreases while the value of the put option increases.

Strike Price

If all the other factors remain constant but the strike price of option increases, intrinsic value of the call option will decrease and hence its value will also decrease. For example, when the underlying index is at 17562, a call option with a strike price of 17600 will trade at a higher price than a call option with the same maturity but with a strike price of 17700. This is because the intrinsic value is progressively lower for higher strike prices of calls. On the other hand, with all the other factors remaining constant, increase in strike price of option increases the intrinsic value of the put option which in turn increases its option value. Thus, a put option with a strike price of 17700 will trade at a higher premium than a put option with the same maturity but a strike price of 17600.

Volatility

It is the magnitude of movement in the underlying asset's price, either up or down. It affects both call and put options in the same way. Higher the volatility of the underlying stock or index, higher the premium because there is a greater possibility that the option will move in-the-money during the life of the contract. Hence, when the index or stock volatility shoots up because of some

unexpected event, the prices of both calls and puts on the index or stock will increase.

Higher volatility = Higher premium, Lower volatility = Lower premium (for both call and put options).

Time to expiration

The effect of time to expiration on both call and put options is similar to that of volatility on option premiums. Generally, longer the maturity of the option, greater is the uncertainty and hence the higher is the premium. Thus, an index option with a strike price of 17500 and maturing in three months will generally trade at a higher price than an option with the same strike price but expiring in one month. If all other factors affecting an option's price remain the same, the time value portion of an option's premium will decrease with the passage of time. This is also known as time decay. Options are known as 'wasting assets', due to this property where the time value gradually falls to zero.

It is also interesting to note that of the two component of option pricing (time value and intrinsic value), one component (the time Value) is inherently biased towards reducing in value. So, if all things remain constant throughout the contract period, the option price will always fall in price by expiry. Thus, option sellers are at a fundamental advantage as compared to option buyers as there is an inherent tendency in the price to go down.

Interest Rates

Interest rates are slightly complicated because they affect different options, differently. For example, interest rates have a greater impact on options with individual stocks and indices compared to options on futures. To put it in a simpler way, high interest rates will result in an increase in the value of a call option and a decrease in the value of a put option.

Option Greeks

Option premiums change with changes in the factors that determine option pricing i.e., factors such as strike price, volatility, term to maturity, etc. The sensitivities most commonly tracked in the market are known collectively as "Greeks" represented by Delta, Gamma, Theta, Vega and Rho.

Delta (δ or Δ)

The most important of the 'Greeks' is the option's "Delta". This measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to price of the underlying asset.

Delta = Change in option premium/ Unit change in price of the underlying asset.

Delta for call option buyer is positive. This means that the value of the contract increases as the underlying price rises. To that extent it is rather like a long or 'bull' position in the underlying asset. Delta for call option seller will be same in magnitude but with the opposite sign (negative).

Delta for put option buyer is negative. The value of the contract increases as the underlying price falls. This is similar to a short or 'bear' position in the underlying asset. Delta for put option seller will be same in magnitude but with the opposite sign (positive).

Therefore, delta is the degree to which an option price will move given a small change in the underlying stock or index price, all else being equal. For example, if the delta of a call option is 0.60, it means that a small change of, say 1 rupee, in the price of the underlying asset, will lead to a change of 60 paise in the price of the call option.

The knowledge of delta is of vital importance for option traders because this parameter is heavily used in margining and risk management strategies. The delta is often called the hedge ratio. For example, if you have a portfolio of 'n' shares of a stock then 'n' divided by the delta gives you the number of calls you would need to be short (i.e., the number of calls you need to write) to create a hedge. In such a "delta neutral" portfolio, any gain in the value of the shares held due to a rise in the share price would be exactly offset by a loss on the value of the calls written, and vice versa.

Gamma (γ)

Gamma measures change in delta with respect to change in price of the underlying asset. This is called a second derivative of the option price with regard to price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in market price of the underlying asset.

Gamma = Change in an option delta / Unit change in price of underlying asset

Gamma works as an acceleration of the delta, i.e. it signifies the speed with which an option will go either in-the-money or out-of-the-money due to a change in price of the underlying asset. For instance, if a call option has a delta of 0.50 and a gamma of 0.08, it means that a small increase of say, 1 rupee, in the price of the stock will cause the option delta to change by 0.08. Thus, the new call delta will be 0.58.

Theta (θ)

Theta is the measure of an option's sensitivity to time decay. Theta is the change in option price given a one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions.

Theta = Change in an option premium / Change in time to expiry

For example, if a call option with 5 days to expiry has a theta of 1.2, it means that the option price will decline by Rs.1.20 for each day till the option expiry. Usually, theta is negative for a long option, whether it is a call or a put. Other things being equal, options tend to lose time value each day throughout their life.

Vega (ν)

Vega is the measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change (typically 1%) in the underlying volatility.

Vega = Change in an option premium / Change in volatility

Thus, if a call option has a vega of 0.80, it means that the option premium will change by 0.80 per cent for every 1 per cent change in the implied volatility of the underlying asset.

Vega is positive for a long call and a long put. An increase in the assumed volatility of the underlying increases the expected reward from a long option position, whether the option is a call or a put.

Rho (ρ)

Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying.

Rho = Change in an option premium / Change in cost of funding the underlying

16.8 Option Pricing Models

There are various option pricing models which traders use to arrive at the right value of the option. Some of the most popular models are briefly discussed below:

The Binomial Pricing Model

The binomial option pricing model was developed by William Sharpe in 1978. It has proved over time to be the most flexible, intuitive and popular approach to option pricing.

The binomial model represents the price evolution of the option's underlying asset as the binomial tree of all possible prices at equally-spaced time steps from today under the assumption that at each step, the price can only move up and down at fixed rates and with respective simulated probabilities.

This is a very accurate model as it is iterative, but its implementation is complex and time consuming.

The Black & Scholes Model

The Black & Scholes model was published in 1973 by Fisher Black and Myron Scholes. It is one of the most popular, relatively simple and fast modes of calculation. Unlike the binomial model, it does not rely on calculation by iteration.

This model is used to calculate a theoretical call price (ignoring the dividends paid during the life of the option) using the five key determinants of an option's price: stock price, strike price, volatility, time to expiration, and short-term (risk free) interest rate.

Call option price can be calculated as: $C = SN(d_1) - Xe^{-rt} N(d_2)$
And
Put option price can be calculated as: $P = Xe^{-rt} N(-d2) - SN(-d1)$
Where,

$D_1=[In(S/X)+(r+v^2/2)t]/ v\sqrt{t}$

$D_2 = d1-v\sqrt{t}$

And the variables are

- S = stock price
- X = strike price
- t = time remaining until expiration, expressed in years
- r = current continuously compounded risk-free interest rate
- v = annual volatility of stock price (the standard deviation of the short-term returns over one year)
- In = natural logarithm
- N(x) = standard normal cumulative distribution function
- e = the exponential function

16.9 Implied volatility of an option

As seen in the earlier section, the volatility of the underlying asset is one of the most important factors affecting the price of the option. But volatility is invisible. So how do we measure it? One way of measuring volatility is by measuring the percentage price changes in the underlying asset

over a historical period. For instance, we can take the weekly percentage changes in Nifty over the past one year and compute the standard deviation of these weekly price changes. This will tell us how volatile Nifty was over the past year. This measure of volatility is known as 'historical volatility'. But option traders do not use just the historical volatility of a stock to compute the price of an option on that stock.

Market participants are more interested in finding out how volatile the stock is expected to be over the remaining life of the option. For example, a pharmaceutical company's stock price has been range-bound over the past one year and its historical volatility has been around 15 per cent. However, suppose that the company is fighting an important court case and the verdict is expected to be announced in the next week. A favourable outcome of the court case is expected to boost the sales and profits of the company's most important product, while an unfavourable verdict will lead to huge losses. In such a case, the expected volatility of the stock over the next week will probably be much higher than its historical volatility; it could be as high as 70 or 80 per cent! So, how do we understand what this 'expected volatility' is for a given stock or index?

Option traders calculate this expected volatility by running the Black-Scholes model in the reverse order. For example, suppose we know that when the index is at 17562, a call option with a strike price of 17500 and 9 days to expiration is trading at Rs.95. We also know that the interest rate currently is 6 per cent. Since we have all the data we need except the underlying volatility, we can simply plug all this data into the Black-Scholes model and calculate what the volatility should be in order to get an option price of Rs.95. This type of underlying volatility is known as the 'implied volatility' of the asset. It is different from the historical volatility of the asset because it is worked out from the option price rather than the historical price movement of the asset itself.

So, how does calculating implied volatility help you as an option trader? Simply put, option traders use the implied volatility to understand whether it is the right price to buy or sell an option. Usually, when the implied volatility is high, option traders start selling options. When implied volatility is low, traders like to buy options. In the example of the pharmaceutical company mentioned above, suppose that the implied volatility is around 80 per cent just a day before the court verdict is to be announced. This is much higher than the historical volatility of the stock, which was 15 per cent. So, option traders would like to sell options on the stock just before the announcement of the verdict. This is because a high implied volatility means that the option price itself is very high. However, conscious about the fact that they are at the receiving end of the asymmetric nature of options pay offs, the option writers tend to extract higher premiums from the option buyers, which works as a margin of safety for them.

In the above example of pharma company, if the put option writers had already factored in the impact of adverse verdict on the stock price while writing those options, then even an adverse verdict may not really lead to losses for the writers (as they already collected high premium by factoring in such an eventuality). Similarly, even if the stock rises sharply on the back of a favourable court verdict, the call writers may not incur huge losses, had they factored that possibility in their options pricing and sold those options at higher premiums. Remember that an implied volatility of 70-80 per cent just before the day of the court verdict means that option premia would be high.

16.10 Analysis of options from the perspectives of buyer and seller

An important decision that a trader needs to make is which option he should trade: in-the-money, at-the-money or out-of-the-money. Among other things, a trader must also consider the premium of these three options in order to make an educated decision. As discussed earlier, there are two components in the option premium – intrinsic value and time value. If the option is deeply in-the-money, the intrinsic value will be higher and so is the option value/premium. In case of at-the-money or out-of-the-money options, there is no intrinsic value but only time value. Hence, these options remain cheaper compared to in-the-money options. Therefore, option buyer pays higher premium for an in-the-money option, compared to an at-the-money or out-of-the-money option.

For ATM options, the uncertainty is highest as compared to ITM or OTM options. This is because we know that when an option is ITM or OTM, even if the price moves somewhat, in either direction, the option will still largely remain ITM or OTM as the case may be. But in case of ATM options, even a small price movement in either direction can tip the option from ATM to ITM or OTM. There is a huge uncertainty here and this uncertainty is a function of the time to expiry and the volatility of the underlying, both of which are captured in the time value.

Analysis of Call Option Trading from Buyer's Perspective

Suppose that the index is at 17562. Let us consider call options with strike prices of 17300, 17400, 17500 and 17600. A call option buyer will buy the option and pay the premium upfront. Premiums for various strike prices are as follows:

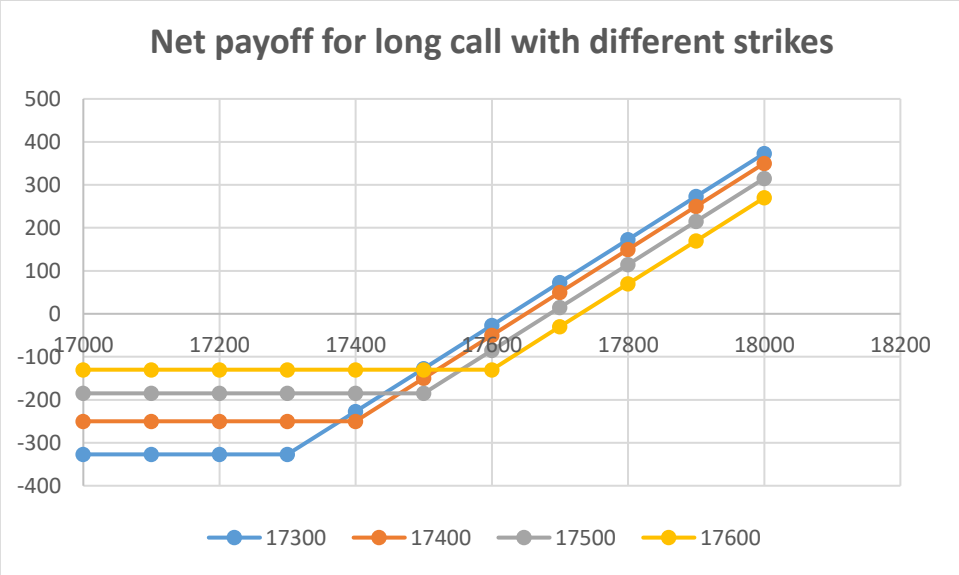
Strike Price	Premium
17300	327
17400	250
17500	185
17600	130

The 17300 strike call option is deep in-the-money and has an intrinsic value of 17562 – 17300 = 262. Hence the option premium will be at least equal to this value. The remaining portion of the premium (i.e., 327 - 262 = 65) is the time value.

The 17600 strike call option is an out-of-the money option. There is no intrinsic value here. The entire option premium is attributed to risk associated with time, i.e. time value.

Strike price	**17300**	**17400**	**17500**	**17600**
Premium	327	250	185	130
BEP	17627	17650	17685	17730
Index closing value on expiry	**Profit on expiration date**			
17000	-327	-250	-185	-130
17100	-327	-250	-185	-130
17200	-327	-250	-185	-130
17300	-327	-250	-185	-130

17400	-227	-250	-185	-130
17500	-127	-150	-185	-130
17600	-27	-50	-85	-130
17700	73	50	15	-30
17800	173	150	115	70
17900	273	250	215	170
18000	373	350	315	270



If the index closes below 17300 at expiry, all options will expire out of the money i.e., they are worthless. The greatest loss will be for the option with strike price 17300 (whose premium was Rs 327) and the least loss will be incurred on strike 17600 option (whose premium was Rs 130).

Profitability for call options

As seen above, when an option buyer is bullish on the index, he can buy call options with any strike price. The choice of the option would be better understood with return on investment (ROI). In each case, ROI is defined as net profit as a percentage of premium paid by the option buyer.

To illustrate, if the index rises to 17800 at maturity, then ROI for all the four options will be as below:

Profit on strike price 17300 option = 17800 – 17300 – 327 = 173
Return on investment = 173/327 = 53%

Profit on strike price 17400 option = 17800 -17400 -250 = 150
Return on investment = 150/250 = 60%

Profit on strike price 17500 option = 17800 – 17500 -185 = 115
Return on investment = 115/185 = 62%

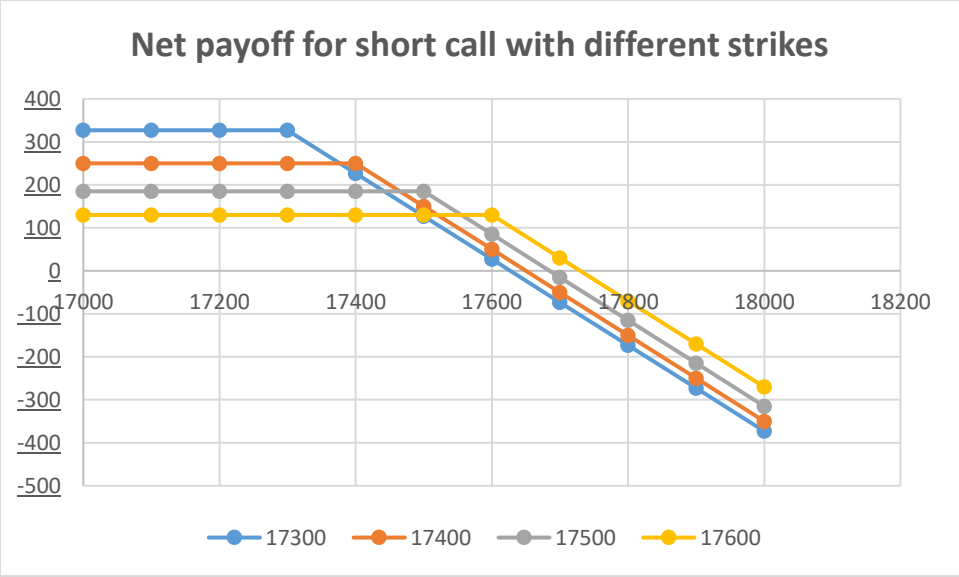
Profit on strike price 17600 option = 17800 – 17600 – 130 = 70
Return on investment = 70/130 = 54%

Analysis of Call Option Trading from Seller's Perspective

A call option seller has a neutral to bearish perspective regarding the underlying price.

Strike price	17300	17400	17500	17600
Premium	327	250	185	130
BEP	17627	17650	17685	17730
Index closing value on expiry	Profit on expiration date			
17000	327	250	185	130
17100	327	250	185	130
17200	327	250	185	130
17300	327	250	185	130
17400	227	250	185	130
17500	127	150	185	130
17600	27	50	85	130
17700	-73	-50	-15	30
17800	-173	-150	-115	-70
17900	-273	-250	-215	-170
18000	-373	-350	-315	-270

The table above shows the net gain for a seller of call options with different strike prices at different spot values of the index on the expiry date. As can be seen, the seller makes a fixed amount of gain, equal to the option premium received by him, when the index closes below the strike price on expiry. The seller's gain goes on reducing and he starts making losses when the index closes at higher levels on expiry date.



Analysis of Put Option Trading from a Buyers' Perspective

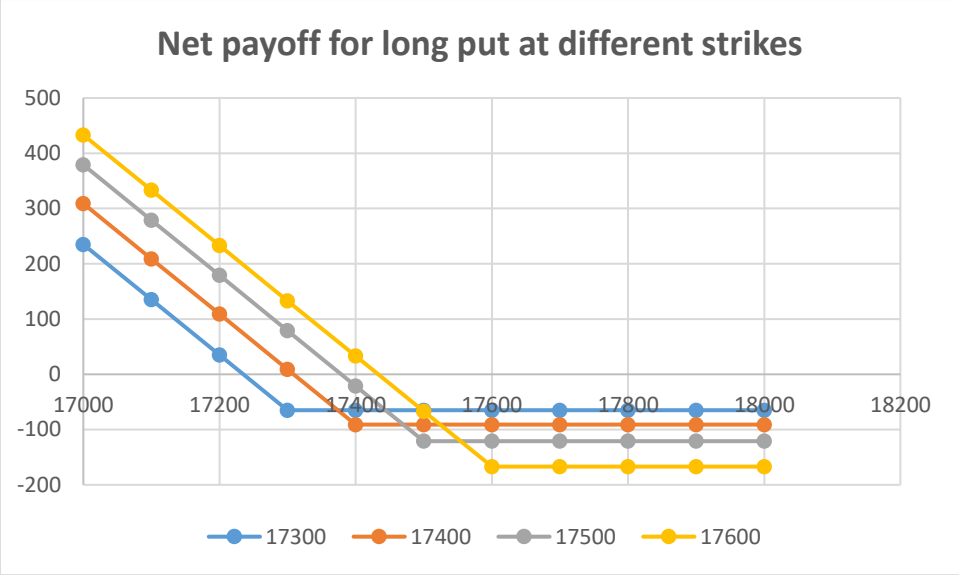
Suppose that the underlying index is at 17562. A person bearish on the index can buy a put option of any strike available. Let us consider put options of strike prices 17300, 17400, 17500 and 17600. The premiums for each of these are given below:

Strike Price	Premium
17300	65
17400	91
17500	121
17600	167

The 17600 strike put option is ITM whereas the 17300 strike put option is OTM. In case of the 17600 strike option, the intrinsic value is 17600 - 17562 = 38 and 167 – 38 = 129 is the time value. For the other options, the entire premium is the time value.

Strike price	**17300**	**17400**	**17500**	**17600**
Premium	65	91	121	167
BEP	17235	17309	17379	17433
Index closing value on expiry	**Profit on expiration date**			
17000	235	309	379	433
17100	135	209	279	333
17200	35	109	179	233
17300	-65	9	79	133
17400	-65	-91	-21	33
17500	-65	-91	-121	-67
17600	-65	-91	-121	-167
17700	-65	-91	-121	-167
17800	-65	-91	-121	-167
17900	-65	-91	-121	-167
18000	-65	-91	-121	-167

The table above shows the net gains of a buyer of put options at different strike prices, when the index expires at different levels on the expiry date.



The strike price of 17600 is in-the-money and hence the sellers are charging a higher premium of Rs. 167 for it. Similarly strike price 17300 is out-of-the-money and hence the contract is selling at low premium of Rs. 65.

In terms of return on investment criterion, generally the buyer of deep OTM put option will get a higher return on his/her investment, if price of the index falls drastically.

To illustrate if the index falls to 17000 at maturity then ROI for all the options will be as below:
Profit on strike price 17300 option = 17300 -17000 - 65 = 235
Return on investment = 235/65 = 362%

Profit on strike price 17400 option = 17400 – 17000 – 91 = 309
Return on investment = 309/91 = 340%

Profit on strike price 17500 option = 17500 – 17000 – 121 = 379
Return on investment = 379/121 = 313%

Profit on strike price 17600 option = 17600-17000-167 = 433
Return on investment = 433/167 = 259%

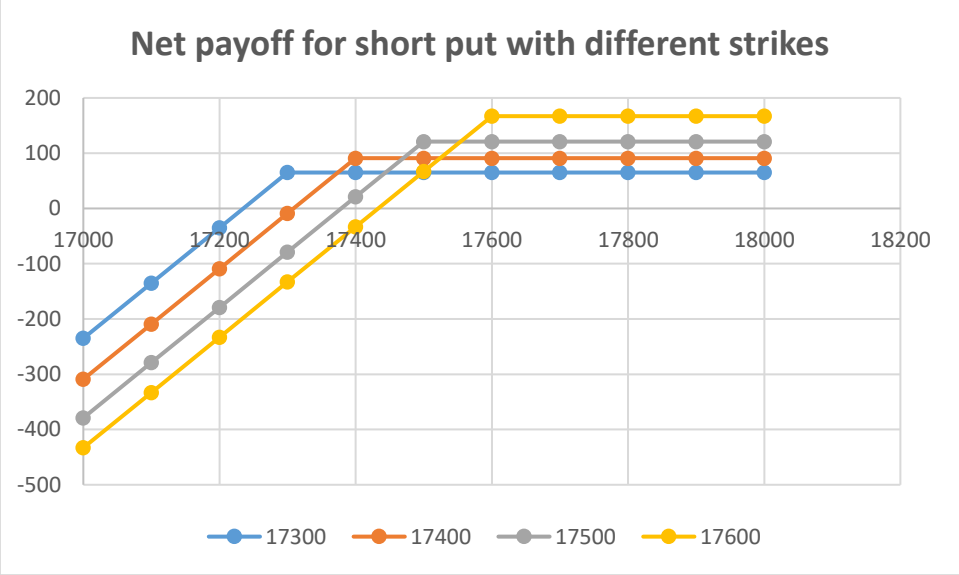
Seller of put option

A put option seller has a neutral to bullish perspective regarding the underlying price.

Strike price	**17300**	**17400**	**17500**	**17600**
Premium	65	91	121	167
BEP	17235	17309	17379	17433
Index closing value on expiry	**Profit on expiration date**			
17000	-235	-309	-379	-433
17100	-135	-209	-279	-333
17200	-35	-109	-179	-233
17300	65	-9	-79	-133
17400	65	91	21	-33

17500	65	91	121	67
17600	65	91	121	167
17700	65	91	121	167
17800	65	91	121	167
17900	65	91	121	167
18000	65	91	121	167

The table above shows the net gains to a seller of put options at different strike prices at different closing levels of the index on the expiry date.



As per the table and charts, the seller of put option incurs higher risk in selling deep ITM put options even though they fetch higher returns in terms of option premiums. On the other hand, selling deep OTM put options is less risky but they come with lower premium.

Summary

From a trader's perspective, we may say that he has the choice of futures of various expiries and also options of various expiries and various strikes. Depending upon his analysis of the then existing market conditions and his risk appetite, he can devise various strategies, which we will see in the next chapter.

Chapter 16: Sample questions

1. The buyer of an option cannot lose more than the option premium paid.
(a) True only for European options
(b) True only for American options
(c) **True for all options**
(d) False for all options

2. You sold a Put option on a share. The strike price of the put was Rs. 245 and you received a premium of Rs 49 from the option buyer. Theoretically, what can be the maximum loss on this position?
(a) **196**
(b) 206
(c) 0
(d) 49

3. Current Price of XYZ Stock is Rs 286. Rs. 260 strike call is quoted at Rs 45. What is the Intrinsic Value?
(a) 19
(b) **26**
(c) 45
(d) 0

4. A European call option gives the buyer the right but not the obligation to buy from the seller an underlying at the prevailing market price "on or before" the expiry date.
(a) True
(b) **False**

5. An in-the-money option is _____.
(a) An option with a negative intrinsic value
(b) An option which cannot be profitably exercised by the holder immediately
(c) **An option with a positive intrinsic value**
(d) An option with zero-time value

CHAPTER 17: STRATEGIES USING EQUITY FUTURES AND EQUITY OPTIONS

Learning Objectives:

After studying this chapter, you should know various hedging, arbitrage and trading strategies using equity futures and options:

- Hedging using futures contracts
- Using futures contracts for trading
- Cash-carry and Reverse cash-and-carry arbitrage using futures
- Calendar spreads using futures
- Spread strategies using options
- Straddles and Strangles
- Collar and Butterfly Spread
- Covered calls and Protective Puts
- Arbitrage using options
- Delta-hedging using options
- Interpreting Open Interest and Put-Call ratio

In the earlier chapters we have studied the features, contract specifications and payoff profiles of long and short positions in futures and options. Having understood the risk/ return profiles of both futures and options, now we turn to the application of these instruments for hedging, trading and arbitrage. First, we will understand how futures contracts can be used for hedging, trading and arbitrage. Next, we will examine different trading strategies using options. We will also understand arbitrage using options based on the principle of put-call parity. Lastly, we will consider the process of delta-hedging an options portfolio.

17.1 Futures contracts for hedging, speculation and arbitrage

Derivative instruments such as futures and options were primarily created for managing risk. In Unit 3 we saw how stock and index futures contracts can be used for mitigating the risk of a single stock or a portfolio of stocks. We saw that an investor may take a 'long hedge' or a 'short hedge' using futures. Let us look at specific examples in this chapter.

Long hedge using stock futures:

A long hedge using stock futures is taken to hedge the price risk of a planned future purchase of a stock. Consider that you want to buy 1500 shares of ABC Ltd. The shares are traded at Rs.455 today, i.e. May 10, 20XX. However, you do not have the required funds today. One of your bank deposits will mature on June 20, 20XX and you plan to use those funds to buy the shares only on that date. What is the risk that you are exposed to if you postpone your purchase till 20th June?

The risk is that if you do not purchase the shares today, the share price may increase rapidly by 20th June. To hedge this price risk, you can take a long position in a futures contract on ABC Ltd shares today. Suppose that the futures contract expiring on June 29, 20XX is traded at Rs.457.30. The lot size of the contract is 1500. Since you are planning to buy 1500 shares, you will take a long position (one lot) in the futures contract expiring in June.

Now suppose that on 20th June you are able to purchase the 1500 shares in the spot market. The share price could have increased or declined till 20th June. Let us look at both these scenarios:

Suppose that the stock price has increased to Rs.520. Your total outlay on the purchase will be Rs.7,80,000 (= 1500 x 520). At the same time, you will square up your long position in the futures contract. Suppose that the futures price at that moment is Rs.521.20. Then, the gain on your futures position will be the difference between the price at which you took the long position and the price at which you squared up the position. Therefore, the gain on futures position is Rs. (521.20 – 457.30) x 1500 = Rs.63.90 x 1500 which is Rs.95,850.

Thus, although the share price shot up and you were able to purchase the shares only at a higher price in the cash market, you also made a profit on the long futures position. Hence, the net cost of the shares is the cost of buying in the cash market less the gain on the futures position.

Cost of buying in cash market	Rs. 7,80,000
Less: Gain on futures position	(-) Rs. 95,850
Net cost of buying the shares	Rs. 6,84,150
Net cost per share (= 6,84,150 / 1500)	Rs. 456.10

The effective purchase price per share is Rs.456.10 which is quite close to the futures purchase price of Rs.457.30 at which you have taken the initial long position.

Now, consider the other scenario where the stock price has declined to Rs.390 by 20th June. Your total outlay on the purchase of ABC Ltd shares in the spot market will be Rs.5,85,000 (= 1500 x 390). At the same time, you will square-off your long position in the futures contract. Suppose that the futures price at that moment is Rs.391.10. You will then make a loss on your futures position, equal to the difference between the price at which you took the long position and the price at which you squared up the position. Hence the loss is Rs. (457.30 – 391.10) x 1500 = Rs.66.20 x 1500 which is Rs.99,300 loss.

Thus, although the share price declined and you were able to purchase the shares at a lower price in the cash market, you also made a loss on the long futures position. Hence, the net cost of the shares is the cost of buying the shares in the cash market plus the loss incurred on the futures position.

Cost of buying in cash market	Rs. 5,85,000
Add: Loss on futures position	(+) Rs. 99,300
Net cost of buying the shares	Rs. 6,84,300
Net cost per share (= 6,84,300 / 1500)	Rs. 456.20

Therefore, the effective purchase price per share becomes Rs.456.20 which is again quite close to the initial futures price of Rs.457.30.

The above example shows that a long position in a futures contract enables an investor to lock in a price for a planned purchase at a future date. Thus, whether the stock price rises or falls over the hedge interval, the investor can largely eliminate his price risk.

Short hedge using stock futures:

A short hedge using stock futures is taken to hedge the price risk of a planned future sale of a stock. Consider that you are planning to sell 1200 shares of PQR Ltd on July 10, 20XX to raise money for paying a personal loan due in that month. Suppose that the shares are trading at Rs.1690 today, i.e. on May 10, 20XX and the July futures contract for PQR Ltd shares is trading at Rs.1706. What is the risk to which you are exposed in this situation?

The risk is that between today, i.e., May 10 and the date of the planned sale, i.e., July 10, the stock price may fall steeply and you may receive a much lower amount on your sale of shares. To hedge this price risk, you can take a short position in the PQR Ltd stock futures contract today (the contract size is 600). Since you want to hedge 1200 shares, you will short 2 contracts of PQR Ltd July futures at the prevailing futures price of Rs.1706.

Now suppose that on 10th July you are able to sell the 1200 shares in the spot market. The share price could have increased or declined till that date. Let us look at both these scenarios:

Suppose that the stock price has fallen to Rs.1440. You will realize Rs.17,28,000 on the sale of shares (= 1440 x 1200). This amount is lower than what you would have raised had you sold the shares on 10th May itself. However, note that the futures price on 10th July would also be lower. Suppose that the futures price is Rs.1441 and you square-off the short position at that price. The gain on futures position would be Rs. (1706 – 1441) x 600 x 2 = Rs.318000. So, the actual amount that you receive on the sale is the sum of the amount that you receive in the cash market and the gain you made on the short futures position, i.e. 17,28,000 + 3,18,000 = 20,46,000. The effective selling price per share then works out to Rs. 1705. This is quite close to the price at which you initially sold the July futures, which was Rs.1706.

Amount received on selling in cash market	Rs.17,28,000
Add: Gain on short futures position	(+) Rs. 3,18,000
Total amount received on sale	Rs. 20,46,000
Selling price per share (= 20,46,000 / 1200)	Rs. 1705.00

Now, consider the other scenario where the share price rises sharply to Rs.1800 by 10th July. In that case, you will be able to sell your shares in the spot market at a price higher than the price that prevailed on 10th May. The amount received from the sale in the cash market would be Rs.21,60,000 (= 1800 x 1200). However, remember that your short futures position would be squared-off at a higher price, leading to a loss. Suppose that the futures price on 10th July is Rs.1802. So, squaring off the futures position would lead to a loss of Rs.1,15,200 (= (Rs.1706-1802) x 2 x 600). This loss would reduce the net amount received on the sale to Rs.20,44,800 (= 21,60,000 – 1,15,200). The selling price per share would then be Rs.1704 (= 2044800/1200). Again, this is quite close to the price at which you sold the July futures contracts earlier (which was at Rs 1706).

The above example shows how an investor can lock in his selling price for a planned sale of shares in the future.

Hedging a portfolio using index futures:

We saw in Unit 3 that index futures can be used to hedge the risk of a portfolio of stocks. Suppose that you have a portfolio consisting of 15 large-cap stocks from different sectors. Since the portfolio is well-diversified, the specific risk is almost/near zero. However, the portfolio is still subject to the systematic or market risk. Suppose that you are worried about a potential market crash in the next one month. What are the alternatives available to you? You can either: (i) sell the entire portfolio today and sit on cash, or (ii) reduce the systematic risk of your portfolio using index futures.

To hedge the systematic risk of the portfolio, you need to take a short position in the index futures. In this way, even if there is a market crash and you make a loss on the portfolio, you will make a profit on the short position in index futures. As discussed in Unit 3, you need to calculate a hedge ratio for the portfolio to decide how many lots of index futures you should go short. Suppose that the market value of the portfolio is Rs.90,00,000, the portfolio beta is 1.3 and the index futures price is 17700 with a lot size of 50. The hedge ratio will be calculated as:

$$\frac{(1.3 * 90{,}00{,}000)}{(17700 * 50)}$$

This works out to 13.22 contracts. Thus, you should take a short position in 13 index futures contracts to hedge the portfolio risk.

Using futures for trading or speculation:

Although futures contracts were originally created for hedging price risk, they are widely used for trading. Investors having a bullish view on the underlying stock or index, i.e., those who expect the stock price or index level to increase, take a long position in the stock futures or index futures contract. Investors who are bearish on the stock or index, i.e., those who expect the stock price or index level to fall, take a short position in the stock futures or index futures contract.

Bullish view: Long futures:

Suppose that a futures trader expects the stock price of XYZ Ltd to rise from Rs. 1298 to Rs.1350 over the next week. The near-month XYZ futures contract is currently traded at Rs.1300. What strategy should the trader follow?

Since the trader is bullish on the stock price of XYZ Ltd, he can either buy the stock or go long in a stock futures contract on XYZ. Buying the stock means an immediate cash outflow for the trader. Suppose that the lot size of the futures contract is 850. A long position in a single futures contract gives the trader a position equivalent to buying 850 shares, but without paying the price of 850 shares at the onset. The contract value for the long position is Rs.11,05,000 (= Rs 1300 x 850). The only cash outlay for the futures position is the margin that the trader must pay to his broker. Assume that the margin is Rs.2,21,000 (i.e., 20% of the contract value). Suppose that a week later the stock is traded at Rs.1345 and the futures contract is trading at Rs.1346. The following table shows the return on investment for the trader, if he had: (a) purchased the shares in the cash market, or (b) taken a long position in the futures.

(a) Purchase of 850 shares of XYZ Ltd	(b) Long position in XYZ futures contract (lot size: 850)
Cash outflow is the cost of buying these shares: 850 x Rs.1298 = Rs.11,03,300	Cash outflow is the margin on the futures position: Rs.2,21,000
Profit on selling the shares = Rs.39,950 i.e., (1345-1298) * 850	Profit on squaring-off of futures position = Rs.39,100, i.e. (1346-1300) * 850
Return on investment: 3.62% (39950/11,03,300)	Return on investment: 17.69% (39100/2,21,000)

This example explains why stock and index futures contracts are so popular among investors. These contracts offer the benefit of 'leverage' so that investors can make much higher returns on a lower capital outlay as compared to an outright purchase of shares.

Bearish view: Short futures:

Suppose that a trader expects the stock price of RSB Bank to fall from Rs.1595 to Rs.1520 over the next few days. The stock futures contract is traded at Rs.1602. The trader can either: (a) sell shares of RSB Bank today and buy the same shares back at a lower price after a few days, or (b) he can short RSB Bank futures today and cover the short position at a lower price after a few days. Selling the shares today would require the trader to deliver these shares on the settlement date. Hence selling in cash market is possible only if the trader holds the shares in his demat account. However, the trader can always short the RSB Bank futures contract instead of selling actual shares. Again, shorting the futures contract would require the trader to deposit a margin with his broker. Assume that the lot size of RSB Bank futures is 550. The contract value is Rs.8,81,100 (= 550 x 1602). Assuming that the margin is 20% of this value, the cash outlay on the trader's short position is Rs.1,76,220.

Suppose that the stock price falls to Rs.1525 over the next week and the futures price becomes Rs.1527. The trader can now square off his short position at 1527. The gain on the short position is Rs.41,250, i.e. (1602-1527) x 550. On an initial cash outlay of Rs.1,76,220, the return on investment is 23.41% (= 41250 / 176220).

Thus, shorting a futures contract makes it possible for market participants to express a bearish view on the stock or index, without owning the stock or index.

Using futures for arbitrage:

As explained in Unit 3, traders look for arbitrage opportunities using index and stock futures. Basically, they compare the fair futures price with the actual or traded price of the futures contract. If the traded price is higher than the fair futures price, cash-and-carry arbitrage is profitable. If the traded price is lower than the fair futures price, reverse cash-and-carry arbitrage becomes profitable.

Illustrations:

Cash-and-carry arbitrage

The following data is available on stock A.

Cash market price Rs. 1500

3-month Futures price	Rs. 1550
Contract multiplier for stock	100 shares

Assume a cost of carry of 9% per annum i.e. around 0.75% per month.

Theoretical/ fair price of three-month futures contract is 1534.13 (= 1500* $e^{0.0075*3}$ or 1500* $e^{0.09*3/12}$). Going by this theoretical price, we may say that the 3-month futures contract on stock A is overvalued. To take advantage of the mispricing, an arbitrageur may buy 100 shares of stock A and sell 1 futures contract at their current prices. This would result in the arbitrage profit of Rs. 1587 (= 100 X 15.87), which is the difference between actual and fair futures prices for 100 shares. Position of the arbitrageur in various scenarios of stock price would be as follows:

Case I: Stock rises to Rs. 1580 on expiry day

Profit on underlying = (1580 – 1500) x 100 = Rs. 8000
Loss on futures = (1580 - 1550) x 100 = Rs. 3000
Gain on Arbitrage = Rs. 5000
Cost of Arbitrage in terms of financing (Rs. 34.13 * 100 shares) = Rs. 3413
Net gain out of arbitrage = (5000 – 3413) = Rs. 1587

Case II: Stock falls to Rs.1480 on expiry day

Loss on underlying = (1500 - 1480) x 100 = Rs. 2000
Profit on futures = (1550 - 1480) x 100 = Rs. 7000
Gain on Arbitrage = Rs. 5000
Cost of Arbitrage in terms of financing (Rs. 34.13 * 100 shares) = Rs. 3413
Net gain out of arbitrage = (5000 – 3413) = Rs. 1587

Reverse cash-and-carry arbitrage

The reverse cash-and-carry arbitrage is done when the futures contract is trading at a discount to the cash market price. Let us look at the following data on stock B:

Cash market price	Rs. 100
One-month futures price	Rs. 90

The prices trading in the market reflect a negative cost of carry, which offers an opportunity to the traders to execute reverse cash-and-carry arbitrage as cost of carry is expected to reverse to positive at some point in time during contract's life. Otherwise, also, if the trader carries his position till the expiry, it will yield him an arbitrage profit. The assumption in implementing this arbitrage opportunity is that the arbitrageur has got the stock to sell in the cash market, which will be bought back at the time of reversing the position. If stock is not available, arbitrageur needs to borrow the stock to implement the arbitrage. In that case, while analysing the profitability from the transaction, cost of borrowing of stock should also be taken into account.

Assuming the contract multiplier for futures contract on stock B is 200 shares, to execute the reverse cash-and-carry, arbitrageur would buy one futures contract at Rs 90 and sell 200 shares of stock B at Rs 100 in cash market. This would result in the arbitrage profit of Rs 2000 (= 200 X Rs 10). Position of the arbitrageur in various scenarios of stock price would be as follows:

Case I: Stock rises to Rs. 110 on expiry day

Loss on underlying = (110 - 100) x 200 = Rs. 2000
Profit on futures = (110 - 90) x 200 = Rs. 4000
Net gain = Rs. 2000

Assume that the arbitrageur can invest the proceeds from his sale of 200 shares in the cash market at 9% p.a. for one month. The interest earned on this investment (with continuous compounding) works out to Rs.150.56 ((20000* $e^{0.09*1/12}$) – 20000). Taking this interest earned into account, the total gain from this arbitrage position is Rs.2000 + 150.56, i.e. Rs. 2150.56.

Case II: Stock falls to Rs. 85 on expiry day

Profit on underlying = (100 - 85) x 200 = Rs. 3000
Loss on futures = (90 - 85) x 200 = Rs. 1000
Net gain = Rs. 2000

Once again, assuming that the arbitrageur can invest the proceeds from his cash market sale of 200 shares at 9% p.a. for one month, the interest earned on this investment would be Rs.150.56 as explained earlier. Taking this interest earned into account, the total gain from this arbitrage would be Rs.2150.56.

Our assumption in the above example is that both the positions (i.e., in cash and futures) were held until maturity. The futures price converges with the spot price of underlying on expiry day and the arbitrageur can buy the stock back at the closing price / settlement price of the day. However, one can always square-off one's position before the expiry of the contract, whenever one feels that the market prices are favourable. If in the above example of reverse cash-and-carry arbitrage, suppose that on 15th of the same month the spot price of stock B is Rs. 130 and the futures contract is trading at Rs. 135. The arbitrageur could reverse both his positions i.e., by buying the stock at Rs. 130 and selling the futures at Rs. 135. This would result in the following:

Loss on underlying = (130 - 100) x 200 = Rs. 6000
Profit on futures = (135 - 90) x 200 = Rs. 9000
Net gain = Rs. 3000

Again, assuming that the arbitrageur invests the initial amount received on the cash market sale of 200 shares at 9% p.a. for 15 days, the interest on this amount works out to Rs. 74.11 (= (20000* $e^{0.09*15/365}$) – 20000). Hence, the total gain from reverse cash-and-carry arbitrage becomes Rs.3000 + Rs.74.11, i.e. Rs.3074.11.

Calendar spread

Calendar spread refers to the arbitrage between futures contracts of different expiration months. In this strategy, the arbitrageur buys and sells the futures contracts of two different months. To execute this strategy, the arbitrageur must identify which contract to buy or sell. The principal rule of arbitrage is that one must buy the underpriced contract and sell the overpriced one. Hence, the arbitrageur needs to compute the fair price of both futures contracts and compare these with the traded prices, to decide which contract is overpriced and which one is underpriced.

For example, suppose that a stock is traded at Rs.120 and the near-month futures and mid-month futures are traded at Rs.121.30 and Rs.121.50. Suppose further that the interest rate is around 8% p.a.

Now the fair price of the near-month futures works out to $120* e^{0.08*1/12}$ which is 120.80 while the fair price of the mid-month futures is $120* e^{0.08*2/12}$, i.e., 121.61. As per the fair price computation, the difference between the prices of both futures contracts should ideally be around 81 paise, but currently this difference has narrowed to just 20 paise. This means that the near-month futures contract is overpriced relative to the mid-month futures contract. Hence the arbitrageur will short the near-month futures contract at Rs 121.30 and go long the mid-month futures contract at Rs 121.50. This is done because sooner or later, the difference in the prices of the two futures contracts (i.e., the spread) is expected to come back to the fair difference. The arbitrageur makes a profit when the actual spread returns to the fair spread and then he unwinds both the positions.

Case 1: The stock price closes at Rs.122 on the expiry date of the near-month futures contract and the mid-month futures contract trades at Rs.122.82:

Near-month futures price: 122
Loss on near-month futures: 121.30 – 122 = 0.70
Mid-month futures price: 122.82
Gain on mid-month futures: 1.32 (=122.82 – 121.50)
Net gain on the calendar spread: Rs 0.62 (= 1.32 - 0.70)

Case 2: The stock price closes at 120 on the expiry date of near-month futures and the mid-month futures contract trades at Rs.120.80:

Near-month futures price: 120
Gain on near-month futures: 121.30 – 120 = 1.30
Mid-month futures price: 120.80
Loss on mid-month futures: 0.70 (=121.50 - 120.80).
Net gain on the calendar spread: Rs 0.60 (= 1.30 - 0.70)

The above example shows that calendar spreads are typically low risk - low return strategies. The return is low because the arbitrageur is simply trying to capture the small amount of mispricing in the prices of the pair of futures contracts. There is no directional bet involved in calendar spreads. The risk is low because the arbitrageur takes opposite positions in both contracts. Hence, the arbitrageur is protected from large losses, regardless of whether the stock price rises or declines.

In practice, calendar spread arbitrage opportunities are difficult to find. Index and stock futures contracts are quite liquid, and a large number of buyers and sellers continuously track these futures prices. As a result, any instances of mispricing are spotted quickly, and arbitrageurs rapidly exploit these arbitrage opportunities so that the mispricing disappears within a very short timeframe. For the calendar spread arbitrage to make the anticipated profit, it is essential that the long and short positions must be entered simultaneously and squared up at the same instant. Any delay in execution of the other leg of the transaction after the first leg has been executed, will reduce the profitability or may even lead to losses.

17.2 Use of Options for Trading and Hedging

Trading strategies using options:

The most common trading strategies using options include spreads, straddles and strangles. Let us consider each of these strategies using numerical examples.

Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities. These are limited profit and limited loss positions. They are primarily categorized into three sections as:

- Vertical Spreads
- Horizontal Spreads
- Diagonal Spreads

Vertical Spreads

Vertical spreads are created by using options having same expiry date but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:

- Bullish Vertical Spread
    - Using Calls
    - Using Puts
- Bearish Vertical Spread
    - Using Calls
    - Using Puts

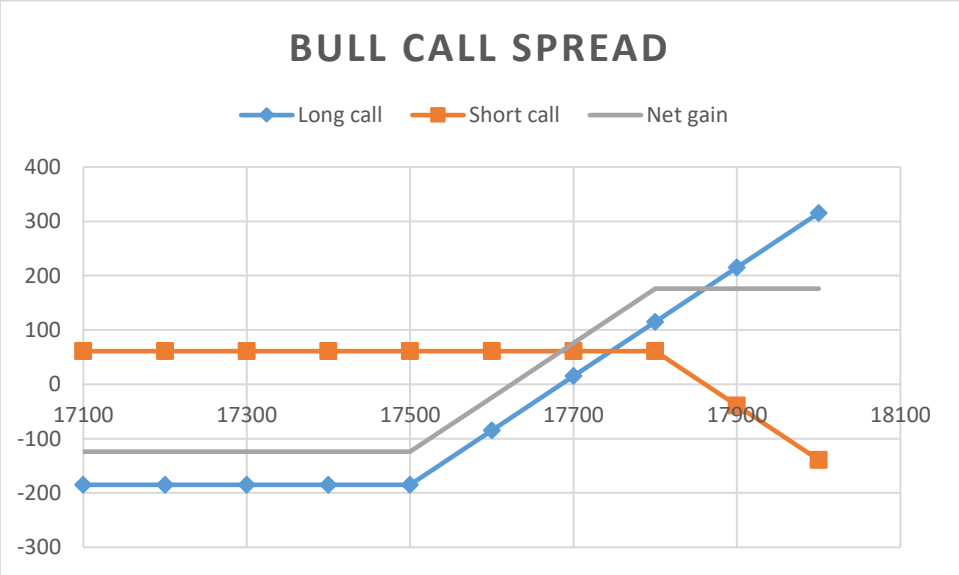
Bullish Vertical Spread using Calls

A bull call spread is created when the underlying view on the market is positive or bullish, but the trader would also like to reduce the cost of his position. So, he takes one long call position with a lower strike price and sells a call option with a higher strike. As the lower strike call costs more than the premium earned by selling a higher strike call, the position involves a net cash outflow to begin with. Secondly, as the higher strike call is sold, all gains on the long call beyond the strike price of the short call get negated by losses on the short call. To capture more profits from his long call, the trader can short a call with as high a strike price as possible. However, this will result in his cost coming down only marginally, as the higher strike calls will fetch lesser and lesser premium.

For example, a trader is bullish on the market and decides to go long on 17500 strike call option by paying a premium of Rs 185. He does not expect the market to rise above 17800, and so he shorts a 17800 call option and receives a premium of Rs 61. His net payoff for various price moves (after adjusting the premium paid or received) will be as follows:

Option	Call	Call
Long/Short	Long	Short
Strike	17500	17800
Premium	185	61
Spot	17500	

Index value at expiry	P&L long call	P&L short call	Net gain
17100	-185	61	-124
17200	-185	61	-124
17300	-185	61	-124
17400	-185	61	-124
17500	-185	61	-124
17600	-85	61	-24
17700	15	61	76
17800	115	61	176
17900	215	-39	176
18000	315	-139	176



As can be seen from the above payoff chart, it is a limited profit and limited loss position. Maximum profit in this position is Rs. 176 and maximum loss is Rs.124. The break-even point for this spread is 17624. This is obtained by adding the net premium paid (i.e., 185-61=124) to the lower strike price, i.e. 17500 + 124.

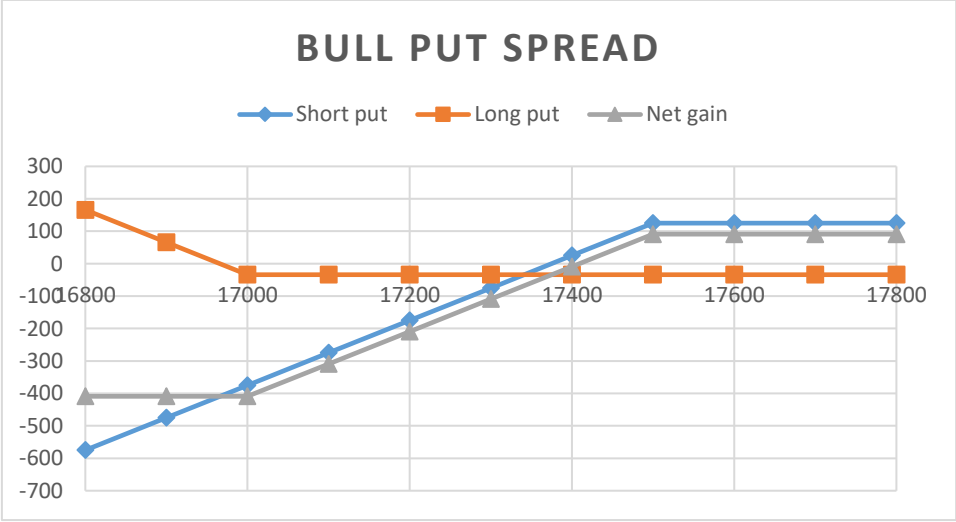
Bullish Vertical Spread using Puts

Here again, the view on the market is bullish and hence, the trader would like to short a put option. If the index goes up, the trader will end up with the premium on sold puts. However, in case of a fall in the index, the trader will face the risk of unlimited losses. In order to put a floor to his downside, he may buy a put option with a lower strike. While this would reduce his overall upfront premium, the benefit is the embedded insurance against unlimited potential loss on short put. This is a net premium receipt strategy.

Let us see this with the help of an example, where the trader goes short a put option of strike 17500 and receives a premium of Rs 125 and goes long a put option of strike 17000 and pays a premium of Rs 34:

Option	Put	Put
Long/Short	Short	Long
Strike	17500	17000
Premium	125	34
Spot	17500	

Index values at expiry	P&L short put	P&L long put	Net gain
16800	-575	166	-409
16900	-475	66	-409
17000	-375	-34	-409
17100	-275	-34	-309
17200	-175	-34	-209
17300	-75	-34	-109
17400	25	-34	-9
17500	125	-34	91
17600	125	-34	91
17700	125	-34	91
17800	125	-34	91



As can be seen from the chart above, this is a limited profit and limited loss position. Maximum profit in this position is Rs 91 (the difference between the premium received and paid) and maximum loss is Rs 409. The break-even point for this position is 17409. This is obtained by deducting the net premium received (i.e., 125-34=91) from the higher strike price, i.e., 17500.

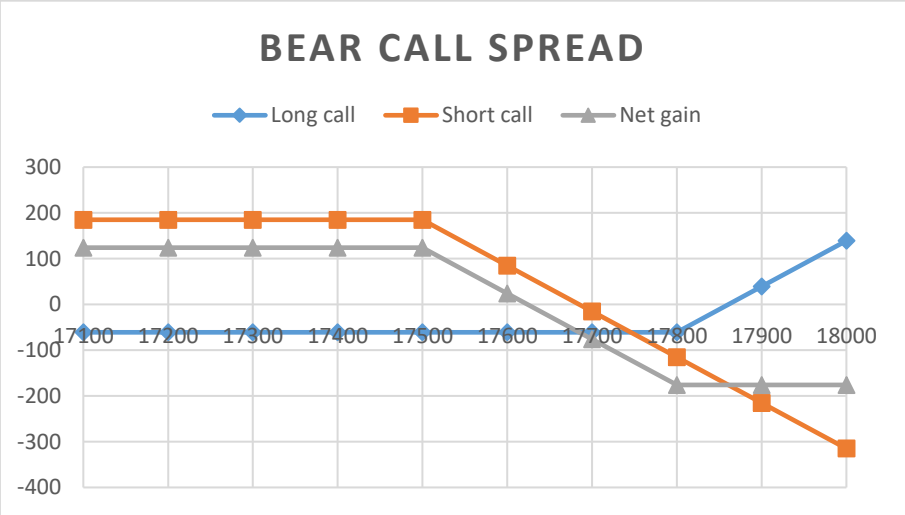
Bearish Vertical Spread using calls

Here, the trader is bearish on the market and so he shorts a low strike call with a high premium. The risk in a naked short call is that if prices rise, losses could be unlimited. So, to prevent his unlimited losses, he also goes long a higher strike call costing a smaller premium. Thus, in this strategy, he starts with a net inflow.

Let us see this with the help of the following table:

Option	Call	Call
Long/Short	Long	Short
Strike	17800	17500
Premium	61	185
Spot	17500	

Index values at expiry	P&L long call	P&L short call	Net gain
17100	-61	185	124
17200	-61	185	124
17300	-61	185	124
17400	-61	185	124
17500	-61	185	124
17600	-61	85	24
17700	-61	-15	-76
17800	-61	-115	-176
17900	39	-215	-176
18000	139	-315	-176



As can be seen from the picture above, this is a limited profit and limited loss position. Maximum profit in this position is Rs 124 (net premium received) and maximum loss is Rs 176. The break-even point for this position is 17624.

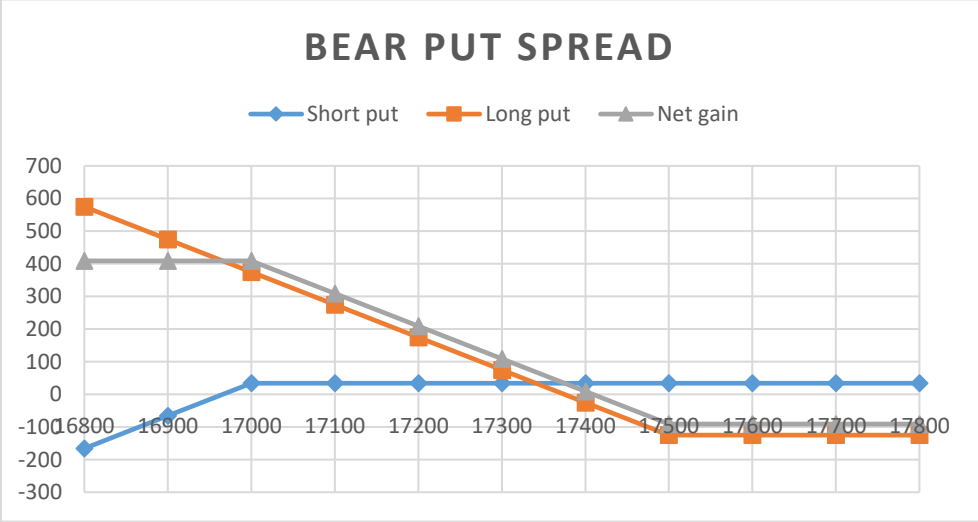
Bearish Vertical Spread using puts

Here, again the trader is bearish on the market and so goes long in one put option by paying a premium. Further, to reduce his cost, he shorts another low strike put and receives a premium.

For example, if a trader goes long in a put option of strike 17500 and pays a premium of Rs 125 and at the same time to reduce his cost, shorts a 17000 strike put option and earns a premium of Rs 34, his net profits/ losses would be as under:

Option	Put	Put	
Long/Short	Short	Long	
Strike	17000	17500	
Premium	34	125	
Spot	17500		

Index values at expiry	P&L short put	P&L long put	Net gain
16800	-166	575	409
16900	-66	475	409
17000	34	375	409
17100	34	275	309
17200	34	175	209
17300	34	75	109
17400	34	-25	9
17500	34	-125	-91
17600	34	-125	-91
17700	34	-125	-91
17800	34	-125	-91



As can be seen from the picture above, it is a limited profit and limited loss position. Maximum profit in this position is Rs 409 and maximum loss is Rs 91. The break-even point for this position is 17409.

Horizontal Spread

A horizontal spread involves options of the same type, having the same strike price, but different expiry dates. This is also known as time spread or calendar spread. Here, it is not possible to draw the payoff chart as the expiry dates of the underlying options are different. The rationale for horizontal spreads is that these two options would have different time values and the trader believes that the difference between the time values would shrink or widen. This is essentially a bet on the narrowing or widening of the difference in the premium of the two options.

Diagonal spread

Diagonal spread involves a combination of options on the same underlying but different expiry dates as well as different strikes. Again, as the two options in the spread have different maturities, it is not possible to draw payoff diagrams. These are much more complicated in nature and in execution. These strategies are more suitable for the OTC market than for the exchange-traded markets.

Straddles

This strategy involves two different types of options (call and put) with the same strike prices and same maturity. A long straddle position is created by buying a call and a put option of the same strike and same expiry date whereas a short straddle is created by shorting a call and a put option of same strike and same expiry date.

Let us say a stock is trading at Rs 6,000 and premiums for ATM call and put options are Rs 257 and Rs 136 respectively.

Long Straddle

If a person buys both a call and a put at these prices, then his maximum loss will be equal to the sum of these two premiums paid, which is equal to Rs 393 (= 257 + 136). Any price movement from here in either direction would first result in that person recovering his premium and then making a profit. This strategy is undertaken when the trader is not certain of the direction in which the stock will move in the near future, but he expects a significant movement in the stock price, either upwards or downwards.

Now, let us analyse his position on various market moves. Let us say the stock price falls to 5300 at expiry. Then, his payoffs from the strategy would be:
Long Call: - 257 (market price is below strike price, so option expires worthless)
Long Put: - 136 - 5300 + 6000 = 564
Net Flow: 564 – 257 = 307

As the stock price keeps moving down, loss on long call position is limited to premium paid, whereas profit on long put position keeps increasing.

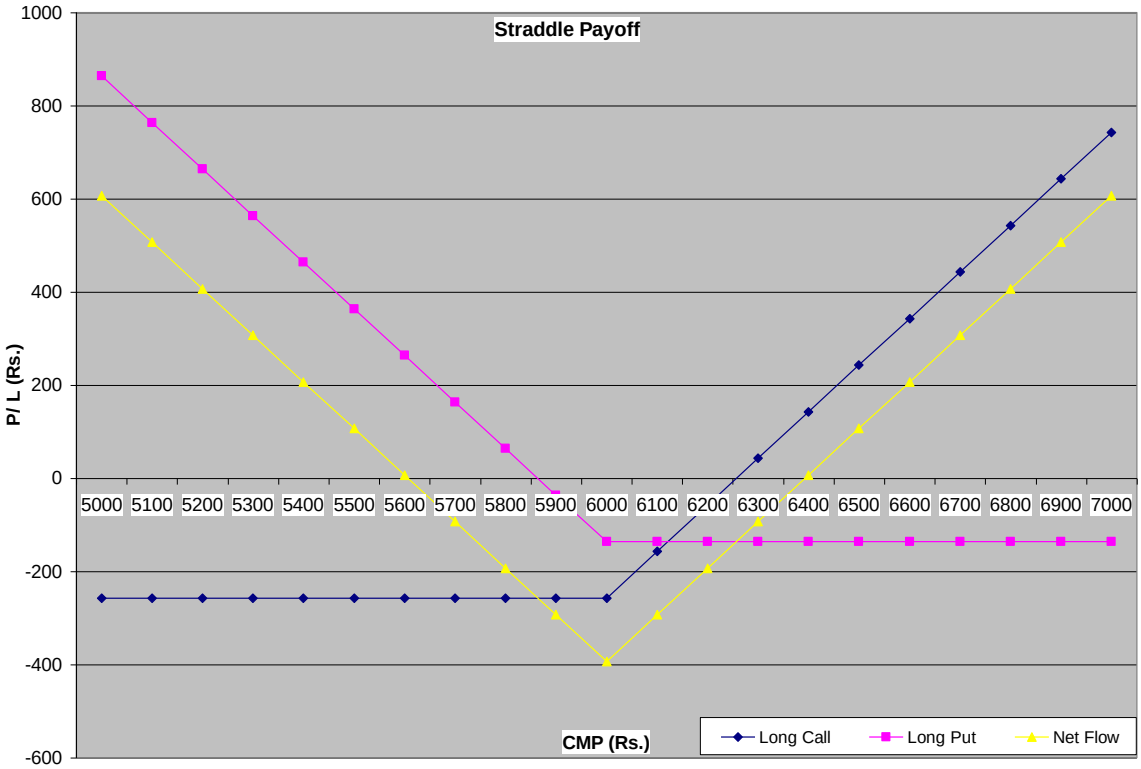
Now, consider that the stock price shoots up to 6700.
Long Call: - 257 – 6000 + 6700 = 443
Long Put: - 136
Net Flow: 443 – 136 = 307

As the stock price keeps moving up, loss on long put position is limited to premium paid, whereas profit on long call position keeps increasing.

Thus, it can be seen that the strategy yields profits for huge swings in either direction. However, there would be a band within which the position would result into losses. This position would have two Break even points (BEPs) and they would lie at “Strike – Total Premium” and “Strike + Total Premium”. Combined pay-off may be shown as follows:

Option	Call	Put
Long/Short	Long	Long
Strike	6000	6000
Premium	257	136
Spot	6000	

CMP	Long Call	Long Put	Net Flow
5000	-257	864	607
5100	-257	764	507
5200	-257	664	407
5300	-257	564	307
5400	-257	464	207
5500	-257	364	107
5600	-257	264	7
5700	-257	164	-93
5800	-257	64	-193
5900	-257	-36	-293
6000	-257	-136	-393
6100	-157	-136	-293
6200	-57	-136	-193
6300	43	-136	-93
6400	143	-136	7
6500	243	-136	107
6600	343	-136	207
6700	443	-136	307
6800	543	-136	407
6900	643	-136	507
7000	743	-136	607



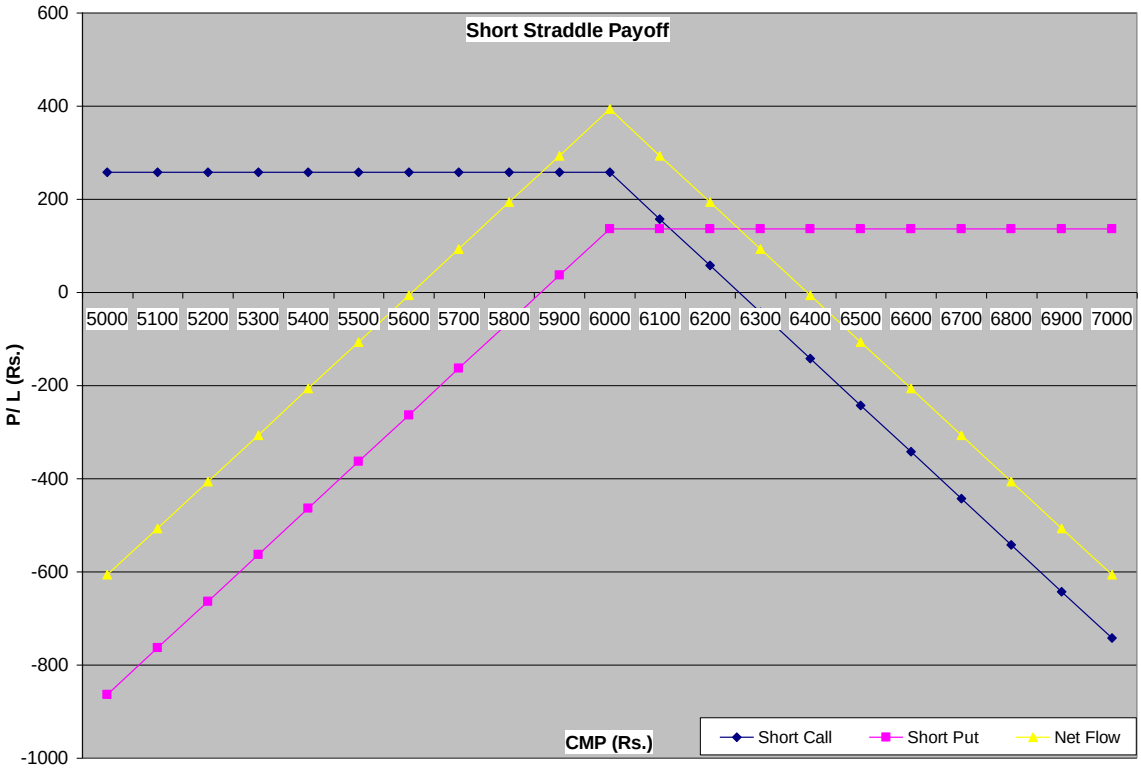
It may be noted from the table and picture, that the maximum loss of Rs. 393 would occur to the trader if the underlying expires at the strike price of the options viz. 6000. Further, as long as the underlying stock expires between 6393 and 5607, he would always incur a loss which would depend on the level of underlying. His profit would start only after recovery of his total premium of Rs. 393 in either direction, and that is the reason for the two breakeven points in this strategy.

Short Straddle

This would be the exact opposite of long straddle. Here, the trader's view is that the price of underlying would not move much or remain stable. So, he sells a call and a put so that he can profit from the premiums. As the position of short straddle is just opposite of long straddle, the payoff chart would be just inverted, so what was a loss for the long straddle would become a profit for the short straddle. The details of the position are as follows:

Option	Call	Put
Long/Short	Short	Short
Strike	6000	6000
Premium	257	136
Spot	6000	

CMP	Short Call	Short Put	Net Flow
5000	257	-864	-607
5100	257	-764	-507
5200	257	-664	-407
5300	257	-564	-307
5400	257	-464	-207
5500	257	-364	-107
5600	257	-264	-7
5700	257	-164	93
5800	257	-64	193
5900	257	36	293
6000	257	136	393
6100	157	136	293
6200	57	136	193
6300	-43	136	93
6400	-143	136	-7
6500	-243	136	-107
6600	-343	136	-207
6700	-443	136	-307
6800	-543	136	-407
6900	-643	136	-507
7000	-743	136	-607



It is clear that this strategy is a limited profit and unlimited loss strategy and should be undertaken with significant care. Further, it will incur a substantial loss for the trader if the market moves significantly in either direction – up or down.

Strangles

This outlook of this strategy is similar to that of a straddle, but the implementation, aggression and cost are different.

Long Strangle

As in case of straddle, the outlook here (for the long strangle position) is that the market will move substantially in either direction, but while in a straddle, both options have the same strike price, strangles are constructed using different strike prices. Also, both the options (call and put) in this case are out-of-the-money and hence the premium paid is low.

Let us say the cash market price of a stock is 6100. The 6200 strike call is available at Rs 145 and 6000 put is trading at a premium of Rs 140. Both these options are out-of-the-money.

If a trader goes long both these options, then his maximum cost would be equal to the sum of the premiums of both these options. This would also be his maximum loss in worst case situation. However, if the stock starts moving in either direction, his loss would remain the same for some time and then reduce. And, beyond a point (BEP) in either direction, he would make money. Let us see this with various price points.

If spot price falls to 5700 on maturity, his long put would make profits while his long call option would expire worthless.

Long Call: - 145

Long Put: - 140 - 5700 + 6000 = 160

Net Position: 160 - 145 = 15

As the stock price continues to go down, the long put position will become more and more profitable and the long call's loss would be limited to the premium paid.

In case the stock price rises to 6800 at expiry, the long call would become profitable and long put would expire worthless.

Long Call: - 145 - 6200 + 6800 = 455

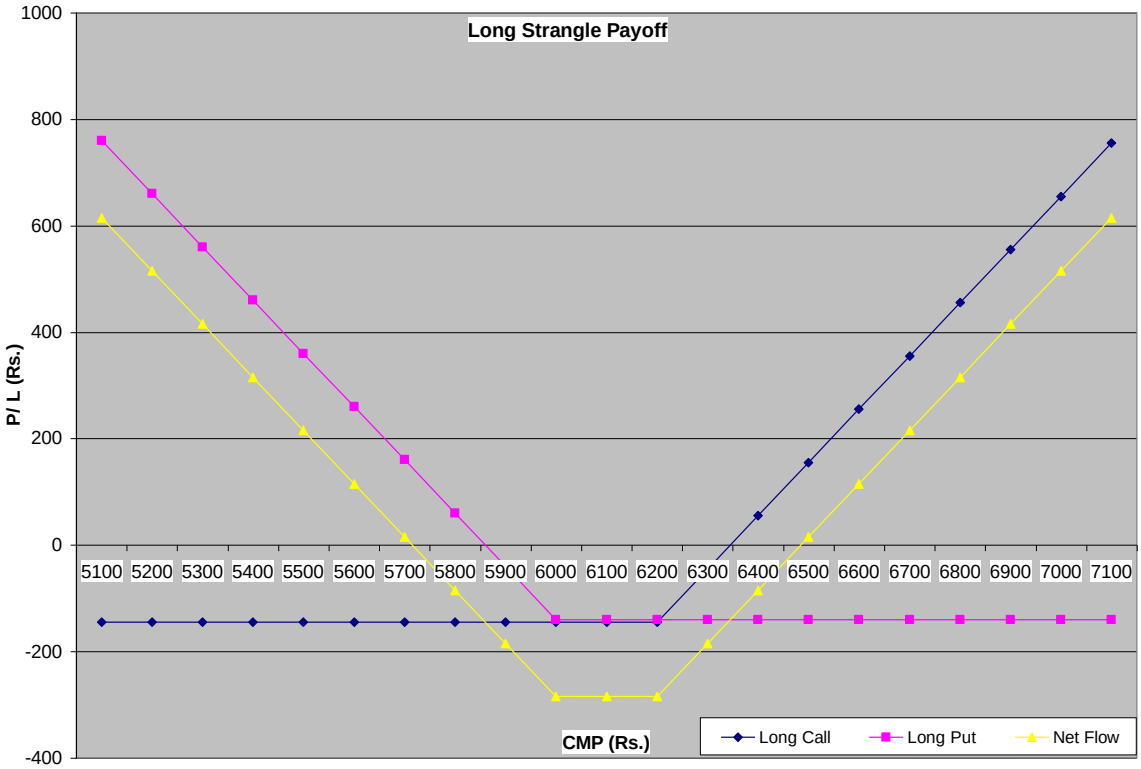
Long Put: - 140

Net Position: 455 - 140 = 315

The payoff chart for long strangle is shown below:

Option	Call	Put
Long/Short	Long	Long
Strike	6200	6000
Premium	145	140
Spot	6100	

CMP	Long Call	Long Put	Net Flow
5100	-145	760	615
5200	-145	660	515
5300	-145	560	415
5400	-145	460	315
5500	-145	360	215
5600	-145	260	115
5700	-145	160	15
5800	-145	60	-85
5900	-145	-40	-185
6000	-145	-140	-285
6100	-145	-140	-285
6200	-145	-140	-285
6300	-45	-140	-185
6400	55	-140	-85
6500	155	-140	15
6600	255	-140	115
6700	355	-140	215
6800	455	-140	315
6900	555	-140	415
7000	655	-140	515
7100	755	-140	615



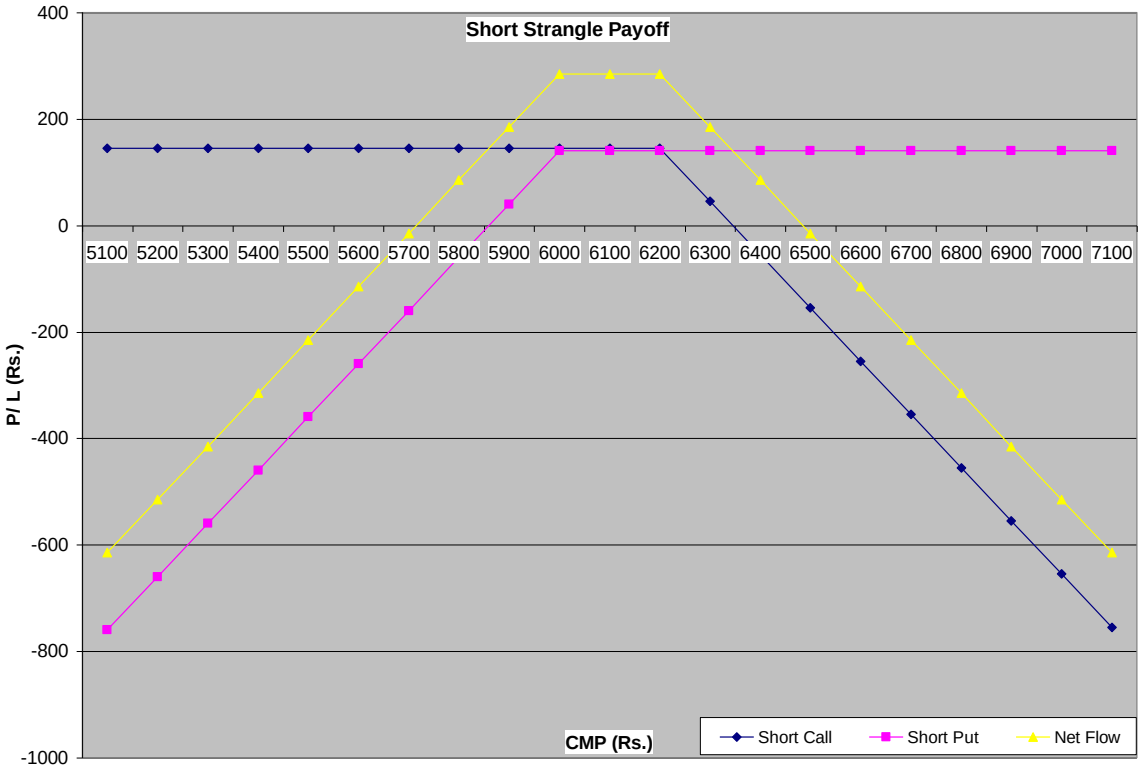
In this position, the maximum profit for the trader would be unlimited in both the directions – up or down and maximum loss would be limited to Rs. 285, which would occur if the underlying expired at any price between 6000 and 6200. The position would have two BEPs at 5715 and 6485. The trader would always incur a loss until the underlying crosses either of these prices.

Short Strangle

This is exactly opposite to the long strangle and involves a short position in two out-of-the-money options (call and put). The outlook, like in the short straddle, is that the underlying price will remain stable over the life of options. Payoffs for this position will be exactly opposite to that of a long strangle position. As always, the short position will make money, when the long position is in a loss and vice versa.

Option	Call	Put
Long/Short	Short	Short
Strike	6200	6000
Premium	145	140
Spot	6100	

CMP	Short Call	Short Put	Net Flow
5100	145	-760	-615
5200	145	-660	-515
5300	145	-560	-415
5400	145	-460	-315
5500	145	-360	-215
5600	145	-260	-115
5700	145	-160	-15
5800	145	-60	85
5900	145	40	185
6000	145	140	285
6100	145	140	285
6200	145	140	285
6300	45	140	185
6400	-55	140	85
6500	-155	140	-15
6600	-255	140	-115
6700	-355	140	-215
6800	-455	140	-315
6900	-555	140	-415
7000	-655	140	-515
7100	-755	140	-615



In this position, the maximum loss for the trader would be unlimited in both the directions – up or down and the maximum profit would be limited to Rs. 285, which would occur if the underlying expired at any price between 6000 and 6200. Again, the short strangle would have two BEPs at 5715 and 6485. The trader would always make a profit until the underlying crosses either of these prices.

Covered call

This strategy is used to generate extra income from existing holdings in the cash market. If an investor has bought a stock and intends to hold it for some time, then he would like to earn some income on the stockholding, without selling the stock. This would help to reduce his cost of acquisition. So how does an investor continue to hold on to the stock, earn income and reduce acquisition cost?

Suppose that an investor buys a stock in the cash market at Rs. 1590 and sells a call option with a strike price of 1600, thereby earning Rs. 10 as premium. If the stock price rises above Rs. 1590, he makes a profit in the cash market but starts losing in the option trade. For example, if the stock price rises to 1640:

Long Cash: Profit of 1640 – 1590 = 50
Short Call: – 1640 + 1600 + 10 = –30
Net Position: 50 – 30 = 20

If the stock drops below Rs.1590, he loses in the cash market, but gets to keep the premium as income. For example, if the stock price falls to Rs.1520,

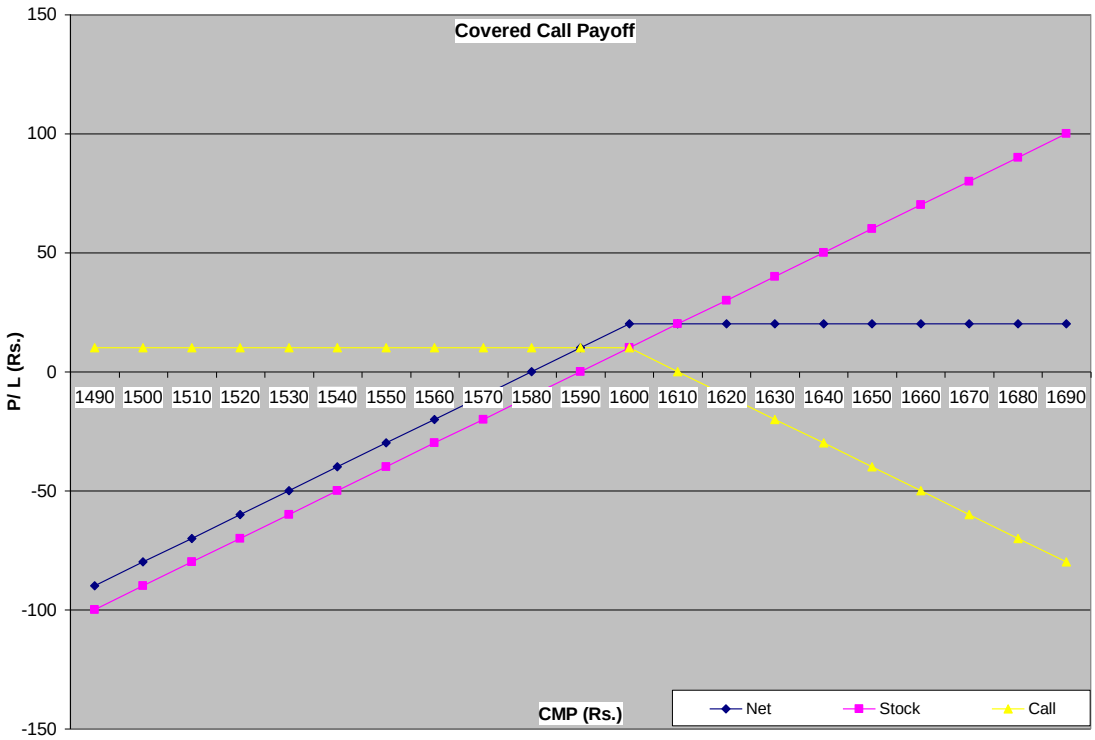
Long Cash: 1520 – 1590 = -70

Short Call: + 10 (The call holder will not exercise his right as he can buy the stock from the market at a price lower than strike, and so he will let the option expire and the seller gets to keep the premium.)
Net Position: -70 + 10 = -60

Therefore, the combined position of long stock and short call would generate the payoff as defined in the table and picture below:

Long Stock	1590
Strike Price	1600
Premium	10

CMP	Stock	Call	Net
1490	-100	10	-90
1500	-90	10	-80
1510	-80	10	-70
1520	-70	10	-60
1530	-60	10	-50
1540	-50	10	-40
1550	-40	10	-30
1560	-30	10	-20
1570	-20	10	-10
1580	-10	10	0
1590	0	10	10
1600	10	10	20
1610	20	0	20
1620	30	-10	20
1630	40	-20	20
1640	50	-30	20
1650	60	-40	20
1660	70	-50	20
1670	80	-60	20
1680	90	-70	20
1690	100	-80	20



From the table and the payoff chart we can see that the net position of a covered call strategy looks like 'short put' with a strike of 1600. This is because the covered call restricts the 'upside' or gains from the position while leaving a scope for unlimited losses. Hence, the covered call is called a 'synthetic short put' position.

If at that point of time, a 1600 strike put is available at any price other than Rs.20 (let us say Rs.17), an arbitrage opportunity exists, where the trader can create a synthetic short put position (covered call), earn a Rs. 20 premium and use the proceeds to buy a 1600 put for Rs.17, thereby making a risk-free profit of Rs.3. Indeed, one needs to also provide for frictions in the market like brokerage, taxes, administrative costs, funding costs, etc.

The most important factor in this strategy is the strike of the sold call option. If the strike price is close to the prevailing price of the underlying stock, it would fetch higher premium upfront but would lock the potential gain from the stock early. And, if the strike price is too far from the current price of underlying, while it would fetch low upfront premium, it would provide for a longer ride of money on the underlying stock. One must decide on this subject based on one's view on the stock price and the choice between upfront premium from the option and a potential gain from the movement of the underlying.

A simple perspective on the choice of strike price for the covered call is that, till the time the cash market price does not reach the pre-determined exit price, the long cash position can be used to sell calls of that target strike price. As long as the stock price stays below that target price (let's say 1600 in our case), we can write call option of 1600 strike and keep earning the premium. The moment 1600 is reached in the spot market, we can sell in the cash market and also cover the short call position.

Collar

A collar strategy is an extension of the covered call strategy. Readers may recall that in case of covered call, the downside risk remains for falling prices; i.e. if the stock price moves down, losses keep increasing (covered call is similar to short put). To put a floor to this downside, we go long a put option, which essentially eliminates the downside of the short underlying/futures (or the synthetic short put).

In our example, we had assumed that a trader goes long a stock at 1590 and shorts a call option with a strike price of 1600 and receives Rs. 10 as premium. In this case, the BEP was 1580. If the stock price fell below 1580, loss could be unlimited whereas if price rose above 1600, the profit was capped at Rs. 20.

To limit the downside, let us say, we now buy an out-of-the-money put option of strike 1580 by paying a small premium of Rs. 7.

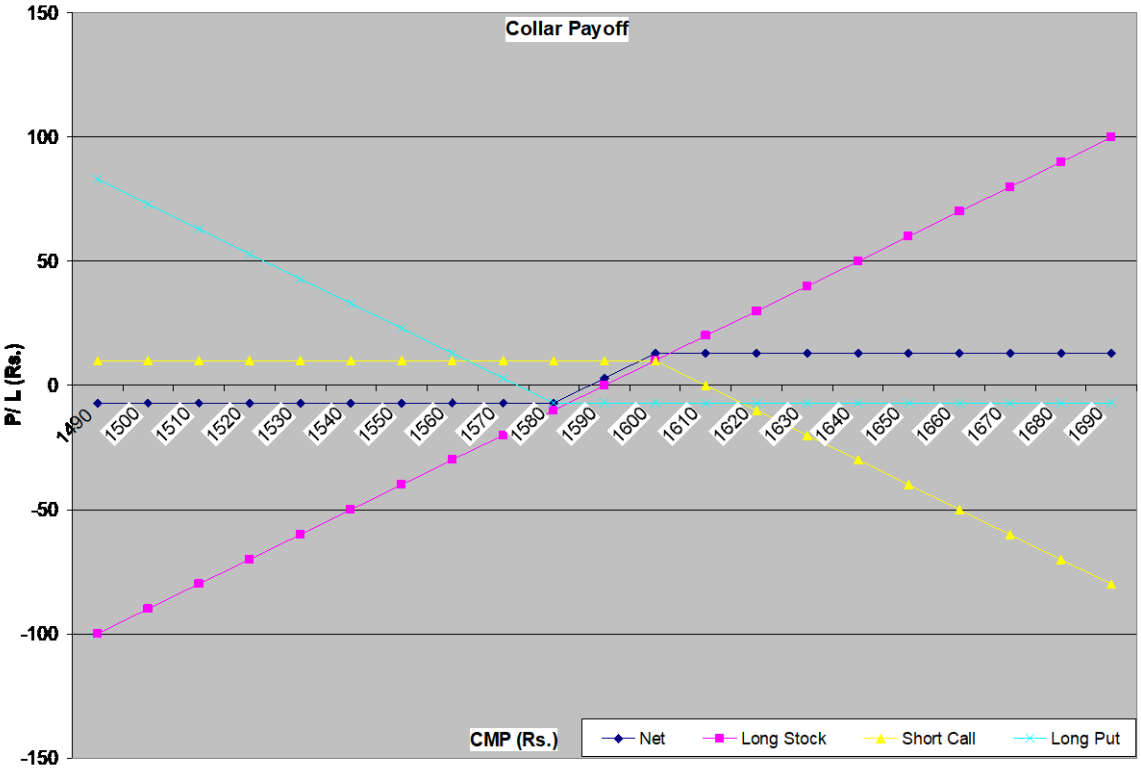
Now, if price of underlying falls to 1490 on maturity:
Long Stock: -1590 + 1490 = -100
Short Call: 10
Long Put: -7 – 1490 + 1580 = 83
Net Position: -100 + 10 + 83 = - 7 (in case of covered call this would have been -90)

If price rises to 1690 on maturity:
Long Stock: -1590 + 1690 = 100
Short Call: 10 – 1690 +1600 = - 80
Long Put: - 7
Net Position: 100 – 80 – 7 = 13 (in case of covered call this would have been + 20)

Combined position (i.e. long underlying, short call and long put) is as follows:

Long Stock	1590		Long Put	1580
Short Call	1600		Premium	7
Call Premium	10			
CMP	Long Stock	Short Call	Long Put	Net
1490	-100	10	83	-7
1500	-90	10	73	-7
1510	-80	10	63	-7
1520	-70	10	53	-7
1530	-60	10	43	-7
1540	-50	10	33	-7
1550	-40	10	23	-7
1560	-30	10	13	-7
1570	-20	10	3	-7
1580	-10	10	-7	-7
1590	0	10	-7	3
1600	10	10	-7	13

1610	20	0	-7	13
1620	30	-10	-7	13
1630	40	-20	-7	13
1640	50	-30	-7	13
1650	60	-40	-7	13
1660	70	-50	-7	13
1670	80	-60	-7	13
1680	90	-70	-7	13
1690	100	-80	-7	13



It is important to note here that while the long put helps in reducing the downside risk, it also reduces the maximum profit, which a covered call would have generated. Also, the BEP has moved higher by the amount of premium paid for buying the out-of-the-money put option.

Butterfly Spread

As a collar is an extension of the covered call, a butterfly spread is an extension of the short straddle. We may recollect that a short straddle has an unlimited downside, if the underlying moves significantly in either direction. To limit this downside, the trader buys one out-of-the-money call and one out-of-the-money put along with the short straddle. This results in a position with a pictorial payoff, which looks like a butterfly and so this strategy is called “Butterfly Spread”.

A butterfly spread can be created with only calls, only puts or combinations of both calls and puts. Here, we are creating this position with the help of only calls. To do so, the trader must take the following positions in three options with different strikes and the same maturity dates:

Long Call 1 with strike of 6000 and premium paid Rs. 230

Short Call 2 with strike of 6100 and premium received Rs. 150

Long Call 3 with strike of 6200 and premium paid of Rs. 100
Short Call 2 with strike of 6100 and premium received Rs. 150

Let us see what happens if on the expiry the stock price is:

- Less than or equal to 6000
- Equal to 6100
- More than or equal to 6200

Case I: Price at 6000

Long Call 1: -230
Short Call 2: 150
Long Call 3: - 100
Short Call 2: 150
Net Position: -230 + 150 – 100 + 150 = -30

For any price lower than 6000, all calls will be out-of-the-money so nobody will exercise. Hence buyers will lose the premium and sellers/ writers will get to keep the premium. In all these situations, the trader's loss would be a flat Rs. 30.

Case II: Price at 6100

Long Call 1: - 230 – 6000 + 6100 = - 130
Short Call 2: 150
Long Call 3: - 100
Short Call 2: 150
Net Position: - 130 + 150 – 100 + 150 = 70

This is the maximum possible profit for this position. Both the short calls earn the premium for the trader. This entire premium is retained by the trader for all prices less than or equal to 6100.

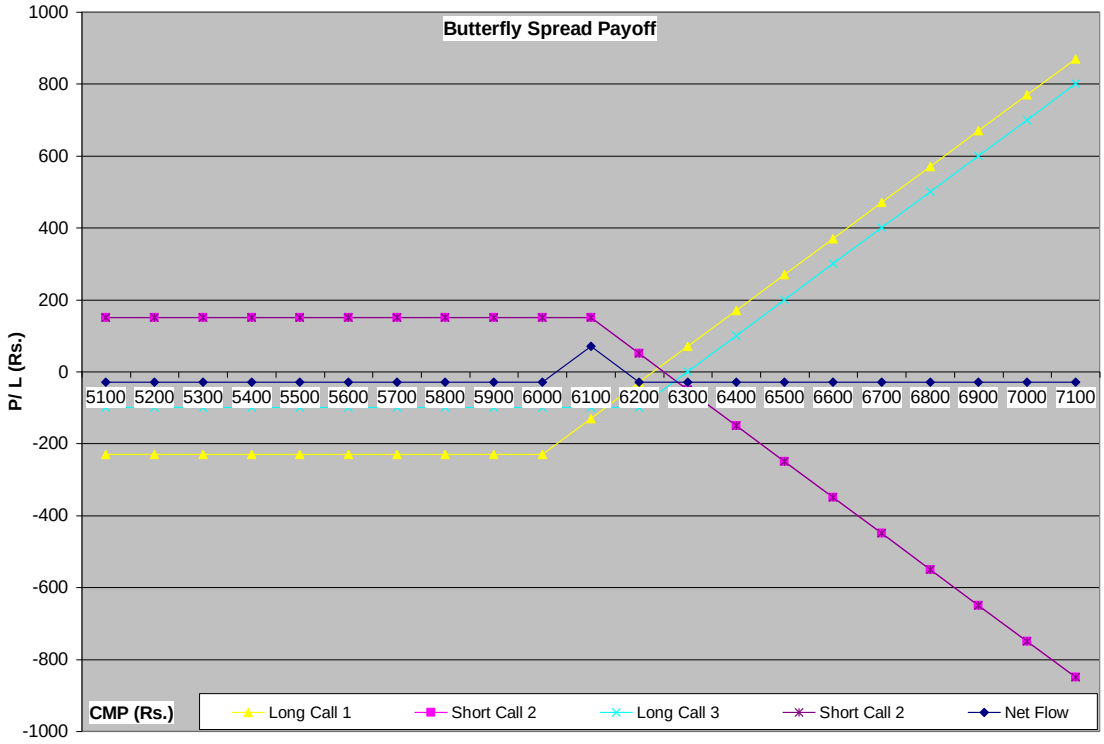
Case III: Price at 6200 or higher

Long Call 1: - 230 – 6000 + 6200 = - 30 (This will keep increasing as price rises)
Short Call 2: 150 – 6200 + 6100 = 50 (This will start getting losses as price increases)
Long Call 3: - 100
Short Call 2: 150 – 6200 + 6100 = 50 (This will start getting losses as price increases)
Net Position: - 30 + 50 – 100 + 50 = - 30

From 6200 or higher, the long calls will start making money for the trader whereas the short calls will be in losses. The net payoff of all 4 options would always be equal to –30. Following table and picture explain this position:

Option	Call	Call	Call	Call
Long/Short	Long	Short	Long	Short
Strike	6000	6100	6200	6100
Premium	230	150	100	150
Spot	6100			

CMP	Long Call 1	Short Call 2	Long Call 3	Short Call 2	Net Flow
5100	-230	150	-100	150	-30
5200	-230	150	-100	150	-30
5300	-230	150	-100	150	-30
5400	-230	150	-100	150	-30
5500	-230	150	-100	150	-30
5600	-230	150	-100	150	-30
5700	-230	150	-100	150	-30
5800	-230	150	-100	150	-30
5900	-230	150	-100	150	-30
6000	-230	150	-100	150	-30
6100	-130	150	-100	150	70
6200	-30	50	-100	50	-30
6300	70	-50	0	-50	-30
6400	170	-150	100	-150	-30
6500	270	-250	200	-250	-30
6600	370	-350	300	-350	-30
6700	470	-450	400	-450	-30
6800	570	-550	500	-550	-30
6900	670	-650	600	-650	-30
7000	770	-750	700	-750	-30
7100	870	-850	800	-850	-30



Cost of creating butterfly spread: -230 + 150 – 100 + 150 = - 30

Lower BEP = 6000 + 30 = 6030

Higher BEP = 6200 – 30 = 6170

This position can also be created with the help of only puts or a combination of calls and puts. To create this position from puts, you need to buy one highest strike option, sell two middle strike options and then again buy one lowest strike option. And, to create this position from combination of calls and puts, you must buy one call at lowest strike, sell one call at middle strike, buy one put at highest strike and sell one put at middle strike. This is a limited profit and limited loss strategy.

Hedging with options:

Options are known for providing an insurance against unexpected movements in the underlying price. If an investor has plans to buy a stock at some date in the future, buying a call option on the stock enables him to lock in the purchase price for the stock today. Thus, the investor is protected against a surprise rally in the stock price. Hence, buying a call option enables the call holder to 'insure' against large and surprise upside movement in the stock price.

For example, suppose that an investor expects to receive some money from a maturing fixed deposit at the end of the month and plans to buy 1500 shares of a company at that time. The risk faced by the investor is that the stock price might rise a lot by end of the month, making it difficult for him to buy the planned number of shares. The investor can protect himself from the risk of a rally in the stock price by buying a call option on the stock today. Suppose that the stock price today is Rs.463 and the investor buys a near-month call option with a strike price of 460 at a premium of Rs.19. Now suppose that the stock price on the expiry date has risen to Rs.520. In this case, the rise in the call premium would compensate the investor for the rise in the stock price. However, if the stock price falls to Rs.430 on the expiry date, the investor would buy the stock at the market price which is cheaper than exercising the option. In this way, buying a call option protects the investor from a sudden rise in the price of the stock that he is planning to buy in the future.

Similarly, buying a put option enables an investor to protect his portfolio against unexpected downward movements in the underlying price.

Protective Put

This is a hedged position. Any investor, long in the cash market, always runs the risk of a fall in prices and thereby reduction of portfolio value and MTM losses. A mutual fund manager, who is anticipating a fall, can either sell his entire portfolio or he can short futures to hedge his portfolio. In both cases, he is out of the market, as far as profits from upside are concerned. What can be done to remain in the market, reduce losses but gain from the upside? Buy insurance!

By buying put options, the fund manager is effectively taking a bearish view on the market and if his view turns to be correct, he will make profits on the long put, which will be useful to wipe out the MTM losses in the cash market portfolio.

Let us say an investor buys a stock in the cash market at Rs 1600 and at the same time buys a put option with strike of 1600 by paying a premium of Rs 20.

Now, if prices fall to Rs 1530 from here:
Long Cash: Loss of 70 (i.e., 1530 - 1600 = - 70)
Long Put: Profit of 50 (i.e., – 20 – 1530 + 1600 = 50)
Net Position: -20

For all falls in the market, the long put will be profitable, and the long stock position will be loss-making, thereby reducing the overall losses only to the extent of premium paid (if strikes are different, losses will be different from premium paid).

In case prices rise to 1660:

Long Cash: Profit of 60 (i.e., 1660 – 1600 = 60)

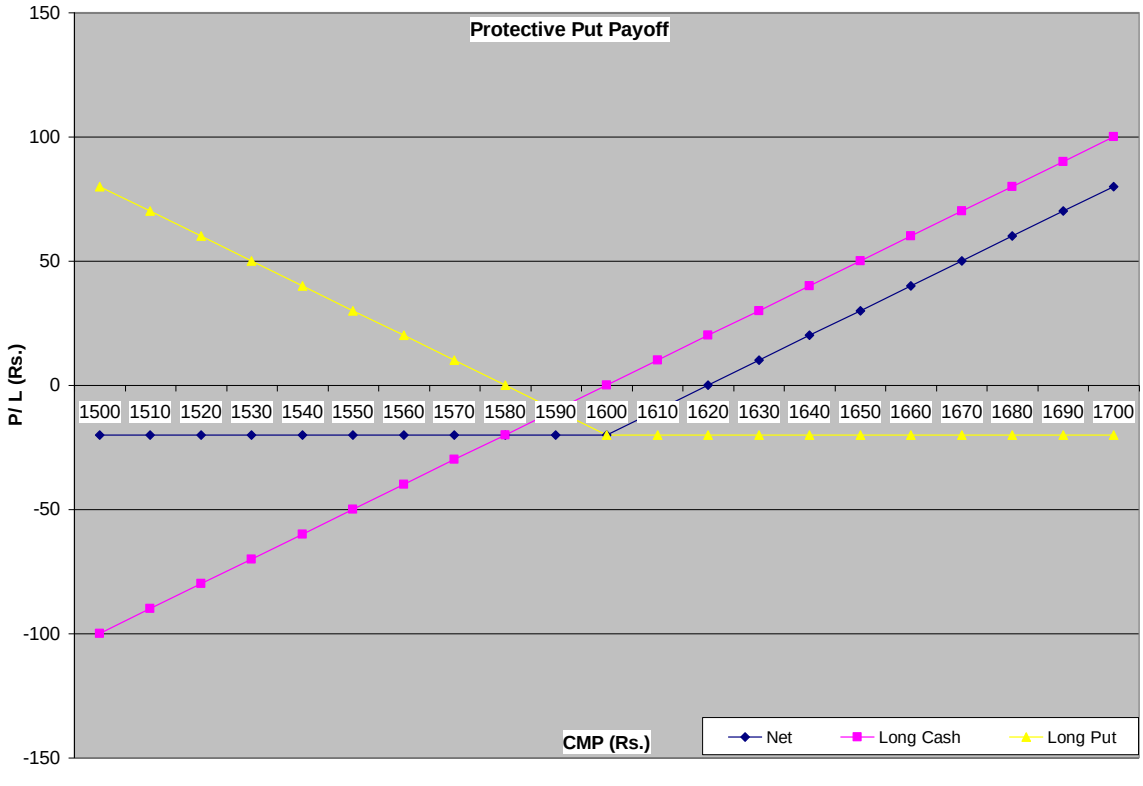
Long Put: Loss of 20

Net Position: 60 – 20 = 40

As the stock price keeps rising, the profits of the hedged position will keep rising. This is because while the maximum loss in the long put is equal to the premium paid, the profits in the long stock position keep increasing. The combined position would look like this:

Long Cash	1600
Strike Price	1600
Premium	20

CMP	Long Cash	Long Put	Net Flow
1500	-100	80	-20
1510	-90	70	-20
1520	-80	60	-20
1530	-70	50	-20
1540	-60	40	-20
1550	-50	30	-20
1560	-40	20	-20
1570	-30	10	-20
1580	-20	0	-20
1590	-10	-10	-20
1600	0	-20	-20
1610	10	-20	-10
1620	20	-20	0
1630	30	-20	10
1640	40	-20	20
1650	50	-20	30
1660	60	-20	40
1670	70	-20	50
1680	80	-20	60
1690	90	-20	70
1700	100	-20	80



A protective put payoff is similar to that of a long call. This is because a protective put position offers the scope of unlimited gains with a limited loss, which is also the payoff profile of a long call position. Hence the protective put is called a 'synthetic long call' position.

17.3 Arbitrage using options: Put-call parity

We have seen how it is possible to execute arbitrage strategies whenever the traded price of a futures contract deviates from its fair or theoretical price. In the same manner, arbitrage is possible whenever the traded price of an option deviates from its fair price. Such arbitrage is based on an important principle known as 'put-call parity'. It simply states the relationship between calls and puts with the same strike price and time to maturity. It can be stated as below:

$$c + X * e^{-rt} = p + S_0$$

In this formula, c and p denote the premium for the call and put options, X is the strike price of the options, S_0 is the spot price of the underlying, r is the rate of interest and t is the time to expiry of the options.

What this formula means is that if we know the price of the underlying stock or asset and also the price of a call option on this asset, we can derive the 'fair' or 'theoretical' price of a put option on the same underlying asset having the same strike price and expiry date as the call option. Further, if the traded price of the put option is different from this derived fair price, there is an arbitrage opportunity to make a risk-free profit. Note that the put-call parity principle is only applicable to European options.

For example, suppose that a stock is trading at Rs.1251 and a call option with a strike price of Rs.1240 and expiring after 1 month is quoting at Rs.47.50. Assume that the interest rate is 8% p.a. What should be the fair price of a one-month put option on the stock with the same strike price?

Substituting the numbers in the put-call parity formula, we can derive the fair price of the put option as Rs.28.26. Now suppose that the put is being traded in the market at Rs.23.15. It means that the put is underpriced, thus creating an arbitrage opportunity. What will the arbitrageur do?

The arbitrageur will buy the put and the stock, (paying out Rs.23.15 and Rs.1251) and simultaneously short the call option for Rs.47.50. This leaves him with a net cash outflow of Rs.1226.65 (=1251+23.15-47.50). Assume that the arbitrageur can borrow this amount at 8% p.a.

Now, suppose that the stock rises to Rs.1275 on expiry date. The arbitrageur will sell the shares held by him for Rs.1275. The put bought by him will expire worthless. The short call position will be in-the-money and lead to a loss of Rs.35 for the arbitrageur. The borrowing will grow to Rs.1234.86 (=1226.65*exp(0.08*1/12)) and will have to be repaid. The net cash inflow will thus be 1275-35-1234.86 = Rs.5.14, which is equal to the difference between the fair price and traded price of the put.

If the stock falls to Rs.1200 on the expiry date, the short call will expire worthless. The arbitrageur will sell his stock at Rs.1200, but the long put will result in a payoff of Rs.40. After repayment of borrowing of Rs.1234.86, the arbitrageur will again be left with a net gain of Rs.5.14.

The above example shows how the principle of put-call parity can be used to find arbitrage opportunities between call and put options on the same underlying stock and having the same strike price and expiry dates. However, these strategies are difficult to execute, because they involve the simultaneous buying and selling of the stock, the put and the call. Any delay in executing one leg of the strategy will lead to the arbitrageur not being able to capture the anticipated arbitrage gain. Also, if the arbitrageur is unable to execute one leg of the transaction after the other leg has already been executed, he will be left with a naked long or short position, which can expose him to large losses.

17.4 Delta-hedging

We have discussed briefly about option greeks in Unit 4. Remember that the delta of the option measures the sensitivity of the option value to a given small change in the price of the underlying asset. Hence, if the delta of a call option is 0.6, it means that a change of Rs 1 in the underlying stock price will lead to a change of Rs 0.60 in the price of the option. Option traders use the concept of delta to hedge their portfolio of option positions. This will be clear from the following example.

Suppose that a stock is trading at Rs.100 and a trader takes a short position in 10 ATM call options on this stock. Assume that the options have a lot size of 50. Now suppose that the delta of this call option is 0.50. It means that a one rupee change in the stock price will cause the call price to change by 50 paise.

Since the trader has sold the calls, he is at risk from a rise in the stock price. To hedge this risk, the trader must go long in the underlying stock. But what should be the size of the long stock position? This is decided based on the option delta. If the stock price moves up by 1 rupee, the loss on the trader's short call position would be 0.50*50*10 = Rs 250. The trader's long position in stock futures should compensate for the loss in the option position.

Remember that a stock futures contract has a delta of roughly one, because the futures price goes hand in hand with the spot price. As the lot size is 50, it means that the trader must go long in 5

futures contracts. Since the delta of a futures contract is equal to one, the long position in 5 lots of futures has a delta of 1*5*50 = 250. The delta of the 10 lots of short call is -0.5*10*50 = -250. Hence the delta of the combined position (short call and long futures) is equal to zero. This position is called a 'delta-neutral' position. What this means is that the combined position of short 10 lots of calls and long 5 lots of futures contracts is not affected by any small changes in the stock price. The key word here is 'small' changes.

The option delta changes with any change in the price of the underlying stock. So, if the stock price rises from 100 to 110, the call delta may rise from 0.50 to 0.60. In that case, the trader will need to increase his long position in futures so as to keep the portfolio delta-neutral. He will now have to go long in one more lot of futures so that the long futures position is now 6 lots. This will again make the combined position delta-neutral.

In this way, the trader must keep buying or selling futures contracts in order to maintain the delta of the combined position near zero. This process is known as 'delta hedging'. It is the option trader's way of managing the risk of his short option position.

17.5 Interpreting open interest and put-call ratio for trading strategies

Before we end this chapter, let us understand some basic terms associated with futures and options and how these can be used for deciding a trading strategy.

Open Interest: This refers to the number of positions that have been opened by market participants and not yet closed. For example, if the May index futures contract has an open interest of 2,56,000 contracts, it means that market participants have bought or sold 2,56,000 contracts till date and all these positions are yet to be closed.

17.5.1 New Formulation of Open Interest (OI)

Open Interest (OI) is now measured at a portfolio level by computing the net Delta-adjusted open positions across futures and options for an underlying. This will lead to Future markets mirroring underlying markets.

We have discussed option greeks in Unit 4 briefly. You can recall that the Delta indicates the sensitivity of a derivative's price movement relative to its underlying asset. The details of delta value for futures and options are as follows:

Position	Delta Value	Delta Value Interpretation
Long Futures	+1	Gains ₹ 1 for every ₹ 1 rise in underlying asset
Short Futures	-1	Loses ₹ 1 for every ₹ 1 rise in underlying asset
Long Call	0 to +1	Partial gain when underlying asset rises
Short Call	0 to -1	Partial loss when underlying asset rises
Long Put	0 to -1	Partial gain when underlying asset falls
Short Put	0 to +1	Partial loss when underlying asset falls

The new formulation of OI introduced by SEBI aim to enhance both risk management and trading convenience in the equity derivatives.

Example for the calculation of Future Equivalent Open Interest (FutEq OI) for F & O

Scrip 1	Long Position in Futures	Long Position in Call	Delta of long Call	Long Position in Put	Delta of long Put	Short Position in Put	Delta of Put	Short Position in Call	Delta of Call	Notional OI	FutEq OI
Client 1	300									300	300
Client 2		500	0.5							500	250
Client 3	300	500	0.5	400	-0.5					1200	350
Client 4						-400	-0.5	-400	0.5	800	0
Market wide OI										**2800**	**900**

As mentioned in the above table, we used to calculate notional OI for Client 2 as 500 earlier but it will be FutEq OI now by multiplying delta value of 0.5 with long position in call of 500 i.e. 500*0.5 = 250. Similarly, FutEq OI of other scrips will be calculated. For overall portfolio, Market wide OI decreased to 900 as per new FutEq OI calculation in comparison to 2800 which is as per Notional OI calculation (Old). It will align equity futures and options market more closely with cash market and strengthen the risk management. You may see the SEBI Circular[117] for more details.

17.5.2 Put Call Ratio

Total Traded Quantity or traded volume: This is the total number of contracts that have been traded or changed hands during the day. If the traded volume of May index futures today is 2,00,000 contracts, it refers to the number of contracts traded today.

Put-call ratio: This is the ratio of trading volume of put options to call options. The ratio is calculated either on the basis of options trading volumes or on the basis of their open interest.

Traders can decide whether to buy or sell futures based on changes in the open interest and the futures price. There are four possible scenarios and the trading strategy would differ accordingly:

1. If the futures price is rising and open interest of the futures contract is also increasing, it signals a bullish trend. Traders usually prefer to go long the futures in such situations.

2. If the futures price is rising but open interest is declining, it indicates short-covering. It usually indicates that existing short positions are being squared up.

3. If the futures price is declining but open interest is increasing, it indicates a build-up of short positions and a bearish trend. Traders usually tend to go short on the futures in such a scenario.

4. If the futures price is declining and open interest is also declining, it usually means that existing long positions are being squared up.

[117] SEBI Circular Ref.: SEBI/HO/MRD/TPD-1/P/CIR/2025/79 Dated May 29, 2025

Traders also consider the changes in the put-call ratio for deciding their option trading strategy. If the put open interest for an index options contract is 8000 and the call open interest is 12000, the put-call ratio is computed as:

$$PCR = 8000/12000 = 0.67.$$

The put-call ratio is generally treated as a contrarian indicator. If the PCR is less than one, it means that the open interest of calls exceeds that of puts. It also means that option traders prefer to sell more calls than puts. This indicates that option sellers do not expect the index to rise in the near future. Thus, a PCR less than one signals a bearish trend. A PCR greater than one, say 1.25, means that the open interest of puts is higher than that of calls. This is taken as a bullish signal, because it shows that option sellers do not expect a fall in the market.

Chapter 17: Sample questions

1. If an investor buys a call option with lower strike price and sells another call option with higher strike price, both on the same underlying share and same expiration date, the strategy is called _____.

(a) **Bullish spread**
(b) Bearish spread
(c) Butterfly spread
(d) Calendar spread

2. Which of the following is a hedged position?

(a) Short straddle
(b) Short strangle
(c) Covered call
(d) **Protective put**

3. Put-call parity refers to the relationship between: _____.

(a) futures and options on the same stock
(b) call options on the same stock with the same maturity but different strike prices
(c) put and call options on the same stock but different strike prices and different maturity
(d) **call and put options on the same stock with the same strike prices and same maturity**

4. Which of the following situations indicates a bullish trend in the underlying?

(a) a rising futures price along with falling open interest
(b) a falling futures price along with rising open interest
(c) **a rising futures price along with rising open interest**
(d) a falling futures price along with falling open interest

MODULE 3: INTEREST RATE DERIVATIVES

CHAPTER 18: INTRODUCTION TO INTEREST RATE, INTEREST RATE INSTRUMENTS AND FIXED INCOME MARKETS

CHAPTER 19: INTEREST RATE DERIVATIVES

CHAPTER 20: EXCHANGE TRADED INTEREST RATE FUTURES

CHAPTER 21: EXCHANGE TRADED INTEREST RATE OPTIONS

CHAPTER 22: STRATEGIES USING INTEREST RATE DERIVATIVES

CHAPTER 18: INTRODUCTION TO INTEREST RATE, INTEREST RATE INSTRUMENTS AND FIXED INCOME MARKET

Learning Objectives:

After studying this chapter, you should know about:

- Concept of Options
- Payoffs in case of option contracts
- Difference between futures and options
- Fundamentals relating to option pricing
- Option Greeks and Implied volatility
- Analysis of options from the perspective of option buyers and sellers

18.1 Understanding the Interest Rate Concept

Debt is a concept of "I owe You" in which the receiver of the favour is willing to return the favour with agreed rate of return for using the favour for the time period. In simple terms, Mr. A is borrowing some money "X" from Mr. B for 3 months with a promise to pay back "X+Δ". This "Δ" is calculated as a percentage or rate of return on the Principal X. For example, Δ = X * R% *3/12 where "R% is the annual rate of interest agreed to be paid for the use of Principal amount "X" by Mr. A. In this example, Mr. A is the "Borrower", Mr. B is the "Lender" and "R" is the agreed rate of interest expressed as percentage per annum and time period is "3/12" years (i.e., 3 months). To make the process formal and enforceable, Mr. A and Mr. B can sign the agreement and then the same is treated as "Loan". Loans are generally non-tradable. On the other hand, Mr. A can give in writing a "Note" that he would return the borrowed Principal money "X" to Mr. B after 3 months with agreed rate of interest at R% per annum. Simply put, we can state that the "Note" given by Mr. A is treated as a "Debt instrument" or "Debt Securities" which is a tradable security (Mr. B can assign the same to someone against appropriate payment before 3 months, if he requires liquidity and wants to exit the transaction): Mr. A here is the Issuer, Mr. B is the Investor, R is the yield or rate of interest on the date of transaction for the borrowed time (here 3 months).

In the above example "R" is the Interest rate which is essentially a charge to the borrower for the use of an asset. Assets borrowed can include cash, consumer goods, vehicles, property, etc. Interest rates apply to most lending or borrowing transactions. Individuals borrow money to purchase homes, fund projects, launch or fund businesses, or pay for college fees. Businesses take loans to fund capital projects and expand their operations by purchasing fixed and long-term assets such as land, buildings, and machinery. Borrowed money is repaid either in a lump sum by a pre-determined date or in periodic instalments. The interest rate is the cost of debt for the borrower and the rate of return for the lender. Interest rates are typically quoted as the annual percentage rate which is generally termed as nominal annual interest rate.

Interest rate is subjective. If we say, interest rate is 6%, it does not provide any clarity on the interest rate. To understand let us take few examples:

- The housing loan up to Rs. 50 lacs for 15 years is at the rate of 6% p.a.
- The personal loan up to Rs. 50 lacs for 15 years is at the rate of 7% p.a.
- The housing loan up to Rs. 50 lacs for 20 years is at the rate of 6.5% p.a.
- The housing loan above Rs. 50 lacs for 15 years is at the rate of 6.25% p.a.
- The coupon for government securities with 5-year maturity is 5% p.a.
- The coupon for AAA corporate bonds with 5-year maturity is 5.50% p.a.

For above example you can see that the interest rate changes with change in tenor, amount, credit risk etc., as interest rate will be determined based on various factors.

The interest rate is dependent upon various factors. When the borrower is considered to be low risk by the lender, the borrower will usually be charged a lower interest rate. If the borrower is considered high risk, the interest rate that they are charged will be higher. Factors like inflation, liquidity, duration, central bank policy, price of competing assets, etc., influence the movement and level of general interest rates in the market.

Following are a few macro factors that influence the interest rates in the economy:

1. Demand for money: This will be best explained by looking at the economic activity in the market. When the economy is doing better, there will be more demand for funds and investors would be willing to take higher risk by investing in various projects. Hence, the demand for funds would see an uptick which will possibly raise the cost of money (interest rate). However, during recession when the effective demand is very low, the demand for funds from investors would be low and interest rate would show a depression.
2. Supply of money: The supply of money is typically controlled by the central bank of the country. When the inflation kicks in, the central bank would like to tighten the supply of money which will reduce effective demand and it would possibly think of increasing policy rate to make the cost of funds higher.
3. Fiscal deficit and government borrowing: When fiscal deficit is high and Government has to borrow higher amount from the market, the traders would demand higher interest rate to support such borrowing and the funds for corporates would be constrained.
4. Inflation: When inflation level increases, the savers need compensation, as the real value of their money would drop, and therefore the nominal interest rate has to be higher to compensate for the same. As inflation drops, the nominal interest rate also comes down.
5. Global interest rates and foreign exchange rates: Global investors would arbitrage between various markets. When interest rates rise in other countries, investors would move to such locations to take advantage of the higher rate of return. Hence, to attract foreign investment and to keep in sync with the global scenario, the domestic interest rate also has to increase.
6. Central bank actions: At times, the central banks raise policy rates which affect all commercial interest rates in the system. A rise in policy Repo rate would lead to increase in money market rates which will affect the bond market yields.

Following are some of the micro factors which will have impact on interest rates of fixed income securities

1. Maturity / Tenor of the bonds: Generally, interest rates are positively correlated with the tenor. As tenor increases interest rates increased.
2. Credit Risk: If there is a higher level of perceived credit risk, investors and lenders usually charge a higher interest rate.
3. Seniority of Bonds: Bond seniority refers to the order in which bondholders are paid in case the issuer defaults or goes bankrupt. Seniority affects the perceived risk of the bond, which directly influences the interest rate.
4. Security of Bonds: Secured bonds are backed by specific assets of the issuer. Unsecured bonds not backed by any specific assets, hence pay higher interest rates to compensate for the higher risk.
5. Liquidity of Bonds: Bond liquidity refers to how easily a bond can be bought or sold in the market without affecting its price significantly. Investors are willing to pay a premium for bonds that are easy to trade.
6. Investor sentiments: Investor sentiment refers to the overall mood or attitude of investors toward market conditions. When sentiments turn negative, investors rush to safer assets like government securities.

18.1.1 Effective Rate

The effective interest rate can be different from annual interest rate due to compounding effect. Let us understand the same with an example. If a debt security pays 6% annually and compounds semi-annually, an investor who places Rs.1,000 in this bond will receive Rs.30 of interest payments after the first 6 months (Rs.1,000 x .03), and Rs.30.90 of interest after the next six months (Rs.1,030 x .03), assuming Rs. 30 received after 6 months is invested in same bond. In total, this investor receives Rs.60.90 for the year. In this scenario, while the nominal rate is 6%, the effective rate is 6.09%.

Typically, Effective interest rate = $[(1 + \text{annual interest rate}/n)^n - 1]$

Effective interest rate = [(1+6%/2)^2)-1] = 6.09%

Where n = number of compounding periods.

18.1.2 Nominal and Real Interest Rate

The nominal interest rate is the stated interest rate (coupon rate) of a bond. The nominal interest rate denotes the rate that the bond issuer pays to the bond holder. However, the inflation reduces the purchasing power of money. Therefore, the nominal interest rate has to be adjusted for the rate of inflation in order to understand the real growth of money for the bond holder. The nominal interest rate adjusted for inflation is called real interest rate. The relationship between real and nominal interest rates can be described in the equation:

$(1 + r) \times (1 + i) = (1 + R)$

where r is the real interest rate, i is the inflation rate and R is the nominal interest rate.

For low-level rates, this relation can be approximated as: $r = R - i$

i.e., Real interest rate = Nominal interest rate – Rate of Inflation

For example, if the nominal interest rate on a bond is 9% and the inflation rate is 6%, then the real interest rate will be around 3%. Therefore, if the rate of inflation exceeds the coupon rate of a bond, the real interest rate on the bond will be negative. For example, a bond with a 7% nominal interest rate will have a real interest rate of -2% (approximately), if the rate of inflation is 9%.

In brief:

- The interest rate is the amount charged on top of the principal by a lender to a borrower for the use of assets.
- It is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets.
- Interest rates are typically noted on an annual basis.
- Interest rate is subjective.
- Interest rate is decided based on various factors.
- Interest rate risk is the uncertainty in the movement of the interest rates.
- Both way movement of interest rate will impact the participants.

18.2 Fixed Income Securities

"Fixed Income Securities" are debt instruments that pay a fixed amount of interest - in the form of coupon payments - to investors. The interest payments are made periodically while the principal invested returns to the investor at maturity. Bonds / Debentures are the most common form of fixed income securities. Companies raise capital by issuing fixed income products to investors. A bond is an investment product that is issued by corporations and governments to raise funds to finance projects and fund operations. Bonds are mostly comprised of corporate bonds and government bonds and can have various maturities and face value amounts. They are called "fixed-income" securities because of the following "fixed" features.

- Their life is *fixed*: they will be redeemed on a specified future date because all borrow-lend transactions are for a *fixed* period. The only exception to this rule is a Dutch perpetual bond issued in 1648. In recent years, some Indian banks and corporates have issued perpetual bonds, which are not strictly perpetuals because the issuer has call option.
- In most cases, their cash flows are *fixed*, too. In other words, the timing and size of cash flows are known in advance. In some securities (e.g. floating-rate bonds), the timing of cash flows is known in advance but not their size because the amount is linked to prevailing interest rate.

18.2.1 Key Components of Fixed Income Securities are given below:

Issue Price is the price at which the bonds are issued to the investors. Issue price is mostly same as face value in case of coupon bearing bond. In case of non-coupon bearing bond (zero coupon bond), security is generally issued at discount i.e., issue price is less than face value.

Face Value (FV) is also known as the par value or principal value. Coupon (interest) is calculated on the face value of bond. FV is the price of the bond, which is agreed by the issuer to pay to the investor, excluding the interest amount, on the maturity date. Sometime issuer can pay premium above the face value at the time of maturity.

Coupon / Interest is the cash flow that are offered by a particular security at fixed intervals / predefined dates. The coupon expressed as a percentage of the face value of the security gives the coupon rate. Coupons are typically given on annual basis.

Coupon Frequency means how regularly an issuer pays the coupon to holder. Bonds generally pay interest monthly, quarterly, semi-annually or annually.

Interest Payment Dates means dates on which interest/coupon is paid to bond holder by the issuer.

Maturity date is a date in the future on which the investor's principal will be repaid. From that date, the security ceases to exist.

Call / Put option date is the date on which issuer or investor can exercise their rights to redeem the security before maturity date.

Maturity / Redemption Value is the amount paid by issuer other than coupon payment. If the redemption proceeds are more than the face value of the bond/debentures, the debentures are redeemed at a premium. If one gets less than the face value, then they are redeemed at a discount and if one gets the same as their face value, then they are redeemed at par.

Example:
Security with FV of Rs 1,000 issued on April 01, 2021, for a period of 10 years at Rs. 1,000, Coupon of 7% p.a. is paid every 6 months.
Issue price = Rs 1,000
Face value = Rs 1,000
Coupon = 7%
Coupon Frequency = Half yearly
Interest payment date: April 01st and October 01st.
Maturity Date = April 01, 2031
Put Option =Not applicable
Call option =Not applicable
Redemption Value = Rs 1,000

18.3 Type of Fixed Income Securities

A bond is a financial security issued by a legal entity to raise funds from the financial market and agrees to refund/return the borrowed amount (principal) at the end of the contract period or at various time intervals as given in the indenture along with the promised interest or coupon. Agreed annual interest promised by the issuer on the bond is generally referred to as “Coupon”. A bond is akin to a loan with a maturity and coupon rate paid at various intervals viz. quarterly or half-yearly or annually. However, it differs from a loan mainly with respect to its tradability. A bond is usually tradable and can change many hands before it matures; whereas a loan usually is not traded or transferred freely. A loan brings permanent risk to the lender till the loan is repaid but the bond holder can transfer his risk to other risk takers through efficient pricing mechanism. The value of the loan does not change but the value of the bond changes on continuous basis depending on future interest rate regime in the economy as well as the credit worthiness of the borrower. While bonds

can be classified in many ways, for ease of understanding, the basic classification of bonds can be considered based on the following criteria:

- Based on issuers;
- Based on maturity;
- Based on coupon;
- Based on currencies;
- Based on embedded options;
- Based on Security
- Based on priority of claims;
- Based on purpose of issue;
- Based on underlying;
- Based on taxation.

Here we will discuss in brief few important classifications of bonds based on their inherent features.

18.3.1 Classification of fixed income securities based on the Type of Issuer

The borrowers of funds who borrowed by way of issuing of bonds are called Issuers. Bonds are usually gauged for their riskiness based on the issuer's profile. The value of the bond mainly depends on the ability of the borrower to service the debt obligations as per the bond indenture.

18.3.1.1 Government Bonds / Sovereign Bonds / Gilt edged Bonds

A sovereign bond is issued by the government and is typically denominated in the domestic currency to support planned and unplanned expenditures. Government bonds are also known as "sovereign debt" and are generally issued via auctions and traded in the secondary market. Government bonds issued in local currency are considered risk free as the Government, being a sovereign entity, can print the currency to repay its obligation to bondholders. However, as demonstrated during the European debt crisis (2008-2012), Governments may also default in debt payments in case of an emergency situation. Because of their relative low risk, government bonds typically pay lower interest rates than the bonds issued by other issuers in the country.

In India, government bonds constitute the largest segment of the fixed income market. Other than Central Government Securities, this also includes the securities issued by the various State Governments and Union Territories, which are known as State Development Loans (SDLs). Indian Government Securities market (G-sec) also includes the special securities issued by the central and state governments in India. Special securities are issued by the Government for providing various subsidies like oil, fertilizer, bank recapitalization, etc.

18.3.1.2 Municipal Bonds

Local authorities may also issue bonds to fund projects such as infrastructure, libraries, or parks. These are known as "municipal bonds". Municipal bonds are also known as "muni bonds" or "muni". A municipal bond is categorized based on the source of its interest payments and principal repayments. In India, while very few local authorities or municipal authorities have issued such bonds, the market is gradually picking up. In India, SEBI has issued separate regulation for Issuance and Listing of Municipal Bonds.

18.3.1.3 Corporate Bonds

A Corporate Bond and/or Non-Convertible Debentures (NCDs) is issued by a corporate to raise capital. The performance of the bond during its life depends on future revenues and profitability of the corporate. Debt is typically cheaper source of financing for corporates, and, unlike issuance of more equity, their ownership structure is not diluted. In some cases, the corporate's physical assets may be used as collateral. Corporate bonds carry higher risk vis-a-vis government bonds and hence the bond holders expect higher interest rates to compensate for the additional risk they take while investing in the bond. Corporates issue short term papers like Commercial papers (CPs) to fund their short-term requirement or for their working capital funding.

The corporate papers are issued either through public issuance or private placements. The creditworthiness of the issuer (i.e., issuer's ability to discharge its financial obligations) is to be assessed periodically by one or more credit rating agencies. The bond's credit rating, and ultimately the company's credit rating, impacts the market price of the bond in both primary and secondary markets. The Credit Rating Agencies (CRAs) assign ratings through letter grades for their common and global understanding. The highest quality (and safest) bonds are given "AAA", while the high risk bonds are known as "junk" or "high-yield bonds". The difference between the yields on corporate bonds and government bonds is called the credit spread.

18.3.1.4 Securitized Debt

Securitization is the process of monetizing illiquid loan assets of a lender such as a bank, into a liquid pool of tradable assets. Securitization is achieved by creation of a Special Purpose Vehicle (SPV) and structuring the pool of loans into tradable bonds. Securitized (or asset-backed) securities transfer ownership of assets (i.e., loans and receivables) to the SPV.

18.3.2 Classification of fixed income securities based on Maturity/Redemption

Bonds are issued for various maturities depending on the requirement of funds as well as the demand from the investors. Long term bonds are generally costlier than short term loans as the funds are locked in for a longer period of time while investors may suffer from illiquidity. Bonds may be classified in terms of maturities like ultra-short term, short term, medium term and long term. Short term borrowings are typically made for working capital requirement where as long term funds are used for project, capital and infrastructure funding. The returns on bonds by similar rating class of issuers also vary according to the maturity, which forms the basis of yield curve theories.

18.3.2.1 Overnight Debt / Borrowings

Typically, banks borrow overnight funds from the money market as well as from the RBI. These borrowings can be collateralized or clean. Collateralized borrowings cost less vis-à-vis clean borrowings. The RBI plays a very important role in this market through absorption or supplying liquidity through banks and Primary Dealers.

18.3.2.2 Ultra-Short-Term Debt (Money Market)

Short term borrowings up to one year are covered under this category. Mostly, money market instruments like Commercial Papers (CP), Certificate of Deposits (CD), Treasury Bills (TB), Cash Management Bills (CMB), etc. belong to this category.

18.3.2.3 Short Term Debt

Bonds with maturity spanning from 1 to 5 years are referred to short term bonds. Issuer generally issued short term bonds mainly for cost effectiveness, operational flexibility, matching debt maturity with cash flow projection etc.

18.3.2.4 Medium Term Debt

These are bonds maturing in 5 to 12 years. These are also referred to as intermediate bonds. Generally, the bulk of debt issuances take place in this segment.

18.3.2.5 Long Term Debt

These are bonds with maturity beyond 12 years. Generally, Government of India bonds issued are of long-term maturity bonds.

Please note, there is no specific guideline for determining short term, medium term and long term debt. Mutual Funds classified debt funds based on "Duration" of bonds rather than maturity tenor of bonds.

18.3.2.6 Staggered Maturities

Some bond issues are packaged as a series of different bonds with different or staggered maturities. Every few years a portion of the bond issue matures and is paid off. Staggering maturities in this fashion allows the issuing company to retire the debt in an orderly fashion without facing a large one-time need for cash, as would be the case if the entire issue were to mature at once. Serial payments pay off bonds according to a staggered maturity schedule.

18.3.2.7 Perpetual Bonds (Consol Bonds)

These bonds will not have any maturity date and will continue to pay coupons during the life of the company. Banks are primary issuers of perpetual bonds. They issue perpetual bonds to meet Tier-I Capital requirement under Basel III norms.

18.3.3 Classification of fixed income securities based on Coupon

The promised interest as per the indenture of the bond is referred to as the coupon. The coupon payments on bonds have a pre-determined payment frequency and may be paid annually, semi-annually, quarterly or monthly. Bonds are classified on the basis of coupons, as these are returns on the investment made by the holders.

18.3.3.1 Plain Vanilla Bonds

A plain vanilla bond is the simplest form of a bond with a fixed coupon and defined maturity and is usually issued and redeemed at face value. It is also known as a straight bond or a bullet bond. These bonds have intermittent cash flows in the form of coupons received as well as the final cash flow of the face value of the bond on maturity.

18.3.3.2 Zero-Coupon Bonds

A zero coupon bond (ZCB) is a discounted instrument which does not pay any interest and are redeemed at the face value of the bond at the time of maturity. These bonds are issued at a discount and redeemed at the face value with the difference amounting to the return earned by the investor.

ZCBs have a single cash flow at maturity which is equal to the face value of the bond. Common examples of ZCBs in India include Treasury Bills, Cash Management Bills and STRIPS created by separating and trading independently (in other words "stripping off") the coupons from the final principal payment of normal bonds. ZCBs are highly sensitive to changes in the interest rate as they do not have intervening cash flows and are generally used by long term fixed income investors such as pension funds and insurance companies to gauge and offset the interest rate risk of these firms' long-term liabilities.

18.3.3.3 Floating Rate Bonds

Floating rate bonds (FRBs) do not pay any pre-fixed coupons but are linked to a benchmark interest rate (generally a short-term rate like the 182-day Treasury bill rate etc. in India). The coupon rate is reset on each coupon payment date. When the general interest rate rises in the market, the benchmark interest rises and hence does the coupon on the FRBs. The same situation reverses when the interest rate falls. FRBs typically trade very close to their face value as interest resets happen at regular intervals. These instruments are generally immune to interest rate risk and are considered conservative investments.

18.3.3.4 Caps and Floor

Most FRB issuers may issue bonds which will cap their interest payment obligation if the interest rate rises. These instruments may also provide for a floor beyond which the interest rate will not fall in order to protect the interest of the investors. If an FRB has both a cap to protect the issuer and a floor to protect the investor, it is called a "Collar".

18.3.3.5 Inverse Floater

These types of bonds are similar to FRBs in that the coupon is related to the benchmark linked to the bond (but it is inversely related in case of Inverse Floaters). If the benchmark increases, the Coupon falls and vice versa. For example, in India generally the interest rate on such bonds is linked to a negative spread over the fixed coupon rate. The spread is usually few percentage points over the benchmark MIBOR rate. If the interest rates go up, corporates end up paying less as the coupon will be a few percentage points lower than the original coupon rate. This has mostly been used by NBFCs to raise funds while mutual funds are the primary investors.

18.3.3.6 Inflation Indexed Bonds

These are a type of FRBs which protect investors from the adverse effects of rising prices by being indexed to an inflation measure like the WPI (Wholesale Price Index) or CPI (Consumer Price Index) in India. Only the face/par value or both par value and coupons may be indexed against the inflation measure.

18.3.3.7 Step Up/Down Bonds

Step up bonds are designed to pay lower coupon in the initial years of the bond and higher coupon towards maturity. These bonds are preferred by issuers like start-ups who expect their cash flows to balloon after some time and hence would like to service the bonds with lower cash flows at the beginning. The investors of these bonds also take higher risk as higher cash flows are expected after

some time and hence expect higher interest rate to make the investment attractive. These bonds are generally risky.

Step down bonds are the exact opposite of step up bonds. These bonds pay high interest at the beginning of the bond and as the time moves towards maturity, the coupon drops. Such bonds are usually issued by companies where revenues/profits are expected to decline in a phased manner; this may be due to wear and tear of the assets or machinery as in the case of leasing. The step up and step down bonds are used for better cash flow planning of both issuers and investors.

18.3.3.8 Deferred Coupon Bonds

This is a mixture of coupon paying bond and a ZCB. In the initial years, these bonds do not pay any interest, but these bonds pay very high interest after a few years and typically few years before the maturity. The corporates having high gestation period typically prefer this kind of arrangement.

18.3.3.9 Deep Discount Bonds

When a zero coupon bond is issued at a high discount to the Face Value, it is generally referred to as a Deep Discount bond. Normally, a discount of 20% or more with relatively longer maturity is the main characteristics of the Deep Discount Bond. Typically, infrastructure companies issue such kind of bonds as their gestation period is very long. These bonds carry high risk.

18.3.4 Classification of fixed income securities based on Embedded Options

An embedded option bond is an instrument with a provision of callability by the issuer and puttability by the investor. The optionality influences the price of the bond as the risk is higher for these bonds. The “Call” feature incorporates the right of the issuer to call back / repay the bond on a specific date before the original maturity date. The same way, the “Put” provision of the bond gives the right to seek redemption of the bond by the investor on a particular date before the original maturity date. A bond having call provision is likely to be called when the cost of refinancing the bond is low due to fall in interest rates. A bond having “Put” option may encourage the investors to submit the bond for redemption when interest rate rises. The bonds with embedded options are valued using option premia.

18.3.4.1 Straight Bonds

A straight bond is a bond that pays interest at regular pre-determined intervals and at maturity pays back the principal that was originally invested. A straight bond is also called a plain vanilla bond or a bullet bond. These bonds pay regular coupon which is typically fixed at the beginning or at the issuance time. It is the most basic form of debt investments.

18.3.4.2 Bond with a Call Option

A bond with a call provision gives the right to the bond issuer to call back the bond and pay the borrowed funds to investors before the original maturity date but at the pre-fixed call date. The issuer invokes this right only when the market interest rate is lower than the interest in the callable bond. However, the callable bonds generally require premium to be paid at the time of redemption when called.

18.3.4.3 Bond with a Put Option

A bond with a Put provision gives the right to the bond investor to seek redemption of the bond from the issuer before the original maturity date but at the pre-fixed put date. The investor invokes this right only when the market interest rate is higher than the interest in the puttable bond. However, these bonds generally require discount at the time of redemption when the investor chooses to redeem the same before maturity.

18.3.4.4 Bond with Call and Put Option

A bond with call and put provision gives right both to bond holder and issuer to redeem the bond before the original maturity date.

18.3.5 Classification of fixed income securities based on Security

All bonds are in essence fungible loans for which returns ultimately depend on the servicing ability of the issuer. Bonds can be secured or unsecured. Bonds may also be secured against specific assets of the user. Hence, it is critical for investors to be aware of the priority in claims of the security they intend to invest in based on their risk appetite.\

18.3.5.1 Secured debt

Secured bonds are backed by specific assets of the issuer. Secured bonds have collateral ranking and they would be paid first out of the assigned assets which have been collateralized against such debt. This makes it more secure with higher recovery rate vis-à-vis lower level unsecured bonds in the event the company defaults.

18.3.5.2 Unsecured debt

Unsecured debt instruments are issued by companies without any specific collaterals allocated against these issuances. Companies issue such unsecured debt using their name and reputation in the market.

18.3.5.3 Credit enhanced bonds

Credit enhancement is a strategy to show the investors that the company would be able to pay back the borrowings as there is some kind of guaranteed system in place to support the borrowings. It is a method whereby a borrower or a bond issuer attempts to improve the credit worthiness of its debt offering. Through credit enhancement, the lender or bond holder is provided with reassurance that the borrower will meet its repayment through an additional collateral, insurance, or a third party guarantee. A company lowers its cost of borrowing using credit enhancement. The credit enhancement also leads to better rating grade for the bond and reduces the risk for investors.

18.3.6 Based on Seniority

These can be senior or junior (subordinate) types depending on their claim in the company's asset at the time of liquidation. Bonds lower in priority of claims offer higher yields to compensate for the risk inherent in them.

18.3.6.1 Senior debt

These bonds have higher priority in the repayment hierarchy if the issuing company faces bankruptcy or liquidation. Senior debt holders are paid before other creditors, such as subordinated (junior) debt holders and shareholders. Because of its lower risk, senior debt typically carries lower interest rates compared to junior debt.

18.3.6.2 Subordinated debt

Subordinated bonds are issued by companies that pay higher coupon but are riskier as these bonds are paid out just before the equity holders at the time of liquidation. In India, banks issue subordinate bonds to shore up their Tier II capital as per the capital adequacy requirement.

18.3.7 Other Instruments

- Annuities are financial products that provide monthly payments over a certain period. Annuity is considered as fixed income asset class; however, it cannot be traded like fixed income securities in secondary market. Generally, in annuity you invest money, either as a lump-sum or over time. In exchange, you get income in the form of regular payments. There are several types of annuities, and they can be broken down based on when the payments start. Most consumer loans and housing loans are structured as annuities.
- AT1 (Additional Tier-1) Bonds: Under the Basel III framework, banks' regulatory capital is divided into Tier 1 and Tier 2 capital. Tier 1 capital is subdivided into Common Equity (CET1) and Additional Tier 1 Capital (AT-1). Equity capital is classified as CET1. Perpetual bonds that satisfy specific conditions stipulated by RBI are classified as AT-1. They are a type of unsecured, perpetual and non-convertible bonds that banks issue to shore up their core capital base to meet the Basel-III norms.
- AT2 Bonds: Tier 2 bonds are components of tier 2 capital, primarily for banks. These are debt instruments like loans. As with all bonds and other debt instruments, they do not give ownership or voting rights, but they do offer interest earnings to bondholders or owners. Banks issue Subordinated Tier 2 bonds to meet their Tier 2 capital requirements. These have to be for a minimum period of 5 years at the time of issue. They are unsecured and subordinated in claims to depositors, unsecured creditors and senior bonds of the bank. Bank Tier 2 bonds do not have Put Option and only have a Call Option (option for early repayment) which the bank can exercise after minimum of 5 years and after approval from Reserve Bank of India (RBI).
- Convertible Bonds: Convertible bonds are the bonds issued by corporates and such bonds get converted to equity shares at a specified time at a pre-fixed conversion price. The bondholder has the right to convert the said bonds to equity shares and issuing company cannot refuse the conversion as it is agreed at the time of the issuance.
- REITs (Real Estate Investment Trusts): REITs are trusts registered with SEBI that invest in commercial real estate assets. The REIT will raise funds through an initial offer and subsequently through follow-on offers, rights issue and institutional placements.

- InvITs (Infrastructure investment trusts): InvITs are trusts registered with SEBI that invest in the infrastructure sector. The InvITs shall raise funds from the public through an initial offer of units. The cash flow thus generated is distributed among investors as dividend income.
- Green bonds: A green bond is a type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects. These bonds are typically asset-linked and backed by the issuing entity's balance sheet, so they usually carry the same credit rating as their issuers' other debt obligations.
- Tax-free bonds: Tax-free bonds are issued by a government enterprise to raise funds for a particular purpose. As the name suggests, its most attractive feature is its absolute tax exemption on interest as per Section 10 of the Income Tax Act of India, 1961.
- Tax Saving Bonds: These bonds offer tax benefits to owners, therefore helping them save a certain portion of their overall tax. Tax-saving bonds mainly come with a minimum lock-in period. Note that the interest earned through these bonds are taxable.
- Asset Linked Bonds: These bonds are issued giving better credit enhancement to the investors. These are linked to some assets and the payable capability depends on the underlying asset's ability to perform in the market.
- Environment, Social and Governance Debt Securities: SEBI vide circular dated June 05, 2025, provided framework for Environment, Social and Governance (ESG) Debt Securities(other than green debt securities). "Environment, Social and Governance Debt Securities or "ESG Debt Securities" means green debt securities, social bonds, sustainability bonds, sustainability-linked bonds, or any other type of bonds, by whatever name called, that are issued in accordance with such international frameworks as adapted or adjusted to suit Indian requirements that are specified by the SEBI from time to time, and any other securities as specified by the SEBI.
- Masala Bonds are rupee-denominated bonds issued outside India by Indian entities. They are debt instruments which help to raise money in local currency from foreign investors.

18.4 Equity Securities v/s Debt Securities

Equity securities/shares indicate ownership in the company whereas debt securities indicate a loan to the company. Equity securities do not have a maturity date whereas debt securities typically have a maturity date. Equity securities have variable returns in the form of dividends and capital gains whereas debt securities have a predefined return in the form of interest payments. Equity shareholders are entitled to voting rights whereas debt securities do not hold such rights. In the event of liquidation of company debt securities have higher preference and equities will have last preference. Typically, equity securities are riskier as compared to debt securities.

Advantages of Debt Compared to Equity

- Debt is a long term source of capital for borrowers.
- Borrowing through a debt paper by the owner would not reduce the control of the company for the borrower. Lenders of funds generally have priority over equity holders, in case of bankruptcy of the company.

- The lender would get the promised interest rate as per the indenture of the issue as well as the principal at the time of maturity. The lenders are indifferent to the profit made by the company that is shared as a dividend to the equity holders.
- In case of debt, the future obligations are mostly known to the company for making the cash flow planning and repayment planning. Hence, a proper and efficient cash flow management is key to the success of debt management.
- Interest or the coupon to be paid on debt is tax-deductible to the company as it is an expense for the company. This tax deductibility reduces weighted average cost of capital for the company. Higher the marginal tax rate of the company, larger is the benefit of such tax savings.
- Raising large amount of debt capital through private placement is generally less complicated as it is sold to qualified institutional buyers and unlike public issuances of equity, complex regulations may be avoided.
- For its debt obligations, the company is not required to send periodic mailings to large numbers of investors, hold periodic meetings of shareholders, or seek the vote of shareholders before taking certain actions.
- Debt is long term and lenders tend to be more committed than the equity holders.
- In the long-run, debt is cheaper than equity. The return on investment for equity holders is eventually higher than the interest paid on debt financing.

Disadvantages of Debt Compared to Equity

- Certain debt instruments may put restrictions on the company's core activities, and at times, exclusivity clauses can harm the company in general.
- Unlike equity, debt must be repaid at some point in time resulting in liquidity outflow.
- Debt repayment causes cash flow risk for the company and at times the company may not be able to refinance debt or raise money from the market to repay the existing debt if the market condition turns bad.
- Debt is a leverage action and high leverage can jeopardize the growth plans of the companies. High leverage may also increase the risk of default. Historically, many good companies have gone into bankruptcy due to the burden of huge debt.
- Debt obligations are fixed at the beginning of the issuance with future dates known to both issuers and lenders. These obligations have to be repaid irrespective of the market conditions.
- If repayment of debt is not properly planned, the company’s usual operations may get jeopardized because of such debt repayment obligations. At times, unplanned cash flow causes upheaval in working capital finance, jeopardizing production plan and operations of the company.
- The larger a company's debt-equity ratio, the riskier is the company considered by lenders and investors. Accordingly, there is a limit to the level of debt a business can take on its balance sheet.
- Some form of debt like secured debentures require the company to create a lien on the assets of the company or create sinking fund out of operational cash flows which may be burdensome at times, specifically at the time of market stress.

18.5 Concept of risk-free interest rate

Debt Securities are also known as fixed income securities as typically they have fixed tenor (life) and fixed cash flows. It should be noted that fixed-income security does not mean fixed-return security. It merely means that the timing of cash flows (and in certain cases, the size of cash flows, too) is fixed and known in advance. It does not necessarily guarantee a fixed return. For example, consider a 7-year bond that pays 9% per annum interest and issued by a company. The 9% per annum interest is not the guaranteed return for the following reasons:

1. Credit risk: The Company may not be able to pay interest and principal as per schedule. This is called credit risk in the bond.
2. Price Risk (Interest rate risk): The 9% per annum will be the guaranteed return if the investor/holder holds the bond until its maturity of seven years. If the investor wants his investment back at the end of five years, he cannot demand prepayment from the issuing company but should sell it in the secondary market at the end of five years. The sale price may be higher or lower than the initial purchase price, resulting in capital gain/loss, which is not known in advance. This is called interest rate risk / market risk / price risk in the bond.

   In this example we have only considered risk of investor who is holding the debt securities. Interest rate risk is the uncertainty in the movement of the interest rates and hence, both way movement of interest rate will impact the participants. Interest rate risk can impact assets and liabilities, whether you are an individual, corporate, banks, financial institutions etc. For example, a borrower who wants to borrow money in future will carry the risk of increase in interest rate, on the other side a lender who wants to lend money in future will carry risk of decrease in interest rate. Participants like Banks, NBFCs have interest rate exposure on both asset and liability side for different tenor, hence these institutions may have exposure to either side of interest rate risk.
3. Reinvestment risk: If your investment horizon is seven years, ideally there should be no interim payments. If there are (such as interest payments in this example), they are to be reinvested until the horizon at unknown future interest rates. In the above example, the 9% coupon in the first year should be reinvested for six years at the end of one year; the 9% coupon in the second year will have to be reinvested for five years at the end of second year; and so on. Since the reinvestment rates (and income) are not known in advance, it is called reinvestment risk.

Additionally, there can be liquidity risk[118], call risk, inflation risk etc. attached to debt securities.

Price Risk (Interest Rate Risk) and Reinvestment Risk

118 There is a risk an investor might not be able to sell their bonds quickly due to a thin market with few buyers and sellers for the bond. This can lead to substantial price volatility and adversely impact a bondholder's total return upon sale.

	Price Risk (Interest Rate Risk)	Reinvestment Risk
If interest rate goes up		
If interest rate goes down		

Credit Risk: Consider that the borrower is a sovereign government, and the borrowing is in home currency. There is no possibility of default by the borrower because the sovereign can always print money and pay off the lender. In other words, there is no credit risk in this transaction. The interest rate applicable to such transactions is called "risk-free" rate, the risk here being the credit risk.

For borrowers other than the sovereign government, there is some chance of default. Therefore, the interest rate applicable to such non-sovereign borrowers must be higher than the corresponding rate for sovereign borrower. The difference between them is called the "credit spread". In practice, all borrowers are grouped according to their credit rating (which is a measure of credit risk), and the interest rate is quoted as an add-on spread over risk-free rate. For example, if the risk-free rate is 8.25% and the credit spread is 0.10% for AAA-rated borrowers and 0.25% for AA-rated borrower, the interest rate applicable to the last two are, respectively, 8.35% (i.e., risk-free rate of 8.25 + credit spread of 0.10) and 8.50% (i.e., risk-free rate of 8.25 + credit spread of 0.25).

The risk-free rate is the benchmark for *all* valuations because it represents the return without risk. All other financial instruments have various risks (such as credit risk, market risk, etc.). To bear these risks, investors would demand premium, which is an add-on amount to the benchmark return represented by risk-free rate. We may say that risk-free rate is the opportunity cost of earning return without risk.

Market risk: It disappears if the investor holds bond till maturity date when it will be redeemed directly by the issuer at face value.

Reinvestment risk: It disappears if the instrument is a zero-coupon instrument because there is nothing to reinvest in the interim as interest is received at the time of maturity.

Thus, if a person buys a zero-coupon instrument, without any embedded call option, issued by a sovereign government in its home currency and held it till maturity, there is no risk; and the fixed-income security is also a fixed-return security.

18.6 Term Structure of Interest Rates

What is the interest rate today? This question cannot be precisely answered because it is incomplete in two respects. First, the rate depends on the term (or tenor) of borrowing/lending period. Though the periods can be many, the market quotes rates only for "standard" terms/tenors, which are as follows in money and bond market.
Money market: Overnight (ON), 1-week (1W), 2-week (2W), 1-month (1M) to 1-year (1Y) at the interval of a month.
Bond Market: 2Y, 5Y, 7Y, 10Y, 15Y, 20Y, 25Y, 30Y and 40Y.

Second, even for the same term, the rate differs from borrower to borrower because the credit risk is priced and incorporated into the transaction rate. For the sovereign borrower, the rate is directly quoted for each term; and for non-sovereign borrowers (grouped by credit rating), what is quoted

is the add-on credit spread, representing the price of credit risk. The following tables shows the hypothetical interest rates for various terms and for various borrowers rated by their credit rating (AAA, AA, A, BBB, etc.)

Term	Risk-free rate	Credit Spread		
		AAA	A	BBB
1M	5.00%	0.15%	0.25%	0.35%
3M	5.25%	0.25%	0.50%	0.75%
1Y	5.75%	0.40%	0.75%	1.10%
5Y	6.50%	0.85%	1.50%	2.25%

When the interest rate (on vertical axis) is plotted against the term (on horizontal axis), it is called the *term structure* of interest rates (also known as yield curve). Thus, we have "risk-free curve", "AAA curve", "BBB curve", and so on.

The term structure of risk-free rate is the most important tool in *any* valuation because it represents the ultimate opportunity cost. It is the rate an investor can earn without any risk of default or loss for a given term. Any other competing alternative has a risk, which has to be priced and added to the risk-free rate for the same term as the "risk premium." Without term structure of rates, valuation becomes speculative rather than objective.

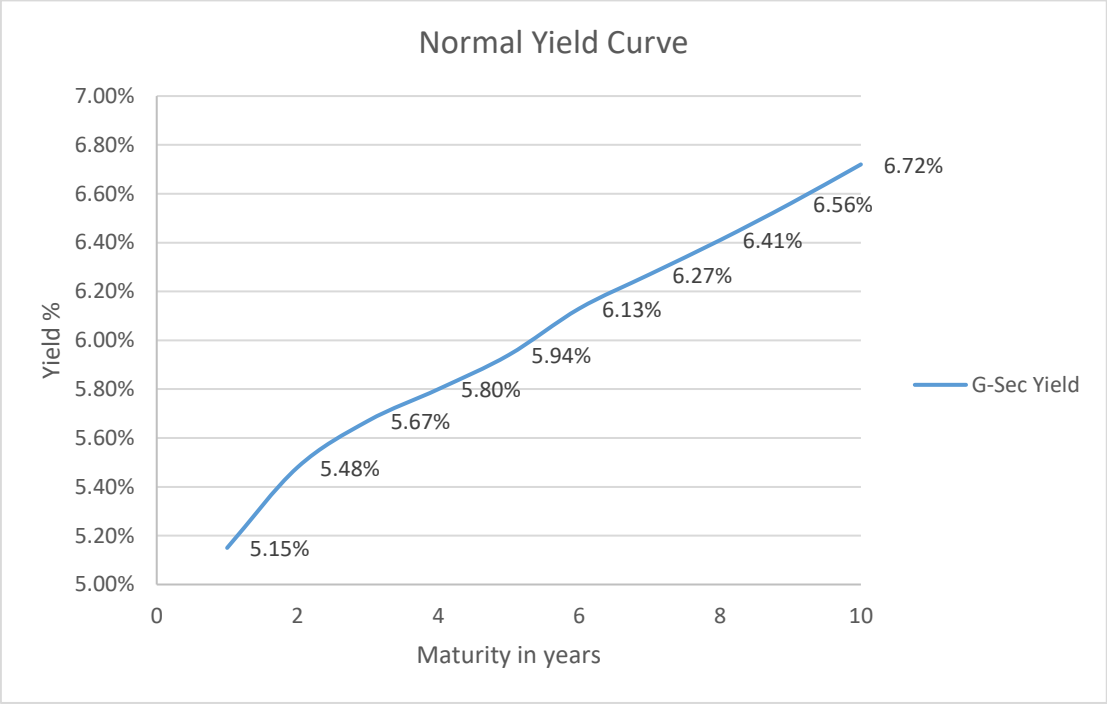
But what determines the interest rate? The answer is demand-supply for money for different terms or periods. For example, the demand-supply for money borrowing/lending for 1Y term determines the 1Y interest rate, and so on. It is convenient to assess the demand-supply separately for short-term (i.e., 1Y or less, which is money market) and long-term (i.e., more than 1Y, which is bond market). The short-term rate is determined by liquidity, which in turn is caused by seasonal demand-supply for credit, foreign portfolio investment inflows and outflows, bunching of tax and government payments, etc. The long-term rate is predominantly determined by inflation outlook and the capital expenditure by industry and businesses.

In developed economies, central bank monitors and controls only the short-term interest rate, but in developing and emerging economies, central bank influences long-term rates, too. The central bank uses the repo and reverse repo with commercial banks to control the short-term rate. It uses repo (i.e., repo for commercial bank) to inject liquidity into money market and reverse repo (i.e., reverse repo for commercial bank) to drain excess liquidity. To control long-term interest rate, the central bank uses bank rate (i.e., the rate at which the central bank lends to commercial banks), cash reserve ratio, statutory liquidity ratio and open market operations. In the Indian market, there is distortion of free play of demand-supply forces for determining the interest rate. The reason for this is that the statutory liquidity ratio (SLR) requires banks to compulsorily invest certain % of the 'time and demand deposits' into sovereign debt, and the government decides what interest rate is acceptable to it. This is somewhat forced lending to the government at artificial interest rate. It also

creates what is called "uncovered interest rate parity[119]" between the interest rates in India and other countries.

The term structure has different shapes but four of the following account for most of the shapes.

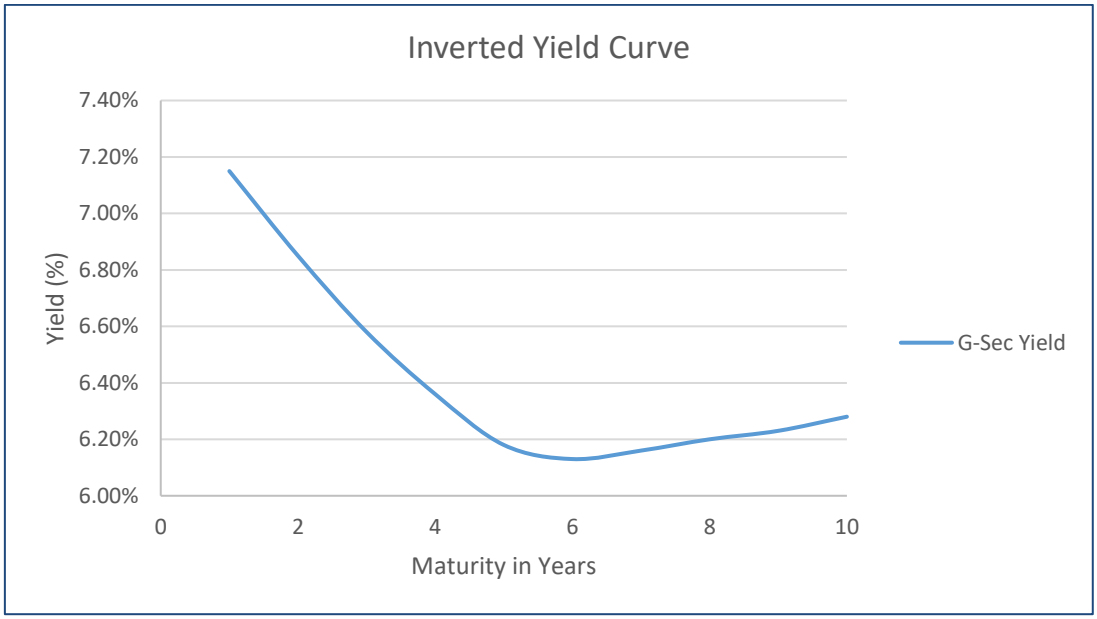
1. **Normal Yield curve:** This is an upward sloping yield curve indicating higher yield for higher maturity. Long term yields are higher compared to short term yields as the risk premia is higher for higher maturities. It is thought to reflect the higher inflation-risk premium that investors demand for longer term bonds. The positive slope of the yield curve here reflects investors' expectations for the economy to grow in the future and, importantly, for this growth would be likely to be associated with a greater risk of inflation in the future.



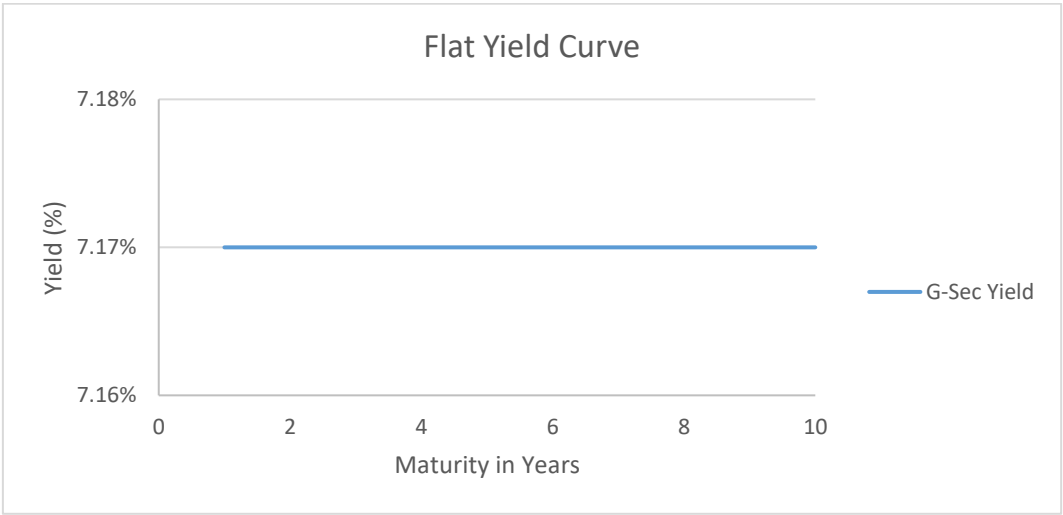
2. **Inverted Yield curve:** In this kind of curve, the short term yields are higher than the long term yields. At times, the policy rates are kept high to bring down excess demand and reduce financial bubbles created due to easy availability of credit and use of high leverage by the borrowers. At times, severe asset liability mismatch may also produce inverted yield curve. Typically, borrowers tend to create long term assets out of short term liabilities assuming the possibility of rolling over their borrowing and easy access to credit because of smoother availability of funds. An inversion happens, if assets are not sufficiently maturing to pay back the maturing liabilities and the borrower is not able to get easy credit, the short term demand for funds can be very high resulting in very high interest rate at the short end and lower interest at medium term. This shape is often seen when the market expects interest rates to fall. Under this abnormal and contradictory situation, long term investors may settle for lower yields now if they think the economy is likely to slow or even decline in the future.

[119] Uncovered interest rate parity (UIP) theory states that the difference in interest rates between two countries will equal the relative change in currency foreign exchange rates over the same period.

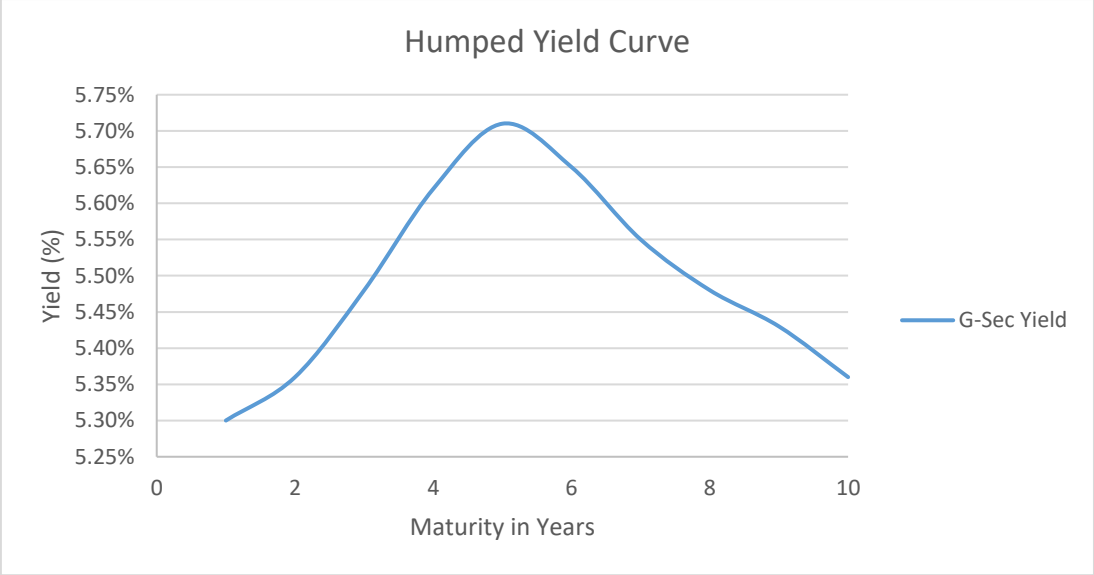
An inverted yield curve may indicate a worsening economic situation or recessionary situation in the future. However, technical factors such as a flight-to-quality or global economic or currency situations may cause demand for bonds on the long end of the yield curve causing rates to fall.



3. **Flat Yield Curve:** Here yields remain constant irrespective of time to maturity. There is no difference between short term yield and long-term yield indicating no extra premium for higher maturities. A small or negligible difference between short- and long-term interest rates occurs later in the economic cycle when interest rates increase due to higher inflation expectations and tighter monetary policy. This is called a shallow or flat yield curve and higher short-term rates reflect less available money.



4. **Humped yield curve:** At times, yield curves can be humped, and the short term and long term yields would be lower than medium term yield.



18.6.1 Term Structure of Rates: Shifts

Term structure is a snapshot of rates at a point of time, and there are many theories and economic arguments to explain the shapes. What is more important is, not the shape, but how it changes over time, which is called term structure "shifts". The shifts describe the *relative* moves of long-term rate (LR) and short term rate (SR), and they are grouped into three: parallel, steepening and flattening, as summarized below:

Shift	**Description**
Steepening	Difference between LR and SR rises or widens. The curve shifts in anti-clockwise direction
Flattening	Difference between LR and SR falls or narrows. The curve shifts in clockwise direction.
Parallel	All rates move in the same direction by same extent

Steepening and flattening can occur in three ways: both rates move in opposite direction; both rates move in the same direction (either both rise or both fall) but by different extent; and one rate remains constant and the other changes (either rise or fall). The first is called "twist" and the last two are called "convexity change".

Before				**After**				**Shift**
SR	**LR**	**Spread**	**Shape**	**SR**	**LR**	**Spread**	**Shape**	
7.00%	8.00%	+1.00%	Normal	6.90%	8.10%	+1.20%	Normal	Steepening – twist
7.00%	8.00%	+1.00%	Normal	7.10%	8.20%	+1.10%	Normal	Steepening – Convex change
7.00%	8.00%	+1.00%	Normal	6.80%	7.90%	+1.10%	Normal	Steepening – Convex change
7.00%	8.00%	+1.00%	Normal	6.90%	8.00%	+1.10%	Normal	Steepening – Convex change

Before				After				Shift
SR	LR	Spread	Shape	SR	LR	Spread	Shape	
7.00%	8.00%	+1.00%	Normal	7.00%	8.10%	+1.10%	Normal	Steepening – Convex change
7.00%	8.00%	+1.00%	Normal	7.10%	8.10%	+1.00%	Normal	Parallel
7.00%	8.00%	+1.00%	Normal	6.90%	7.90%	+1.00%	Normal	Parallel
7.00%	8.00%	+1.00%	Normal	7.10%	7.90%	+0.80%	Normal	Flattening – twist
7.00%	8.00%	+1.00%	Normal	7.20%	8.10%	+0.90%	Normal	Flattening – Convex change
7.00%	8.00%	+1.00%	Normal	6.90%	7.80%	+0.90%	Normal	Flattening – Convex change
7.00%	8.00%	+1.00%	Normal	7.10%	8.00%	+0.90%	Normal	Flattening – Convex change
7.00%	8.00%	+1.00%	Normal	7.00%	7.90%	+0.90%	Normal	Flattening – Convex change
8.00%	8.00%	0	Flat	8.10%	8.10%	0	Flat	Parallel
8.00%	8.00%	0	Flat	7.90%	7.90%	0	Flat	Parallel
8.00%	8.00%	0	Flat	8.00%	8.10%	+0.10%	Normal	Steepening – Convex change
8.00%	8.00%	0	Flat	8.10%	8.20%	+0.10%	Normal	Steepening – Convex change
8.00%	8.00%	0	Flat	7.90%	8.10%	+0.20%	Normal	Steepening – twist

18.7 Conversion of Rate into Amount

The market practice is to always quote interest rate as percentage per annum, but in the settlement of transaction, the interest *rate* is converted into interest *amount*. The conversion requires the following parameters to be specified: payment frequency, compounding frequency, day count fraction.

18.7.1 Simple Interest (SI) and Compound Interest (CI)

Simple interest is basically an interest rate without any reinvestment option. When interest is accrued for more than one period, it becomes necessary to distinguish between simple interest (SI) and compound interest (CI). Under compound interest, the money received at various points of time is reinvested to earn a higher effective rate of return. So, in effect, the simple interest rate remains static from year to year whereas the compound interest rate increases over each year.

The basic formula for simple interest is:

Simple interest (SI) = Principal * Interest rate p.a. * Time in years

The basic formula for compound interest is:

Interest for Year 1 (I_1) = Principal * Interest rate p.a. * (Time which is 1 year)

Interest for Year 2 (I_2) = (Principal +I_1) * Interest rate p.a. * (Time which is 1 year)

Interest for Year 3 (I_3) = (Principal + I_1 + I_2) * Interest rate p.a. * (Time which is 1 year)

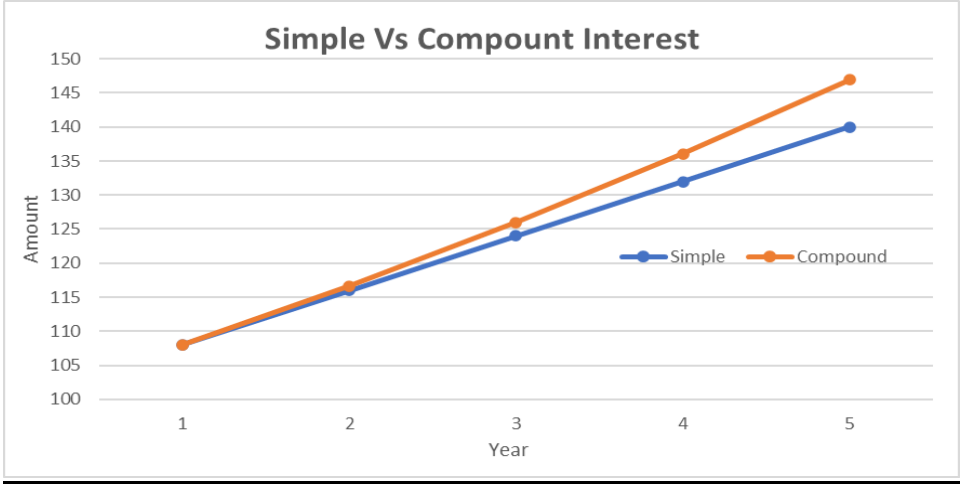
And so on……

Example: For an investment of ₹100 that earns 8% p.a., over five years, the growth in the investment would look like this:

Table: Comparison of Simple Interest and Compound Interest

Year	Principal at beginning of the period (₹)		Interest @ 8% (₹)		Principal + Interest at the end of year (₹)	
	Simple	Compound	Simple	Compound	Simple	Compound
1	100.00	100.00	100 * 8% =8	100 * 8% =8.00	108.00	108.00
2	108.00	108.00	100 * 8% =8	108 * 8% =8.64	116.00	116.64
3	116.00	116.64	100 * 8% =8	116.64 * 8% =9.33	124.00	125.97
4	124.00	125.97	100 * 8% =8	125.97 * 8% =10.08	132.00	136.05
5	132.00	136.05	100 * 8% =8	136.05 * 8% =10.88	140.00	146.93

Chart: Simple Vs Compound Interest



18.7.2 Single Period Investment

When investment is made for a single period (like a year), the investor gives money today and receives the principal and promised interest at the end of that period. The investor only earns a simple interest in a single period. For example, an investment of ₹2000 at 9% for one year would result in ₹2000+₹2000*9% = ₹2000 (1+9%) = ₹2180. This is the Future Value of the investment of ₹2000 made today at an interest rate of 9% per annum for a single period of one year.

Future Value for one period = Principal * (1 + Interest Rate %) or FV = PV (1 + r%)

where, FV = future value, PV = present value and r = periodic rate of return.

Then, PV = FV/ (1 + r%)

18.7.3 Multi-period Investment:

When multiple periods are involved in an investment, the present value would be calculated assuming reinvestment of the future stream of income at the agreed rate. If our ₹2000 is invested for 5 years, the Future Value would be ₹2000*(1+9%)^5 = ₹3077.25.

Hence, for multi-period investment:

Future Value = Principal * (1 + Interest Rate)^{time}

or

$FV = PV (1 + r)^{t}$

where FV = future value, PV = present value, r = periodic rate of return and t = number of periods invested. Single period is a simple case of the above rule with t=1.

Then, $PV = FV/(1 + r)^{t}$

These calculations of future value recognize interest-on-interest (compounded interest). In the example above, the interest would have been (=₹2,000*9%*5), or ₹900, if simple interest was calculated. Instead, since interest was earned on interest, the total amount earned has become ₹1077.25, when compounding was applied.

In general, the future value of money invested for *t* years with interest credited and re-invested at the end of each year is:

$$FV = PV (1 + r)^{t}$$

The expression $(1 + r)^{t}$ represents the future value of ₹1 invested today for *t* period at a compounding rate of *r.*

For example, suppose that an investment manager invests ₹1,00,000 in a debt obligation that promises to pay 7.3% p.a. for 4 years. The future value of the ₹1,00,000 investment is ₹1,32,555.85:

$FV = ₹1,00,000*(1+7.3\%)^{4}$

$= ₹1,00,000*(1.3255585)$

$= ₹1,32,555.85$

The above example demonstrates the computation of the future value of an investment when interest is paid annually. When interest is paid multiple times in a year like half-yearly, quarterly, monthly, etc., we need to adjust the frequency of payment and interest rate.

$$r = \frac{\text{Interest rate p.a.}}{\text{No. of times interest paid in a year}}$$

n = No. of times interest paid in a year * number of years

In the above example, if interest is paid semi-annually (i.e., paid twice in a year), then

$$r = \frac{0.073}{2} = 0.0365$$

$n = 2 * 4 = 8$

$FV = ₹1,00,000*(1+0.0365)^{8}$

$= ₹1,00,000*(1.332154)$

$= ₹1,33,215.41$

When interest is paid multiple times, the investor gets reinvestment option for the received interest and accordingly the total value of the investment increases due to the power of compounding. Hence, an investment with semi-annual coupon payment would be valued more than the same investment with an annual compounding. A quarterly compounding rate fetches a much higher value. The following table explains the same:

Payment Frequency	Effective rate for 12% investment
Annul	12.00%
Semi-annual	12.36%
Quarterly	12.55%
Monthly	12.68%

18.7.4 Day count fraction (or day count basis)

It specifies how to convert the payment period into year fraction (e.g. 6M = 0.5Y). For this conversion, we must agree on counting the number of days in a year and in the interest accrual period. It is expressed as a fraction. The numerator indicates the method of counting the number of days in the payment period; and the denominator indicates the total number of days in a year or 'full coupon period'.

It is the convention in all markets to include the first day of the period and exclude the last day of the period for interest accrual. For example, in the period from 30-April-2021 to 05-May-2021, there is one day in April and four days in May.

A particular market will apply one of the following day count conventions:

1. *Actual/Actual day counting:* This takes into account the actual number of days between the last coupon date and the next coupon date. This is very helpful for the Leap year when we have one day more for the year. In India this is widely used for corporate bond securities.

2. *30/360 (European) Day Counting***:** This day count convention considers all months are equal and have fixed 30 days in a month and 360 days in a year. If the day of either start date or end date is 31, it is arbitrarily set to 30. This is widely used for Indian government securities market. Day count conventions can be explained as follows:

$$Day\ count\ Fraction = \frac{[360 * (Y2 - Y1)] + [30 * (M2 - M1) + (D2 - D1)]}{360}$$

where:

"Y1" is the year pertaining to the year of the start date (last coupon date);

"Y2" is the year pertains to the year of the end date (settlement of cash flow date or next coupon date);

"M1" is the calendar month pertaining to the start date (last coupon date);

"M2" is the calendar month pertaining to the end date (settlement of cash flow date or next coupon date);

"D1" is the first calendar day, expressed as number, of the Calculation Period or Compounding Period, unless such number would be 31, in which case D1 will be 30; and

"D2" is the calendar day, expressed as a number, immediately following the last day included in the Calculation Period or Compounding Period, unless such number would be 31, in which case D2 will be 30.

For example, the accrual period is from 31-Dec-2020 to 25-Jan-2021. The day of the start date, being 31, needs to be shortened to 30, while the day of the end date requires no adjustment. After the adjustment, the Y2, Y1, M2, M1, D2 and D1 are 2021, 2020, 1, 12, 25 and 30, respectively.

$$[360 \times (2021 - 2020) + 30 \times (1 - 12) + (25 - 30)] / 360 = 25/360.$$

Similar to this we can have 30/360 (American) Day Counting

Lets take another example to understand difference between Actual/Actual and 30/360 Day counting.

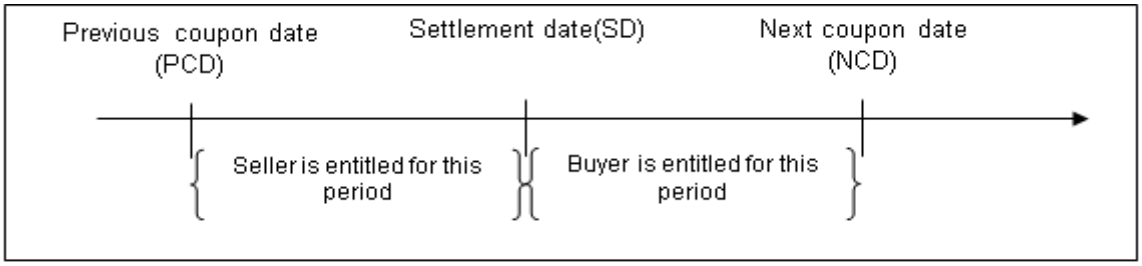
Find the accrual factors for the period from June 1, 2019 to September 1, 2019.

3. *Actual/365 Day Counting*: In this convention, the coupon days are calculated as actual number of days in between two dates but the year is considered as 365 days. This day count convention is used in Indian money market.
4. *Actual/360 Day Counting*: In this convention, the coupon days are calculated as actual number of days in between two dates but the year is considered as containing 360 days. This is widely used in Swap valuation.

Globally, different countries use different conventions for their fixed income markets. In addition, these may be different for money market and bond market in same geography (e.g. India).

18.8 Accrued Interest

Accrued interest is a market practice peculiar to bond market. Accrued interest applies only when a bond is a coupon bond (or any other instrument for which coupon for the current interest period is known). For the secondary market trades of such bonds, there are two prices. They are "clean price": the price at which the bond is negotiated; and "dirty price" (also known as "invoice price"): the price at which the bond is settled. Dirty price is always higher than the clean price by the amount of accrued interest. In other words, dirty price is clean price plus accrued interest. Accrued interest is the interest accrual at coupon rate from the previous coupon date to the settlement date of the trade. Let us see the timeline of different dates in the following figure:



The settlement date of the secondary market trade falls between two coupon dates, which we will designate as previous coupon date and next coupon date. Between previous coupon date and settlement date, it is the seller that owns the bond and therefore is entitled to receive the interest accrual for this period. Similarly, it is buyer that owns the bond between settlement date and next coupon date and therefore he is entitled to the interest accrual only for this period. However, the issuer does not keep track of who owns the bonds for which period during the coupon period. Whosoever owns the bond on next coupon date, he gets the coupon for the full period. Accordingly, the buyer gets the coupon for the full period, which means that the seller is deprived of his entitlement. To make the trade fair to both parties, buyers computes the interest accrual from previous coupon date to settlement date and pays to the seller as an add-on amount of "accrued interest" at the time of settlement, and gets it reimbursed on the next coupon date. Day count convention is very important for computation of accrued interest.

For example, in case of Actual/Actual, in the case of a 6.90% bond paying semi-annually, whose previous coupon date was the January 13, 2021, and next coupon date is July 13, 2021, the accrued interest on March 5, would be:

$$\text{AI} = \frac{6.90}{2} * \frac{51}{181} = 0.972099$$

In case of 30/360 (E), in the case of the 6.90% bond paying semi-annually, whose previous coupon date was the January 13th and next coupon date is July 13th, the accrued interest on March 5th, would be:

$$\text{AI} = \frac{6.90}{2} * \frac{52}{180} = 0.996667$$

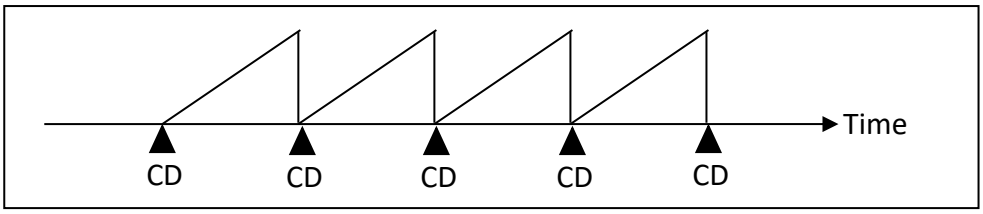
Now, if clean price of the bond is Rs. 101.50, then

Dirty price = clean price + accrued interest

Dirty price = Rs. 101.50 + Rs. 0.9967 = Rs. 102.4967

Generally in market, trading / quotation is done at clean price and settlement happens on dirty price.

A logical question is why not include accrued interest in the market price or clean price of the bond so that the negotiated price (or clean price) recorded in the deal ticket is the same as the settlement price (or dirty price)? If we incorporate the accrued interest in the market price of bond itself, the result will be a periodic rise-and-fall pattern in bond price between two coupon dates. Because the daily interest accrual is constant, the price will rise smoothly every day by daily accrual amount from one coupon date (CD) to the next and falls abruptly by the full coupon amount on the next coupon date.



This is how the bond price will change between two coupon dates if accrued interest is incorporated in market price. And this pattern of change will repeat in all other coupon periods. This saw-tooth like price change is in addition to two other sources of price change, which are price change due to change in interest rate; and price change due to change in credit rating of the issuer. The former affects all bonds, and the latter will affect only the bonds of a particular issuer. Of the three sources of change in bond price, that due to accrued interest is known in advance, but that due to interest rate and credit rating changes are not known in advance. The known changes are called 'deterministic', and the unknown changes are called 'stochastic'. Traders would like to monitor only the stochastic changes. There is no use of monitoring deterministic changes, which are already known. Therefore, accrued interest is removed from the market price, and is made an add-on amount in the settlement.

Accrued interest is peculiar to bond market. Its equivalent in equity market, which is 'accrued dividend' does not exist. One may argue that dividend is contingent and not known in advance. However, after the company announces the dividend pay-out, the amount is known. Therefore, for all trades in secondary market between announcement date and ex-dividend date, the concept of 'accrued dividend' can be implemented. Dividend's contribution to the total return from equity is negligible. Therefore, the concept of 'accrued dividend' is ignored. Coupon's contribution to total return from bond may be 50 – 100%. Therefore, the concept of 'accrued interest' cannot be ignored.

18.9 Spot Rate (Zero Rate) and Holding Period Return

Return on investment is the most important measure of performance. It has the following properties:

- Expressed as a rate per annum
- If there is income before the investment term, the income has to be reinvested until the term
- Compounding at less than yearly intervals, if required, is incorporated

If there is no interim income, then it is simple to compute the return as follows:

$$\left\{\left[\frac{F}{P}\right]^{\frac{1}{N \times C}} - 1\right\} \times C$$

where

- F = final amount received (i.e., face value)
- P = initial amount invested (market price)

- N = number of years
- C = compounding frequency

The first term, (F/P), is the growth factor: it indicates how much the unit amount has grown into over the entire investment term. For example, if Rs 100 grows into Rs 150 over three years, the growth factor is 1.5: one unit has grown into 1.5. The exponent term, the reciprocal of (N × C), converts the growth factor from "per investment period" to "per compounding period". The third term, deducting unity from the "per compounding period" growth factor, converts it from growth factor to growth rate. The fourth term, *C*, converts the "per compounding period" growth rate into annualized compounded growth rate, which is how the return is expressed. Using the same example of Rs 100 resulting into Rs 150 after three years, the return measure with different compounding frequency is:

With annual compounding: $\left\{\left[\frac{150}{100}\right]^{\frac{1}{3\times 1}} - 1\right\} \times 1$ = 14.4714%.

With semi-annual compounding: $\left\{\left[\frac{150}{100}\right]^{\frac{1}{3\times 2}} - 1\right\} \times 2$ = 13.9826%.

With quarterly compounding: $\left\{\left[\frac{150}{100}\right]^{\frac{1}{3\times 4}} - 1\right\} \times 4$ = 13.7464%.

With monthly compounding: $\left\{\left[\frac{150}{100}\right]^{\frac{1}{3\times 12}} - 1\right\} \times 12$ = 13.5919%.

The above is the true and realized return. In the above example, we can say that we have earned 13.5919% per annum for every month for the next three years, and the interest earned every month is automatically reinvested at the same rate of 13.5919% per annum until the end of three years. This return, which is the realized return, is also called *zero rate* or *spot rate*. A 5Y zero rate of 7.5% means that the return on initial investment is 7.5% for first year, which is reinvested automatically for four more years at the same rate of 7.5%; the return for the second year is 7.5%, which is reinvested automatically for three more years at the same rate of 7.5%, and so on.

For zero-coupon securities (i.e. discount instruments), it is possible to readily compute the true return or zero rate because there are no interim cash flows. The redemption value corresponds to the *F* and the initial purchase price corresponds to the *P*. For coupon bonds and annuities, it is not possible to compute true return because of interim cash flows, which need reinvestment until maturity. The reinvestment rates are not known until the reinvestment time (except when the future cash flows are locked through interest rate derivatives), and therefore true return is not known at the beginning ("ex ante") but known only at the end of investment period ("ex post"). At the end of investment period, all the reinvestment rates are known, and we can compute the true return, which is called *holding period return* (HPR). Since HPR can be computed only ex post and not ex ante, some other approximate measures of return are developed for coupon bonds and annuities. They are *coupon*, *current yield* and *yield-to-maturity*.

The main weakness of the yield to maturity yield curve stems from the assumption of a constant rate for coupons reinvested during the bond's life. This ignores time value of money aspect. However, to take care of time value of money, we need to use the spot rates or zero coupon yield curve. We will see these in detail in section 1.11.4.

18.10 Coupon, Current Yield and Yield-To-Maturity

18.10.1 Return from Bonds

Fixed income investors or investors who purchase a bond may benefit from that investment in many ways:

- periodic coupon as per the terms in the indenture of the bond;
- capital gain if interest rate falls (it may also result in capital loss if interest rate rises), in case the instrument is traded before maturity;
- reinvestment of the cash flows received during the life of the bond (akin to interest on interest).

18.10.1.1 Coupon Income

A coupon income is the regular flow of money or return to the investor or lender as promised by the borrower. When we say, for example, 7% GS 2027, we mean the security is a Government Security, paying an Annual Coupon of Rs 7 on a Face value of Rs 100. Typically, the coupons are paid semi-annually and hence the investor would receive the coupon of Rs 3.50 every half year.

Coupon is the promise of the borrower to pay a certain amount of money at regular intervals to the lender during the life of a bond or a note. In earlier years, bonds issued by Governments or central banks on behalf of sovereign Governments used to be bearer bonds and were repaid on physical presentation of the appropriate instrument. Smaller tokens/coupons used to be attached to such bearer bonds indicating a specific amount that was payable on a specific date mentioned on such tokens/coupons so that investors could collect the same on physical presentation of those tokens/coupons. The coupon used to be fixed for the bearer bonds. Bond coupons are the biggest source of income for the bond holders. As per indenture, the specified yearly coupon amount is typically paid semi-annually.

Indenture of Government Bond 7.17% GS 2028 (08-Jan-2028) specifies coupon payment twice in a year on 08-Jan and 08-July till it matures on 08-Jan-2028. An investor will receive Rs 3.585 (i.e., half of Rs 7.17) on every coupon date per each bond held. Rs 7.17 is calculated using the face value of Rs 100 (i.e., as 7.17% p.a. on Rs 100).

A Zero Coupon Bond investor doesn't receive any coupon during the investment period. At the end of the investment period, investor will receive the face value Rs 100. In India, GOI treasury bills are issued as Zero Coupon Bonds. If the bond buyer buys a Floating rate bond linked to a benchmark like 182-Day T-Bills, the investor would receive varying coupons depending on the interest rate paid on a 182-day T-Bill on the coupon date.

18.10.1.2 Capital Appreciation

During the life of investment in a bond, market interest rate changes and the present value of the bond would also change as the coupon is fixed. If the investor holds till maturity, investor's rate of return would remain fixed but if the investor desires to exit the investment anytime during the life of the bond, his/her investment would either gain in value (if the present market interest rate has fallen vis-à-vis promised coupon) or it would have reduced in value (if the present market interest rate has gone up). There will be capital appreciation during the life of the bond, if the interest rate in the market falls and the original investor sold the bond at such times, though at maturity the return would be only the face value.

Typically, coupon is set on the issuance date based on the interest rate prevailing in the market for a particular class of bonds with a particular maturity. For example, the issuer issuing the AAA rated bond of 10 years maturity would pay the interest rate prevailing in the market on the date of issue for similar kind of bonds. After issuance, changes in the economic scenario do make the interest rate change. If the interest rate rises, the market value of the investment would come down and if the interest rate falls, the market value of the instrument would increase. This fall / rise in market value is a capital depreciation / appreciation of the bond if it is sold during this time before maturity. If the bond is held till maturity, this interim fall and rise of interest rate would have no meaning for the investor. Appreciation and depreciation in value of the bond is very important to traders as their investment has to be recorded in their books of accounts as per the market value of the bond.

If our investor of 7.17% GS 2028 faces the interest rate changes lower than 7.17%, the bond would be selling at a price higher than Rs 100 in the market. Therefore, the investor would make a gain out of this bond when interest rate falls below 7.17% but the investor would make loss if the interest rate rose above 7.17%. The rule is when interest rate falls, the investor gains but when interest rises, the investor faces loss.

Further, long term bonds pay a 'term premium'. The 'term premium' is the amount by which the yield on a long-term bond is greater than the yield on shorter-term bonds. This premium reflects the amount investors expect to be compensated for lending for longer periods (and therefore longer periods of uncertainty).

18.10.1.3 Reinvestment income

The investor receives periodic interest or coupon on the debt investment. The same is reinvested on assets which would yield further income. For example, when a semi-annual coupon payment is received by our investor from the investment on 7.17% GS 2028, the investor would have the ability to invest that cash flow of Rs 3.585 in another asset on such coupon receiving date. The yield to maturity (YTM) assumes the reinvestment of the future coupons at the same rate (i.e., at YTM). This is because the bond price equation assumes the same yield to discount all future cash flows (i.e., both the coupons and the redemption value).

18.10.2 Yield Measures

Bonds exhibit various characteristics with respect to being securities as below:

- Different maturities with the same coupon

- Different coupons for the same maturity
- Different ratings for the same coupon and maturities
- Different redemption values with varied maturity

These characteristics affect price of the bonds in a very explicit way. Price of a bond cannot be used to compare the relative attractiveness with another bond because of the above reasons.

Bonds' price does not give much information to the investors. If a bond maturing in 10 years of time with a coupon of 10% trades at Rs 117.37 and another bond with 10-year maturity with a coupon of 8% trading at Rs 103.47 and still another bond of 10-year maturity with 6% coupon trading at Rs 89.58, the investor gets the same return of 7.5% p.a., when converted into implied yield from their prices, given maturity and the coupons, assuming the above three bonds belong to the same rating class. The returns on investment on bonds have to be compared using a unified measure like the yield an investor gets from such bonds. Yields can be compared to find out the relative attractiveness of various investments. For an investor, yield of a bond also provides information about the bond being fairly valued.

18.10.2.1 Current Yield

Current yield is the simplest measure of the yield on a bond and oldest form of yield used in the market to compare various bonds in terms of their relative attractiveness of investment. It assumes only one period investment and it can rank all the bonds. Any bond in which the current yield is lower than the other short term interest rate, it would imply that the bond has holding (running) cost. This means that the investor would relatively be less compensated by investing in this bond vis-à-vis other short term instruments which are more attractive in terms of return.

It calculates the bond's coupon income as a proportion of the clean price paid for the bond. The formula used to calculate current yield is:

$$\text{Current Yield} = \frac{\text{Coupon}}{\text{Clean Price}} * 100$$

Example: Bond 7.17% GS 2028 (8-Jan-2028) is trading at Rs 96.2290 (clean price). The current yield of this bond is 7.45% [= (7.17/96.2290)*100)] vis-à-vis the coupon of 7.17%.

18.10.2.2 Yield to Maturity (YTM)

The most widely observed yield is known as the "Yield to Maturity" (or YTM) which is commonly referred to as "Yield" in the market. For any bond traded in the market, the YTM is derived assuming that the investor would hold the bond until maturity and all future interest rates would be remaining the same as the discount rate so that all future coupons when received in future would be reinvested at the same Yield.

In this case, "Yield" is the interest rate that would make present value of the known future cash flows of the bond equivalent to the current price of the bond. We know the equation:

$$PV = \sum_{n=1}^{N} \frac{C_n}{(1+r)^n} + \frac{Redemption\ Value}{(1+r)^n}$$

C_n is the future known cash flows (at various future dates) of the bond over "n" years;
PV = Initial value we agree to pay for the Bond or Price of the Bond (all inclusive);
N = number of years 1 to N.

The yield "r" calculated from the above relationship is also known as the "Internal Rate of Return" as this is used to discount all future known cash flows to get the current price of the bond.

Yield to Maturity is a very simple measure and does not take into account the time value of money as it uses the same yield to discount all future cash flows irrespective of their time of arrival. The YTM is the discount rate that equates the discounted future cash flows and principal to be received with the present value or current price of the bond. In other words, it is the internal rate of return (IRR) or the expected rate of return on the bond. YTM can be calculated iteratively using standard spreadsheet YIELD function available in MS Excel. There are various calculators and software's available that provide YTM or yield as an inbuilt function.

18.10.2.3 Yield for Money Market

Money market instruments are short-term instruments which mature within a year. Yield measures for money market instruments are annualized but not compounded as there is only a single cash flow till maturity in general. These instruments have different maturity periods and hence for the estimation of the yield, money market instruments need to be converted to a common basis. Such yield is also known as B*ond Equivalent Yield* (BEY). This can be understood better with the following example for estimation of a T-Bill's yield.
Treasury Bills (T-bills) are money market instruments to finance the short term requirements of the Government of India. These are discounted securities and thus are issued at a discount to face value and redeemed at par (₹100). The return to the investor is the difference between the maturity value and issue price. The Bond Equivalent Yield (BEY) of Treasury bill is calculated using this formula:

$$\text{BEY} = \frac{\text{Face Value} - \text{Price}}{\text{Price}} * \frac{365}{\text{Days to maturity}} * 100$$

This uses Actual/365 day count convention as prevalent in Indian Money Market.

Example: T-Bills maturing on November 25, 2021, is trading at Rs 99.6898 with value date October 22, 2021.

The yield of this T-Bill is 3.34% [= {(100-99.6898)/99.6898}*(365/34)].
The similar methodology is used to compute yield of money market instruments such as Commercial paper and Certificate of Deposits.

Discount Yield:

Discount yield computes the expected return of a bond purchased at a discount and held until maturity. Discount yield formula uses a 30-day month and 360-day year to simplify the calculation. Discount yield is important for trading in 91-day T-Bills Futures.

Discount Yield = (Face value – Price) * 360 / (Face Value * Days to maturity)

18.10.2.4 Effective Yield

Deposit taking institutions (like banks) often quote two interest rates when they advertise interest rate on various products they are selling. The first is the actual annualized interest rate known as nominal rate or stated rate. The second rate is an equivalent rate which produces same final amount at the end of 1 year if simple interest is applied. This is called the "effective yield". A nominal interest rate of r per annum, compounded m times per year, is equivalent to an effective annual yield of:

$$Y = (1 + \frac{r}{m})^m - 1.$$

For example, a bond paying 4.20% annual coupon would be worth 4.28%, if coupon is paid every month. [= (1+0.042/12)^12 - 1 = 0.042818 = 4.28%].

Point to note that multiplying semi-annual yield by 2 will give an underestimate of the effective annual yield. The proper way to annualize the semi-annual yield is by applying the following formula:

$$Effective\ Annual\ Yield = (1 + periodic\ interest\ \ rate)^n - 1$$

For a semi-annual- pay bond, the formula can be modified as follows:

$$Effective\ Annual\ Yield = (1 + semi\ \ annual\ interest\ \ rate)^2 - 1$$

Similarly, semi-annual yield is:

$$Semiannual\ Yield = 2 * ((1 + Annual\ \ Interest\ rate)^{\frac{1}{2}} - 1)$$

18.11 Determining Cash Flow, Yield and Price of Bonds

A bond is valued using known future cash flows. The future cash flows are calculated using the promised coupon on the Principal. We will use the above equation to price a bond. Let us assume an annual coupon paying bond with 10% interest rate promised at the time of issuance with a residual maturity of 5 years from today. Let us also assume that similar types of securities are available in the market at the yield or market interest rate of 8%. Now we have to find the cash flows, discount factors and ultimately the price of the bond assuming a face value or par value of ₹100.

The cash flows are: Yearly ₹10 for the next 5 years and at the time of maturity, we get back ₹100 along with the last coupon. Now the Year 1 Discount Factor would be $\frac{1}{(1+8\%)^1} = 0.9259$. This means ₹1 to be received after 1 year from now would be valued ₹0.9259 today with 8% current interest rate. The same way we compute Discount Factors as follows:

Year	Discount factors using 8% Yield
1	0.9259
2	0.8573
3	0.7938
4	0.7350
5	0.6806

The Cash flows to be received in future years would be as follows along with their respective Present value using the present yield of 8% for such investment:

Year	Discount factors using 8% Yield (DF)	Cash flows (₹)	Value = DF * Cash flow (₹)
1	0.9259	10	9.2593
2	0.8573	10	8.5734
3	0.7938	10	7.9383
4	0.7350	10	7.3503
5	0.6806	110	74.8642

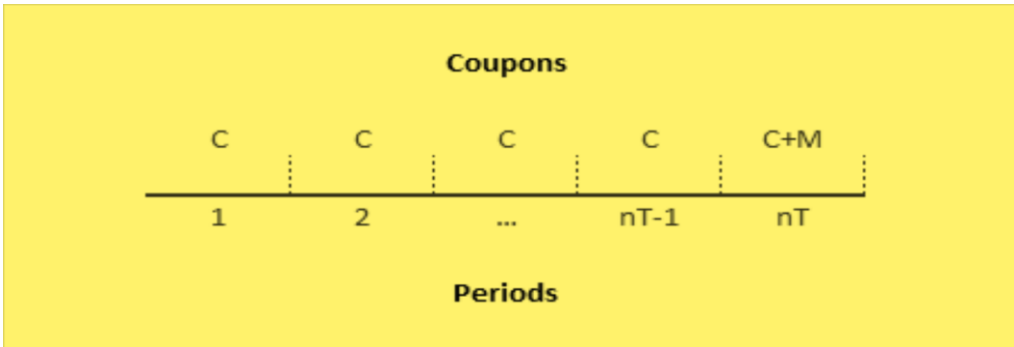
Now the value of the bond in our example would be sum of all discounted value of future cash flows as given in the above table. The same would work out as follows:

Year	Discount factors using 8% Yield (DF)	Cash flows (₹)	Value = DF * Cash flow (₹)
1	0.9259	10	9.2593
2	0.8573	10	8.5734
3	0.7938	10	7.9383
4	0.7350	10	7.3503
5	0.6806	110	74.8642
	3.9927		**107.9854**

The sum of all Discount Factors (3.9927) in this case would be known as PVIF or Present value interest factor. This 3.9927 is arrived using (8%,5) with annual cash flows. We can use the above PFIV to calculate the bond as follows:

Value = (Annual Coupon cash flow * PVIF) + (Par value or Face value or Redemption Value * PV of last maturity)
Or, Value of the Bond with 10% Coupon with 5 years maturity and present yield of 8% = (10*3.9927) + (100*0.6806) = 39.9270 + 68.0600 = ₹107.9870.

Consider a bond paying coupons with frequency n maturing in year T. The cash flows associated with the bond are coupon C paid with frequency n up to year T, plus the principal M, paid at T.



We can use the same bond price equation to describe the value of a semi-annual coupon paying bond (n = 2 in this case). If the bond is paying coupon (of 10% p.a.) twice in a year, then the investor

will receive only ₹5 (i.e., half of ₹10) every 6 months and the same can be reinvested at the current market interest rate of 8% p.a.

Valuation of bonds with semi-annual compounding is given in the table below:

Year	Discount Factors using 8% Yield (DF)	Cash flows (₹)	Value = Cash Flow * DF (₹)
0.5	0.961538462	5	4.8077
1.0	0.924556213	5	4.6228
1.5	0.888996359	5	4.4450
2.0	0.854804191	5	4.2740
2.5	0.821927107	5	4.1096
3.0	0.790314526	5	3.9516
3.5	0.759917813	5	3.7996
4.0	0.730690205	5	3.6535
4.5	0.702586736	5	3.5129
5.0	0.675564169	105	70.9342
SUM of DF	**8.110895779**	**Total Value**	**108.1109**

The Discount Factor for the first period is calculated as $\frac{1}{(1+4\%)^{2*0.5}}$ = 0.9615 ($\frac{1}{(1+r/2\%)^{2*n}}$)

The bond can be valued as: (coupon * PVIF) + (face value * DF for the maturity year). The same would be: (5*8.1109) + (100*0.675564) = 40.5545 + 67.5564 = ₹108.1109. The semi-annual coupon paying bond is valued more at 108.1109 than the annual coupon paying bond at 107.9870 with similar maturity, yield and coupon rate. This is due to the greater frequency of compounding in case of semi-annual bond**.**

The valuation rule for valuing semi-annual bonds can be extended to valuing bonds paying interest more frequently – like once in a quarter. Hence, if "n" is the frequency of payments per year, "t" the maturity in years, and, as before, R the present interest quoted on an annual basis, then the formula for valuing the bond would be:

$$V = \sum_{t=1}^{n*t} \frac{(\frac{C}{n})}{\left((1+\frac{R\%}{n})^{n*t}\right)} + \frac{\text{Face Value}}{(1+\frac{R\%}{n})^{n*t}}$$

When n becomes very large, this approaches continuous compounding wherein the investment earns and reinvests interest at all points in time, rather than at specified intervals. However, in practice, continuous compounding gives a marginally higher interest than daily compounding and having an infinite number of periods may not be feasible.

18.11.1 Valuing Bonds with Maturities Less Than One Year

If a bond matures before one coupon cycle (typically a Treasury bill), then the value of the bond would be calculated as:

$$V = \frac{Face\ Value}{(1 + R\% * \frac{n}{365})}$$

This formula would calculate n as the difference between the maturity date and the date of buying the bond.

18.11.2 Valuing Zero Coupon Bond

If we have a zero coupon paper higher than one year or one coupon cycle, we can calculate the bond equivalent yield price:

$$\mathrm{V} = \frac{\mathrm{Face\ Value}}{(1 + \frac{\mathrm{R\%}}{\mathrm{n}})^{\mathrm{n*t}}}$$

For semi-annual yield, n will equal to 2.

$$V = \frac{Face\ Value}{(1 + R\%/2)\text{^}(2 * time)}$$

If we want to calculate the annual bond equivalent yield, the R% would not be divided by 2 and the time would not be multiplied by 2. Time will be number of years to maturity.

18.11.3 Valuing Bonds at Non-Coupon Dates

The Dirty Price is nothing but the Present Value of the Bond. The Present value is further bifurcated into Clean Price and Accrued Interest. Bonds are generally valued in between coupon dates when they are traded. Hence the concept of Clean price and Dirty price has to be established. The dirty price is the sum of clean price and the interest accrued on the bond since the last coupon payment date.

Dirty Price = Clean Price + Accrued Interest

In order to price a bond in between coupon days, the following principles are followed.

1. Take the settlement date (buying date) to the previous coupon date and value the bond using the coupon, yield and the residual maturity from the last coupon date.
2. Bring the said price or value to the future date (settlement date or buying date) with a Future Value Factor.
3. Deduct the accrued interest from the total value to arrive at the clean price or trade price or invoice price.

Example:

Trade value (Settlement) date: 12-Aug-2020

Maturity date: 11-May-2030

Coupon: 5.79%

Present yield: 5.90%.

The bond pays semi-annual coupon.

The market convention for day count is “30/360 European” (i.e., every month is 30 days and year is 360 days).

Last coupon Date = 11-May-2020

Time from 11-May-2020 to 11-May-2030 = 10 years

Time between Last coupon date (11-May-2020) and Settlement date (12-Aug-2020) = 91 days = 91/360 years = 0.252778 years (using 30/360E day count rule). Now for 91 days, the accrued interest will be:

$$\text{Accrued Interest} = 5.79 * \left(\frac{91}{360}\right) = ₹1.4636$$

This bond would be quoted and traded at a clean price of ₹99.1828 and will be settled at the Dirty Price of ₹100.6464. The same value can be arrived at using every stage cash flow discounting, as shown below:

Cash Flow date (CFD)	Cash Flow in Rs.	Difference in CFD and Settlement Date in terms of year	DF @5.90%	D Value = CF*DF
11-Nov-20	2.895	0.2472	0.9857	2.8537
11-May-21	2.895	0.7472	0.9575	2.7719
11-Nov-21	2.895	1.2472	0.9300	2.6925
11-May-22	2.895	1.7472	0.9034	2.6153
11-Nov-22	2.895	2.2472	0.8775	2.5404
11-May-23	2.895	2.7472	0.8524	2.4676
11-Nov-23	2.895	3.2472	0.8279	2.3969
11-May-24	2.895	3.7472	0.8042	2.3282
11-Nov-24	2.895	4.2472	0.7812	2.2615
11-May-25	2.895	4.7472	0.7588	2.1967
11-Nov-25	2.895	5.2472	0.7370	2.1337
11-May-26	2.895	5.7472	0.7159	2.0726
11-Nov-26	2.895	6.2472	0.6954	2.0132
11-May-27	2.895	6.7472	0.6755	1.9555
11-Nov-27	2.895	7.2472	0.6561	1.8995
11-May-28	2.895	7.7472	0.6373	1.8451
11-Nov-28	2.895	8.2472	0.6191	1.7922
11-May-29	2.895	8.7472	0.6013	1.7408
11-Nov-29	2.895	9.2472	0.5841	1.6910
11-May-30	102.895	9.7472	0.5674	58.3782
		SUM	15.16779	**100.6464**

Deducting accrued interest from the dirty price will provide the clean price of the bond.
Therefore, clean price of this bond would be: ₹100.6464 – ₹1.4636 = ₹99.1828.

18.11.4 Spot Rate Bond Price and YTM

Spot rate (also known as “zero rate”) is the true return on investment. It considers premium/discount in bond price, capital gain/loss at redemption and reinvestment of interim income. It is also called “zero rate” because it can be readily computed from the market price of zero-coupon bond.

Since the zero rate (Z) is the true return, the present-value of any future cash flow will be its discounted value, the discounting being at the zero rate relevant to the timing of the cash flow. Bond (or any financial instrument) is a set of cash flows occurring at different times during its life. The current market price of bond should be its cash flows discounted at the appropriate zero rates from the prevailing term structure of zero rates. Consider the earlier 3Y 8% coupon bond. The current market price of the bond should be:

$$\text{Price} = \frac{8}{(1+Z_1)^1} + \frac{8}{(1+Z_2)^2} + \frac{108}{(1+Z_3)^3}$$

where Z_i is the zero rate for the *i*th year. For the above example, what is the true return? The answer is that there is no single answer but there are three answers. For the first year, the return is Z_1 on a final amount of 8; for the second year, Z_2 on a final amount of 8; and for the third year, Z_3 on a final amount of 108. Assuming that the term structure of zero rates is 7.75%, 8.00% and 8.25%, respectively, for the first, second and third years, the market price of the bond will be as follows:

Year	Zero rate (Z)	Cash flow	Discounted value
1	7.75%	8	$8 / (1.075^1) = 7.4246$
2	8.00%	8	$8 / (1.08^2) = 6.8587$
3	8.25%	108	$108 / (1.0825^3) = 85.1413$
		Total	**99.4246**

The above brings in two important facts.

- First, the bond price is determined, not by demand-supply for bond, but by term structure of zero rates. It should be noted that the demand-supply forces do have a play, but that is demand-supply for money, not for bond. The demand-supply for money determines the zero rates, which in turn determine the bond price.
- Second, in a coupon bond (or annuity), there is no single return measure but multiple of them.

In the above example, the return is 7.75% for one year for a final amount of 8; 8% for two years for a final amount of 8; and 8.25% for three years for a final amount of 108. The interpretation of 2Y zero rate of 8% means this: you earn 8% for one year, which will be automatically reinvested at the same 8% for one more year. Similarly, the 3Y zero rate of 8.25% implies that in the first year, the return is 8.25%, which is reinvested at the same rate for two more years; and in the second year, the return is the same 8.25%, which is reinvested for one more year at the same rate. If there is a 10Y coupon bond with semi-annual payment, there will be 20 different return measures, each corresponding to the cash flows. To make it easier for interpretation, we average all the rates into a single number, which is called YTM. For the earlier 3Y 8% coupon bond, the YTM is derived from the bond price as follows:

$$99.4246 = \frac{8}{(1+YTM)^1} + \frac{8}{(1+YTM)^2} + \frac{108}{(1+YTM)^3}$$

It can be solved through trial-and-error method by starting at a guess rate and progressively increasing or decreasing it. For the above example, YTM has to be 8.2241% for the above equation to be satisfied.

The above shows that YTM is not a return measure but another way of quoting bond price (because it is derived from bond price). Alternately, given YTM, the bond price can be derived from the above equation. Both bond price and its variant of YTM cannot be used as judgment tools to determine the mispricing, as shown by the following example. There are two bonds issued by the same issuer and with the same maturity of 3Y. One bond has a coupon of 8% and the other 9%. The market prices of these bonds, given the following term structure of zero rates, and the translation of price into YTM will be as follows:

Year	Zero Rate	Bond A		Bond B	
		Coupon	Disc Amount	Coupon	Disc Amount
1	7.7500%	8	7.4246	9	8.3527
2	8.0000%	8	6.8587	9	7.7160
3	8.2500%	108	85.1413	109	85.9296
Total			99.4246		101.9983
YTM			**8.2941%**		**8.2215%**

Both bonds have the same maturity and issued by the same issuer. Therefore, maturity-related price risk and issuer-related credit risk are the same for both bonds. Which bond is better? Bond A would seem under-priced at 99.4246 and Bond B would seem overpriced at 101.9983. However, this is incorrect because we are comparing apples with oranges. Both bonds are priced correctly at the same term structure of zero rates. The price cannot be used as a judgment tool for determining the mis-pricing. Since YTM is another way of quoting price, it cannot be used as judgment tool, too. Only if the actual market price of the bonds is different from 99.4246 (for Bond A) and 101.9983 (for Bond B), we can say that there is a mispricing or cheapness/richness of bonds.

Investor may still have preference for the bonds, which is decided by factors other than price or YTM. These factors are tax considerations and expectations about future interest rates for reinvestment. If you expect interest rate would rise in future, then you may prefer Bond B because higher amount of Rs 9 will be reinvested at higher rate. Similarly, if capital gains are taxed at lower rate than income, then investor will prefer Bond A because it has lower income of Rs 8 a year and a capital gain at redemption.

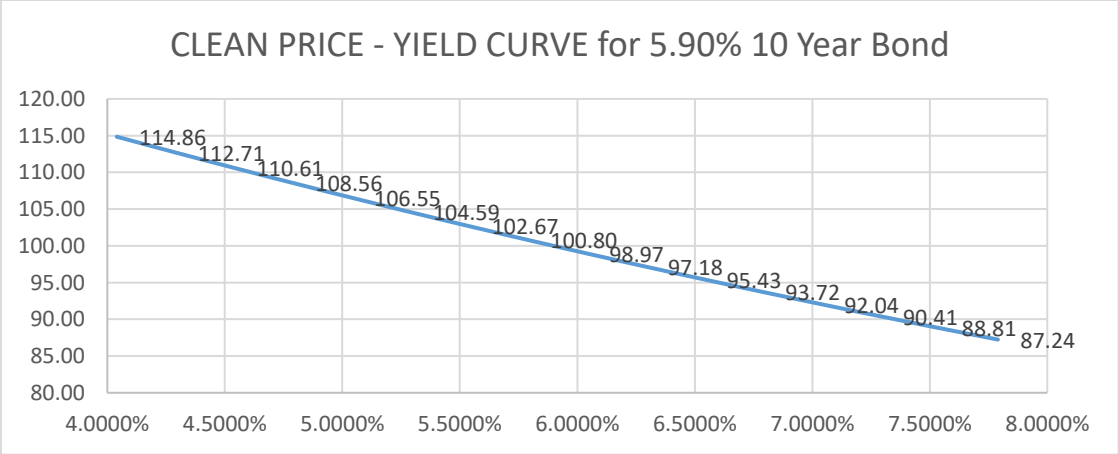
To sum up, the following are the drawbacks in using YTM as a true return measure:

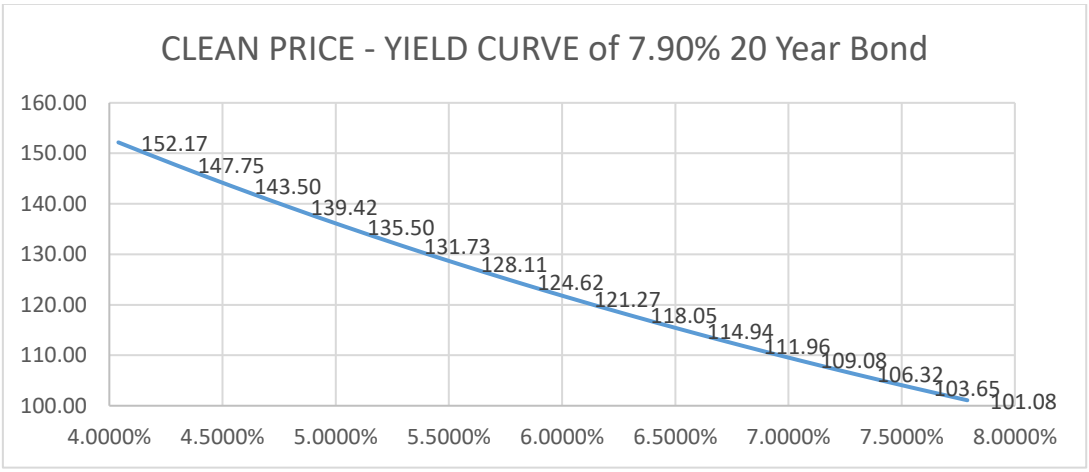
- By using the same rate for all cash flows, it assumes that the term structure of zero rates is flat, which is inconsistent with reality.

- Bond with different coupons but with same maturity will have different YTMs (which is called "coupon effect"). In other words, YTM is inconsistent because it simultaneously assumes different levels of term structure of zero rates at the same time. In the above example, YTM assumes that term structure of zero rates is flat at 8.2941% for Bond A and 8.2215% for Bond B, whereas the actual rates are 7.75%, 8% and 8.25% for 1Y, 2Y and 3Y, respectively.
- YTM is inconsistent in another way: it assumes different reinvestment rates simultaneously. In the above example, it assumes the reinvestment rate to be 8.2941% for Bond A and 8.2215% for Bond B, while the actual investment rates are unknown.

18.11.5 Price-Yield Relationship

The price-yield relationship is inverse in nature. When we calculate the relationship, we use only the clean price. If we want to plot the price-yield relationship of two bonds, we can compare their relative effective riskiness.

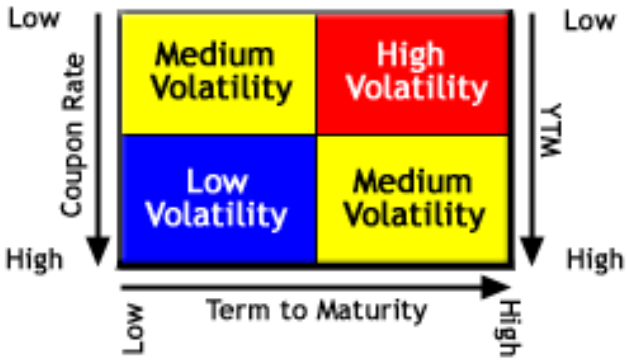




The price-yield relationship can be summarized here as follows:

1. The inverse relation between a bond's price and rate of return (yield) is given by the negative slope of the price-yield curve. The movement across the curve is non-linear.
2. If the coupon rate and the bond initial price are constant, the bond with a longer term to maturity will display higher price volatility and a bond with a shorter term to maturity will display lower price volatility.

3. If term to maturity and a bond's initial price remain constant, the higher the coupon, the lower the volatility, and the lower the coupon, the higher the volatility.
4. A bond with a high yield to maturity will display lower price volatility than a bond with a lower yield to maturity, but a similar coupon rate and term to maturity.



18.11.6 Relation between Coupon Rate(C^R), Yield (R), Price (V), and par value (F)

Bonds can trade at par when the coupon and yield are same. But, if the coupon is lower than the current market yield, then the bond would be trading at discount. If the coupon is higher than the current market yield, it would be trading at premium.

Bond-Price Relation 1:	if $C^R = R \Rightarrow V_o^b$ = F: Bond valued at par. if $C^R < R \Rightarrow V_o^b <$ F: Bond valued at discount. if $C^R > R \Rightarrow V_o^b >$ F: Bond valued at premium.

The coupon rate (CR), current market yield (CY) and yield-to-maturity (YTM) are related such that:

Bond Selling at	Relationship				
Par	CR	=	CY	=	YTM
Discount	CR	<	CY	<	YTM
Premium	CR	>	CY	>	YTM

When the required rate increases, the price of the bond falls as can be seen in the table:

PRICE-YIELD RELATION

10-Year, 9% Annual Coupon Bond

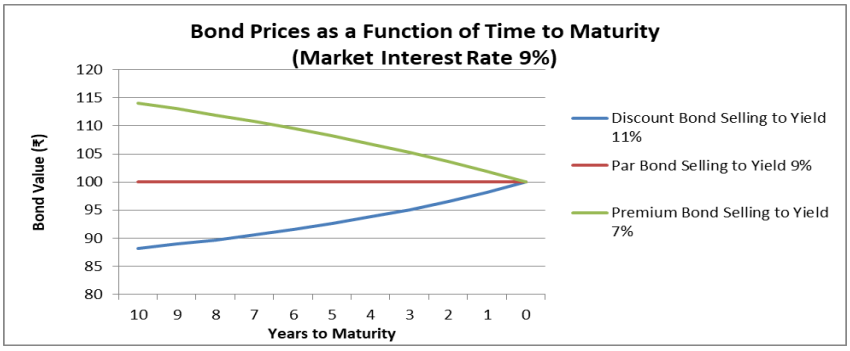
Required Rate	Bond Value (₹)	Changes in Bond Value (₹)
5%	130.89	
6%	122.08	-8.807
7%	114.05	-8.032
8%	106.71	-7.337
9%	100.00	-6.710
10%	93.855	-6.145

Required Rate	Bond Value (₹)	Changes in Bond Value (₹)
11%	88.222	-5.633
12%	83.049	-5.173
13%	78.295	-4.754

18.11.7 Price Time Path of a Bond

The Value Over Time of an Original 10-Year, 9% Annual Coupon Bond Selling at Par, at Discount, and at Premium:

	Discount Bond	Par Bond	Premium Bond
	Price of Bond (₹)	Price of Bond (₹)	Price of Bond (₹)
Year	Selling to Yield 11%	Selling to Yield 9%	Selling to Yield 7%
10	88.2220	100.00	114.05
9	88.9260	100.00	113.03
8	89.7080	100.00	111.94
7	90.5760	100.00	110.75
6	91.5390	100.00	109.53
5	92.6080	100.00	108.20
4	93.7950	100.00	106.77
3	95.1130	100.00	105.25
2	96.5750	100.00	103.62
1	98.1980	100.00	101.87
0	100.0000	100.00	100.00



The price path of a bond tells us the importance of "Pulled to Par" concept. Pull to par is the movement of a bond's price toward its face value as it approaches its maturity date. Premium bonds, which trade at a higher price than their face (par) value, will decrease in price as they approach maturity. Discount bonds, which trade at a lower price than their par value, will increase in price as they approach maturity.

18.12 Risk Measures

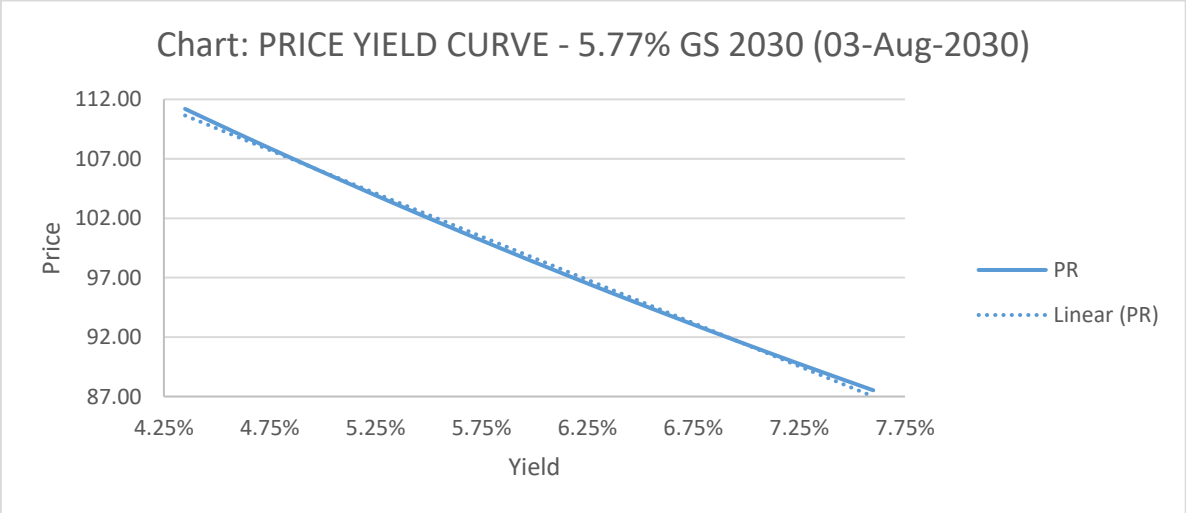
In earlier sections, we have discussed about various risks associated with Fixed Income Securities. If the issuer is a sovereign government, there will be no credit risk because government will not

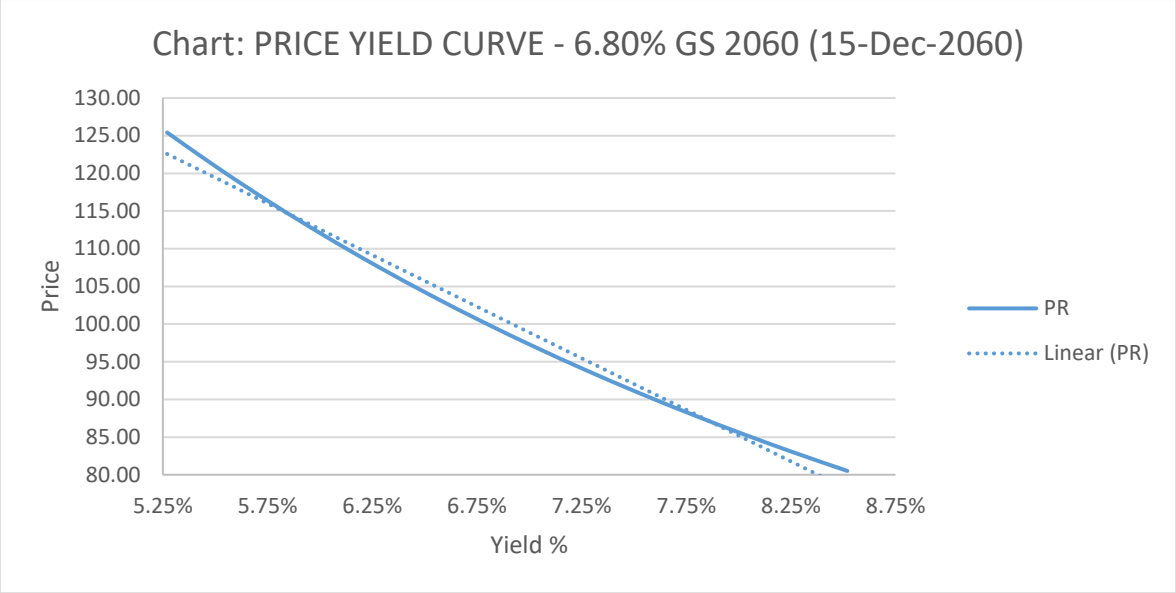
default in its own currency. If the bond is held until maturity, there will be no price risk, liquidity risk because of "pull-to-par" effect of bond price at maturity. If the bond is a zero-coupon bond, there will be no reinvestment risk because there are no interim cash flows to be reinvested until maturity. Since most bonds are issued by non-sovereign issuers and are coupon bonds, all these risks are present in the bond. We will consider only risk associated with change in interest rate and ignore all other risk.

Price risk and reinvestment risk always work in the opposite way. For example, if the market interest rate rises, the bond price falls but reinvestment income rises. The bond price falls because of discounting at a higher interest rate results in lower present value; and reinvestment income rises because the interim cash flows are reinvested at higher than the original interest rate. Similarly, if the market interest rate falls, the bond price rises but reinvestment income falls. The change in bond price is instant after the change in interest rate but the effect of reinvestment income is slow over a period of time.

18.12.1 Price Volatility Characteristics of Option Free Fixed Income Securities

Interest rate risk can be defined as the change in the price or value of the bond with respect to the change in market interest rates. Each bond has a unique volatility stream with respect to change in interest rate. Volatility stream is nothing but variability in volatility or sensitivity of a bond with respect to the given yield or interest rate changes. A bond with long maturity may have higher sensitivity for a given change in interest rate vis-à-vis a shorter maturity bond. Understanding price volatility is the key to the risk management of fixed income securities. Below chart and table depicts the Price-Yield relationship for two bonds of 2030 and 2060 maturity and the same would be used by us to understand the price sensitivity of bonds for value dated 26-Oct-2020.





For same change in yield (25 bps), the change in price is different for these two bonds

Table: Price sensitivity of Short duration and Long duration bonds (Clean Price)	
25 bps Delta Price 2030 starting with yield of 4.35% to 7.60%	25 bps Delta Price 2060 starting with Yield of 5.27% to 8.52%
2.08	4.85
2.03	4.55
1.99	4.27
1.94	4.02
1.90	3.78
1.86	3.56
1.81	3.35
1.77	3.16
1.73	2.98
1.69	2.82
1.66	2.67
1.62	2.52
1.58	2.39

This may show that price changes for small changes in yield are not likely to be the same across the curve. A longer bond is expected to have higher price sensitivity compared to a short duration bond.

In order to explain the risk of a bond price from interest rate changes, we will once again use another example.

Table: Price sensitivity for 5.79% GS 2030 at 25 bps and 50 bps shock to yield (Clean Price)							
YLD-1	PRICE 1	CH25 %DOWN	CH25 %UP	YLD-2	PRICE 2	CH50 %DOWN	CH50 %UP
4.08%	113.7440		1.93%	2.33%	130.2774		3.99%
4.33%	111.5951	-1.89%	1.92%	2.83%	125.2735	-3.84%	3.96%
4.58%	109.4955	-1.88%	1.91%	3.33%	120.4993	-3.81%	3.93%
4.83%	107.4439	-1.87%	1.90%	3.83%	115.9435	-3.78%	3.90%
5.08%	105.4392	-1.87%	1.89%	4.33%	111.5951	-3.75%	3.86%
5.33%	103.4802	-1.86%	1.88%	4.83%	107.4439	-3.72%	3.83%
5.58%	101.5657	-1.85%	1.88%	5.33%	103.4802	-3.69%	3.80%
5.83%	99.6947	-1.84%	1.87%	5.83%	99.6947	-3.66%	3.76%
6.08%	97.8660	-1.83%	1.86%	6.33%	96.0786	-3.63%	3.73%
6.33%	96.0786	-1.83%	1.85%	6.83%	92.6237	-3.60%	3.70%
6.58%	94.3315	-1.82%	1.84%	7.33%	89.3221	-3.56%	3.66%
6.83%	92.6237	-1.81%	1.84%	7.83%	86.1663	-3.53%	3.63%
7.08%	90.9542	-1.80%	1.83%	8.33%	83.1494	-3.50%	3.59%
7.33%	89.3221	-1.79%	1.82%	8.83%	80.2645	-3.47%	3.56%
7.58%	87.7264	-1.79%		9.33%	77.5053	-3.44%	
STDEV		0.0331%	0.0343%		STDEV	0.13%	0.14%

This table shows that for small changes in the yield, the risk is lower while a large yield change results into higher volatility in prices. It also shows that price change is not same when yield decreases vs. when it increases. Price decreases by 1.89% when yield increases by 25 bps (i.e., from 4.08% to 4.33%) vs. price increases by 1.93% when yield decreases by 25 bps (i.e., from 4.33% to 4.08%).

For a change of 25 bps in yield, we have generated the price changes and we can see the volatility level is different against the changes of 50 bps for the same bond. The volatility measured by standard deviation of price changes for 25 bps change in yield is 0.03% but for change in 50 bps in yield, the said standard deviation is about 4 times higher.

There are four basic properties with regard to the price volatility of an option-free bond:

(i) The percentage change in price due to a change in yield will be different for different bonds where their coupons, maturities and traded yields are different. For example, if we consider 5.79% GS 2030 bond as given in the prior example, when yield increases from 4.08% to 4.33%, the price drops by 1.89% but if we take another bond with the same maturity year except 8.5% coupon (8.50% GS 2030), the price drop is 1.76% when yield increases from 4.08% to 4.33%.

(ii) When yield changes are very small (say 1-2 bps), the percentage price change for a given bond remains more or less the same irrespective of increase or decrease in the yield.

(iii) When yield changes are large (say more than 20 bps viz. 100-200 bps), the price change for the bond is different for the same increase and decrease in the yield.

(iv) When yields fall, the price changes are bigger than the price changes when yield rises by the same magnitude. For example, for a 5.79% GS 2030, when yield rises from 5.08% to 6.08%, the change is price in opposite direction is 7.18% but when the yield drops from 5.08% to 4.08%, the price changes in opposite direction by 7.88%. This means, the losses due to

increase in yield is less than the profit due to drop in yield for a bond even when we change the yield by the same level. These properties can be best explained using the Price-Yield curve that is convex in nature. The convexity shape of the price-yield relationship explains the difference in price changes depending on the zone of yield movement.

18.12.2 Understand the Concept of Duration

Duration of a bond is the time weighted average of the present value of bond's future known cash flows. It is also called weighted average maturity or the payback period of the bond. Since the bonds have fixed maturities and cash flows come at various points in time, we need to put them in one single explanatory element to understand the relative and effective maturity of a bond vis-à-vis another as well as to understand the riskiness of the bonds. For understanding Duration, we need to understand the Price-Yield curve. The Price-Yield curve depicts the relative volatility or sensitivity of the bond across various yields surface. A Price-Yield curve is a simple depiction of price and yield relationship on a two-dimensional surface. Price and Yield are inversely related.

18.12.3 Macaulay Duration

Macaulay duration is an extremely important concept for understanding bond price sensitivity. It is the weighted average of the time to get the future cash flows from a bond. It is measured in units of years. In simple terms, this concept tells the weighted average time that we need to hold a bond in the portfolio so that the total present value of the future cash flows is equal to the current market price of the bond. Macaulay duration of a bond is influenced by the bond's coupon rate, term to maturity, and yield to maturity. With all the other factors constant, a bond with a longer term to maturity will have a greater Macaulay duration, as it takes a longer period to receive the principal payment at the maturity. Macaulay duration will decrease as time passes (term to maturity reduces). Macaulay duration is inversely related to the coupon rate. The greater the coupon payments, the lower the Macaulay duration. This is because we receive larger cash amounts (when discounted) in the early periods. A zero-coupon bond assumes the highest Macaulay duration compared with coupon bonds, assuming other features are the same. It is equal to the maturity for a zero-coupon bond and is less than the maturity for coupon bonds. Macaulay duration is also inversely related to the yield to maturity. A bond with a higher yield to maturity shows a lower Macaulay duration.

Duration (also called Macaulay duration) can be adjusted to provide us a measure of interest rate risk exposure that measures the bond's weighted average maturity. It tells us how long it would take to recover our investment and can be compared with other bonds to rank them in terms of their effective pay back periods. The weighted average maturity changes with yield changes. If interest rate increases (yield rises), the payback period comes down and vice versa. For example, the semi-annual coupon paying bond 5.77% GS 2030 (maturity 03-Aug-2030) will have a payback period of 7.50 years as on 26-Oct-2020 when the yield is 5.85%. If the yield changes to 6.50% and all other things remain the same, the payback period drops to 7.43 years.

Hence, Duration in simple terms is a measure of average time to receive all the future cash flows that will make the Present value of the said future cash flows to current market price. Zero coupon bonds will have no intervening cash flows and hence the duration and maturity would be the same.

Duration does not increase exponentially with increase in maturity of a bond and stagnates after a maturity level is reached.

Table: Duration of Bonds with various Maturities				
Settlement Date	Coupon	Maturity	Yield	Duration
26-Oct-20	5.77%	03-Aug-30	5.85%	7.50
26-Oct-20	5.77%	03-Aug-60	6.50%	14.67
26-Oct-20	5.77%	03-Aug-90	6.80%	14.93

We typically use the following formula for deriving Duration of a bond:

$$Mac\ Duration = \frac{\sum_{t=1}^{n} PV(CF_t) * t}{Market\ Price\ of\ Bond}$$

$$\text{Or, } Mac\ Duration = \frac{\sum_{t=1}^{n} \frac{t*C}{(1+Y)^t} + \frac{n*M}{(1+Y)^t}}{Market\ Price\ of\ Bond}$$

where:

Mac Duration = duration of the bond;

CF_t= cashflow at time t;

t = time period of the cashflow;

C = periodic coupon payment;

M = maturity value;

n = number of periods to maturity;

Y = the yield to maturity (market interest rate).

Table: DURATION Calculation using Spreadsheet						
Settlement Date	Next Cashflow Date	Cashflow	Time (Years)	Discount Factor	Discounted Cashflow	Weighted Discounted Cashflow
A	B	C	D	E	F=C*E	G=F*D
07-Jul-20	11-Nov-20	2.895	0.3444	0.9804	2.8383	0.9776
	11-May-21	2.895	0.8444	0.9526	2.7579	2.3289
	11-Nov-21	2.895	1.3444	0.9256	2.6798	3.6028
	11-May-22	2.895	1.8444	0.8994	2.6039	4.8027
	11-Nov-22	2.895	2.3444	0.8740	2.5301	5.9317
	11-May-23	2.895	2.8444	0.8492	2.4584	6.9929
	11-Nov-23	2.895	3.3444	0.8251	2.3888	7.9892
	11-May-24	2.895	3.8444	0.8018	2.3211	8.9235

	11-Nov-24	2.895	4.3444	0.7791	2.2554	9.7984
	11-May-25	2.895	4.8444	0.7570	2.1915	10.6167
	11-Nov-25	2.895	5.3444	0.7356	2.1294	11.3807
	11-May-26	2.895	5.8444	0.7147	2.0691	12.0929
	11-Nov-26	2.895	6.3444	0.6945	2.0105	12.7556
	11-May-27	2.895	6.8444	0.6748	1.9536	13.3711
	11-Nov-27	2.895	7.3444	0.6557	1.8982	13.9415
	11-May-28	2.895	7.8444	0.6371	1.8445	14.4689
	11-Nov-28	2.895	8.3444	0.6191	1.7922	14.9551
	11-May-29	2.895	8.8444	0.6015	1.7415	15.4023
	11-Nov-29	2.895	9.3444	0.5845	1.6921	15.8121
	11-May-30	102.895	9.8444	0.5679	58.4390	575.2997
				DP (SUM)	100.5953	761.4442
				Duration		7.5694
				Formula	761.4442/100.5953	

18.12.4 Use of duration

The duration-price sensitivity or elasticity depends on the maturity, coupon, and yield to maturity. All other things being equal, the longer maturity bonds are likely to have greater duration.

Higher coupon bonds are likely to have smaller duration as larger part of the cash flows will be received in early stages. Coupon payments cause weight to be put on the early years in the duration formula.

Third, duration decreases with increases in YTM. This occurs because an increase in the yield (interest rate) has a greater damping effect on the present value of a distant coupon than on the present value of a nearby coupon.

Some Important Duration Relationships are summarized below:

- Coupon is inversely related to Duration. Higher coupon means lower duration. This is mainly due to the fact that we receive large part of the income or cash flows at the early stage of the bond.
- YTM (yield to maturity) is inversely related to duration. Higher yield means lower Duration and vice versa.
- Duration increases with maturity.
- For zero coupon bond, duration is equal to its maturity. For simple coupon paying bond with no embedded features, duration is lower than its maturity.

18.12.5 Portfolio Duration

The duration of a portfolio is equal to the weighted average of the duration of the bonds in the portfolio:

$$DUR_{Portfolio} = \sum w_i \, DUR_i$$

Duration of a portfolio of two assets is their weighted average of Durations. If the portfolio was 30% invested in an asset with a 3-year duration and 70% invested in an asset with a 5-year duration, the duration of the two assets would be 0.3 * 3 + 0.7 * 5 = 4.40 years.
Hence, duration of portfolio is 4.40 years.

18.12.6 Modified Duration and Interest Rate Sensitivity Approximation

Modified Duration is an adjusted measure of Macaulay duration to help in the estimation of a bond's price sensitivity to changes in interest rates. In other words, it illustrates the effect of a 100-basis point (1%) change in interest rates on the price of a bond. It is important to note that modified duration shows the volatility of a dirty price. It is the value by which the dirty price changes when the yield changes by 100 basis points. To find the modified duration, all an investor needs to do is take the Macaulay duration and divide it by 1 + (yield-to-maturity / number of coupon periods per year).

$$\text{Modified Duration} = \frac{\text{Macaulay Duration}}{(1 + \text{YTM} / \text{n})}$$

Modified Duration example:
For the earlier example, DUR was 5.34.
The Modified Duration would be 5.34/(1+4.5%) = 5.11.
This means if the interest rate or the yield changes by 100 basis point, the bond price is likely to change by 5.11% in opposite direction. If the bond is semi-annual coupon paying bond, the Modified Duration would be 5.34/(1+4.5%/2)= 5.22**.**

Percentage Change in Bond Price = - Modified Duration × Change in Yield

To find the effect of modified duration on a bond's price, you should use the dirty price because the dirty price represents the total amount paid by the investor and reflects the bond's true market value including accrued interest, which is essential for an accurate price-yield relationship. Modified duration measures how much the total purchase price (the dirty price) of a bond changes for a given change in its yield.

It may be noted that for small changes in interest rates, the approximation produced is likely to be reasonably accurate, but for large changes this may not be true. This is because Modified Duration based price change follows linear relationship and it works well when the rate change is small. Price-Yield relationship being non-linear, large rate changes always produces smaller price changes using Duration based approach. Bond Convexity fixes this mismatch.

18.12.7 Price Value of Basis Point (PV01)

Price Value of a Basis Point is simply the change in price in terms of currency of the bond, if the yield changes by 1 basis point (0.01%). If the change in price is 0.05 (=100-99.95) for 1 bps change in yield, then intuitively, the PV01 is Rs 0.05 or 5 paise for this bond. The PV01 or PVBP is given in terms of modified duration as well. The formula is:
PV01 = .01 * Modified Duration/100 * Bond Price = (Bond price * Modified Duration) / 10000

PV01 = (Dirty Price * Modified Duration) / 10000.
Here the dirty price is used as we need to understand the full value change in bond for one unit change in yield.

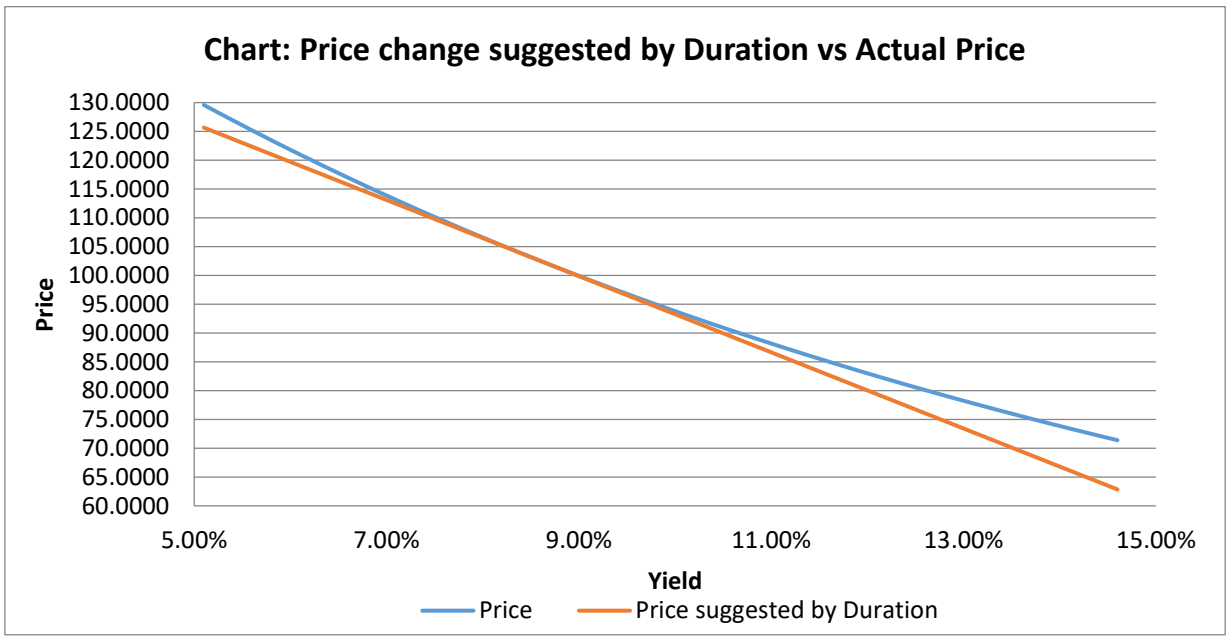
18.12.8 Convexity Measure

Duration is derived from the first derivative of the Bond price equation. Mathematically, duration is a first approximation of the price/yield relationship. Modified duration is an approximation of the percentage change in bond price for a given change in yield. In fact, it is accurate only for very small and parallel shifts in the yield curve. Duration can approximate price changes, if the yield changes are small; but when the yield changes are large, the duration does not approximate the price changes accurately. This is so because of bonds have different degree of convex shapes. When considering moderate or large changes in interest rates, a factor known as convexity is important. That is, duration attempts to estimate a convex relationship with a straight line (the tangent line). The above can be explained with the example of our Bond.

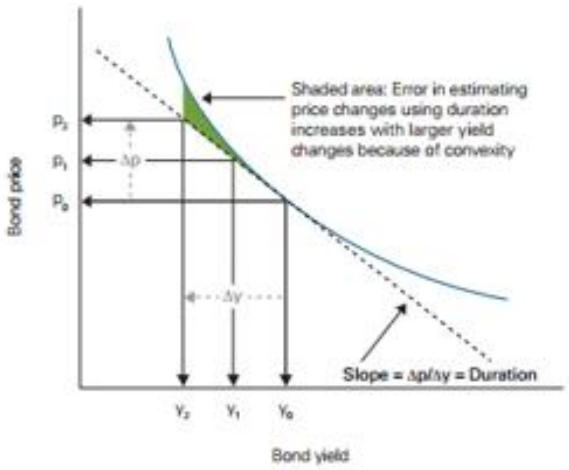
Table: Interest Rate or Yield Shock to a Bond and Modified Duration

Interest Rate Shock	Actual Price Change	Price Change Implied by MD	Difference (Error)
0.10%	-0.6421	-0.6610	0.0189
-0.10%	0.6477	0.6610	0.0134
0.20%	-1.2787	-1.3221	0.0434
-0.20%	1.3009	1.3221	0.0211
0.30%	-1.9099	-1.9831	0.0733
-0.30%	1.9599	1.9831	0.0232
0.40%	-2.5356	-2.6442	0.1085
-0.40%	2.6246	2.6442	0.0196
0.50%	-3.1560	-3.3052	0.1492
-0.50%	3.2950	3.3052	0.0102
0.60%	-3.7712	-3.9663	0.1951
-0.60%	3.9713	3.9663	-0.0050
0.70%	-4.3810	-4.6273	0.2463
-0.70%	4.6534	4.6273	-0.0261
0.80%	-4.9857	-5.2884	0.3027
-0.80%	5.3416	5.2884	-0.0532
0.90%	-5.5852	-5.9494	0.3642
-0.90%	6.0357	5.9494	-0.0863
1.00%	-6.1797	-6.6105	0.4308
-1.00%	6.7359	6.6105	-0.1254
1.50%	-9.0771	-9.9157	0.8385
-1.50%	10.3298	9.9157	-0.4142
2.00%	-11.8543	-13.2209	1.3666
-2.00%	14.0846	13.2209	-0.8637

The error in approximating the bond price changes using modified duration gets larger as the interest shocks become larger. Further, the increase in interest rate has a relatively lesser impact on bond price changes that the fall in interest rate. Hence, duration underestimates the price change in case of interest rate fall and over estimates the price change in case of an increase in interest rate.



The actual price change curve looks more convex vis-à-vis the linear line suggested by modified duration. Hence, we need to look at the effect of convexity on the price change to figure out better precision. Greater precision in measuring the bond's sensitivity to yield changes can be achieved by taking into account the bond's convexity.



Convexity measures how the bond's duration—and by implication, its price—will change depending on how much interest rates change. Convexity is a measure of the sensitivity of a bond's price to changes in yield which is not explained by duration due to non-linear relationship between price and yield. Hence this provides a measure of the degree by which a bond's price-yield curve departs from a straight line. This measure provides better estimate of a bond's price volatility. The formula

for convexity is a complex one that uses the bond price, yield to maturity, time to maturity and discounted future cash inflow of the bond. The cash inflow includes both coupon payment and the principal received at maturity.

Convexity is measure of the curvature of the price/yield relationship. This is the second partial derivative of the bond valuation equation w.r.t. the yield. Convexity can be calculated using following formula:

$$Convexity = \frac{1}{P \times (1+y)^2} \sum_{t=1}^{T} \left[\frac{CF_t}{(1+y)^t} (t^2 + t) \right]$$

Where,
P= Bond price
Y= Yield to maturity
T= Maturity in years
CF_t = Cash flow at time t

Convexity example: Assuming a 3-yr Bond, 10% coupon, semi-annual compounding, required yield 9%, convexity can be calculated as:

$$CONV = \frac{\frac{5*1*2}{(1.045)^3} + \frac{5*2*3}{(1.045)^4} + \frac{5*3*4}{(1.045)^5} + \frac{5*4*5}{(1.045)^6} + \frac{5*5*6}{(1.045)^7} + \frac{105*6*7}{(1.045)^8}}{4 * 102.58}$$

$$= 8.2135$$

To make the convexity of semi-annual bond comparable to that of an annual bond, we divide convexity by 4 (=2^2).

As seen in the convexity calculation can be quite tedious and long, especially if the bond is long term and has numerous cash flows. The formula for convexity approximation is as follows:

$$\text{Convexity} = \frac{(P_+) + (P_-) - 2P_0}{2 \times P_0 (\Delta y)^2}$$

P_0 = Bond price.
P_- = Bond price when interest rate is incremented
P_+ = Bond price when interest rate is decremented
Δy = change in yield, in decimal form.

Convexity adjustment formula, is then added to the duration adjustment to calculate bond price change for given change in yield.

Convexity Adjustment= Convexity × 100 × $(\Delta y)^2$

Convexity Relationships

- Coupon is inversely related to convexity. Convexity is high for lower coupon bonds.
- Yield to maturity is inversely related to convexity. Higher Yield means lower convexity.

- Convexity is positively related to maturity of the bond. Higher the maturity, more convex is the Price-Yield curve.
- Portfolio convexity is weighted sum of individual bond's convexity.

18.12.9 Duration and Convexity Effect on the Price Change of a Bond

The change in the price of a bond can be summarized as follow:

Change in price = Duration effect + Convexity effect

Suppose the yield-to-maturity is expected to fall by 200 bps tomorrow, from 5% to 3%. A bond has an annual (modified) duration of 10.66 and annual convexity of 81.96. What is the percentage price gain from this fall in interest rate?

% Change in price = $\{-10.66*(-0.02)\} + \{100*81.96*(-0.02)^2\}$
% Change in price = 21.32%+3.28% = 24.60% (Estimated price change 24.60% approx.)

In case of yield to maturity is expected to increase by 200 bps then,
% Change in price = $(-10.66*0.020) + \{100*81.96*(0.020)^2\}$
% Change in price = -21.32%+3.28% = -18.04% (Estimated price change -18.04% approx.)

Due to positive convexity, the % increase in bond price is greater than % decrease in bond price for same yield change.

18.13 Role of the Debt Market

Financial markets are grouped into three super asset classes: *underlying, derivative* and *structured finance*. Besides these three, there are *collective investment schemes* (e.g. mutual funds), *physical assets* (e.g. real estate, commodities, art, antiques, wine, etc) and *alternative assets* (e.g. ETFs, managed futures, hedge funds, private equity, etc).

The underlying super asset class consists of fundamental assets and there are four of asset classes: *money, bond, equity* and *forex*. They are fundamental because they are independent. They are also called traditional asset classes because investors have traditionally parked their savings and investments in them. Money and bond markets together can be considered as fixed income securities (FIS) market. A capital market is a financial market in which long-term debt (over a year) or equity-backed securities are bought and sold, in contrast to a money market where short-term fixed income securities are bought and sold. Debt market and equity market together are called capital market because they constitute the two parts of capital of corporate bodies. The derivative super asset class is not independent but derived (hence the name "derivative") from the underlying super asset class. There can be no derivative without underlying.

Economic role of underlying markets is financing, which means transferring cash from those that have to those that need it. The financing is through borrow-lend of cash in money and bond markets (together called debt or fixed-income securities); and through buy-sell of business ownership in equity market. Forex market traditionally serves the function of production-consumption in international trade but can also be used for financing in the sense one can borrow or lend foreign

currency instead of home currency. Economic role of derivative markets is risk management, the risk being the risk present in the underlying from which the derivative is derived. The role of structured finance is financing combined with risk management.

Firms need finance for their day to day operations. Business owners raise finance mostly using debt and equity. "Debt" involves borrowed money to be repaid with interest, while "Equity" involves raising money by selling stake in the company. Debt is a charge on income for the firm, while the return on equity is an allocation / appropriation of profit made by the company. Similarly, governments also borrow so that they can finance spending for development of the society and country. Borrowing at both firm and government levels can be either to fund temporary liquidity shortfall or for funding long-term asset creation. Depending upon the duration and purpose of borrowing, a variety of debt instruments can be used for raising the funds.

The debt market facilitates borrowing of funds using such instruments to investors having varied risk appetite. Inherently, all debt instruments are essentially loans or IOUs, with an undertaking to pay or service regular promised coupon or interest and repay the principal amount borrowed after a specified period as promised at the time of borrowing. As the periodic interest or cash flows are typically fixed and known in advance, these instruments are more popularly referred to as “Fixed Income Securities”. Borrowing money to finance the operations and growth of a business is a kind of leverage the company takes against its equity capital. This way, the owner does not have to give up (or dilute) control of the business, but too much debt can inhibit the growth of the company and many companies have gone bankrupt under the pressure of debt. Hence, a balanced decision on the level of leverage is imperative based on the careful assessment of pros and cons of the available financing avenues.

18.13.1 Importance of Debt Markets

In any economy, the Government generally issues the largest amount of debt to fund its expenditure. A well-developed debt market helps the Government to raise debt at a reasonable cost. A liquid debt market lowers the borrowing cost for all, and it provides greater pricing efficiency. Debt is funded either by bank loans or by bond issuances. A corporate bond market dealing with issuance of pure corporate paper helps an economic entity to raise funds at cheaper cost. The debt market brings together large number of buyers and sellers to price the debt instruments efficiently. A well-developed debt market reduces degree of banking support for the economy, as risk is distributed among many investors. A well-developed debt market helps the banking system with better Asset-Liability Management. The development of a well-functioning debt market helps to channelize the collective investment schemes to invest in the market and also facilitate in bringing retail investors to invest directly in debt. The well developed and liquid debt market also helps various long term investors like pension funds, insurance companies which have different investment objectives, as they invest for very long term, to match and immunize their liabilities.

The primary debt market helps Governments and corporates to directly sell their securities to investors. Typically, Government’s issue debt through “Auctions” while corporates issue debt papers through “Private Placement”. The secondary debt market provides an exit route to the investors, and it also provides important information on price discovery process through credit risk

appetite, spread, default probability, etc. The tradability of bonds issued by a borrower helps the market in getting required information on the firm.

However, in practice, issuance of debt is a multi-level process adhering to various regulations. It involves underwriting, credit rating, listing with stock exchanges, coordinating with issue managers to distribute the bond to the right investors, liquidity in the market, banking support, etc. A well-functioning debt market would require developed and sustainable legal framework with clear bankruptcy codes. The regulatory cost of the debt can be at times prohibitive for smaller borrowers. Hence, small and medium firms usually prefer bank borrowing vis-a-vis debt issuances.

18.14 Primary and Secondary Debt Market in India

The debt market deals in both the Government debt as well as in non-Government debt instruments. The market has three important functionaries: (a) issuers like Government and Corporate firms; (b) intermediaries like merchant bankers and brokers selling debt; and (c) investors like commercial banks, collective investment schemes like mutual funds, pension funds, insurance companies, retail investors, etc.

Thus, the three critical participants in the debt market are:

1. Issuers are Governments, commercial banks, public sector companies, private corporate firms, etc.
2. Intermediaries are investment banks and merchant banks who help issuers to sell bonds to the investors.
3. Investors are the private corporate treasuries, collective investment vehicles like mutual funds, insurance companies, commercial banks, pension funds, high net-worth Individuals, etc. Investors can further be classified as domestic and international investors.

The Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) are the main regulators in the Indian debt market.

Indian Debt market typically has three distinct segments based on issuer category – (a) Government debt, known as “G-sec” market with Government of India issuing dated papers, Treasury Bills and State governments issuing State Development Loans of various maturities; (b) Public sector units (PSU) and Banks issuing instruments to raise resources from the market; and (c) private sector raising resources through issuance of debt papers.

Along with dated securities, Government of India also issues Floating Rate Bonds, Inflation Indexed Bonds, Special Securities, and Cash Management Bills while State Governments raise funds using Ujwal Discom Assurance Yojana (UDAY) Bonds. PSU Bonds are popular among investors because of their perceived low risk and Commercial Banks issue short term papers like Certificate of Deposits (CDs) as well as long term bonds to fund their various business needs. The private corporates issue instruments like Bonds, Debentures, Commercial Papers (CPs), Floating Rate Notes (FRNs), Zero Coupon Bonds (ZCBs), etc. Based on issuer of debt security and nature of debt instrument/security we can have Government Securities Market, Corporate Bond Market and Money Market.

18.14.1 Primary and Secondary Market of Government Securities

Debt instruments are issued in the primary market where initially they are subscribed by the various investors who may trade in them subsequently in the secondary market. The Reserve Bank of India issues government securities on behalf of the government. The primary market operations of the Reserve Bank are mainly driven by the objectives of the debt management policy, which is to ensure funding of fiscal deficit from the market in a cost effective manner. The primary market instruments are treasury bills and government dated securities. The central government mobilizes funds mainly through the issue of treasury bills and dated securities while state government does so solely through dated securities.

In the primary market, Government securities & Treasury Bills are issued through auctions (yield based or price based auctions) conducted by RBI. Auctions are classified as Multiple/Uniform price auctions based on the price paid by successful bidders. When all the successful bidders are required to pay at the auction cut-off rate, it is a uniform price auction; while when successful bidders pay at the respective price/yield at which they have bid, it is termed a multiple price auction. The choice of multiple vs. uniform price auctions is made by RBI based on underlying market conditions. The minimum bid amount is ₹10,000 and in multiples of ₹10,000 thereafter. The auctions are generally conducted on weekly basis.

Auction Participants can bid under two categories based on their eligibility:

- Competitive Bidding: It is meant for well-informed institutional investors where they bid at a specific price/yield and get allotment if their quotes are within the cut-off price/yield. Such participants including banks, PDs, insurance companies, financial institutions, and mutual funds can put in multiple bids at various prices/yield levels.
- Non-Competitive Bidding (NCB): Specially provided for small and retail investors, NCB is open to participants who do not have a current account or Subsidiary General Ledger (SGL) account with RBI and submit their bid indirectly through an Aggregator/Facilitator such as Scheduled banks, PDs and specified stock exchanges. Under the scheme, eligible retail investors apply for a certain amount of securities in an auction without mentioning price/yield. Such bidders are allotted securities at the weighted average price/yield of the accepted competitive bids.

Eligible entities for competitive bidding have access to primary issuance of government securities through RBI interface. Non-competitive bidder can access primary issuance through banks, primary dealers, stock exchange mechanism and RBI Retail Direct Scheme.

The secondary market for G-Secs in India is very active with diverse groups of market participants. The infrastructure for trading and settlement is one of the best in the world which has supported the market's growth and expansion. Secondary market trading takes place through:

- Negotiated Dealing System-Order Matching (NDS-OM): In August 2005, RBI introduced an anonymous screen-based electronic order matching module called NDS-OM. Participants can trade anonymously by placing their orders on the system or by accepting the orders already placed by other participants. This anonymity ensures a level playing field for various categories of participants due to price transparency and better price discovery. NDS-OM is

operated by Clearcorp Dealing Systems Limited, a wholly-owned subsidiary of CCIL, on behalf of RBI. Direct access to the NDS-OM system is available to large institutional participants like banks, PDs, etc. while other participants get indirect access through their custodians / Primary Members i.e., with whom they maintain Gilt Accounts. Retail (individual) investors having demat accounts can access through any of the existing Primary Members of NDS-OM who also act as Depository Participants.

- Over the Counter (OTC)/Telephone Market: G-Sec trading in India can also be done over telephonic negotiations with a bank / PD / financial institution either directly or through a SEBI registered broker. All such trades have to be reported on the Reported segment of NDS-OM within 15 minutes of striking the deal.
- NDS-OM-Web: This was launched by RBI on June 29, 2012, to enable Gilt Account Holders (GAHs) to control their orders and get access to real time live quotes on NDS-OM through their Primary Members only as risk controllers.
- Stock Exchanges: Stock exchanges provide trading platform to cater to the needs of retail investors. Settlement of trades is done in demat.
- RBI Retail Direct Scheme: Retail Direct Scheme is a one-stop solution to facilitate investment in Government Securities by individual investors. Under this scheme individual retail investors can open a Gilt Securities Account – "Retail Direct Gilt (RDG)" account with RBI. Using this account, retail investors can buy and sell government securities through the online portal – https://rbiretaildirect.org.in

18.14.1.1 SEBI registered Stock Brokers to access Negotiated Dealing System-Order Matching (NDS-OM) for trading in Government Securities.

Reserve Bank of India vide its notification dated February 07, 2025 permitted access of SEBI-registered non-bank brokers to Negotiated Dealing System-Order Matching (NDS-OM) through Master Direction - Reserve Bank of India (Access Criteria for NDS-OM) Directions, 2025[120].

As per the RBI direction, any person/entity eligible to invest in Government securities in terms of the applicable rules/ guidelines issued by the Government of India / State Governments / the Reserve Bank, as amended from time to time shall be eligible to access NDS-OM either through direct access or through indirect access or through Stock Broker Connect, in terms of these Directions. **"Stock Broker Connect"** shall mean a mechanism through which a stock broker provides access to NDS-OM to its individual constituents / clients maintaining demat accounts with depositories registered with the Securities and Exchange Board of India (SEBI).

SEBI vide circular dated February 11, 2025[121] provided guideline on "Facilitation to SEBI registered Stock Brokers to access Negotiated Dealing System-Order Matching (NDS-OM) for trading in Government Securities-Separate Business Units (SBU)". The details of the same is given below:

[120] https://www.rbi.org.in/Scripts/BS_ViewMasDirections.aspx?id=12777
[121] https://www.sebi.gov.in/legal/circulars/feb-2025/facilitation-to-sebi-registered-stock-brokers-to-access-

In order to facilitate SEBI-registered stock brokers to participate in Government Securities (G-Secs) market in the NDS-OM, it has been decided that they may do so under a Separate Business Unit (SBU) of the stock broking entity itself, in the manner specified herewith.

The matters related to policy, eligibility criteria, risk management, investor grievances, inspection, enforcement, claims etc. for stock brokers to transact on NDS-OM would be specified under the regulatory framework issued by the respective regulatory authority and all activities of the business unit of stock broker facilitating trading on NDS-OM would be under the jurisdiction of that regulatory authority.

In pursuance of the above regulatory jurisdiction, to demarcate the regulatory obligations and to ring fence the activities of the stock brokers and its NDS-OM activities, some of the key safeguards are being prescribed as under:

i. Stock brokers shall ensure that activities of the NDS-OM under a SBU are segregated and ring-fenced from the securities market related activities of the stock broker and arms-length relationship between these activities are maintained;
ii. Such SBU shall be exclusively engaged in activities of transacting on NDS-OM only;
iii. Stock brokers shall prepare and maintain a separate account for the SBU on arms-length basis;
iv. The net worth of the SBU shall be kept segregated from the net worth of the stock broker in the securities market. Net worth criteria for stock broker shall be satisfied after excluding account of the SBU.
v. As the activities of the SBU shall be under the jurisdiction of another regulatory authority, Grievance Redressal Mechanism and Investor Protection Fund (IPF) of the stock exchanges and SCORES shall not be available for investors availing the services of the SBU.

Clearing and Settlement of Government Securities

The transactions relating to G-Secs (other than traded on stock exchanges) are settled through the member's securities / current accounts maintained with the RBI. The securities and funds are settled on a net basis i.e., Delivery versus Payment System-III (DvP-III). CCIL (Clearing Corporation of India Ltd.) guarantees settlement of trades on the settlement date by becoming a central counter-party (CCP) to every trade through the process of novation, i.e., it becomes seller to the buyer and buyer to the seller. All outright secondary market transactions in G-Secs are settled on a T+1 basis. However, RBI had permitted FPIs to settle OTC secondary market transactions in Government Securities either on T+1 or on T+2 basis and in such cases, it must be ensured that all such trades are reported on the trade date itself.

Conversion (Switch) of Government of India Securities through auction

RBI has also started conducting the auction for conversion of Government of India securities. Bidding in the auction implies that the market participants agree to sell the source security/ies to

negotiated-dealing-system-order-matching-nds-om-for-trading-in-government-securities-separate-business-units-sbu-_91764.html

the Government of India (GOI) and simultaneously agree to buy the destination security from the GOI at their respective quoted prices. The source securities along with notified amount and corresponding destination securities are provided in the press release issued before the auction. The market participants are required to place their bids in RBI provided interface (e-Kuber) giving the amount of the source security and the price of the source and destination security expressed up to two decimal places. The price of the source security quoted must be equal to the FBIL closing price of the source security as on the previous working day.

Open Market Operations

OMOs are the market operations conducted by the RBI by way of sale/ purchase of G-Secs to/ from the market with an objective to adjust the rupee liquidity conditions in the market on a durable basis. When the RBI feels that there is excess liquidity in the market, it resorts to sale of securities thereby sucking out the rupee liquidity. Similarly, when the liquidity conditions are tight, RBI may buy securities from the market, thereby releasing liquidity into the market.

Repurchase or Buyback of G-Secs

Repurchase (buyback) of G-Secs is a process whereby the Government of India and State Governments buy back their existing securities, by redeeming them prematurely, from the holders. The objectives of buyback can be reduction of cost (by buying back high coupon securities), reduction in the number of outstanding securities and improving liquidity in the G-Secs market (by buying back illiquid securities) and infusion of liquidity in the system. The repurchase by the Government of India is also undertaken for effective cash management by utilising the surplus cash balances. State Governments can also buy-back their high coupon (high cost debt) bearing securities to reduce their interest outflows in the times when interest rates show a falling trend. Governments make provisions in their budget for buying back of existing securities. Buyback can be done through an auction process (generally if amount is large) or through the secondary market route, i.e., NDS-OM (if amount is not large).

Government Securities Lending Transactions:

RBI has issued Reserve Bank of India (Government Securities Lending) Directions, 2023 in December 2023, which enable market participants to do borrowing and lending in Government Securities. These Directions shall be applicable to all Government securities lending transactions, undertaken in Over-the-Counter markets. “Government Securities Lending (GSL) transaction” refers to dealing in Government securities involving lending of eligible Government securities, for a fee, by the owner of those securities (the lender) to a borrower, on the collateral of other Government securities, for a specified period of time, with an agreement that the borrower shall return to the lender the security borrowed and the latter shall return the security received as collateral to the former at the end of the agreed period. Entities that are eligible to undertake short sale transactions in terms of Short Sale (Reserve Bank) Directions, 2018 dated July 25, 2018, as amended from time to time, shall be eligible to borrow securities under a GSL transaction. An entity eligible to undertake repo transactions in Government securities in terms of the Repurchase

Transactions (Repo) (Reserve Bank) Directions, 2018 dated July 24, 2018, as amended from time to time is allowed to participate in GSL transactions as lenders of securities.

Holding of G-Secs

The Public Debt Office (PDO) of RBI, acts as the registry and central depository for G-Secs. They may be held by investors either as physical stock or in dematerialized (demat/electronic) form. From May 20, 2002, it is mandatory for all the RBI regulated entities to hold and transact in G-Secs only in dematerialized (SGL) form.

a. **Physical form:** G-Secs may be held in the form of stock certificates. A stock certificate is registered in the books of PDO. Ownership in stock certificates cannot be transferred by way of endorsement and delivery. They are transferred by executing a transfer form as the ownership and transfer details are recorded in the books of PDO. The transfer of a stock certificate is final and valid only when the same is registered in the books of PDO.

b. **Demat form (Electronic Form) :** Holding G-Secs in the electronic or scripless form is the safest and the most convenient alternative as it eliminates the problems relating to their custody, viz., loss of security. Besides, transfers and servicing of securities in electronic form is hassle free. The holders can maintain their securities in dematerialised form in either of the two ways:

i. SGL Account: Reserve Bank of India offers SGL (Subsidiary General Ledger) Account facility to select entities who can hold their securities in SGL accounts maintained with the Public Debt Offices of the RBI. Only financially strong entities viz. Banks, PDs, select UCBs and NBFCs which meet RBI guidelines (please see RBI circular IDMD.DOD.No. 13/10.25.66/2011-12 dt Nov 18, 2011) are allowed to maintain SGL with RBI.
ii. Gilt Account: As the eligibility to open and maintain an SGL account with the RBI is restricted, an investor has the option of opening a Gilt Account with a bank or a PD which is eligible to open a CSGL (Constituent Subsidiary General Ledger) account with the RBI. Under this arrangement, the bank or the PD, as a custodian of the Gilt Account holders, would maintain the holdings of its constituents in a CSGL account (which is also known as SGL II account) with the RBI. The servicing of securities held in the Gilt Accounts is done electronically, facilitating hassle free trading and maintenance of the securities. Receipt of maturity proceeds and periodic interest is also faster as the proceeds are credited to the current account of the custodian bank / PD with the RBI and the custodian (CSGL account holder) immediately passes on the credit to the Gilt Account Holders (GAH).

Investors also have the option of holding G-Secs in a dematerialized account with a depository (NSDL / CDSL, etc.). This facilitates trading of G-Secs on the stock exchanges.

18.14.2 Primary and Secondary Market of Corporate Bonds / Non-Convertible Debentures

In India, corporate bonds are issued mainly on private placement basis and only small part of the total issuances are through public offer. A private placement is usually made to institutional investors. Private placement allows customized structure of the issue as per the requirements of issuers or investors.

Public Issuance

"Public Issue" means an invitation by a company to public to subscribe to its debt securities offered through a prospectus. SEBI regulations require all public issues of debt to be listed on one or more recognized Stock Exchanges. SEBI Regulations and amendments thereon govern public issue of debt securities. While the offer document for a public issue is not required to be approved by SEBI, an In-Principle approval is obtained from the stock exchange where it is to be listed. The offer document is prepared as per the disclosure requirements under the Companies Act, 2013 and Securities and Exchange Board of India (Issue and Listing of Non-Convertible Securities) Regulations, 2021 and other SEBI Debt Securities related regulations.

Private Placement

Private Placement refers to an offer of sale of debt securities by an issuer to a select group of people/institutions. All the necessary information about the issue is given in the Private Placement Memorandum (PPM). SEBI issued separate regulation for issue and listing of debt securities, municipal securities, securitized debt. Listing of all debt securities, whether privately placed or a public/rights issue, is done through a separate listing agreement.

SEBI (Issue and Listing of Non-Convertible Securities), 2021 ('NCS Regulations') is the main regulations for issuance of corporate debt securities. The face value of a listed debt security or non-convertible redeemable preference share issued on private placement basis traded on a stock exchange or OTC basis shall be Rs. One lakh. However, the Issuer may issue debt security or non-convertible redeemable preference share on private placement basis at a face value of Rs. Ten Thousand subject to fulfilment of certain conditions.

With the majority of corporate debt issuances in India being private placements, SEBI vide its circular of April 21, 2016, mandated the private placement issuance through electronic book mechanism / electronic bidding platform (EBP) for better and transparent price discovery. SEBI further streamlined the procedure through its revised guidelines dated October 10, 2022[122] and May 16, 2025[123]. The EBP guidelines are applicable for debt securities and non-convertible redeemable preference shares as defined under SEBI regulations, municipal debt securities. For certain private placement issuance based on issue size, existence of issuer etc. EBP is mandatory as given below.
The following issues of securities shall be made through the EBP platform:

- A private placement of debt securities and NCRPS as per the provisions of SEBI NCS Regulations, 2021 and municipal debt securities as per provisions of SEBI (Issue and Listing of Municipal Debt Securities) Regulations, 2015, if it is:
    a. a single issue, inclusive of green shoe option, if any, of Rs. 20 crore or more;
    b. a shelf issue, consisting of multiple tranches, which cumulatively amounts to Rs. 20 crore or more, in a financial year; and

[122] https://www.sebi.gov.in/legal/circulars/oct-2022/review-of-provisions-pertaining-to-electronic-book-provider-platform-replacement-of-chapter-vi-to-operational-circular-dated-august-10-2021_63807.html
[123] https://www.sebi.gov.in/legal/circulars/may-2025/review-of-provisions-pertaining-to-electronic-book-provider-ebp-platform-to-increase-its-efficacy-and-utility_94020.html

c. a subsequent issue, where aggregate of all previous issues by an issuer in a financial year equals or exceeds Rs. 20 crore

An issuer, if desirous, may choose to access EBP platform for private placement of securitised debt instruments or security receipts or CPs or CDs, and issuers constituted as REITs, SM REITs and InvITs may also access the EBP platform for private placement of units of REITs, SM REITs and InvITs. Issuers of debt securities, NCRPS and municipal debt securities on private placement basis of issue size less than Rs. 20 crore may also choose to access the EBP platform for such issuances.

All participants are required to enroll with EBPs prior to entering into the bidding process. These include issuers, arrangers, QIBs, non-QIBs and custodians. Arrangers bid on the EBP platform on behalf of other eligible participants and include Merchant Bankers/ Brokers/ RBI registered Primary Dealers. Custodians bid on behalf of their foreign portfolio investor (FPI) clients. All non-QIB participants including arrangers have to be authorized by the issuer to participate in a particular issue. Exchanges provide unique codes to each participant which can be used to participate in EBP platform. The Issuer shall provide the Placement Memorandum and term sheet (i.e. summary of important terms and conditions related to an issue) to the EBP at least two working days prior to the issue opening date. However, the issuer issuing the securities for the first time through EBP platform shall provide the above information at least three working days prior to the issue to the opening date. Issuer shall make the bidding announcement on EBP at least one working day before initiating the bidding process.

The PPM/IM has to mandatorily disclose the mode of bidding (open/close), manner of allotment (uniform/ multiple yield), manner of settlement (through clearing corporation/ escrow bank account of issuer) and settlement cycle (T+1 or T+2). Issuer shall have an option to avail an 'anchor portion' within the base issue size. The quantum of allocation(s) to the anchor investor(s) shall be at the discretion of the issuer, subject to total allocation to the anchor(s) not exceeding 30%/40%/50% of the base issue size. The maximum anchor portion is depends on instrument rating. If the issuer opts for anchor portion, the same shall be suitably disclosed in the placement memorandum and the term sheet along with the relevant quantum. In case of open bidding, the bid information, such as bid value and bid rate/price (except the bidder's name), is available to the market during the bidding window. However, in case of closed bidding, the same is disclosed post-bidding. Only the cumulative bids amount (in Rs crores) is displayed to the eligible participants during the bidding period. The issuer has to disclose the estimated cut off yield to the EBP at least one hour prior to opening of the bidding for the issue. Successful bids are determined by the EBP as per the guideline provided by SEBI and post successful closure, shared with the designated Registrar to the Issue. It also electronically notifies all the successful bidders about the total payable amount in INR, details of the pay-in account where the amount is to be deposited and the pay-in date and cut-off time. Once the bidding window closes, the EBP gives out the details regarding issuance which includes yield/coupon/price, amount with oversubscription, total bids received, ratings, category of Investor (anonymous basis), etc. on its website.

Secondary Market Mechanism of Corporate Bonds

Unlike the G-Sec segment with dominant electronic trading and easy availability of trade information, corporate debt trading in India is mainly OTC. Regulatory measures have improved dissemination of trade information which led to improved transparency on market activity and levels. The secondary market of corporate bonds is mainly institutional market. The market is basically negotiated market where transactions are executed OTC (over the counter) and then it is reported in Exchange reporting platform for market dissemination and bilateral settlement on DVP-I mechanism through clearing corporation. Every corporate bond trade in India, whether done over-the-counter (OTC) or through exchanges, must be reported within 15 minutes of execution. This is a rule set by the SEBI, aimed at promoting transparency and reducing systemic risks. The settlement of all such trades takes place from T+0 to T+2.

The Exchanges in early 2020 have launched Request for Quote platform (RFQ) for execution and settlement of trades which will allow market participants to transact in debt securities. The RFQ Platform provides market participants range of options to seek a quote and to respond to a quote, while keeping an audit trail of all the interactions i.e., quoted yield, mutually agreed price, deal terms etc. This has brought pre-trade transparency in the transactions of eligible debt securities. RFQ facilitate participant to negotiate various terms of transaction through screen-based system. SEBI has taken various steps to developed RFQ platform. Some of them are mentioned below:

SEBI vide circular no. SEBI/HO/DDHS/DDHS_Div1/P/CIR/2022/142 dated October 19, 2022 on 'Request for Quote (RFQ) platform for trade execution and settlement of trades in listed Non-convertible Securities, Securitised Debt Instruments, Municipal Debt Securities and Commercial Paper' has permitted stock brokers registered under the debt segment of the Stock Exchange(s) to place/ seek bids on the RFQ platform on behalf of client(s), in addition to the existing option of placing bids in a proprietary capacity.

SEBI vide circular no. SEBI/HO/DDHS/P/CIR/2022/00144 dated October 28, 2022, on 'Reduction in denomination for debt securities and non-convertible redeemable preference shares'inter-alia modified the face value of the listed debt security and non-convertible redeemable preference share issued on private placement basis traded on a stock exchange or OTC basis from Rs. Ten Lakh to Rs. One lakh.

SEBI vide circular No. SEBI/HO/DDHS/DDHS-RACPOD1/P/CIR/2022/154 dated November 14, 2022, on 'Registration and regulatory framework for Online Bond Platform Providers' inter-alia stipulated that all the orders with respect to listed debt securities placed on an online Bond Platform shall be mandatorily routed through the RFQ platform of the recognised Stock Exchange(s) and settled through the respective Clearing Corporations.

SEBI vide circular no. SEBI/HO/DDHS/DDHS-RACPOD1/P/CIR/2023/9 dated January 09, 2023, on "Mode of settlement for trades executed on the Request for Quote (RFQ) platform" has allowed in addition to the Real-Time Gross Settlement (RTGS) mechanisms, payment mechanisms

provided by banks/payment aggregators authorised by Reserve Bank of India, from time to time, may be used for settlement of trades executed on the RFQ platform.

In order to simplify the process of yield to price computation for non-convertible securities, cash flow dates regarding payment of interest/ dividend/ redemption for the securities traded on RFQ platform for the purpose for yield to price computation shall not be adjusted for day count convention and shall accordingly be based on the due date of payment as per the cash flow schedule and not as per the date of payment.

SEBI vide circular dated August 02, 2023, mandated stock brokers with effect from April 01, 2024, for all the trades in proprietary capacity, SBs shall undertake at least 25% of their total secondary market trades by value in CBs in that month by placing/seeking quotes through OTO (One to One) or OTM (One to Many) mode on the RFQ platform of stock exchanges.

SEBI vide circular dated August 07, 2023, mandated FPIs to undertake at least 10% of their total secondary market trades in Corporate Bonds by value by placing/seeking quotes on the RFQ platform of stock exchanges, on a quarterly basis.

Similar mandate is given to Mutual Funds, Alternative Investment Funds, Portfolio Management Services to undertake certain % of their transaction in secondary market in corporate bonds through RFQ platforms.

Exchanges also provide Order Matching platform (similar to equity) for trading in corporate bond securities.

Online Bond Platform Provider (OBPP): Online Bond Platform Provider means any person operating or providing an online bond platform. Online Bond Platform means any electronic system, other than a recognised stock exchange or an electronic book provider platform, on which the debt securities which are listed or proposed to be listed, are offered and transacted. OBPPs provide an avenue for investors, particularly non-institutional investors to access the bond market.

18.14.3 Money Market

Money Market is a short-term market and handles instrument from 1 day to 1 year. It is mostly used by Government, Banks and other corporate entities to tide over short-term requirements of funds. The entities having excess and the entities with shortage of funds participate in this market. The RBI uses the money market for transmission of its monetary policy direction by changing various Reserve ratios, conducting Open Market Operations, increasing or decreasing of policy rates, etc.

Participants in the Indian money market include Public Sector Banks, Private Sector Banks, Foreign Banks, Co-operative Banks, Financial Institutions, Insurance Companies, Mutual Funds, Primary Dealers, Bank cum Primary Dealers, Non-Banking Financial Companies (NBFCs), Corporates, Provident/Pension Funds, Payment Banks, Small Finance Banks, etc.

Money market is typically divided into two segments: (a) Borrowing and Lending segment with or without collaterals; (b) Asset Market involving purchase and sale of money market instruments.

These are explained briefly below:

a) ***Call Money:*** The call money market is an avenue for unsecured lending and borrowing of funds. This market is a purely interbank market in India restricted only to Scheduled Commercial Banks (SCBs) and the Primary Dealers (PDs). Call money transactions are dealt/ reported on the Reserve Bank of India's NDS-CALL (Negotiated Dealing System – Call) platform, which is managed by CCIL, and are predominantly overnight (tenor of borrowing may be extended to account for weekends and holidays).

b) ***Notice Money:*** This is an extension of the interbank call market with uncollateralized lending and borrowing of funds for a period beyond overnight and up to 14 days. Notice money transactions are dealt / reported on the RBI's NDS-CALL.

c) ***Term Money***: This is an extension of the interbank call market for uncollateralized lending and borrowing of funds for a period between 15 days and 1 year. Term money transactions are dealt / reported on the RBI's NDS-CALL.

d) ***Market Repo***: Repo, also known as a ready forward contract, refers to borrowing funds via sale of securities with an agreement to repurchase the same at a future date with the interest for the borrowings incorporated in the repurchase price. Reverse repo is the exact opposite transaction which is essentially a collateralized lending of funds. Each repo/ reverse repo deal thus has two parts (or, two legs). The repo period Is the time between the two legs. The interest is computed on the actual amount borrowed by the repo seller which is the consideration amount in the repo's first leg. The lender receives the interest in the second leg when the security is bought back by the borrower at a higher consideration that includes the interest. RBI regulates the repo market in India and major participants are Scheduled Commercial Banks, Primary Dealers, Mutual Funds, NBFCs, Financial Institutions, Insurance Companies, Corporates, Provident / Pension Funds, Payment Banks, Small Finance Banks, etc. Repo transactions against G-secs are traded / reported on the Clearcorp Repo Order Matching System (CROMS) electronic platform of the Clearcorp Dealing Systems. These are settled by CCIL along with the G-secs.

e) ***Triparty Repo i***n Government Securities: "Triparty repo" is a type of repo contract with a third party intermediary between the borrower and lender known as the Triparty Agent (TPA). The TPA does the collateral selection, payment and settlement, custody and management during repo period. Following RBI's authorization to CCIL to act as a TPA, the 'Collateralized Borrowing and Lending Obligation' (CBLO) launched by CCIL on January 20, 2003, was converted into TREP on November 5, 2018. The Tri Party Repo Dealing System (TREPS), an anonymous order matching trading platform, is provided by Clearcorp Dealing Systems (India) Ltd with CCIL as the Central Counterparty (CCP) for borrowing and lending of funds against government securities in India with a triparty arrangement. All the repo eligible entities can trade on TREPS, and the funds borrowed on TREPS are exempted from RBI's CRR/SLR computation and the security acquired under the deal is eligible for SLR by the acquiring Bank. Unlike Repo, TREPS facilitate the trading of Repo and the seller of the

security has a right to substitute the security. Stock Exchanges have also introduced Triparty Repo on Corporate Bonds.

f) ***Treasury Bills (T-bills)***: In India, Treasury bills or T-bills are used for short term borrowing by the Government of India and are considered to be a part of the money market as they mature within a year from issue. These are basically zero coupon securities which are issued at a discount and are redeemed at par. Normally RBI conducts weekly auctions (on Wednesday) for three tenors of T-bills: 91, 182 and 364 days.

g) ***Cash Management Bills (CMBs)***: Essentially very short term T-bills, Cash Management Bills (CMBs) are issued by the Government of India to fund the temporary mismatches in its cash flow. CMBs have maturities less than 91 days. This is issued to absorb excess liquidity in the system after auction for usual Treasury Bills on weekly basis.

h) ***Commercial Paper (CP)***: A Commercial Paper (CP) is used by Indian corporates to raise short-term unsecured funds. CPs are also discounted instruments like T-bills and are issued for ₹5 lakh and multiples thereof for maturities between 7 days and one year. CP issuances are governed by RBI regulations. CPs are issued in dematerialised form and held with depository registered with SEBI. Companies, including Non-Banking Finance Companies (NBFCs) and All India Financial Institutions (AIFIs), are eligible to issue CPs subject to the condition that any fund-based facility availed of from bank(s) and/or financial institutions is classified as a standard asset by all financing banks/institutions at the time of issue. Other entities like co-operative societies/unions, government entities, trusts, limited liability partnerships and any other body corporate having presence in India with a net worth of Rs. 100 crore or higher subject to the condition as specified above. The minimum credit rating for a CP shall be 'A3' as per rating symbol and definition prescribed by SEBI. The Issuing and Paying Agent (IPA) shall be appointed for each CP issuance.

i) ***Certificate of Deposit (CD)***: Certificate of Deposits is a negotiable, unsecured money market instrument issued by a bank[124] as a Usance Promissory Note against funds deposited at the bank for a maturity period upto one year. CDs are also discounted instruments like T-bills and are issued for ₹5 lakh and multiples thereof for maturities between 7 days and one year. All India Financial Institutions can issue CDs for a period not less than 1 year and not exceeding 3 years from the date of issue.

j) **Repo in Corporate Bond/ Corporate Debt Securities:** Repo in corporate bonds was introduced by RBI in 2010 and the eligible securities for CBR include:
    a. Listed corporate bonds and debentures, (however, participants cannot borrow against the collateral of their own securities or those of related entities);
    b. CPs and CDs; and
    c. Units of Debt ETFs.
    d. Any other security of a local authority as may be specified in this behalf by the Central Government.

k) **Exchange Traded Tri-party Repo in Corporate Debt Securities**: Tri-party repo on corporate debt securities is available for trading on the exchanges. The Tri-party repo is a type of repo

124 CDs can also be issued by the All India Financial Institution which shall be guided by the specific RBI Directions

contract where a third entity (apart from the borrower and lender), called a Tri-Party Agent, acts as an intermediary between the two parties to the repo to facilitate services like collateral selection, payment and settlement, custody and management during the life of the transaction. The aim to introduce Tri-party repo in corporate bonds was to improve liquidity in the corporate bond market. Tri-party repos are transacted as per the terms of Tri-party repo (Reserve Bank) Directions Tri-party repo (Reserve Bank) Directions, 2018 Amendment dated November 28, 2019, or such other directions issued by the Reserve Bank of India (RBI) from time to time. AMC Repo Clearing Ltd. (ARCL) is a limited purpose clearing corporation (LPCC) acts as a tri-party repo agent. The Tri-party repo product in corporate debt securities is currently traded on Exchange Tri-party repo Market Trading Platform and Clearing & Settlement done by ARCL which also provide settlement guarantee for these transactions.

18.14.3.1 Importance of the Call Money Market

For the lenders, call money is the second most liquid asset after cash. In India, it enables banks to even out their day-end demand and supply of overnight funds. Banks prefer it for day-end liquidity or for reserve management because of operational ease with no collateral and low transaction costs and same day settlement of funds at RBI. Due to its unsecured nature and criticality for meeting unforeseen fund mismatches in the banking system, RBI, in August 2005 converted the call segment into a pure interbank market (including PDs).

Overnight MIBOR

The Mumbai Interbank Outright Rate (MIBOR) benchmark rate is based on overnight call money market transactions and is administered by the Financial Benchmarks India Pvt. Ltd. (FBIL) with CCIL as the 'Calculation Agent'. Overnight MIBOR is notified by RBI as a 'significant benchmark' as it is the most widely used rate in India for pricing and settlement of derivatives and other contracts. Overnight MIBOR is a volume weighted average rate based on actual trades executed on the NDS-CALL platform during the first hour of trading.

18.14.3.2 Economic Utility of Repo Market

Repo market is used by the traders for funding their positions and taking position in the market to execute their views on interest rate. Traders short sell[125] a GOI security, if they think the price of the security is likely to fall due to expected increase in interest rate for a particular segment and they borrow the said security in the Repo market to make deliveries. RBI allows short sale upto 90-days, but the short selling entity has to borrow the security from the Repo market to make deliveries against the short sale.

18.14.4 Role of Regulators

Reserve Bank India (RBI) manages the borrowing of the Central and State Governments including the Union Territories. The RBI also acts as the regulator for the Money market and the G-Sec market.

125 Short selling is allowed only in certain securities and for certain entities

The RBI also governs instruments issued by Commercial Banks and other Institutions regulated by it. The RBI Act, 1934, Government Securities Act, 2006, Payment & Settlement Systems Act, 2007, Foreign Exchange Management Act, 1999, Banking Regulation Act, 2017, etc. are the major regulations used by RBI to ensure an efficient debt market for Government securities.

The Securities and Exchange Board of India (SEBI) is the regulator for the corporate bond market including instruments issued by Commercial Banks and PSUs, provided such issuances by the above regulated entities are of more than one year of maturity. The role of SEBI is paramount when the funds are raised through public issuance. As per the guidelines issued by SEBI, the issuers are required to fully disclose the risks to the investors. For this, the regulator has implemented elaborate risk disclosure standards. Institutional investors like Foreign Portfolio Investors and Mutual Funds also adhere to SEBI guidelines while investing in the market. SEBI also frames guidelines for Debenture Trustees, Credit Rating agencies, Merchant Bankers, etc. to enable a smooth and well-functioning debt market.

18.14.5 Role of Credit Rating Agencies

Credit risk is the risk of default on a debt that arises from the borrower failing to make required payments. Sovereign domestic currency based debt instruments are regarded as safe sovereign investment and perceived to be “credit risk free”. Pricing and returns for non-government debt instruments are dictated by their issuers’ creditworthiness i.e., the continuing ability of the issuer / borrower to service the debt payments. Any deterioration in financial capability of the borrowing firm may result in delinquency, either in part or in full. Debt investments are generally long term investments and are illiquid. Hence, investors must have full information about the issuer as well as the issue, through regulatory and voluntary disclosures. The voluminous information about the issuer as well as the issue are required to be standardized and summarized through a well-qualified and unbiased agency that can provide the independent view about the possible future performance of the debt. This particular role of providing risk information about the possible future performance of the issue is typically performed by a Credit Rating Agency in the debt market. As per the extant SEBI regulations in force in the capital markets, it is necessary for an issuer to obtain a rating from any of the major credit rating agencies. In India, the Rating Agencies are regulated by SEBI under SEBI (Credit Rating Agencies) Regulations, 1999.

A Credit Rating Agency (CRA) is a company that provides information about the riskiness of a debt instrument or a company in terms of its promised performance of a debt instrument. They are regulated by SEBI and have to follow governance standards while giving the Rating on a debt instrument. They issue letter grades to instruments: “AAA” for highest safety, “D” for a Default and many other grades in between. The CRAs may rate government and corporate bonds, CDs, CPs, municipal bonds, preferred stock, mortgage-backed securities and collateralized debt obligations, etc. Investors typically see the rating before they invest in a debt instrument.

In the current times, credit rating has become an integral part of debt market around the globe. SEBI mandates disclosure of at least one Credit Rating while issuing debt instrument. The credit rating represents a CRA’s evaluation of the qualitative and quantitative information pertaining to the prospective debtor, including information provided by the prospective debtor and other non-public information obtained by the credit rating agency’s analysts.

Ratings are the probability of default on repayment of principal or interest on relative scale i.e., an issuer's likelihood to default and its likelihood to default compared to another similar issuer. Ratings assigned by the rating agencies are taken as a key indicator of the relative riskiness of the bonds and to determine the credit spread to be charged for these instruments. It must be noted that the CRAs always qualify the rating provided for an entity or instrument and encourage investors to look for other possible publicly available information on the companies along with the rating information. Often bonds are rated by more than one rating agency.

For ease of understanding by investors, CRAs generally assign letter grades for their view of the instruments. The highest quality (safest, lower yielding) bonds are commonly referred to as "AAA", while the least creditworthy are termed as "junk".

Common Scale of Ratings:

- AAA to BBB- : Investment Grade
- BB+ to CCC- : Non-investment or Junk Grade
- D : Default Rating
- Short term Scale : A1+ to D

The table below shows the ratings and their general significance which may be different for different credit rating agency. Rating agency may apply '+' (plus) or '-' (minus) signs for ratings to reflect comparative standing within the category.

Rating	**General Significance**
AAA	Highest Degree of Safety
AA	High Degree of Safety
A	Adequate Safety
BBB	Moderate Safety
BB	Moderate Risk
B	High Risk
C	Very High Risk
D	Default

Chapter 18: Sample Questions

1. Which of the following has higher credit risk?
    a. Bond rated AAA
    b. Bond rated A
    c. Bond rated BBB
    d. All of them have same credit risk
2. Credit spread is the price of _____.
    a. Credit risk
    b. Reinvestment risk
    c. Price risk
    d. All of the above
3. If the long-term rate is 10% and short-term rate is 8%, the shape of term structure of rates is _____.
    a. Normal/positive
    b. Inverted/negative
    c. Flat
    d. humped
4. The concept of "accrued interest" applies to which of the following?
    a. Zero coupon bond
    b. Coupon bond
    c. Both (a) and (b)
    d. None of the above
5. If the coupon of the bond increases, its Modified Duration will _____.
   (Other things remaining constant).
    a. Increase
    b. Decrease
    c. May increase or decrease
    d. Remain constant

CHAPTER 19: INTEREST RATE DERIVATIVES

Learning Objectives:

After studying this chapter, you should know about:

- Definition and Economic Functions of Derivatives
- Derivatives on Interest Rate and Interest Rate Instrument
- Growth Drivers in Derivatives
- Market Participants in Interest Rate Derivatives
- OTC versus Exchange-Traded Derivatives

19.1 Derivatives: Definition and Economic Role

Derivative is something that is *derived* from another thing called the underlying. The underlying is independent, and the derivative is dependent on and derived from the underlying. The derivative cannot exist without the underlying. This is the general definition of derivative. For example, wheat farmers may wish to sell their harvest at a future date to eliminate the risk of a change in prices by that date. Such a transaction is an example of a derivative. The price of this derivative is driven by the spot price of wheat which is the "underlying".

However, accounting standards like FAS 133 (in the US), IAS 39 (in the EU) and AS 30 (in India) impose more qualifications for derivatives. For example, IAS 39 and AS 30 require the following three criteria to be satisfied for financial derivatives.

1. Value of derivative is linked to the value of underlying
2. Trade settled on a “future” date
3. On trade date, there should be no full cash outlay

FAS 133 requires an additional qualification:

4. Trade must settle (or capable of being settled) on *net* basis and not on gross basis.

The first requirement implies that the price of derivatives is determined by the price of underlying, and not by the demand-supply for derivative. The underlying is the raw material and derivative is the finished product. If the underlying price goes up (or down), the derivative price will go up (or down) regardless of demand-supply for derivative.

The “future” date in the second requirement means that the settlement of the derivative must be later than that for underlying. For example, if the underlying settles on two business days after trade date (T+2), the derivative on that underlying must settle later than T+2; if the underlying settles in T+5, the derivative on that underlying must settle later than T+5; and so on.

The third requirement provides “leverage”: ability to buy the underlying without fully paying for it immediately or sell it without delivering it immediately.

Derivatives are classified into five asset classes: rate, credit, equity, forex and commodity. In each asset class, there are four generic products: *forward, futures, swap* and *option*.

Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity linked derivatives remained the sole form of such products for almost three

hundred years. Financial derivatives came into spotlight in the post 1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two thirds of total transactions in derivative products. In recent years, the market for financial derivatives has grown tremendously in terms of variety of instruments available, their complexity and also turnover.

With Securities Laws (Second Amendment) Act, 1999, Derivatives has been included in the definition of Securities. The term Derivative has been defined in Securities Contracts (Regulations) Act, 1956 as:

a. a security derived from a debt instrument, share, loan, whether secured or unsecured, risk instrument or contract for differences or any other form of security;

b. a contract which derives its value from the prices, or index of prices, of underlying securities;

c. commodity derivatives; and

d. such other instruments as may be declared by the Central Government to be derivatives;

Further Section 18A of the act provides that notwithstanding anything contained in any other law for the time being in force, contracts in derivative shall be legal and valid if such contracts are:

- Traded on a recognized stock exchange
- Settled on the clearing house of the recognized stock exchange, in accordance with the rules and bye–laws of such stock exchanges.
- Between such parties and on such term as the Central Government may, by notification in the Official Gazette specify

Derivatives are tools to manage price risk. How you manage risk depends on your approach to risk. If you want to take risk , you will trade in derivatives which is called speculation. When you want to avoid risk, you manage it one of the three ways: elimination (called hedging); insurance and minimization (called diversification). The following table summarizes the approaches to market risk management.

The following table summarizes the approaches to risk management:

Approach	**Explanation**
Speculation	Taking risk (more formally called “trading”) It results in the possibility of positive return (i.e., profit) or negative return (i.e., loss) in future
Hedging	You are already exposed to risk and hedging eliminates that risk and locks in the future return at a known level.
Insurance	You are already exposed to risk and insurance selectively eliminates the negative return but retains the positive return. It has an explicit upfront cost, unlike speculation and hedging, which do not have any cost. It requires a particular derivative called option to implement it.

Approach	Explanation
Diversification	It reduces both return and risk but in such a way that risk is reduced more than return so that risk is minimized per unit return (or, alternately, return is maximized per unit risk).

Let's understand derivatives with simple example:

- A wheat farmer and a miller sign a contract to exchange a cash of Rs. 10000/- for a 100 Kg. of wheat after 2 months. The party agreeing to buy the underlying asset in the future assumes a long position, and the party agreeing to sell the asset in the future assumes a short position. The price agreed upon is called Forward Price and the settlement date is called Expiration Date. Both parties have reduced a future risk: for the wheat farmer, the uncertainty of the price, and for the miller, the availability of wheat at a specific price.
- Still there is risk in the contract, firstly, no wheat will be available or that one party will renege on the contract. Both reduce a risk and acquire a risk when they sign the derivative contract
    - The farmer reduces the risk that the price of wheat will fall below the price specified in the contract and acquires the risk that the price of wheat will rise above the price specified in the contract (thereby losing additional income that he could have earned).
    - The miller, on the other hand, acquires the risk that the price of wheat will fall below the price specified in the contract (thereby paying more in the future than he otherwise would have) and reduces the risk that the price of wheat will rise above the price specified in the contract.

19.1.1 Key Economic Functions of Derivatives:

Though the primary economic role of derivatives is Risk Management, derivatives market also serves the following functions:

- Hedging risk exposure: Since the value of the derivatives is linked to the value of the underlying asset, the contracts are primarily used for hedging risks. For example, an investor may purchase a derivative contract whose value moves in the opposite direction to the value of an asset the investor owns. In this way, profits in the derivative contract may offset losses in the underlying asset.

- Price discovery: Derivative market serves as an important source of information about prices. Prices of derivative instruments such as futures and forwards can be used to determine what the market expects future spot prices to be. In most cases, the information is accurate and reliable. Thus, the futures and forwards markets are especially helpful in price discovery mechanism.

- Market efficiency: It is considered that derivatives increase the efficiency of financial markets. By using derivative contracts, one can replicate the payoff of the assets. Therefore, the prices of the underlying asset and the associated derivative tend to be in equilibrium to avoid arbitrage opportunities.

- Access to unavailable assets or markets: Derivatives can help organizations get access to otherwise unavailable assets or markets. By employing interest rate swaps, a company may obtain a more favourable interest rate relative to interest rates available from direct borrowing.
- Price Stability: It has been seen that many countries central banks uses derivatives for stabilising the currency prices. In India, RBI also intervene in forex market through derivatives for INR stability.
- Derivatives, due to their inherent nature, are linked to the underlying markets. With the introduction of derivatives, the underlying market witnesses higher trading volumes because of participation by more players who would not otherwise participate for lack of an arrangement to transfer risk.
- Speculation: Financial speculation involves the buying, holding, selling, and short-selling of stocks, bonds, commodities, currencies, real estate, derivatives, or of any other financial instrument, in order to profit from fluctuations in its price. This is not the only use, and probably not the most important use, of financial derivatives. Financial derivatives are considered to be risky. If not used properly, these can lead to financial destruction in an organisation. However, these instruments function as a powerful instrument for knowledgeable traders to expose themselves to calculated and well understood risks in search of a reward, that is, profit.
- Derivatives market helps shift of speculative trades from unorganized market to organized market. Risk management mechanism and surveillance of activities of various participants in organized space provide stability to the financial system.

Market Participants must understand that derivatives, being leveraged instruments, have risks like counterparty risk (default by counterparty), price risk (loss on position because of price move), leverage risk (magnifying the gain and losses), liquidity risk (inability to exit from a position), legal or regulatory risk (enforceability of contracts), operational risk (fraud, inadequate documentation, improper execution, etc.) and may not be an appropriate avenue for someone of limited resources, trading experience and low risk tolerance. A market participant should therefore carefully consider whether such trading is suitable for him/her based on these parameters. Market participants who trade in derivatives are advised to carefully read the Risk Disclosure Document, given by the broker to his clients at the time of signing agreement.

19.2 Products in Derivatives Market

As specified earlier, derivatives can be classified into five asset classes: interest rate, credit, equity, forex and commodity. In each asset class, there are four generic products: *forward, futures, swap* and *option*. We will examine this product with interest rate as asset class. Interest Rate Derivative (IRD) is a financial derivative contract whose value is derived from one or more interest rates, prices of interest rate instruments, or interest rate indices.

19.2.1 Forwards

It is a contractual agreement between two parties to buy/sell an underlying asset at a certain future date for a particular price that is pre-decided on the date of contract. Both the contracting parties are committed and are obliged to honour the transaction irrespective of price of the underlying asset at the time of delivery. Since forwards are negotiated between two parties, the terms and conditions of contracts are customized.
These are Over-the-counter (OTC) contracts. Contracts are mainly settled in delivery. However, in certain cases, they are settled in cash on expiration date. Generally, no margin or mark to market is collected for such contracts.

Forward Rate Agreement (FRA) is an interest rate derivative contract that involves exchange of interest payments on a notional principal amount, on a future date, at agreed rates, for a defined forward period. For example, two parties can enter into an agreement to borrow INR 100 Crores after 60 days for a period of 91 days, at say 5% p.a. and settlement is based on 91-day T-Bills yield. This means that the settlement date is after 60 days, on which date the money will be borrowed/lent for a period of 90 days. The party that is borrowing money under the FRA has a long position, and the party that is lending money has a short position in the FRA. FRA contracts are usually cash-settled, that is, the money is not actually lent or borrowed. Instead, the forward rate specified in the FRA is compared with the benchmark rate (in this case 91-day T-Bills yield). If the benchmark rate is greater that the FRA rate, then the long is effectively able to borrow at a below market rate. The long will therefore receive a payment based on the difference between the two rates. Assume that on the settlement date, the actual 91-day T-Bills yield is 5.5%. This means that the long is able to borrow at a rate of 5% under the FRA, which is 0.5% less than the market rate. Total saving for borrower in interest = 100 Crores * 0.5% *91/365 = Rs.12.46 lacs. The borrower would save Rs. 12.46 lacs by entering into an FRA. However, we need to make one more adjustment to get the accurate value. The settlement in FRA is on a cash basis, and settlement takes place on a pre-decided date. But the saving above is after the duration of the loan (in the above example after 91 days). So, the present value of the expected savings needs to be calculated to determine the accurate quantum of savings.

Let's take another example of FRA:

Let's assume a company enters into a **3×6 FRA** (a contract starting in 3 months and ending in 6 months) to hedge against an expected rise in interest rates.

Parameter	**Value**
Notional Principal	INR 10,00,000
FRA Rate (Fixed Rate)	5% p.a.
Floating Rate at settlement	6% p.a.
Contract period	3 months
Settlement Date	3 months

Interest Rate Difference : 6% - 5% = 1%
Interest Amount Difference = (10,00,000 * 1% * 3) / 12 = Rs. 2500
Since FRA settles today, the cash settlement is discounted.
Settlement Amount = 2500 / {1+(6%*3/12)} = Rs. 2463.05

Bond Forward

RBI vide Notification No. FMRD.DIRD.17/14.03.042/2024-25 dated February 21, 2025 has issued Reserve Bank of India (Forward Contracts in Government Securities) Directions, 2025. These Directions apply to forward contracts in government securities (hereinafter referred to as bond forwards) undertaken in the Over-the-Counter (OTC) market in India. Following some of salient features of the direction:

- Bond forward means a rupee interest rate derivative contract in which one counterparty (buyer) agrees to buy a specific **Government Security** from another counterparty (seller) on a specified future date and at a price determined at the time of the contract. Hence, underlying for bond forward can be Government Securities only.
- A resident; and A non-resident who is eligible to invest in Government Securities under the Foreign Exchange Management (Debt Instruments) Regulations, 2019 dated October 17, 2019, are eligible to undertake bond forward transactions to the extent permitted under these Directions
- Certain entities like banks, PDs are allowed to undertake transactions in bond forwards as market-makers
- Any entity, eligible to be classified as a non-retail user in terms of the Rupee Interest Rate Derivatives (Reserve Bank) Directions, 2019, dated June 26, 2019, as amended from time to time, shall be eligible to undertake transactions in bond forwards as a user.
- A bond forward transaction may be physically-settled or cash-settled.
- A cash-settled bond forward transaction may be settled bilaterally or through any clearing arrangement approved by the Reserve Bank for the purpose.
- A physically-settled bond forward transaction shall be settled through the Clearing Corporation of India Ltd. (CCIL) or any other clearing agency or clearing arrangement approved by the Reserve Bank for the purpose.

19.2.2 Futures

A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Indeed, we may say futures are exchange traded forward contracts. Contracts are mainly settled in cash; however in certain cases they are settle in physically on expiration date. Margins and mark to market are applicable for such contracts. Settlement guarantee is provided by the clearing corporation of the Exchanges.

Interest Rate Futures (IRF) are standardized interest rate derivative contracts traded on a recognized stock exchange to buy or sell a notional security or any other interest-bearing instrument or an index of such instruments or interest rates at a specified future date, at a price determined at the time of the contract. Interest Rate Futures also include money market Futures.

19.2.3 Options

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying on or before a stated date and at a stated price. While buyer of option pays the premium and buys the right, writer/seller of option receives the premium with obligation to sell/ buy the underlying asset, if the buyer exercises his right. Call Option gives buyer of an option the right to buy the asset and put option gives buyer of an option the right to sell the asset. In case of futures/forwards, it is an obligation on both buyer as well as seller to settle the contract, however in option the buyer of an option has right but not the obligation to buy/sell the underlying asset.

- Interest Rate Option (IRO) is an option contract whose value is based on interest rates or interest rate instruments. IRO traded in OTC as well as Exchange Traded market.
- An Interest Rate Cap is a series of interest rate call options (called caplets) in which the buyer of the option receives a payment at the end of each period when the underlying interest rate is above a rate agreed in advance (strike rate).
- An Interest Rate Floor is a series of interest rate put options in which the buyer of the option receives a payment at the end of each period when the underlying interest rate is below the strike rate.
- An Interest Rate Collar is a derivative contract where a market participant simultaneously purchases an interest rate cap and sells an interest rate floor on the same interest rate for the same maturity and notional principal amount.
- A Reverse Interest Rate Collar is a derivative contract which involves simultaneous purchase of an interest rate floor and sale of an interest rate cap on the same interest rate for the same maturity and notional principal amount.

In subsequent chapters we will learn in detail about Exchange traded interest rate futures and options.

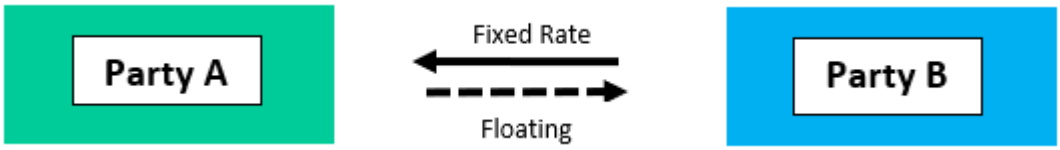
19.2.4 Swaps

A swap is an agreement made between two parties, to exchange cash flows in the future, according to a prearranged formula. Swaps are, broadly speaking, series of forward contracts. Swaps help market participants manage risk associated with volatile interest rates, currency exchange rates and commodity prices etc. Most swaps involve cash flows based on a notional principal amount such as a loan or bond, although the instrument can be almost anything. One cash flow is generally fixed, while the other is variable and based on a benchmark interest rate, floating currency exchange rate, or index price etc.

Interest rate swap is a derivative contract that involves exchange of a stream of agreed interest payments on a `notional principal' amount during a specified period. Such contracts generally involve exchange of a `fixed to floating' or `floating to floating' rates of interest. On each payment date that occurs during the swap period cash payments based on fixed/ floating and floating rates, are made by the parties to one another.

Example

- "A" will pay Overnight MIBOR & receive fixed rate of 3.75%
- "B" will pay fixed rate of 3.75% p.a. & receive Overnight MIBOR
- Tenor – 1 month
- Notional Value – Rs.100 Crores



Date	Days	Overnight MIBOR	Interest (Rs. In Crores) #
01-Oct-XX	4.00	3.7	0.0405
05-Oct-XX	1.00	3.73	0.0102
06-Oct-XX	1.00	3.7	0.0101
07-Oct-XX	1.00	3.65	0.0100
08-Oct-XX	1.00	3.69	0.0101
09-Oct-XX	3.00	3.73	0.0307
12-Oct-XX	1.00	3.67	0.0101
13-Oct-XX	1.00	3.68	0.0101
14-Oct-XX	1.00	3.63	0.0099
15-Oct-XX	1.00	3.62	0.0099
16-Oct-XX	3.00	3.66	0.0301
19-Oct-XX	1.00	3.65	0.0100
20-Oct-XX	1.00	3.66	0.0100
21-Oct-XX	1.00	3.49	0.0096
22-Oct-XX	1.00	3.45	0.0095
23-Oct-XX	3.00	3.45	0.0284
26-Oct-XX	1.00	3.47	0.0095
27-Oct-XX	1.00	3.47	0.0095
28-Oct-XX	1.00	3.46	0.0095
29-Oct-XX	4.00	3.48	0.0381
	32.00		0.315817

Interest calculating using daily compounding

Interest Payable by "A" = Rs. 3158169

Interest Receivable by "A" = Rs. 3287671

(100 Crores * 3.75% *32/365)

Net Pay-off for "A" = Rs. 129503

Net Pay-off for "B" = (Rs. 129503)

A **swaption** is an option on swaps. A swaption gives the buyer the right, but not the obligation, to enter into swap. Interest rate swaptions are more popular in the financial market. An Interest Rate

Swaption is an option on interest rate swaps. A swaption gives the buyer the right, but not the obligation, to enter into an interest rate swap. A call swaption gives the holder the right to enter an interest rate swap where they receive a fixed rate and pay a floating rate, acting as a "receiver". A put swaption gives the holder the right to enter an interest rate swap where they pay a fixed rate and receive a floating rate, acting as a "payer". Both are options on an interest rate swap, allowing the buyer to pay a premium for the flexibility to enter the swap at a predetermined "strike rate" at a future.

The following table summarizes the key feature of four generic types of derivatives.

Generic derivative	**Key feature**	**Market**
Forward	To buy or sell the underlying asset with cash for settlement on a future date. Customized contract.	OTC
Futures	To buy or sell the underlying asset with cash for settlement on a future date. Standardized contract.	Exchange
Swap	To buy or sell returns from the underlying asset with returns from other underlying asset / cash over a period	Mainly OTC
Option	A right to buy or sell on underlying with cash for settlement on a future date	OTC and Exchange

Different kind of derivatives based on underlying

Under lying	**Derivatives**			
	Forward	**Futures**	**Swap**	**Option**
Interest Rate & Interest Rate Instrument	FRA and Bond forward	Interest rate & Bond futures	Interest rate swap	Interest rate and Bond option, Swaptions
Equity & Equity Indices	Equity forward	Equity futures	Equity swap	Equity option
Currency Pairs	FX forward	FX futures	FX swap	FX option
Commodity	Commodity Forward	Commodity Futures	Commodity swap	Commodity option

Additionally, “Credit” risk as underlying, Credit Default Swaps (CDS) are also very popular in the financial market. One counterparty in the CDS contract (the “buyer of protection”) makes a regular periodic payment to the other counterparty (the “seller of protection”); in exchange the protection seller agrees to pay the protection buyer any loss in value on the specified reference obligation if a “credit event” (e.g., default) were to occur during the life of the CDS contract.

19.3 Growth Drivers of Derivatives

Over the last three decades, the derivatives market has seen a phenomenal growth. A large variety of derivative contracts have been launched at exchanges across the world.

Some of the factors driving the growth of financial derivatives are:
1. Increased volatility in asset prices in financial markets,
2. Increased integration of national financial markets with the international financial markets,
3. A significant growth of derivative instruments has been driven by technological breakthrough. Advances in this area include the development of high-speed processors, network systems and enhanced method of data entry.,
4. Development of more sophisticated risk management tools, providing a wider choice of risk management strategies, and
5. Innovations in the derivatives markets, which optimally combine the risks and returns over a large number of financial assets, leading to higher returns, reduced risk and lower transactions costs as compared to individual financial assets.

19.3.1 Interest Rate Derivatives

Interest rate derivatives are the most important among all derivatives, as shown in the following tables of notional outstanding amount:

Notional Amount Outstanding (USD Billion) in Exchange Traded Derivatives as of March 2025

Exchange Traded Products	**Futures**	**Options**
Interest rate	44861	55387
Currency	353	149
Total - All markets	**45214**	**55536**

Source: Bank for International Settlement

Exchange Traded Daily Average Turnover (USD Billion) for year 2024

Exchange Traded Products	**Futures**	**Options**
Interest rate	10364	2262
Currency	156	12
Total - All markets	**10520**	**2274**

Source: Bank for International Settlement

Notional Amount Outstanding (USD Billion) in OTC Derivative Products

Product	**2024 – S1**	**2024 -S2**
Foreign exchange contracts	129885	130093
Interest rate contracts	578805	548341
Equity-linked contracts	8686	8901
Commodity contracts	2446	2408
Credit derivatives (including Credit default swaps)	9196	9229
Other derivatives	518	505
Total	**729536**	**699477**

Source: Bank for International Settlement

We can see that interest rate derivative outnumber their counterparts in other underlying markets. The reason is quite obvious: every business or corporation faces interest rate risk (and therefore need to use interest rate derivatives) while they need not necessarily face other risks like equity risk, currency risk, etc. In contrast, equity risk is faced only by investment companies with exposure to

equity market; currency risk is faced only by those with exports and imports; and commodity risk is faced only by those with exposures to commodities.

Interest rate derivatives are most often used to hedge against interest rate risk, or else to speculate on the direction of future interest rate moves. Interest rate risk exists in an interest-bearing asset, such as a loan or a bond, due to the possibility of a change in the asset's value resulting from the variability of interest rates. Interest rate risk management has become very important, and assorted instruments have been developed to deal with interest rate risk.

19.4 Market Participants in Interest Rate Derivatives Market

There are broadly three types of participants in the derivatives market - hedgers, traders (also called speculators) and Arbitragers. Market participants may play different roles in different market circumstances. Interest rate derivatives are most often used to hedge against interest rate risk, or else to speculate on the direction of future interest rate moves or to take arbitrage due to price difference in interest rate/interest rate instrument in various markets. Interest rate risk exists in an interest-bearing asset, such as a loan or a bond, due to the possibility of a change in the asset's value resulting from the variability of interest rates.

Hedgers

They face risk associated with the prices of underlying assets and use derivatives to reduce their risk. Practically everyone has exposure to interest rate or interest rate related instruments. Hence, all participants can use interest rate derivatives products to hedge or reduce their exposures to interest rates and interest rate instruments. For example, Banks who borrow money in form of deposits and bonds, providing loan for short term and medium term, Mutual Funds and Insurance companies investing in debt instrument, Corporates who borrow money from market in form of loan or debt instrument, Individual who has taken home loan or invested in debt funds etc.

Speculators/Traders

They try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts. Derivatives are preferred over underlying asset for trading purpose, as they offer leverage, are less expensive (cost of transaction is lower than that of the underlying) and are faster to execute in size (high volumes market). In case of interest rate derivatives, trader takes speculative positions based on its views on interest rate.

Arbitragers

Arbitrage is a deal that produces profit by exploiting a price difference in a product in two different markets. Arbitrage originates when a trader purchases an asset cheaply in one location and simultaneously arranges to sell it at a higher price in another location. Such opportunities are unlikely to persist for very long, since Arbitragers would rush in to these transactions, thus closing the price gap at different locations. Similarly in IRD arbitrage may be available between underlying and derivatives market and/or within derivatives market between OTC and derivatives market or between futures and option market.

In India regulators like RBI, SEBI, IRDAI etc. have given detailed guideline about participation of various market participants like Banks, Primary Dealers, Mutual Funds, Insurance Companies,

Foreign Portfolio Investors (FPIs) in Interest Rate Derivatives. We will see these guidelines in detail in subsequent chapters.

19.5 Underlying of Interest Rate Derivatives

Interest Rate Derivative (IRD) is a financial derivative contract whose value is derived from one or more interest rates, prices of interest rate instruments, or interest rate indices. According to definition, for IRD underlying can be interest rate or it can be interest rate instrument like government securities, treasury bills, corporate bonds and interest rate indices. The differences between them are summarized in the following table:

Features	**Interest Rate**	**Notional Bond**	**Single Bond**	**Fixed Income Securities Index**
Underlying	Interest rate on money market benchmark, policy rates, etc. For e.g. derivatives on Overnight MIBOR, Repo Rate, 91-day T-Bills yield etc.	Not a physical bond but theoretical bond with fixed maturity and coupon whose price is inferred from market physically available for bonds. For e.g. derivatives on 10-yr notional Government of India Securities (G-Secs/GOI Bond)	Specific debt securities. For e.g. derivatives on 6.10% GOI 2031 bond	Index based on fixed income securities. For e.g. derivatives on 8-13 year GOI index, Corporate bond indices
Tenor of Underlying	Short term to long term			
Quotation	Generally, interest rate	Yield or price of notional bond	Price of bond	Index Value
Nature of transaction	Participants borrow or lend money at agreed interest rate on future date.	Participant are agreeing to buy or sell notional bond at agreed price on future date	Participant are agreeing to buy or sell debt security at agreed price on future date	Participant are agreeing to buy or sell index at agreed price on future date.
Position	The party that is borrowing money has a long position in terms of interest rate and believes that underlying interest rate will	The party that is buying the bond / index derivatives has a short position in terms of interest rate. As he believes that the interest rate/yield of bond will go down and price of the bond / index will increase[126]. On the other hand, the party that is selling the bond / index derivatives has a long position in terms of interest rate. As he believes that the interest rate/yield of bond will increase, and price of the bond / index will decrease.		

126 Bond prices and yield (i.e. return) have inverse relationship.

Features	Interest Rate	Notional Bond	Single Bond	Fixed Income Securities Index
	increase in future. On the other hand, the party that is lending money has a short position and believes that underlying interest rate will decrease in future.			
Settlement	Mainly Cash Settlement	Cash settlement or physical settlement	Cash settlement or physical settlement	Cash settlement
Settlement price	Mainly derived from benchmark rates	Notional bond price is determined by the basket of available deliverable bonds issued in the market	Spot market price of underlying debt securities	Index Value

The following table summarized four generic types of derivatives among interest rate and interest rate instrument derivatives:

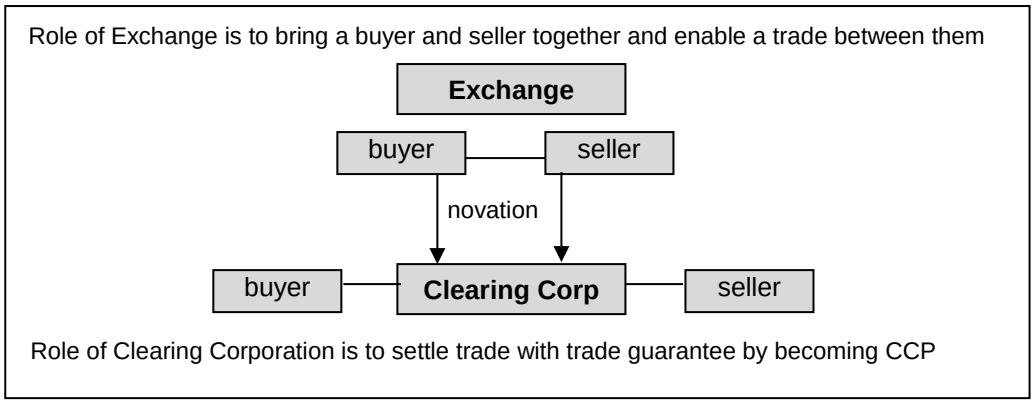
Derivative	Interest rate	Interest Rate instrument like Bond
Forward	Forward Rate Agreements (FRA's) are like forward contracts where one party agrees to borrow or lend a certain amount of money at a fixed rate on a pre-specified future date. FRA contracts are usually cash-settled, that is, the money is not actually lent or borrowed. Instead, the forward rate specified in the FRA is compared with the benchmark rate and difference is cash settled.	Bond forward trade, the seller agrees to provide certain debt securities to the acquirer on a mutually agreed date and a specified price and quantity. The settlement of such transactions takes place either by delivery of bonds on the settlement date or through cash settlement, which takes into account price differentials. As per RBI guideline, Bond forward means a rupee interest rate derivative contract in which one counterparty (buyer) agrees to buy a specific government security from another counterparty (seller) on a specified future date and at a price determined at the time of the contract.
Futures	Interest rate futures contract is a standardized contract, traded on an exchange, where one party agrees to borrow or lend a certain amount of money at a fixed	Interest rate futures contract is a standardized contract, where the seller agrees to provide certain debt securities to the acquirer on a mutually agreed date and a specified price and quantity. The settlement of such transactions takes

Derivative	Interest rate	Interest Rate instrument like Bond
	rate on a pre-specified future date. Similar to FRA, these contracts are usually cash settled.	place either by delivery of bonds on the settlement date or through cash settlement, which takes into account price differentials.
Swap	Interest rate swap is Exchange of a stream of agreed interest payments on a `notional principal' amount during a specified period. Such contracts generally involve exchange of a `fixed to floating' or `floating to floating' rates of interest.	A bond swap is a technique whereby an investor chooses to sell a bond and simultaneously purchase another bond with the proceeds from the sale. Theoretically, it is two underlying bond transaction rather than derivatives contract.
Option	Interest rate option is an option contract between two parties giving the buyer of an option the right, but not the obligation, to borrow or lend money at a specific rate on or before a certain date.	Bond option is an option contract between two parties giving the buyer of an option the right, but not the obligation, to buy or sell bond at a specific price on or before a certain date.

19.6 OTC versus Exchange-Traded Derivatives

Based on the style in which a transaction is negotiated and settled, the market can be classified into two segments: over-the-counter (OTC) and Exchange.

OTC derivatives (OTCD) are privately negotiated and settled contracts between two parties whereas Exchange-traded derivatives (ETD) are screen-based order matching platform and settled contracts with the aid of Exchange (which provides platform for trade execution) and Clearing Corporation (which conducts the settlement). This makes ETD more transparent as compared to OTCD. There are other differences, too. OTCDs can be customized to the specific requirements of the parties where as ETDs are "standardized" in the sense that the trade amount (called "market lot" or "Contract Amount") and the settlement date (called "expiry date") are pre-determined by the Exchange. Another difference is that OTCDs have counterparty credit risk (which is the risk of failure of the counterparty before settlement date) and settlement risk (which is the risk of default by the counterparty on settlement date), but both risks do not arise in ETDs because of "trade guarantee" by Clearing Corporation. The trade guarantee is provided by Clearing Corporation becoming a common party, called central counterparty (CCP), to the buyer and seller through the process of novation, as shown below. We say that both buyer and seller novated the original trade to Clearing Corporation so that Clearing Corporation becomes the buyer to the seller; and the seller to the buyer.



Clearing Corporation protects itself from the counterparty credit risk and settlement risk from both buyer and seller by implementing two processes called margining and mark-to-mark, which are discussed in chapter 7. The exchange traded market can offer hedging solution to even small size requirements whereas in OTC market, hedging a very small size requirement may not be possible, or the transaction cost may be prohibitive.

Though ETD has advantages in terms of transparency, elimination of counter party risk, access to all types of market, low cost of trading, credit agnostic etc. there are certain limitation like standardization may lead to imperfect hedge as amount and settlement dates cannot be customized, cash settlement in ETD may not be helpful to actual hedgers, daily MTM and margin may create operational issues to market participants.

Due to increased competition between OTC and Exchange markets, the differences between them are slowly fading. For example, today many derivatives Exchanges abroad offers customized contracts through the facilities of request-for-quote (RFQ) and Exchange-for-Physical (EFP); and OTC market offers both standardized (called “vanilla” products) and customized (called “exotic” products). There are electronic communication networks called “e-trading” platforms in OTC market that does the functions of an Exchange for price discovery and trade execution. Many OTC markets are going through central counterparty (CCP) clearing for multilateral settlements, like in Exchange markets. In India, Clearing Corporation of India Ltd (CCIL) is offering CCP services for settlement with trade guarantee for many OTC interest rate derivative products. The margining and mark-to-market processes of Exchange markets have proved so useful that today OTC market also implements them.

Chapter 19: Sample Questions

1. Which of the following is the role of derivatives?
    a. Financing
    b. Cash or liquidity management
    c. **Risk management**
    d. All of the above
2. Which of the following derivatives have the largest market size globally?
    a. Equity derivatives
    b. **Interest rate derivatives**
    c. Currency derivatives
    d. Commodity derivatives
3. _____ take position in Interest Rate Derivatives to reduce interest rate risk.
    a. **Hedgers**
    b. Speculators
    c. Arbitragers
    d. None of the above
4. Which of the following is interest rate derivative?
    a. Forward rate agreement
    b. Interest rate swaps
    c. Interest rate futures
    d. **All of the above**
5. _____ are derivatives with underlying as theoretical bond and not a physical bond.
    a. Single bond Futures
    b. Money market futures
    c. **Notional Bond Futures**
    d. None of the above

CHAPTER 20: EXCHANGE TRADED INTEREST RATE FUTURES

LEARNING OBJECTIVES:

After studying this chapter, you should know about following:

- Understandings of Interest Rate Futures and its pay-off
- Contract Specifications of Interest Rate Futures
- Rationale for Introducing Exchange Traded Interest Rate Derivatives in India
- Advantages and Limitations of Future Contracts in Comparison to FRA
- Interest Rate Futures Price Computation

Introduction

Futures contract

Futures markets were innovated to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. Simply, futures are standardised forward contracts that are traded on an exchange. The clearing
corporation guarantees settlement of trades done on Exchange. A trader, who buys futures contracts generally takes a long position and the one, who sells futures, takes a short position. The words buy and sell are figurative only because no money or underlying asset changes hand, between buyer and seller, when the deal is executed.

Features of futures contract

In futures market, exchange decides all the contract terms of the contract other than price. Accordingly, futures contracts have following features:

- Contract between two parties through Exchange
- Centralised trading platform i.e., Exchange
- Price discovery through free interaction of buyers and sellers
- Margins are payable by both the parties
- Expiry date decided today (standardized)
- Quantity decided today (standardized lot size)

20.1 Interest Rate Futures

Interest Rate Futures (IRF) are standardized interest rate derivative contracts traded on a recognized stock exchange to buy or sell a notional security or any other interest-bearing instrument or an index of such instruments or interest rates at a specified future date, at a price determined at the time of the contract. Interest Rate Futures include money market futures also.

For banks, financial institutions and businesses, the exposure to rupee interest rate risk is much more severe than that to currency risk and equity risk. Accordingly, one would expect that the interest rate derivatives market would be larger than that for currency and equity derivatives.

However, in India interest rate derivatives took off only in the third attempt in 2014. Though the OTC interest rate derivatives market has been successful with good volumes for interest rate swaps (Overnight Index Swaps), Exchange-traded interest rate derivatives had not been so successful.

The first attempt in June 2003 launched three futures contracts on 91-day Treasury Bill, 6% 10Y notional bond and zero-coupon 10Y notional bond of Government of India. The launch was not successful, and the contracts were withdrawn soon thereafter. The second attempt was made in August 2009 with launch of bond futures on a notional 7% 10Y GOI bond. As the settlement for the futures was on the basis of a "cheapest-to-deliver" methodology, this was also not adopted by the market. In March 2011, another futures on 91-day Treasury bill was introduced, followed by two more futures on 2Y bond and 5Y bond. The product design of interest rate derivatives launched prior to December 2013 suffered from the drawbacks such as cheapest to deliver, physical settlement, Zero Coupon Yield Curve etc. which led to their failure.

Based on revised guidelines from SEBI and RBI in December 2013, the Exchanges have introduced "cash settled interest rate futures (IRF) on 10-year Government of India Securities. This product is a cash settled single bond futures, based on the on–the–run 10-year GOI bond, and has been a success. Further to this, in June 2015, SEBI and RBI have permitted the exchanges to launch Interest rate futures on 6-year and 13-year GOI securities. Exchanges also launch interest rate futures based on money market instruments. SEBI vide its circular no. SEBI/HO/MRD/MRD-PoD-3/P/CIR/2023/11 dated January 10, 2023, stipulated guideline for "Introduction of futures contracts on Corporate Bond Indices." We will discuss more about cash settled interest rate futures in this chapter. Over all, Exchange-traded derivatives have been more successful in equity and currency than in interest rate markets. However, there is lot of scope for growth of Interest Rate Futures market.

20.1.1 Futures Terminologies

Let us understand various terms in the interest rate futures market.

Underlying Asset: IRF is derivatives, and its value is derived from value/price of certain underlying asset. In this case the underlying can be interest rate (for e.g. Overnight MIBOR) or interest-bearing instrument (Government Securities) or index of interest-bearing instrument (8–13-year G-Sec index, corporate bond index) or notional security (10Y notional Government Securities).

Spot price/rate: The price/interest rate at which the underlying asset trades in the spot market

Futures price/rate: The current price /rate of the specified futures contract

Quantity Freeze: Quantity freeze limits are the maximum number of derivatives (options or futures) contracts/lots for an index that can be traded in a single order. These limits are set by stock exchanges, to maintain market stability by preventing large, unintended orders that could distort prices, and to reduce the chance of "fat finger" errors.

Contract Cycle: It is a period over which a contract trade. The interest rate futures contracts on the SEBI recognized exchanges can be monthly, quarterly in some cases weekly. In case of monthly contract, contract maturing in immediate month is called near month contract, contract expiring in

next month is called mid-month contract and subsequent month contract is called far month contract. These contracts can extend up to one year. For different kind of exchange traded interest rate futures we have different contract cycles. For example, for single bond government securities futures, three serial monthly contracts followed by three quarterly contracts of the cycle March/June/September/December are available.

Expiry date: Also called last trading day of contract. It is the day on which trading ceases in the contract. For different kind of exchange traded interest rate futures we have different expiry dates. If the expiry date is a trading holiday the contract expires on the day before. For example, for single bond government securities futures expiry date for monthly contract is last Thursday of the month. In case the last Thursday is a trading holiday, the previous trading day shall be the expiry/last trading day

Tick Size: It is minimum move allowed in the price/rate quotations. For example, if tick size for single bond futures is Rs 0.0025, the price entered by buyer and seller can be Rs 99.9975, Rs 100.0000, Rs 100.0025 (i.e., price changes will be in multiples of Rs 0.0025).

Contract Size / Lot Size: Futures contracts are traded in lots. Contract size specifies the minimum amount of asset that has to be delivered for a single contract. This is also called as lot size.

Contract Value: To arrive at contract value, we have to multiply the price/rate with contract multiplier or lot size or contract size.

Trading Hours: Time during which trading is allowed on Exchange trading platform.

Base Price: Base price generally act as reference price for trading for start of the day. Generally, on the first day of trading (i.e., on introduction) of contract, it would be the theoretical futures price. The base price of the contracts on subsequent trading days would be the daily settlement price of the futures contracts as computed by Clearing Corporation.

Price Band: The price range (maximum and minimum price) for the day within which contract can be traded for that day. Generally specified as a +/-% to base price. In many derivatives contracts there is no price band for contracts, in such cases dummy operating range is set to avoid erroneous order entry at non-genuine prices. This dummy operating range are relaxed in the direction of the price movement.

Mark to Market (MTM): The positions in the futures contracts for each member are marked-to-market to the daily settlement price of the futures contracts at the end of each trade day. The exchange/CC collects these margins (MTM margins) from the loss-making participants and pays to the gainers on day-to-day basis.

Daily Settlement price (DSP): It is required mainly for MTM settlement. The settlement price is weighted average futures price (VWAP) of the trades generally in the last 30 minutes of trading (i.e., close price), if close price is not available then theoretical price.

Final Settlement Price (FSP): All open positions on the last trading day of the interest rate futures contract shall be marked to the final settlement price for the relevant futures contract and shall be settled on final settlement day. Final settlement price / rate is mainly derived from the underlying market.

Final Settlement: Final settlement can be cash settled or physical settled. In case of cash settlement only the profit and loss resulting from positions shall be paid / received from the participants. In case of physical settlement, participants have to physically give/take delivery of bonds to settle the open transactions instead of settling them with cash.

Open Interest: An open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset. It is important to understand that number of long futures as well as number of short futures is equal to the Open Interest. This is because total number of long futures will always be equal to total number of short futures. Only one side of contracts is considered while calculating/mentioning open interest. The level of open interest indicates depth in the market.

Positions in derivatives market

As a market participant, you will always deal with certain terms like long, short and open positions in the market. Let us understand the meanings of commonly used terms:

Long position

Outstanding/ unsettled buy position in a contract is called “Long Position”. For instance, if Mr. X buys 5 contracts on single bond futures then he would be long on 5 contracts on single bond futures. If Mr. Y buys 4 contracts on Pepper futures, then he would be long on 4 contracts on pepper.

Short Position

Outstanding/ unsettled sell position in a contract is called “Short Position”. For instance, if Mr. X sells 5 contracts on single bond futures then he would be short on 5 contracts on single bond future. If Mr. Y sells 4 contracts on Pepper futures, then he would be short on 4 contracts on pepper.

Open position

Outstanding/ unsettled either long (buy) or short (sell) position in various derivative contracts is called “Open Position.” For instance, if Mr. X shorts say 5 contracts on 6.10% GOI bond futures and longs say 3 contracts on 91-day T-Bills futures, he is said to be having open position, which is equal to short on 5 contracts of 6.10% GOI bond and long on 3 contracts of 91-day T-Bills futures. If next day, he sells 2 contracts 91-day T-Bills futures contracts of same maturity, his open position would be short on 5 contracts of 6.10% GOI bond futures contracts and long on 1 contract of 91-day T-Bills futures contract.

Opening a position

Opening a position means either buying or selling a contract, which increases client's open position (long or short).

Closing a position

Closing a position means either buying or selling a contract, which essentially results in reduction of client's open position (long or short). A client is said to be closed a position, if he sells a contract which he had bought before or he buys a contract which he had sold earlier.

Rollover of Position

In derivatives trading, a rollover position indicates that a trader is carrying forward their existing position in a futures contract to the next expiry cycle. This involves closing the current month's contract and simultaneously opening a new position in the next month's contract. It's essentially a way to extend the trading horizon of a position beyond the current expiry date. Rollover is typically expressed as a percentage of total positions. There are no specific benchmarks for rollovers. However, they are compared based on their historical data, generally on the trailing three-month average. On most of the occasions, 'lower-than-average' rollover signals uncertainty, while higher rollovers indicate strong sentiments and the ongoing momentum to continue.

Important points of Futures:

- All open future positions are subject to MTM.
- Future positions can be offset by taking an opposite position (Square off).
- Participant can choose to rollover the future contract if individual wishes to continue with the position. (Rollover is "closing the current month's position and taking the position in the next month's contract)
- Traders need to track positions regularly.
- Trader is solely responsible for maintaining margins.
- Future trade is ZERO sum equation, i.e. profit of a trader is exactly equal to loss of opposite trader.
- Futures trade offers unlimited profit and unlimited losses.

20.2 Pay off Charts for Futures Contract

Pay off Charts

Pay off on a position is the profit/ loss that would accrue to a market participant with change in the price of the underlying asset at expiry. The pay-off diagram is graphical representation showing the price of the underlying asset on the X-axis and profits / losses on the Y-axis.

Pay off charts for futures

In case of futures contracts, long as well as short position has unlimited profit or loss potential. This results into linear pay offs for futures contracts. Futures pay offs are explained in detail below:

Payoff for buyer of futures: Long futures

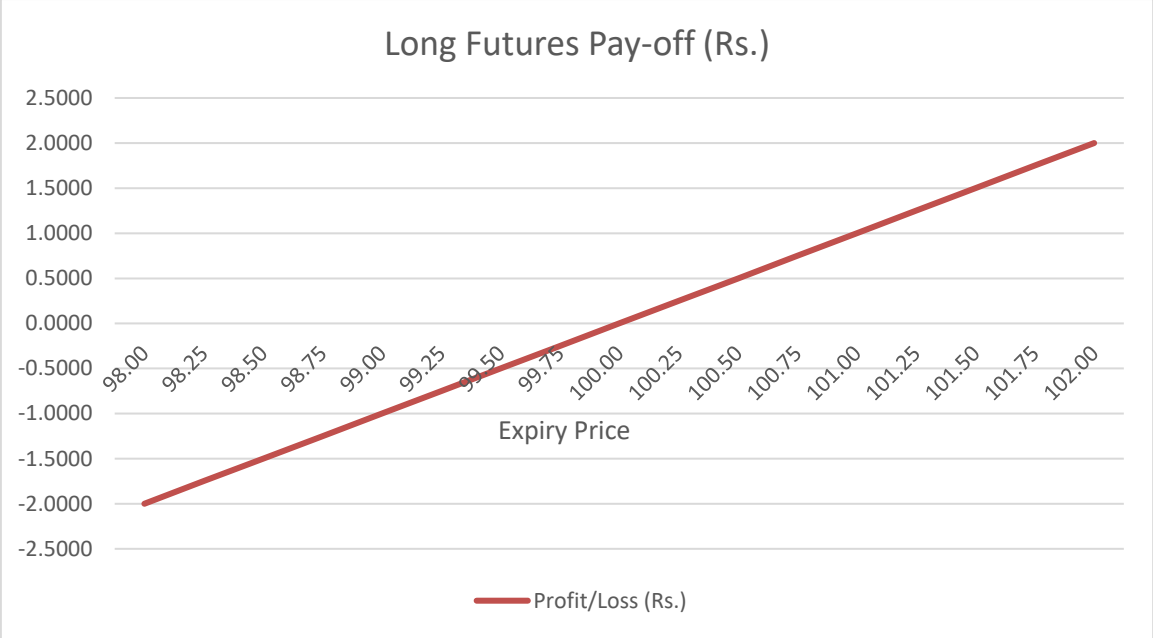
Let us say a person goes long in a futures contract at Rs.100. This means that he has agreed to buy the underlying at Rs. 100 on expiry. Now, if on expiry, the price of the underlying is Rs. 101, then

this person will buy at Rs. 100, as per the futures contract and will immediately be able to sell the underlying in the cash market at Rs.101, thereby making a profit of Rs. 1. Similarly, if the price of the underlying falls to Rs. 99 at expiry, he would have to buy at Rs. 100, as per the futures contract, and if he sells the same in the cash market, he will receive only Rs. 99, translating into a loss of Rs. 1. If it is cash settled futures contract then participant will either receive/pay only profit/loss amount i.e., Rs 1 in the above example.

This potential profit/loss at expiry, when expressed graphically, is known as a payoff chart. The X axis has the market price of the underlying at expiry. It increases on the Right-Hand Side (RHS). We do not draw the X axis on the Left-Hand Profit Side (LHS), as prices cannot go below zero. The Y axis shows profit & loss. In the upward direction, we have profits and in the downward direction, we show losses in the chart. So, we can see that long futures position makes profits when prices rise.

The below table and pay off chart show long futures pay offs:

Long Future at Rs. 100	
Market Price at Expiry	Long Futures Pay-off
98.0000	-2.0000
98.2500	-1.7500
98.5000	-1.5000
98.7500	-1.2500
99.0000	-1.0000
99.2500	-0.7500
99.5000	-0.5000
99.7500	-0.2500
100.0000	0.0000
100.2500	0.2500
100.5000	0.5000
100.7500	0.7500
101.0000	1.0000
101.2500	1.2500
101.5000	1.5000
101.7500	1.7500
102.0000	2.0000

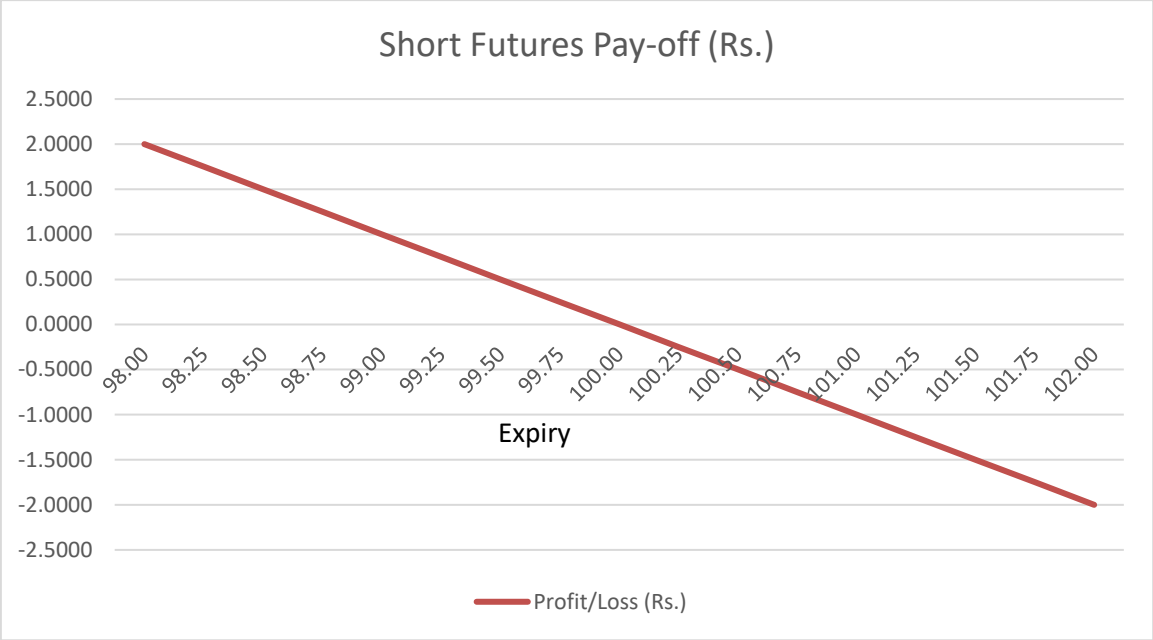


Pay-off for seller of futures: Short futures

Let us say a person goes short in a futures contract at Rs.100. This means that he has agreed to sell the underlying at Rs. 100 on expiry. Now, if on expiry, the price of the underlying is Rs. 99, then the person will buy from underlying in cash market at Rs. 99 and will sell at Rs. 100, as per the futures contract thereby making a profit of Rs. 1. Similarly, if the price of the underlying increase to Rs. 101 at expiry, he would have to buy at Rs. 101, in underlying cash market and sell at Rs. 100 in future market, translating into a loss of Rs. 1. If it is cash settled futures contract then participant will either receive / pay only profit/loss amount i.e., Rs. 1 in the above example. So, we can see that a short futures position would make profits when prices fall.

The below table and pay off chart show long futures pay offs:

Short Future at Rs. 100	
Market Price at Expiry	Short Futures Pay-off
98.00	2.0000
98.25	1.7500
98.50	1.5000
98.75	1.2500
99.00	1.0000
99.25	0.7500
99.50	0.5000
99.75	0.2500
100.00	0.0000
100.25	-0.2500
100.50	-0.5000
100.75	-0.7500
101.00	-1.0000
101.25	-1.2500
101.50	-1.5000
101.75	-1.7500
102.00	-2.0000



The payoff graph for futures displays a linear or symmetrical style.

20.3 Contract Specification of Exchange Traded Interest Rate Futures

As discuss earlier in this chapter, based on RBI and SEBI guidelines, various kinds of interest rate futures have been launched by Exchanges in last two decades. Currently Exchange traded interest rate futures are part of interest rate derivatives in the currency derivatives segment of the Exchange. Exchange traded interest rate futures are regulated by SEBI as well as RBI. We will see the regulatory framework of the Interest Rate Derivatives in subsequent chapter. Details of the IRF contracts which are currently active on Exchanges are provided below and also brief details are provided for other interest rate futures contract which were available earlier or which can be introduce by the Exchanges.

Cash Settled Interest Rate Futures (IRF) on 6-year, 10 year and 13-year Government of India (GOI) Security

Underlying	Single GOI Dated Security with following residual maturity 4-8 year 8-11 year 11-15 year GOI Bond is selected by Stock Exchanges in consultation with FIMMDA. For example, futures on 6.33% Central Government Security having maturity in 2035
Unit of Trading	1 Lot - (1 lot is equal to notional bonds of FV INR 2 Lakhs i.e., 2000 bonds)

Quotation	Price based (Trading and settlement at clean price) for FV of Rs. 100/-
Contract Value	Trade Price * 2000
Tick Size	Rs. 0.0025
Base Price	Theoretical future price on 1st day of the contract, on subsequent days, it refers to the daily settlement price of the contract.
Price Band	+/-3 % of the base price (Exchange may expand the price band for that contract by 0.5% in specific direction after 30 minutes after taking into account market trend. Price band may be relaxed only 2 times during the day)
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m. (Align the trading hours of IRF with that of underlying market in case of change of trading hours of underlying NDS-OM platform)
Trading Cycle	Three serial monthly contracts followed by three quarter ended contracts (Mar, Jun, Sep & Dec)
Expiry Day	Last Thursday of the month. In case the last Thursday is a trading holiday, the previous trading day shall be the expiry / last trading day.
Mode of Settlement	Cash Settlement
Final Settlement Price	Weighted average price of the underlying bond based on the prices during the last two hours of the trading on NDS-OM. If less than 5 trades are executed in the underlying bond during the last two hours of trading, then FIMMDA/FBIL[127] price shall be used for final settlement
Daily Settlement Price	Volume Weighted Average Futures Price of last half an hour across exchanges or theoretical future price
Daily MTM and Final Settlement	T+1

127 Financial Benchmark India Pvt. Ltd (FBIL) is an independent benchmark administrator for interest rates and foreign exchange

91 Day T-Bills Futures

Underlying	91-day Government of India (GOI) Treasury Bill
Unit of Trading	One contract denotes 2000 units (Face Value Rs.2 lacs)
Quotation	100 minus futures discount yield (y). For example, if the discount yield is 5%, then the price of T-bill futures will be: 100 – 5 = 95.0000
Contract Value	2000 * (100 - 0.25 * y)
Tick Size	Rs. 0.0025
Price Band	+/- 1% of Base Price
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m. (Similar to underlying market)
Trading Cycle	Three serial monthly contracts & three-quarter end contracts (Mar, Jun, Sep & Dec)
Expiry Day	Last Wednesday of the expiry month at 1.00 pm. In case last Wednesday of the month is a designated holiday, the expiry day would be the previous working day
Daily Settlement Value	Rs.2000 * (100 – 0.25 * Yw) where Yw is weighted average futures yield of last half an hour, in absence of this theoretical futures yield
Final Contract Settlement Value	Rs 2000 * (100 - 0.25 * y) where y is weighted average discount yield obtained from weekly auction of 91-day T-Bill conducted by RBI on the day of expiry
Mode of Settlement	Settled in Cash
Daily MTM and Final Settlement	T+1

Overnight MIBOR (Mumbai Interbank Outright Rate) Futures (Money Market Interest Rate Futures)

Underlying	Daily FBIL Overnight MIBOR for the contract month
Unit of Trading	Interest on notional principal of Rs. 5 crores for one month calculated on 30/365 day basis at a rate equal to average daily FBIL overnight MIBOR for the contract month. Order will be entered in number of contracts

Quotation	Interest Rate
Base Rate	MIBOR OIS rate for the corresponding tenure will be considered to compute base rate on the first day of the contract. On all other days, daily settlement rate will be considered for base rate of the contract
Contract Value	Quoted Rate * 100 * 411 [Value for 1 basis point : Rs. 411 = (Rs. 5 Crores * 0.01% * 30/365]
Tick Size	Quarter basis point (0.25 basis point i.e., 0.0025), Tick value is Rs. 102.75. (0.25*411)
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m.
Trading Cycle	Three serial monthly contracts & three-quarter end contracts (Mar, Jun, Sep & Dec)
Expiry Day	Last working day of the month. For Expiring futures contract - The market timing on last trading day will be 9:00 am to 10:00 am
Mode of Settlement	Settled in Cash in Indian Rupees
Daily Settlement Price	Volume weighted average rate of trades -In last 30 minutes of trading, subject to min 5 trades else -In last 60 minutes of trading, subject to min 5 trades else theoretical rate would be made applicable.
Final Settlement price	Simple Average of daily FBIL overnight MIBOR rate, up to 4 decimals, applicable for the contract month
Daily MTM and Final Settlement	T+1

Other Interest Rate Futures Contract[128]

10-Year Notional Coupon-bearing Government of India (GOI) Security Futures – Physical Settlement

Underlying	10-year Notional coupon bearing GOI security (Notional coupon of 7% with semi-annual compounding)
Unit of Trading	1 Lot - (1 lot is equal to notional bonds of FV INR 2 Lakhs)
Quotation	The quotation would be similar to the quoted price of GOI security.

128 This IRF are either earlier introduced by the Exchanges and subsequently discontinued or yet to be introduced by Exchanges

Tick Size	INR 0.0025
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m.
Trading Cycle	The Contract Cycle would consist of four fixed quarterly contracts for entire year, expiring in March, June, September and December.
Expiry Day	Seventh business day preceding the last business day of the delivery month
Mode of Settlement	Physical delivery of deliverable grade securities
Deliverable Grade Securities	GOI securities maturing at least 7.5 years but not more than 15 years from the first day of the delivery month with a minimum total outstanding stock of Rs 10,000 crore.
Conversion Factor	The Conversion Factor for deliverable grade security would be equal to the price of the deliverable security on the first of the delivery month, to yield 7%
Last Delivery Day	Last business day of delivery month

10-Year[129] Notional Coupon-bearing Government of India (GOI) Security Futures (Cash Settlement)

Underlying	10-year Notional coupon bearing GOI. Each contract there will be Basket of Government of India Securities, with residual maturity between 8 and 11 years on the day of expiry of IRF contract. Coupon of the bond to be decided by the exchange to reflect the interest rate environment during the launch of the contract. Similar to 10-yr notional bond, cash settled IRF can be made available on 6-year and 13-yr notional bonds.
Unit of Trading	1 Lot - (1 lot is equal to notional bonds of FV INR 2 Lakhs)
Quotation	The quotation would be similar to the quoted price of GOI security.
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m.
Trading Cycle	3 Serial monthly contracts. Additionally, quarterly contracts of March/June/September/December cycle

129 Similar to 10-yr notional bond, cash settled IRF can be made available on 6-year and 13-yr notional bonds.

Expiry Day	Last Thursday of the month. In case the last Thursday is a trading holiday, the previous trading day shall be the expiry / last trading day.
Mode of Settlement	Cash Settled
Final Settlement Price	The final settlement price shall be based on average settlement yield (Ys) which shall be the weighted average of the yields of bonds in the underlying basket where weights will be the assigned weight of the bonds in the underlying basket. For each bond in the basket, yield shall be calculated by determining weighted average yield of the bond based on last two hours of the trading in NDS-OM system. If less than 5 trades are executed in the bond during the last two hours of trading, then FIMMDA/FBIL price shall be used for determining the yields of individual bonds in the basket.

2-year and 5-year Notional Coupon Bearing Government of India Security

Underlying	• Notional coupon bearing 2-year GOI security with a notional coupon of 7% paid semi-annually and face value of Rs. 100. • Notional coupon bearing 5-year GOI security with a notional coupon of 7% paid semi-annually and face value of Rs. 100.
Unit of Trading	1 Lot - (1 lot is equal to notional bonds of FV INR 2 Lakhs)
Quotation	The quotation would be similar to the quoted price of GOI security.
Tick Size	INR 0.0025
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m.
Trading Cycle	3 Serial monthly contracts.
Expiry Day	Last Thursday of the month. In case the last Thursday is a trading holiday, the previous trading day shall be the expiry / last trading day.
Mode of Settlement	Cash Settled

Final Settlement Price	The settlement price of the notional bond would be determined on the basis of the yields of a basket of eligible bond(s) selected by the exchange with the yields of the bonds in the basket to be determined through a polling process carried out by Fixed Income, Money Market and Derivatives Association (FIMMDA)
Basket of Eligible Bonds	2-Yr Notional Bond: Eligible bonds would comprise of GOI securities maturing at least 1.5 years but not more than 2.5 years from the expiry day. 5-Yr Notional Bond: Eligible bonds would comprise of GOI securities maturing at least 4.5 years but not more than 5.5 years from the expiry day.

Interest Rate Futures based on Corporate Bond Index

SEBI vide its circular dated January 10, 2023 has decided to permit stock exchanges to introduce derivatives contracts on indices of corporate debt securities rated AA+ and above. Product design and risk management framework for Cash Settled Corporate Bond Index Futures (CBIF) is given below:

1. Permitted Corporate Bond Index

The index underlying the derivative contract shall be as per the following:

- The index shall be composed of corporate debt securities.
- Constituents of the index should have adequate liquidity and diversification at issuer level, as decided by the stock exchanges.
- Constituents of the index shall be periodically reviewed (at least on half-yearly basis).
- Constituents of the index shall be aggregated at issuer level for the purpose of determining exposure limits for single issuer, group, sector, etc.
- Single issuer shall not have more than 15% weight in the index.
- There shall be at least 8 issuers in the index.
- The index shall not have more than 25% weight in a particular group of issuers [excluding securities issued by Public Sector Undertakings (PSUs), Public Financial Institutions (PFIs) and Public Sector Banks (PSBs)].
- The index shall not have more than 25% weight in a particular sector (excluding securities issued by PSUs, PFIs and PSBs).
- The duration buckets of the index may be decided by the stock exchanges.
- The index shall have a track record of at least one year.

2. Contract Value

The value of the CBIF contracts shall not be less than INR 2 lakhs at the time of introduction. Stock exchanges shall review the contract value or lot size on half-yearly basis and may make revisions, if required, by giving an advance notice to the market.

3. Trading Hours

The trading hours shall be between 9:00 AM and 5:00 PM on all working days from Monday to Friday. Exchanges shall align the trading hours of CBIF with the trading hours of the underlying

market. Stock exchanges and clearing corporation(s)shall have infrastructure and risk management systems in place which are commensurate to the trading hours.

4. Tenure of the Contracts

- Tenure: The stock exchanges may introduce contracts of up to a tenure of 3 years.
- Contract Cycle: Weekly, three Serial monthly contracts, one quarterly contract of the cycle March/June/September/December or one half-yearly contract of the cycle June/December.

5. Quotation and Tick value

The quotation shall be in Indian Rupee. The Tick value shall be decided by the stock exchanges based on the underlying index values or contract size, etc.

6. Contract Expiry

The expiry or last trading day for the contract shall be the last Thursday of the expiry cycle. If any expiry day is a trading holiday, then the expiry or last trading day shall be the previous trading day.

7. Daily Settlement Price

The daily settlement price shall be the last half an hour volume weighted average price of the contract. In the absence of last half an hour trading, theoretical price shall be considered. The methodology used for the theoretical price computation shall be published on the stock exchange website.

8. Final Settlement Price

Final settlement price for the derivative contracts shall be the closing price of the underlying index on the expiry day or last trading day of such derivative contracts.

9. Settlement Mechanism

The contracts would be settled in cash in Indian Rupee (INR)

10. Settlement Day

MTM and final settlement will be next working day.

20.4 Lot Size, Tick Size and Change in Contract Value for each Tick change

Interest rate futures trading is done in lot size. In IRF, for different kind of contracts, different lot sizes are applicable, as given below:

20.4.1 Cash Settled GOI Bond Futures:

Contract size is Rs 200,000 of face value of GOI securities which is equivalent to 2000 units of that security. Because the face value will always be an integral multiple of Rs 2 lakhs, we cannot buy or sell for amounts like Rs 3 lakh, Rs 5 lakh, etc. In contrast, the market lot in the cash market of wholesale debt market is Rs 5 Crores (which is equal to 250 futures contracts). The face value and market value are linked by the market price. In both cash and futures markets, the prices are quoted for Rs 100 face value so that the relation between face value and market value is:

Market Value = Face Value × (Market Price / 100)

Now in case of IRF, contract value for 1 lot = 2000 * trade price.

For example, if participant buys 5 lots of single bond futures at Rs. 101:
Contract value = 5*2000*101 = Rs. 10,10,000.

In case of cash settled GOI bond futures tick size is Rs. 0.0025 which is same as underlying market. Hence, the minimum price movement will be +/- Rs. 0.0025. For example, if price is Rs. 101, then next price can be either 101.0025 or 100.9975.

So, change in contract value for each tick size change for one lot = 1*2000*0.0025= Rs.5.

Contract value is important for determining margin amount, transaction charges, regulatory charges etc.

20.4.2 91 Day T-Bills Futures

One contract denotes 2000 units (Face Value Rs.2 lacs). Price quotation is 100 minus futures discount yield (y), and contract value is 2000 * (100 - 0.25 * y)

For example, if a participant buys 10 lots of 91-day T-Bills futures at Rs. 95, then:
Future discount yield = 5% (100-95)
Contract Value = 2000*(100-0.25*5)*10 = 19,75,000

In case of cash settled 91 Day T-Bills futures tick size is Rs. 0.0025. Hence, the minimum price movement will be +/- Rs. 0.0025. For example, if price is Rs. 95, then next price can be 95.0025 or 94.9975.

Change in contract value for tick size change for one lot = 1*2000*0.0025*0.25= Rs1.25.

20.4.3 Overnight MIBOR Futures

One contract denotes interest on notional principal of Rs. 5 crores for one month calculated on 30/365 day basis. Price quotation is in interest rate and contract value per lot is Quoted Rate * 100 * 411 [Value for 1 basis point: Rs. 411 = (Rs. 5 Crores * 0.01% * 30/365).

For example, if a participant borrows / buys 10 lots of Overnight MIBOR futures at 4.50% (quotation is in interest rate for MIBOR futures), then:
Contract Value = 4.50*100*411*10 = 18,49,500.

For Overnight MIBOR futures, tick size is 0.0025 (i.e., 0.25 basis point). Hence, the minimum rate movement will be +/- 0.0025. For example, if rate is 4.50, then next rate can be 4.5025 or 4.4975.

Change in contract value for tick size change:
for one lot = (Rs. 5 Crores * 0.0025% * 30/365 = Rs. 102.75/- (i.e., 411/4=Rs. 102.75)

20.5 Rationale for Introducing Exchange Traded Interest Rate Derivatives in India

Interest rate risk affects not only the financial sector, but also the corporate and household sectors. As observed in the report on Interest Rate Futures, banks, insurance companies, primary dealers and provident funds bear a major portion of the interest rate risk on account of their exposure to government securities. As such these entities need a credible institutional hedging mechanism. Today, with a large stock of household financial savings on the assets side and an increasing quantum of housing loans on the liabilities side, interest rate risk is becoming increasingly important for the household sector as well. Moreover, because of the Fisher effect[130] , interest rate derivatives products are the primary instruments available to hedge inflation risk which is typically the single most important macroeconomic risk faced by the household sector. In this context, therefore, it is important that the financial system provides the household sector greater access to interest rate risk management tools through Exchange-Traded interest rate derivatives.

The key public policy objective in introducing IRF is to take a step closer to market completion, i.e., to expand the set of hedging tools available to financial as well as non- financial entities against interest rate risks. The IRF was introduced with the objective that is beneficial for the target users.

Interest rate volatility in a liberalized financial regime affects all economic agents across the board – corporates, financial institutions and individuals, underscoring the need for adequate hedging instruments to facilitate sound economic decisions. OTC segment of interest rate derivatives are the preponderant segment world-wide, the desirability of exchange-traded products for wider reach with an almost zero counterparty, credit & settlement risks, full transparency etc., are compelling reasons for its introduction as a complementary product. Introduction of IRF market with a view to providing a wider repertoire of risk management tools and thereby enhance the efficiency and stability of the financial markets.

The broader group of economic agents comprising banks, primary dealers, insurance companies and provident funds between them carry more than 80 per cent of interest rate risk exposure of GOI securities. This is then the largest constituency that needs a credible institutional hedging mechanism to serve as a 'true hedge' for their colossal pure-time-value-of-money / credit-risk-free interest rate-risk exposure. Although Overnight Index Swap is one such hugely successful and traded IRD instrument for trading and managing interest rate risk exposure, it does not at all answer the description of a 'true hedge' to the colossal exposure represented by the outstanding stock of GOI securities. Further, it needs no emphasis that government securities yield curve being the ultimate risk free sovereign proxy for pure time value of money, delivers all over the world, without exception, the most crucial and fundamental public good function / role in the sense that all riskier financial assets are valued / priced off it at a certain spread over it. Hence, it is very important to have liquid and efficient hedging instrument in form of Exchange traded interest rate derivatives.

20.6 Advantages and Limitations of Future Contracts in Comparison to FRA

Forward contracts are often confused with futures contracts. The confusion is primarily because both serve essentially the same economic functions of allocating risk in the probability of future

130 "Fisher effect" implies that ceteris paribus, increase in expected inflation rate leads to an increase in the nominal interest rate.

price uncertainty. However, futures have some distinct advantages over forward contracts as they eliminate counterparty risk and offer more liquidity and price transparency. However, it should be noted that forwards enjoy the benefit of being customized to meet specific client requirements.

Forward Rate Agreements (FRAs) are like forward contracts where one party agrees to borrow or lend a certain amount of money at a fixed rate on a pre-specified future date. In the FRA the underlying is mainly certain benchmark interest rate. It is a bilateral OTC transaction between two parties. The party that is borrowing money under the FRA has a long position in terms of interest rate, and the party that is lending money has a short position in terms of interest rate in the FRA. FRA contracts are usually cash-settled, that is, the money is not actually lent or borrowed. Instead, the forward rate specified in the FRA is compared with the benchmark rate. If the benchmark rate is greater that the FRA rate, then the long is effectively able to borrow at a below market rate. The long will therefore receive a payment based on the difference between the two rates. If, however, the benchmark rate was lower than the FRA rate, then long will make a payment to the short.

Interest rate futures contract is standardized interest rate derivative contract, traded on a recognized stock exchange, to buy or sell a notional security or any other interest-bearing instrument or an index of such instruments or interest rates at a specified future date, at a price determined at the time of the contract. So, the underlying can be benchmark interest rate, interest rate instrument, index of such instrument or interest rate. In case the underlying for interest rate future is benchmark interest rate then long and short position is generally similar to FRAs. However, if the underlying is bond or index based on fixed income securities, then the party that is buying the futures has a long position in bond (i.e., short position in terms of interest rate) as he believes that the interest rate/yield of bond will go down and price of the bond / index will increase. On the other hand, the party that is selling the bond futures has a short position in bond (i.e., long position in terms of interest rate) as he believes that the interest rate/yield of bond will increase, and price of the bond / index will decrease.

Comparison of FRAs and Interest Rate Futures

Parameters	**Forward Rate Agreements**	**Interest Rate Futures**
Operational mechanism	Mainly bilateral over-the-counter (OTC) transactions. Can be traded on electronic trading platform.	Contract between two parties through centralized trading platform of Exchanges
Terms of Contracts	Non- Standardized. Each Contract is custom designed and hence unique in terms of contract size, expiration date, asset quality, asset type etc.	Standardized Contract
Underlying	Usually interest rate	Interest rate, interest rate instruments, index based on such instrument or interest rates

Parameters	Forward Rate Agreements	Interest Rate Futures
Price Discovery	Mainly through negotiation. Not efficient.	Price discovery through free interaction of buyers and sellers on centralized trading platform
Liquidation Profile	Low, as contracts are tailor made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants	High, as contracts are standardised exchange-traded contracts.
Market Maker	Scheduled Banks, PDs, AIFIs are eligible to act as market maker	Currently not applicable
Settlement	Mainly bilateral settlement by parties. Usually cash settlement	Clearing and Settlement through clearing corporation with guaranteed settlement. Cash settled or physical settlement
Quality of information and dissemination	Reporting of trade to the trade repository within 30 minutes	Futures are traded nationwide. Information is available online on trading platform and websites.
Advantages	• Since customized product can provide perfect hedge. • Less operation issues related to margin and mark to market settlement	• Price transparency • Elimination of Counterparty credit risk as settlement guarantee by clearing corporation of Exchanges • Access to all types of market participants • Credit Agnostic • Lower liquidity risk compared to OTC • Generally lower impact cost
Limitations	• Liquidity risk • Counter party risk • Not accessible for all kind of market participants	• May lead to imperfect hedge as amount and settlement dates are standardized. • Operational issues related to mark-to-mark settlement and margin

20.7 Interest rate futures price computation

Let us understand few concepts before understanding computation of price for interest rate futures contract.

20.7.1 Important Concept

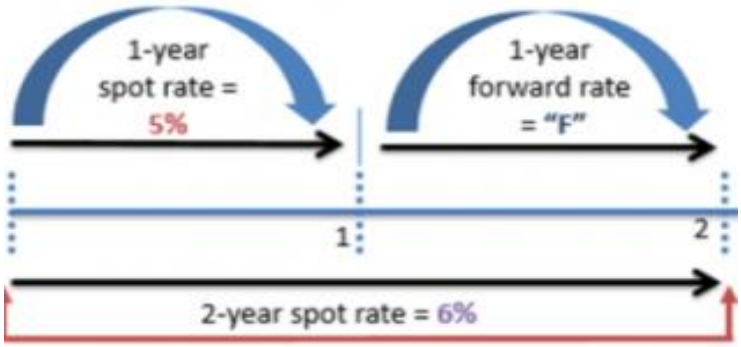
20.7.1.1 Forward Rate

A forward rate is an interest rate applicable to a financial transaction that will take place in the future. Forward Rate can be determined using spot rate. In an efficient market, the same returns are received for investment made over one long term or multiple shorter terms by reinvesting the maturity proceeds. For example, two year returns would be same if invested in a two year bond or by investing in a one year bond and reinvesting again for the subsequent year. The same logic can be extended for a three year bond also. In this case it is seen that there is a defined relation between the spot rates for 1 year, 2 years and 3 years, to get the expected forward spot rate for one and two years in one year's time and the expected spot one-year rate in two years' time.

Forward rate example:

Investor wants to invest INR 1000 for two years. He is faced with two options:

- Directly invest in a 2-year bond @ 6% (S1)
- Invest in a one-year bond @5%(S2), and again invest the proceeds after one year in a one-year bond (let assume "F" is one year forward rate one year from now)



In no-arbitrage case return will be same from both the options

- Value of investment in option 1 after 2 years:

  $= 1000*(1+6\%)^2 = \text{INR } 1123.60$

- Value of investment in option 2 after 2 year

  $= \{1000*(1+5\%)^1\} * (1+F\%)^1$

- If there are no arbitrage opportunities, both these values should be the same

  $1000*(1+6\%)^2 = \{1000*(1+5\%)^1\} * (1+F\%)^1$

  Gives, F = 7.0095%

- Forward Rate (F) = $\{ [(1 + S1)^{n1} / (1 + S2)^{n2}]^{1/(n1-n2)} \} - 1$

  S1 = Spot rate until a further future date

  S2 = Spot rate until a closer future date

  n1 = No. of years until a further future date

n2 = No. of years until a closer future date

Suppose there is different compounding frequency (half yearly, quarterly, continuous compounding) then formula will change accordingly.

For example, 6 month spot rate is 5.60% and one year spot rate is 5.85%, then the 6 month forward rate 6 month from now would be calculated as ((((1+5.85%/2)^(2*1))/(1+5.60%/2)^(2*.5)) – 1) *2 = 6.10%.

20.7.1.2 Financing Cost / Cost of Carry

Financing cost is the relationship between futures prices and spot prices. It measures the interest that is paid to "finance" or 'carry' the asset till expiry date of contract.

Income on cash position

In case of fixed income securities, income is accrued on daily basis. Such accrued interest expected to be received on expiry + Coupon payment received in between the contact + interest received on investment of such coupon payment will be considered as income on cash position. The component of coupon payment and interest on coupon payment invested are applicable in case of any coupon payments falling during the holding period.

20.7.1.3 Basis

The difference between spot price and future price is called basis. If future price is greater than spot price (FP > SP), then the 'Basis' is negative value. Negative basis occurs when the futures price is higher than the spot price. This situation is often observed in markets experiencing contango and can indicate expectations of increased supply or decreased demand in the future. If future price is lesser than spot price (FP < SP) then the 'Basis' is positive value. Positive basis occurs when the spot price is higher than the futures price. This is characteristic of markets in backwardation and may signal strong current demand or tight supply.

In bond futures we observed that most of the time basis is positive as income on cash position is more than the financing cost.

20.7.2 Computation of price for bond futures

The future price computation for single bond future is based on the concept of there is no arbitrage between underlying and future bond price.

So, the future bond price = Cash Price + financing cost – income on cash position

Example of bond future price:

Last Interest payment date: 29-04-20XX
Coupon Rate: 5.75%

Trade Date	03-08-20XX
Settlement Date (G-Secs are settled on T+1 basis)	04-08-20XX
Clean Price of GOI Security	Rs. 101.5000
Accrued Interest (30/360 days basis for G-secs) **(Applicable from April 29 to August 4)**	Rs. 1.5174
Dirty Price / Cash Price (A)	Rs. 103.0174
Financing Cost (%) (Applicable on Dirty Price from August 04 till August 27)	4%
Cost of Borrowing (B) (Actual/365 basis)	Rs. 0.2597
Contract Expiry Date	26-08-20XX
Contract Settlement Date	27-08-20XX
Theoretical Future Dirty Price (A) + (B)	103.2771
Accrued Interest i.e., Income on cash position (C) **(Applicable from April 29 to August 27)**	1.8847
Theoretical Future Clean Price = (A) + (B) – (C)	101.3924

Note: Cost of borrowing of funds[131], return on investment, etc. are different for the different market participants. The number of fair values of futures can be equal to the number of market participants in the market. Perhaps the difference among the fair values of futures contracts and non-arbitrage found for different market participants is what makes the market on continuous basis.

Assumptions in above model

The above model of futures pricing works under certain assumptions. The important assumptions are stated below:

- Underlying asset is available in abundance in cash market.
- Holding and maintaining of underlying asset is easy and feasible.
- Underlying asset can be sold short.
- No transaction costs.
- No taxes.
- No margin requirements.

[*This is not an exhaustive list of the assumptions of the model but is the list of important assumptions]

The assumption that underlying asset is available in abundance in the cash market i.e., we can buy and/or sell as many units of the underlying assets as we want. When an underlying asset is not storable i.e., the asset is not easy to hold/maintain, then one cannot carry the asset to the future. The cash and carry model is not applicable to these types of underlying assets. Similarly, many a

131 It is observed that the bond future price is generally trade at discount to future price as cost of borrowing is lower than income received on bond

times, the underlying may not be sold short. Even though this simple form of model does not discount for transaction cost, taxes etc. We can always upgrade the formula to reflect the impact of these factors in the model. Margins are not considered while delivering the fair value/ synthetic futures value. Thus, no generalized statement can be made with regard to the use of this model for pricing futures contracts. Assumptions of the model and characteristics of underlying asset can help us in deciding whether a specific asset can be priced with the help of this model or not.

20.7.3 Expectancy model of futures pricing

According to the expectancy model, it is not the relationship between spot and futures prices but that of expected spot and futures prices, which moves the market, especially in cases when the asset cannot be sold short or cannot be stored. It also argues that futures price is nothing but the expected spot price of an asset in the future. This is why market participants would enter futures contract and price the futures based upon their estimates of the future spot prices of the underlying assets.

According to this model,

- Futures can trade at a premium or discount to the spot price of underlying asset.
- Futures prices give market participants an indication of the expected direction of movement of the spot price in the future.

For instance, if futures price is higher than spot price of bond, market participants may expect that interest rate will go down in near future leads to reduction in yield of security and may expect spot price to go in future. Similarly, if futures price is lower than spot price of bond, market participants may expect that interest rate will rise in near future leads to increase in yield of security and may expect spot price to go down in future.

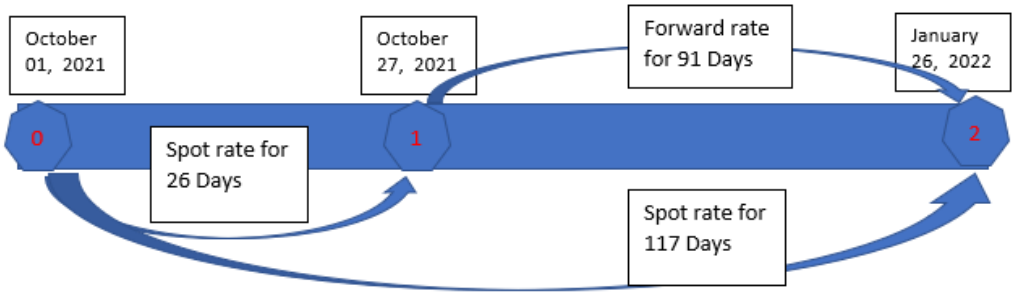
20.7.4 Price Discovery and Convergence of Cash and Futures Prices on the Expiry

It is important to understand what actually futures prices indicate. For instance, if say October 2021 expiry contract of 6.10% Central Government security 2031 maturity is trading at Rs. 98.50 in September 2021. What does it mean? We can explain this by saying that that market expects the spot price of above GOI security to settle at Rs. 98.50 at the closure of the market on last Thursday of October 2021 (i.e., on the last trading day of the contract which is October 28, 2021). Point is that every participant in the market is trying to predict the price at a single point in time i.e., at the closure of the market on last trading day of the contract, which is Thursday in our example. Now, we may also state that futures prices are expected spot price of the underlying asset, at the maturity of the futures contract. Accordingly, both futures and spot prices converge at the maturity of futures contract, as at that point in time there cannot be any difference between these two prices. This is the reason all futures contracts on expiry settle at the underlying cash market price. This principal remains same for all the underlying assets.

20.7.5 Computation of price for 91-day T-Bills futures

Forward rate concept can also be used to arrive the price of IRF contracts. For example, 91 day T-Bills futures as the underlying is notional 91 day T-Bills and participants are predicting the yield of 91 Day T-Bill on expiry date i.e., future date.

Example:
Contract: 91-Day T-Bills Future
Trade Date: 1st October 2021
Expiry Date of Contract: 27th October 2021
91-Day forward rate, 26 days from 1st October can be calculated using latest available treasury bills yield curve published by FBIL of various tenors.



In above example, on October 01, 2021, participants first determine the yield/rate for 26 days and 117 days. In case of yield of required tenor i.e. yield of 26 days and 117 days is not available on T-Bills yield curve published by FBIL, participant may use interpolation/extrapolation to compute the yield of 26 days and 117 days. And then using forward rate formulae, we can determine 91 day yield/rate on October 27, 2021.

It is important to note that the pricing models provided above are theoretical and based on certain assumptions.

Chapter 20: Sample Questions

1. What is the settlement method for 91-day bill futures?
    a. **Cash**
    b. Physical
    c. Can be cash or physical
    d. None of the above

2. Which of the following is the last trading day for cash settled 10-year bond futures?
    a. Two business days after the first business day of the Expiry Month
    b. Two business days before the last business day of the Expiry Month
    c. Seven business days before the last business day of the Expiry Month
    d. **Last Thursday of Contract Month**

3. Total number of derivatives contracts outstanding is called _____
    a. Long position
    b. Short position
    c. **Open interest**
    d. None of the above

4. Person goes short in a futures contract at Rs.100 and on expiry underlying price is Rs. 101, he will _____.
    a. Make profit of Rs. 1
    b. **Make loss of Rs. 1**
    c. No profit no loss
    d. None of the above

5. If participant buy 10 lot of single bond futures at Rs. 99, then contract value _____.
    a. Rs. 20,00,000
    b. Rs. 19,99,000
    c. **Rs. 19,80,000**
    d. None of the above

CHAPTER 21: EXCHANGE TRADED INTEREST RATE OPTIONS

LEARNING OBJECTIVES:

After studying this chapter, you should know about following:

- Understanding of Options and Option Terminology
- Understanding of Option Pricing, Implied Volatility and Option Greeks
- Options Pay-offs and Moneyness of an Option
- Contract Specifications of Exchange Traded Interest Rate Options
- Advantages and Limitations of Exchange Traded Interest Rate Options

21.1 Basics of Options

As seen in earlier section, forward/futures contract is a commitment to buy/sell the underlying and has a linear pay off, which indicates unlimited losses and profits. Some market participants desired to ride upside and restrict the losses. Accordingly, options emerged as a financial instrument, which restricted the losses with a provision of unlimited profits on buy or sell of underlying asset. An Option is a contract that gives the option buyer right, but not an obligation, to buy or sell the underlying asset on or before a specified date/day, at a pre-determined price. For acquiring right option buyer pay certain price/premium to option seller.

Let us understand this with an example:
Mr. X is looking to buy 1 acre of land from Mr. Y. The land is valued at Rs.10,00,000. Mr. X has informed that in next 3 months the infrastructure project is expected near the land and value of land bound to increase. However, if the news turns out to be a rumour, then Mr. X would be stuck with a useless piece of land.
What should X do???

- Mr. X pays an upfront fee of Rs. 50,000 today i.e., August 01, 2021, to Mr. Y. Consider this as a non-refundable
- Against this fees, Mr. Y agrees to sell the land after 3 months to Mr. X
- The price of the land (which is expected 3 months later) is fixed today at Rs.10,00,000
- Mr. X has paid an upfront fee and hence only he can call off the deal at the end of 3 months, Mr. Y cannot.
- In the event Mr. X calls off the deal at the end of 3 months, Mr. Y gets to keep the upfront fees

The above arrangement between Mr. X and Mr. Y is called as option contract. We could define option contract as below:

An option is a contract between two parties giving the buyer of an option the right, but not the obligation, to buy or sell an underlying asset at a specific price on or before a certain date.

We will now use the above example, to define certain important terms relating to options:

- The right to buy the asset is called **call option** and the right to sell the asset is called **put option**. In the above example Mr. X has received right to buy the land, hence it is a call option transaction.
- The pre-specified price at which the underlying asset may be purchased or sold by the option holder is called as **strike price.** In above example the same is set as Rs.10,00,000.
- The date at which the option contract will expire / or ceases to exist is called **expiration date**. In this case October 31, 2021 (3 months from trade date) is the contract expiration date.
- The difference between the date of entering into the contract and the expiration date is called **time to maturity** which is 3 months in the above example.
- The party which buys the rights but not obligation and pays premium for buying the right is called as **option buyer** and the party which sells the right and receives premium for assuming such obligation is called **option seller/ writer**. In above case Mr. X is option buyer and Mr. Y is option seller.
- The price which option buyer pays to option seller to acquire the right is called as **option price or option premium.** In above case, Rs. 50000 is the option premium**.**
- The asset which is bought or sold is an underlying or **underlying asset** which is Land in above case.
- In options trading, "**to exercise**" means to put into effect the right to buy or sell the underlying security that is specified in the options contract. If the holder of a call option exercises the contract, they will buy the underlying security at a stated price within a specific timeframe. If the holder of a put option exercises the contract, they will sell the underlying security at a stated price within a specific timeframe. In the above example, of price of land on October 31, 2021, is Rs. 15 lacs, Mr. X will exercise its option as he will pay only Rs. 10 lacs to buy the land.

Let us also take a real-life example of a put option. When you get your car insured, you pay an insurance premium to the insurance company and the insurance company guarantees to compensate you for the damages to your car during the insurance period.

In this example, you are buying a put option from the insurance company and paying it an option premium in the form of insurance premium. If your car gets damaged during the insurance period, you can use your policy to claim the compensation and if all goes well and you do not need to claim the compensation, the insurance company keeps the premium in return for taking on the risk.

21.2 Difference between futures and options

Let us first highlight the similarities between two types of derivative contracts – Futures and Options. The similarities are as follows:

- Both the contracts have a buyer and a seller
- Both the contracts have a set price for the underlying asset
- Both the contracts have a set settlement date

Just like futures, options can be used for hedging, or to generate returns by taking a view on the future direction of the market, or for arbitrage.

The difference between two contracts is that in futures both the parties are under right as well as obligation to buy or sell and therefore face similar risk. Whereas in options, the buyer has only rights and no obligation and therefore he faces only the risk of premium paid. On the other hand, option seller is under obligation to buy or sell (depending on whether put option is sold or a call option is sold, respectively) and therefore faces unlimited risk. At the same time, the option buyer has chances to get unlimited upside and the option seller has limited upside equal to the premium received. The call option buyer would exercise the option, only if the price of underlying asset is higher than the strike price. Similarly, the put option buyer would exercise the option, only if the price of the underlying asset is less than the strike price.

21.3 Style of options

In options trading, "to exercise" means to put into effect the right to buy or sell the underlying security that is specified in the options contract. Before exercising an option, it is important to consider what type of option you have and whether you can exercise it. Based on when the buyer is allowed to exercise the option, Options are classified into two types:

- **European options**: European options can be exercised by the buyer of the option only on the expiration date. Hence, option buyer enjoys less flexibility in how they handle option trading. However, please note that in case of exchange traded options, participants can sell their option in the secondary market prior to option expiration date to square-off their position.
- **American options**: American options can be exercised by the buyer any time on or before the expiration date. American options offer more flexibility to option buyer as they can be exercised on any trading day prior to their expiration.
- **Bermuda options**: Bermudan options are different from both American and European options. The contract for a Bermudan-style option denotes specific days before expiration on which the trader can exercise his option. The specified exercise dates are usually near the time of the option's expiration date. Thus, Bermudan options fall in between American and European options in terms of how much freedom a trader has to exercise the option.

21.4 Moneyness of an option

The buyer of call option would exercise his right to buy the underlying asset only if the spot price of underlying asset is higher than the strike price at the maturity of the contract. Similarly, the buyer of a put option would exercise his right to sell the underlying asset only if the spot price of underlying asset is lower than the strike price at the maturity of the contract. In certain cases, transaction/regulatory charges are applicable at the time of exercise. If these costs are included, the decision of the option buyer would take into account these costs also. Moneyness of an option indicates whether the contract would result in a positive cash flow, negative cash flow or zero cash flow for the option buyer at the time of exercising it. Based on these scenarios, moneyness of option can be classified in three types:

In the money (ITM) option: An option is said to be in the money, if on exercising it, the option buyer gets a positive cash flow. Thus, a call option would be in the money, if underlying price is higher than

the strike price and similarly a put option would be in the money, if underlying price is lower than the strike price.

Out of the money (OTM) option: An option is said to be out of the money, if on exercising it, the option buyer gets a negative cash flow. Thus a call option would be out of the money, if underlying price is lower than the strike price and similarly a put option would be out of the money, if underlying price is higher than the strike price.

At the money (ATM) option: An option is said to be at the money if spot price is equal to the strike price. On exercise of ATM option buyer gets zero cash flows. Any movement in spot price of underlying from this stage would either make the option ITM or OTM.

Strike	Call Option	Put Option
In-the-money	Strike price < Spot price of underlying asset	Strike price > Spot price of underlying asset
At-the-money	Strike price = Spot price of underlying asset	Strike price = Spot price of underlying asset
Out-of-the-money	Strike price > Spot price of underlying asset	Strike price < Spot price of underlying asset

21.5 Basics of Option Pricing and Option Greeks

21.5.1 Option Value:

The option value/option premium can be broken in two parts.

Intrinsic value: Option premium, defined in earlier section, consists of two components – intrinsic value and time value. For an option, intrinsic value refers to the amount by which option is in the money i.e., the amount an option buyer will realize, before adjusting for premium paid, if he exercises the option instantly. Therefore, only in-the-money options have intrinsic value whereas at-the-money and out-of-the-money options have zero intrinsic value. The intrinsic value of an option can never be negative. Thus, for call option which is in-the-money, intrinsic value is the excess of spot price (S) over the exercise price (X). Thus, intrinsic value of call option can be calculated as S-X, with minimum value possible as zero because no one would like to exercise his right under no advantage condition.

Similarly, for put option which is in-the-money, intrinsic value is the excess of exercise price (X) over the spot price (S). Thus, intrinsic value of put option can be calculated as: X-S, with minimum value possible as zero.

Time value: The difference between option premium and intrinsic value is the time value of that Option. ATM and OTM option will have only time value because the intrinsic value of such option is zero. The time value is directly proportional to the length of time to expiration date of the option. Longer the time to expiration, higher is time value. Therefore, everything else remaining the same, call option for two months maturity would be priced higher than the call option at the same strike price for one month maturity.

The time value reflects the probability that the option will gain in intrinsic value or profitable to exercise before its maturity. Therefore, higher time to expiration, higher the probability and higher the time value. Please note that at expiry the option value is its intrinsic value and time value will be zero.

21.5.2 Option Pricing Fundamentals

On what basis did market participants come to these values of the premiums? What are the parameters that affect these values? Are these fixed by the stock exchanges or by SEBI? The answer lies in understanding what affects options. Prices are never fixed by stock exchanges or SEBI or anybody for that matter. In fact, price discovery is a very critical and basic component of markets. Stock exchanges only provide a platform where buyers and sellers meet, and SEBI's role is to ensure smooth functioning of our markets.

Any option's value increases or decreases depending upon different variables. Each variable has its impact on an option. The impact can be same or different for a call and put option. As explained in the earlier section, option premium is the sum of intrinsic value and time value. As long as the option is not expired, there will always be some time value. Intrinsic value may or may not be there, depending upon whether the option is ITM, ATM or OTM. Time value of the option in turn depends upon how much time is remaining for the option to expire and how volatile is the underlying.

Thus, there are five fundamental parameters on which the option price depends:

1) Spot price of the underlying asset
2) Strike price of the option
3) Volatility of the underlying asset's price
4) Time to expiration
5) Interest rates

These factors affect the premium/ price of options (both American & European) in several ways.

Spot price of the underlying asset

The option premium is affected by the price movements in the underlying instrument. If price of the underlying asset goes up, the value of the call option increases, while the value of the put option decreases. Similarly, if the price of the underlying asset falls, the value of the call option decreases, while the value of the put option increases.

Strike Price

If all the other factors remain constant but the strike price of option increases, intrinsic value of the call option will decrease and hence its value will also decrease. On the other hand, with all the other factors remaining constant, increase in strike price of option increases the intrinsic value of the put option which in turn increases its option value.

Volatility

It is the magnitude of movement in the underlying asset's price, either up or down. It affects both call and put options in the same way. Higher the volatility of the underlying stock, higher the premium because there is a greater possibility that the option will move in-the-money during the life of the contract.

Higher volatility = Higher premium, Lower volatility = Lower premium (for both call and put options).

Time to expiration

The effect of time to expiration on both call and put options is similar to that of volatility on option premiums. Generally, longer the maturity of the option greater is the uncertainty and hence the higher premiums. If all other factors affecting an option's price remain same, the time value portion of an option's premium will decrease with the passage of time. This is also known as time decay. Options are known as 'wasting assets', due to this property where the time value gradually falls to zero.

It is also interesting to note that of the two component of option pricing (time value and intrinsic value), one component is inherently biased towards reducing in value, i.e., time value. So, if all things remain constant throughout the contract period, the option price will always fall in price by expiry. Thus, option sellers are at a fundamental advantage as compared to option buyers as there is an inherent tendency in the price to go down.

Interest Rates

The "interest rate" referred to in relation to the prices of options is what is known as the "Risk Free Interest Rate". Interest rates are slightly complicated because they affect different options, differently. In simpler way high interest rates will result in an increase in the value of a call option and a decrease in the value of a put option.

The relationship between different factors and value of call/ put option is given in the table below. The arrow depicts the rise or fall in prices of options contracts when one of the parameter changes in value while other parameters remain unchanged.

Factor	Change in Factor	Call Premium	Put Premium
Spot Price	Increase	↑	↓
Spot Price	Decrease	↓	↑
Strike Price	Increase	↓	↑
Strike Price	Decrease	↑	↓
Volatility	Increase	↑	↑
Volatility	Decrease	↓	↓
Time to Expiry	Longer	↑	↑
Time to Expiry	Shorter	↓	↓
Interest Rates	Increase	↑	↓
Interest Rates	Decrease	↓	↑

21.5.3 Option Greeks

Option premiums change with changes in the factors that determine option pricing i.e., factors such as strike price, volatility, term to maturity etc. "Greeks" is a term used in the options market to describe the different dimensions of risk involved in taking an options position. There are five primary Greek risk measures represented by Delta, Gamma, Theta, Vega and Rho.

Delta: The most important of the 'Greeks' is the option's "Delta". This measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to price of the underlying asset.

Delta = Change in option premium/ Unit change in price of the underlying asset.

Delta of a long call option (and/ or short put) is always positive and ranges between 0 and 1 and for a long put (and/or short call) is always negative and ranges between 0 and -1.

Delta for call option

Assume a call option has a delta of 0.3 or 30 per cent – what does this mean?

Well, as we know the delta measures the rate of change of premium for every unit change in the underlying. So, a delta of 0.3 indicates that for every 1-point change in the underlying, the premium is likely change by 0.3 units, or for every 100-point change in the underlying the premium is likely to change by 30 points. The following example should help you understand this better:

Price of 6.10% GOI Securities 2031 @ 9:30 AM is at Rs. 98.80
Option Strike = 98.50 **Call Option**
Premium = Rs. 0.45
Delta of the option = + 0.55

Scenario 1: Price of 6.10% GOI Securities 2031 @ 3:00 PM is expected to reach Rs. 99.00
What is the likely option premium value at 3:00 PM?
We know the Delta of the option is 0.55, which means for every 1-point change in the underlying the premium is expected to change by 0.55 points. We are expecting the underlying to change by 0.20 paise (99.00 – 98.80), hence the premium is supposed to increase by
= 0.20*0.55
= 0.11
Therefore, the new option premium is expected to trade around **0.56** (= 0.45+0.11)
(Here, we assume that other factors like volatility etc. will remain constant).

Scenario 2: Price of 6.10% GOI Securities 2031 @ 3:00 PM is expected to reach Rs. 98.60
What is the likely option premium value at 3:00 PM?
We know the Delta of the option is 0.55, which means for every 1-point change in the underlying the premium is expected to change by 0.55 points. We are expecting the underlying to change by -0.20 paise (98.60 – 98.80), hence the premium is supposed to increase by

= -0.20*0.55
= -0.11
Therefore, the new option premium is expected to trade around **0.34** (= 0.45-0.11)

Gamma (γ)
It measures change in delta with respect to change in price of the underlying asset. This is called a second derivative option with regard to price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in market price of the underlying asset.

Gamma = Change in an option delta / Unit change in price of underlying asset

Gamma works as an acceleration of the delta, i.e., it signifies the speed with which an option will go either in-the-money or out-of-the-money due to a change in price of the underlying asset.

For example, consider this – The delta and Gamma of an ATM Put option is -0.50 and 0.004 respectively. Remember Put options have a negative Delta. Gamma as you notice is a positive number i.e., +0.004. The underlying moves by 10 points without specifying the direction, so let us figure out what happens in both cases.

Case 1 – Underlying moves up by 10 points
Delta = – 0.5
Gamma = 0.004
Change in underlying = 10 points
Change in Delta = Gamma * Change in underlying = 0.004 * 10 = 0.04
New Delta = -0.5 + 0.04 = **– 0.46**
(The Put option loses delta when underlying increases)

Case 2 – Underlying goes down by 10 points
Delta = – 0.5
Gamma = 0.004
Change in underlying = – 10 points
Change in Delta = Gamma * Change in underlying = 0.004 * – 10 = – 0.04
New Delta = – 0.5 + (-0.04) = **– 0.54**
(The Put option gains delta when underlying goes down)

Theta (θ)
It is a measure of an option's sensitivity to time decay. Theta is the change in option price given a one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions.

Theta = Change in an option premium / Change in time to expiry

Other things being equal, options tend to lose time value each day throughout their life. This is due to the fact that the uncertainty element in the price decreases. Theta is expressed in points lost per day when all other conditions remain the same. Time runs in one direction; hence theta is always a positive number, however as it is a loss in options value, it is sometimes written as a negative number. A Theta of -0.5 indicates that the option premium will lose -0.5 points for every day that passes by. For example, if an option is trading at Rs.2.75 with theta of -0.05 then it will trade at Rs.2.70 the following day (provided other things are kept constant). A long option (option buyer) will always have a negative theta meaning all else equal, the option buyer will lose money on a day-by-day basis. A short option (option seller) will have a positive theta. Theta is a friendly Greek to the option seller.

Vega (v)

This is a measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change in the underlying volatility.

Vega = Change in an option premium / Change in volatility

Vega is positive for a long call and a long put. An increase in the assumed volatility of the underlying increases the expected pay-out from a long option, whether it is a call or a put.

Since options gain value with increase in volatility, the vega is a positive number, for both calls and puts. For example – if the option has a vega of 0.15, then for each % change in volatility, the option will gain or lose 0.15 in its theoretical value. The effect of volatility is highest when there are more days left for expiry.

A 6.10% GOI 2031 security is trading at Rs. 99.50 in October and a November 100 call is trading for Rs.0.10. Let's assume that the vega of the option is 0.02 and that the underlying volatility is 10%. If the underlying volatility increased by 1% to 11%, then the price of the option should rise to 0.10 + (1 x 0.02) = 0.12.

However, if the volatility had gone down by 2% to 8%, then the option price should drop to 0.10 - (2 x 0.02) = Rs.0.06.

Rho (ρ)

Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying.
Rho = Change in an option premium / Change in cost of funding of the underlying

Call options generally rise in price as interest rates increase and put options generally decrease in price as interest rates increase. Thus, call options have positive rho, while put options have negative rho. Assume that put option is priced at Rs. 0.50 and has a rho of -0.05. If interest rates were to decrease from 5 per cent to 4 per cent, then the price of this put option would increase from Rs.0.50

to Rs.0.55. In this same scenario, assuming the call option mentioned above with price 0.25, its price would decrease from Rs 0.25 to Rs. 0.20.

21.5.4 Put-Call Parity

Put-call parity shows the relationship that has to exist between European put and call options that have the same underlying asset, expiration, and strike prices. Put-Call parity holds only for a European option. It shows that value of European call with certain exercise price and exercise date can be deduced from the value of a European put with the same exercise price and exercise date and vice versa.

Put-call parity is stated using this equation-

$C + PV(x) = P + S$

Here-

- C stands for the price of the call option
- PV(x) is the present value of x (the strike price), as subtracted from the value it has on the date of expiration, as considered at a risk-free rate
- P is the price of the put
- S is the spot price (current market value) the underlying asset

21.6 Option pricing methodology

There are various option pricing models which traders use to arrive at the right value of the option. Some of the most popular models are briefly discussed below:

21.6.1 The Binomial Pricing Model

The binomial option pricing model was developed by William Sharpe in 1978. It has proved over time to be the most flexible, intuitive and popular approach to option pricing.
The binomial model represents the price evolution of the option's underlying asset as the binomial tree of all possible prices at equally-spaced time steps from today under the assumption that at each step, the price can only move up and down at fixed rates and with respective simulated probabilities. This is a very accurate model as it is iterative, but also very lengthy and time consuming.

21.6.2 The Black & Scholes Model

The Black & Scholes model was published in 1973 by Fisher Black and Myron Scholes. It is one of the most popular, relatively simple and fast modes of calculation. Unlike the binomial model, it does not rely on calculation by iteration. This model is used to calculate a theoretical call price (ignoring the dividends paid during the life of the option) using the five key determinants of an option's price: stock price, strike price, volatility, time to expiration, and short-term (risk free) interest rate.

Call and Put option price can be calculated as:

$C = SN(d_1) – Xe^{-rt}N(d_2)$

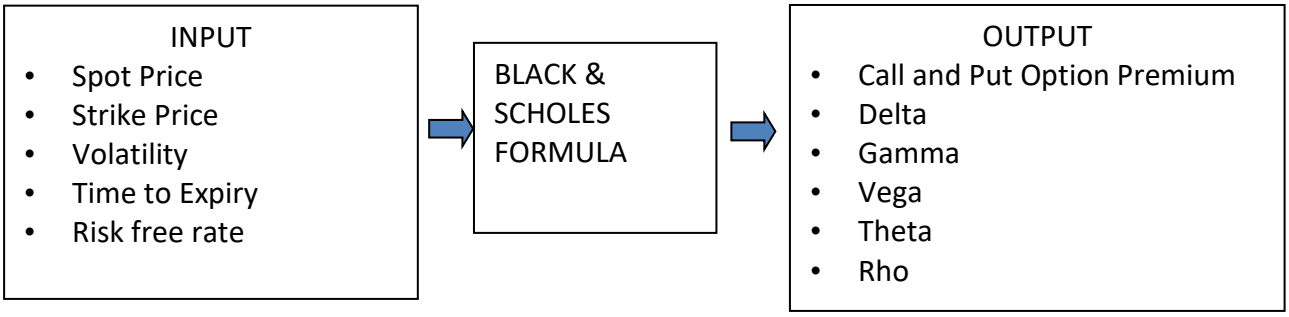
$P = Xe^{-rt}N(-d_2) - SN(-d_1)$

Where, $d1= [In(S/X)+(r+v^2/2)*t]/(v*√t)$

$d2 = d1 – v*√t$

And the variables are:

- S = stock price
- X = strike price
- t = time remaining until expiration, expressed in years
- r = current continuously compounded risk-free interest rate
- v = annual volatility of stock price (the standard deviation of the short-term returns over one year)
- In = natural logarithm
- N(x) = standard normal cumulative distribution function
- e = the exponential function



The Black-Scholes model was designed to value options that can be exercised only at maturity and whose underlying assets do not pay dividends. In addition, options are valued based on certain assumption like markets are random, zero transaction cost etc. In practice, assets do pay dividends, options sometimes get exercised early, and exercising an option can affect the value of the underlying asset. Trader may modify the formula to adjust for the effect of dividend etc.

Dividends: The payment of a dividend reduces the stock price; note that on the ex-dividend day, the stock price generally declines. Consequently, call options become less valuable and put options more valuable, as expected dividend payments increase. There are two ways of dealing with dividends in the Black & Scholes model:

1. Short-term options: One approach to dealing with dividends is to estimate the present value of expected dividends that will be paid by the underlying asset during the option life and subtract it from the current value of the asset to use as S in the model. Modified stock price = Current stock price – Present value of expected dividends during the life of the option.

2. Long-term options: Since it becomes less practical to estimate the present value of dividends for longer maturity options, an alternate approach can be used. If the dividend yield (y =

Dividends/Current value of the asset) on the underlying asset is expected to remain unchanged during the life of the option, the Black-Scholes model can be modified to take dividends into account.

21.6.3 Black (1976) Model

The original Black–Scholes model has undergone several theoretical developments. One such development for the valuation of futures options is introduced by Black (1976). Black proposed a formula for options under the assumption that investors generate risk less hedges between options and the futures or forward contracts. The problem of negative cost of carry was addressed by using 'forward prices' in the option pricing model instead of 'spot prices'. Black observed that actual forward prices not only incorporate cost of carry but also takes into account other irregularities in the market. In his proposed model, he substituted spot price (S) by the discounted value of future price ($F*e^{-rt}$) in the original Black-Scholes model. Black's model found application in valuing options on physical commodities where future price is a better alternative input for valuing options. Its primary applications are for pricing options on future contracts, bond options, interest rate cap and floors, and swaptions.

The Call options prices as per Black's formula can be observed solving following equation:

$C = Fe^{-rt}*N(d_1) – Xe^{-rt}*N(d_2)$

$= e^{-rt} [F*N(d_1)-X*N(-d_2)]$

The corresponding Put price,

$P=e^{-rt} [X*N(-d_2)-F*N(-d_1)]$

Where $d1= \frac{\ln (F/X) + (\sigma^2/2)t}{\sigma*\sqrt{t}}$

$d2= \frac{\ln (F/X) - (\sigma^2/2)t}{\sigma*\sqrt{t}} = d1 - \sigma*\sqrt{t}$

And the variables are

- F = future price
- X = strike price
- t = time remaining until expiration, expressed in years
- r = current continuously compounded risk-free interest rate
- σ = volatility
- In = natural logarithm
- N(x) = standard normal cumulative distribution function
- e = the exponential function

The important difference between Black's and Black-Scholes is that Black uses forward/future prices and Black-Scholes uses spot prices. In India, for computation of theoretical price, of exchange traded interest rate option (underlying is government securities) Black 1976 options pricing model is used.

21.7 Implied Volatility (IV)

Different types of volatility are – Historical Volatility, Forecasted Volatility, and Implied Volatility.

Historical Volatility, in the financial market world, we take the past closing prices of the stock/index/bonds/currency rate and calculate the historical volatility. Historical volatility is very easy to calculate and helps us with most of the day-to-day requirements – for instance historical volatility can 'somewhat' be used in the options calculator to get option price.

Forecasted Volatility refers to the act of predicting the volatility over the desired time frame. There are a few good statistical models available to forecast volatility.

Implied Volatility (IV) represents the market participant's expectation on volatility. Implied volatility can be thought of as consensus volatility arrived amongst all the market participants with respect to the expected amount of underlying price fluctuation over the remaining life of an option. Implied volatility is reflected in the price of the premium. IV is a metric used by investors to estimate future fluctuations (volatility) of a security's price based on certain predictive factors. Implied volatility is denoted by the symbol σ (sigma). It can often be thought to be a proxy of market risk. It is commonly expressed using percentages and standard deviations over a specified time horizon. IV doesn't predict the direction in which the price change will proceed. For example, high volatility means a large price swing, but the price could swing upward (very high), downward (very low), or fluctuate between the two directions. Low volatility means that the price likely won't make broad, unpredictable changes. When applied to the financial market, implied volatility generally increases in bearish markets, when investors believe equity prices will decline over time. IV decreases when the market is bullish. This is when investors believe prices will rise over time. Bearish markets are considered to be undesirable and riskier to the majority of equity investors.

Implied volatility can thus be derived from the cost of the option. In fact, if there were no options traded on a given underlying, there would be no way to calculate implied volatility. It is the only factor in the model that isn't directly observable in the market. Instead, the mathematical option pricing model uses other factors to determine implied volatility and the option's premium. Implied volatility is a dynamic figure that changes based on activity in the options marketplace. Usually, when implied volatility increases, the price of options will increase as well, assuming all other things remain constant. So, when implied volatility increases after a trade has been placed, it's good for the option owner and bad for the option seller. Conversely, if implied volatility decreases after you entering the trade, the price of options usually decreases. That's good if you are an option seller and bad if you are an option owner (i.e., for long option position).

21.8 Pay off Diagrams for Options

Having gone through the basic terminology used in the options market, let us get to the pay off profile of various option positions.

Long on Option

Buyer of an option is said to be "long on option". As described above, he/she would have a right and no obligation with regard to buying / selling the underlying asset in the contract. When you are long on option contract:

- You have the right to exercise that option.
- Your potential loss is limited to the premium amount you paid for buying the option.
- Profit would depend on the level of underlying asset price at the time of exercise/expiry of the contract.

Short on Option

Seller of an option is said to be "short on option". As described above, he/she would have obligation but no right with regard to selling/buying the underlying asset in the contract. When you are short (i.e., the writer of) an option contract:

- Your maximum profit is the premium received.
- You can be assigned to deliver if the option is exercised by the buyer. All option writers should be aware that assignment is a distinct possibility.
- Your potential loss is theoretically unlimited.

Please note that long/short on option and long/short position is different. Long on call option have long position on underlying on the other hand long on put option will have short position on underlying asset.

Now, let us understand each of these positions in detail:

21.8.1 Long Call

On October 1, 2021, 6.10% GOI 2031, security is trading at Rs. 98.40. You buy a call option with strike price of 98.50 at a premium of Rs. 0.20 with expiry date October 28, 2021. A Call option gives the buyer the right, but not the obligation to buy the underlying at the strike price. So, in this example, you have the right to buy 6.10% GOI 2031 security at Rs. 98.50. You may buy or you may not buy, there is no compulsion. If 6.10% GOI 2031 security price is above Rs. 98.50 at expiry, you will exercise the option, else you will let it expire. What will be your maximum profits/ losses under different conditions at expiry, we will try to find out using pay off charts.

If on expiry 6.10% GOI 2031 security price is Rs. 98.25, you will not exercise the right to buy the underlying (which you have got by buying the call option) as 6.10% GOI 2031 security is available in the market at a price lower than your strike price. Why will you buy something at Rs.98.50 when you can have the same thing at Rs. 98.25? So, you will forego the right. In such a situation, your loss will be equal to the premium paid, which in this case is Rs. 0.20.

If on expiry if 6.10% GOI 2031 security price were at Rs. 98.70, you will exercise the option and buy 6.10% GOI 2031 security at Rs.98.50 and make profit by selling it at Rs. 98.70. In this transaction you will make a profit of Rs. 0.20, but you have already paid this much money to the option seller right

at the beginning, when you bought the option. So, Rs.98.70 is the Break-Even Point (BEP) for this option contract. A general formula for calculating BEP for call options is strike price plus premium (X + P).

If 6.10% GOI 2031 security were to close at Rs. 98.90, you will exercise the option and buy 6.10% GOI 2031 security at Rs.98.50 and sell it in the market at Rs.98.90, thereby making a profit of Rs. 0.40. But since you have already paid Rs. 0.20 as option premium, your net profit would be 0.40 – 0.20 =Rs.0.20. Similar to futures, options can be settled through physical delivery, or it can be cash settled. In case of cash settled option contract, on exercise option buyer will receive only the profit amount i.e. Rs.0.40.

For profits/losses for other values, a table is given below. This table is used to draw the pay off diagram:

Strike Price	Rs. 98.50		
Premium	Rs. 0.20		
GOI Security Price @ Expiry	Premium Paid	Profit on Exercise	Pay-off for Long Call Position
	(A)	(B)	(C) = (A) + (B)
98.00	-0.2000	0.0000	-0.2000
98.10	-0.2000	0.0000	-0.2000
98.20	-0.2000	0.0000	-0.2000
98.30	-0.2000	0.0000	-0.2000
98.40	-0.2000	0.0000	-0.2000
98.50	-0.2000	0.0000	-0.2000
98.60	-0.2000	0.1000	-0.1000
98.70	-0.2000	0.2000	0.0000
98.80	-0.2000	0.3000	0.1000
98.90	-0.2000	0.4000	0.2000
99.00	-0.2000	0.5000	0.3000
99.10	-0.2000	0.6000	0.4000
99.20	-0.2000	0.7000	0.5000
99.30	-0.2000	0.8000	0.6000
99.40	-0.2000	0.9000	0.7000
99.50	-0.2000	1.0000	0.8000
99.60	-0.2000	1.1000	0.9000
99.70	-0.2000	1.2000	1.0000
99.80	-0.2000	1.3000	1.1000
99.90	-0.2000	1.4000	1.2000
100.00	-0.2000	1.5000	1.3000

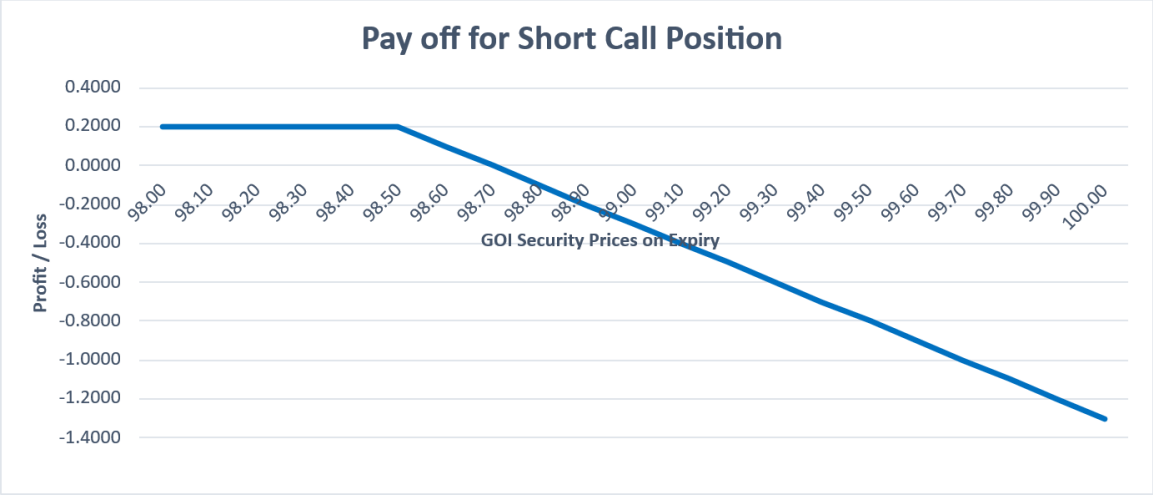
You can see from the diagram that maximum loss for such option buyer will be Rs. 0.20. The lot size of Exchange traded interest rate option is 2000 units, so the maximum loss per lot will be Rs. 400 (=2000*0.20).

21.8.2 Short Call

Whenever someone buys a call option, there has to be a counterparty, who has sold that call option. If the maximum loss for a long call position is equal to the premium paid, it automatically means that the maximum gain for the short call position will be equal to the premium received. Similarly, if maximum gain for long call position is unlimited, then even maximum loss for the short call position has to be unlimited. Lastly, whenever, the long call position is making losses, the short call position will make profits and vice versa. Hence, if we have understood long call pay off, short call pay off chart will be just the water image of the long call pay off.

Strike Price	Rs. 98.50		
Premium	Rs. 0.20		
GOI Security Price @ Expiry	Premium Received	Loss on Exercise	Pay-off for Short Call Position
	(A)	(B)	(C) = (A) + (B)
98.00	0.2000	0.0000	0.2000
98.10	0.2000	0.0000	0.2000
98.20	0.2000	0.0000	0.2000
98.30	0.2000	0.0000	0.2000
98.40	0.2000	0.0000	0.2000
98.50	0.2000	0.0000	0.2000
98.60	0.2000	-0.1000	0.1000
98.70	0.2000	-0.2000	0.0000
98.80	0.2000	-0.3000	-0.1000
GOI Security Price @ Expiry	Premium Received	Loss on Exercise	Pay-off for Short Call Position

98.90	0.2000	-0.4000	-0.2000
99.00	0.2000	-0.5000	-0.3000
99.10	0.2000	-0.6000	-0.4000
99.20	0.2000	-0.7000	-0.5000
99.30	0.2000	-0.8000	-0.6000
99.40	0.2000	-0.9000	-0.7000
99.50	0.2000	-1.0000	-0.8000
99.60	0.2000	-1.1000	-0.9000
99.70	0.2000	-1.2000	-1.0000
99.80	0.2000	-1.3000	-1.1000
99.90	0.2000	-1.4000	-1.2000
100.00	0.2000	-1.5000	-1.3000



The pay-off chart for a short call position is shown above. Maximum gain for an option seller, as explained earlier, will be equal to the premium received, whereas maximum loss can be unlimited (when price starts moving above BEP). BEP for a short call position will also be equal to X + P. BEP is independent of position (long or short), it is instrument specific (call option).

21.8.3 Long Put

On October 1, 2021, 6.10% GOI 2031, security is trading at Rs. 98.40. You buy a put option with strike price of 98.50 at a premium of Rs. 0.30 with expiry date October 28, 2021. A Put option gives the buyer the right, but not the obligation to sell the underlying at the strike price. So, in this example, you have the right to sell 6.10% GOI 2031 security at Rs. 98.50. You may sell or you may not sell, there is no compulsion. If 6.10% GOI 2031 security price is below Rs. 98.50 at expiry, you will exercise the option; else you will let it expire. What will be your maximum profits/ losses under different conditions at expiry, we will try to find out using pay off diagrams.

If on expiry 6.10% GOI 2031 security price is Rs. 98.75, you will not exercise the right to sell the underlying (which you have got by buying the put option) as 6.10% GOI 2031 security can be sold in the market at a price higher than your strike price. Why will you sell something at Rs.98.50 when

you can sell the same thing at Rs. 98.75? So, you will forego the right. In such a situation, your loss will be equal to the premium paid, which in this case is Rs. 0.30.

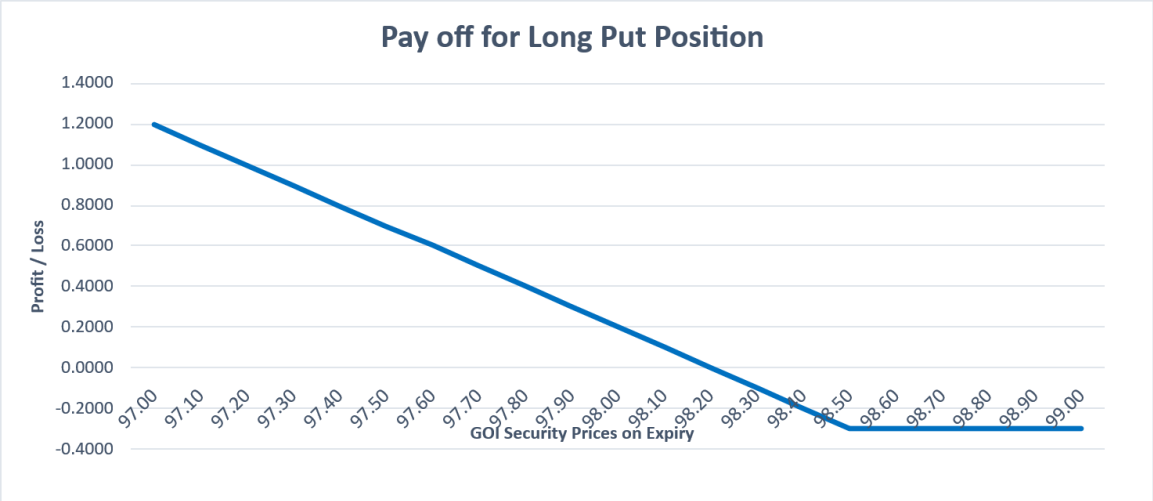
If on expiry if 6.10% GOI 2031 security price were at Rs. 98.20, you will exercise the option and sell 6.10% GOI 2031 security at Rs.98.50 and make profit by buying it at Rs. 98.20. In this transaction you will make a profit of Rs. 0.30, but you have already paid this much money to the option seller right at the beginning, when you bought the option. So Rs.98.20 is the Break-Even Point (BEP) for this option contract. A general formula for calculating BEP for put options is strike price minus premium (X - P).

If 6.10% GOI 2031 security were to close at Rs. 98.00, you will exercise the option and sell 6.10% GOI 2031 security at Rs.98.50 and buy it in the market at Rs.98.00, thereby making a profit of Rs. 0.50. But since you have already paid Rs. 0.30 as option premium, your actual profit would be 0.50 – 0.30 = Rs.0.20. In case of cash settled option contract, on exercise option buyer will receive only the profit amount i.e., Rs.0.50.

For profits/losses for other values, a table is given below. This table is used to draw the pay off diagram:

Strike Price	Rs. 98.50		
Premium	Rs. 0.30		
GOI Security Price @ Expiry	Premium Paid	Profit on Exercise	Pay-off for Long Put Position
	(A)	(B)	(C) = (A) + (B)
97.00	-0.3000	1.5000	1.2000
97.10	-0.3000	1.4000	1.1000
97.20	-0.3000	1.3000	1.0000
97.30	-0.3000	1.2000	0.9000
97.40	-0.3000	1.1000	0.8000
97.50	-0.3000	1.0000	0.7000
97.60	-0.3000	0.9000	0.6000
97.70	-0.3000	0.8000	0.5000
97.80	-0.3000	0.7000	0.4000
97.90	-0.3000	0.6000	0.3000
98.00	-0.3000	0.5000	0.2000
98.10	-0.3000	0.4000	0.1000
GOI Security Price @ Expiry	Premium Paid	Profit on Exercise	Pay-off for Long Put Position
98.20	-0.3000	0.3000	0.0000
98.30	-0.3000	0.2000	-0.1000
98.40	-0.3000	0.1000	-0.2000
98.50	-0.3000	0.0000	-0.3000
98.60	-0.3000	0.0000	-0.3000
98.70	-0.3000	0.0000	-0.3000

98.80	-0.3000	0.0000	-0.3000
98.90	-0.3000	0.0000	-0.3000
99.00	-0.3000	0.0000	-0.3000



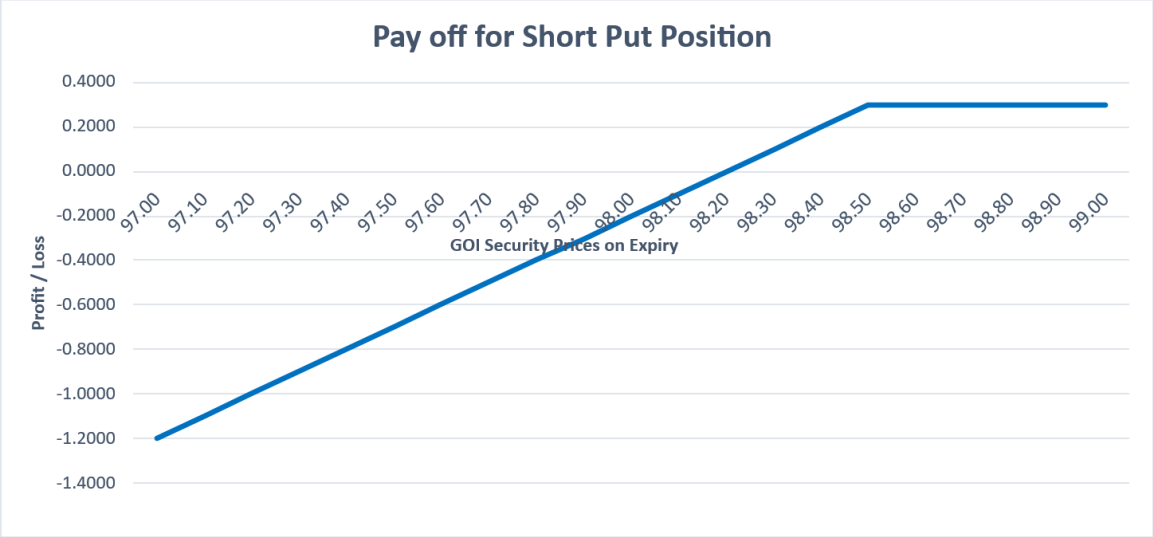
You can see from the diagram that maximum loss for such option buyer will be Rs. 0.30. The lot size of Exchange traded interest rate option is 2000 units, so the maximum loss per lot will be Rs. 600 (=2000*0.30)

21.8.4 Short Put

What will be the position of a put option seller/writer? Just the opposite of that of the put option buyer. When long put makes profit, short put will make loss. If maximum loss for long put is the premium paid, then maximum profit for the short put has to be equal to the premium received. If maximum profit for long put is when price of underlying falls to zero at expiry, then that also will be the time when short put position makes maximum loss. Whenever, the long-put position is making losses, the short put position will make profits and vice versa. Hence, if we have understood long put pay off, short put pay off chart will be just the water image of the long put pay off.

Strike Price	Rs. 98.50		
Premium	Rs. 0.30		
GOI Security Price @ Expiry	Premium Received	Loss on Exercise	Payoff for Short Put Position
	(A)	(B)	(C) = (A) + (B)
97.00	0.3000	-1.5000	-1.2000
97.10	0.3000	-1.4000	-1.1000
97.20	0.3000	-1.3000	-1.0000
97.30	0.3000	-1.2000	-0.9000
97.40	0.3000	-1.1000	-0.8000
97.50	0.3000	-1.0000	-0.7000
97.60	0.3000	-0.9000	-0.6000
97.70	0.3000	-0.8000	-0.5000

97.80	0.3000	-0.7000	-0.4000
97.90	0.3000	-0.6000	-0.3000
98.00	0.3000	-0.5000	-0.2000
98.10	0.3000	-0.4000	-0.1000
98.20	0.3000	-0.3000	0.0000
98.30	0.3000	-0.2000	0.1000
98.40	0.3000	-0.1000	0.2000
98.50	0.3000	0.0000	0.3000
98.60	0.3000	0.0000	0.3000
98.70	0.3000	0.0000	0.3000
98.80	0.3000	0.0000	0.3000
98.90	0.3000	0.0000	0.3000
99.00	0.3000	0.0000	0.3000



The pay-off chart for a short put position is shown above. Maximum gain for an option seller, as explained earlier, will be equal to the premium received, whereas maximum loss will be up to underlying price become zero (when price starts moving below BEP). BEP for a short put position will also be equal to X - P. BEP is independent of position (long or short), it is instrument specific (put option).

As can be seen above, options are products with asymmetric risk exposure i.e., the gains when the underlying asset moves in one direction is significantly different from the losses when the underlying asset moves in the opposite direction. For example, under a call option, when a stock price goes down, the loss incurred by the buyer of this option is limited to the purchase price of the option. But if the stock price goes up, the buyer of the call gains in proportion to the rise in the stock's value, thereby giving asymmetric pay off. In contrast to this, futures have symmetric risk exposures (symmetric pay off).

21.8.5 Square-off option positions

Similar to futures, options positions can also be square-off (closing of position) before expiry of contracts. For e.g. On October 01, 2021, a dealer hedges 100 Crs G-Secs holding by buying 5000 lots of October 2021 expiry 6.10% GOI 2031 put option at a strike of Rs 101.00 when available price was Rs 0.20/0.21. He sold his underlying G-Secs on October 15, 2021. The dealer decided to cancel the option on 15th October when available price for the same contract was Rs 0.10/0.11. The net pay-off for dealer will be:

Premium paid: Rs. 1050/- (5000*0.21)

Premium received at the time of square off: Rs. 500 (5000*0.10)

Net gain / (loss) : (Rs. 550)

21.9 Contract Specification of Exchange Traded Interest Rate Options

RBI vide its notification FMRD.DIRD.12/14.01.011/2016-17 dated December 29, 2016, has decided to introduce Interest Rate Options in India. It has also allowed Exchanges to introduced Interest Rate Options subject to regulatory approval. RBI has advised Fixed Income Money Market and Derivatives Association of India (FIMMDA), in consultation with market participants, to publish a list of objective and transparent rupee money or debt market rates or instruments that may be used as underlying for Interest Rate Option contracts in the OTC market and stock exchanges.

Subsequently, RBI has issued Rupee Interest Rate Derivatives (Reserve Bank) Directions, 2019 on June 26, 2019, which has superseded the above direction. We will see in detail the regulatory framework of Interest Rate Derivatives in subsequent chapter. Based on these guidelines and after approval from SEBI, first the Exchanges traded interest rate options were introduced in August 2019 on single Government of India securities. Exchange traded interest rate options are standardized contract in terms of market lot, expiry date, underlying asset, strike price etc. Currently, Exchanges provide interest rate options on many Governments of India securities. Contract Specification of Exchange Traded Interest Rate Options are given below:

Underlying	GOI Dated Securities. For e.g. Option on 6.33% Central Government Security having maturity in 2035. GOI bond is selected by Exchanges in consultation with FIMMDA.
Unit of Trading	1 Lot - (1 lot = notional bonds of FV INR 2 Lakhs i.e. 2000 bonds)
Quotation	The premium for options contract shall be quoted in Indian Rupees.
Contract Value	Trade Price * 2000
Tick Size	Rs. 0.0025
Price Band	The price bands for options shall be based on the delta of the options contract and calculated using the previous close price of the underlying and volatility. The price band so computed shall be subject to a minimum operating range which would be applicable for all contracts. The bands shall be computed for

	each options contract on a daily basis and shall be applicable from the next trading day. The operating range may be flexed during the day in case the option traded prices crosses certain percentage of the set range.
Trading Hours	Monday to Friday: 9:00 a.m. to 5:00 p.m. (Align the trading hours of IRO with that of underlying market in case of change of trading hours of underlying NDS-OM platform)
Option Type	Premium style European Call & Put Options
Strike Price Interval	Rs. 0.25 (For e.g. strike will be available at RS. 99.50, 99.75, 100.00, 100.25, 100.50, etc.)
No. of strikes	Minimum eight in-the-money, eight out-of-the-money and one near-the-money strikes shall be provided for all available contracts.
Trading Cycle/Contract Cycle	Three serial monthly contracts followed by three quarter ended contracts (Mar, Jun, Sep & Dec)
Expiry Day	Last Thursday of the month. In case the last Thursday is a trading holiday, the previous trading day shall be the expiry / last trading day.
Mode of Settlement	Cash Settlement
Settlement Agency	Settlement through clearing corporation of Exchanges. Settlement guarantee is provided by clearing corporation of Exchanges.
Final Settlement Price	Weighted average price of the underlying bond based on the prices during the last two hours of the trading on NDS-OM. If less than 5 trades are executed in the underlying bond during the last two hours of trading, then FIMMDA/FBIL price shall be used for final settlement
Daily Settlement Price	Volume Weighted Average Price of contract based on last half an hour across exchanges or theoretical price
Final Settlement	T+1

21.10 Comparison of Exchange Traded IRO and OTC IRO

The difference between Exchange Traded Interest Rate Options contract with OTC Option contract is almost similar to futures and forward contracts. Exchange traded IRO have some distinct advantages over OTC IRO as they eliminate counterparty risk and offer more liquidity and price transparency. However, it should be noted that OTC products enjoy the benefit of being customized to meet specific client requirements. Table below mentions a few differences between Exchange Traded IRO and OTC IRO:[132]

132 RBI direction of 2019 considered for comparison

Parameters	Exchange Traded IRO	OTC IRO
Operational mechanism	Contract between two parties through centralized trading platform of Exchanges	Mainly bilateral over-the-counter (OTC) transactions. Can be traded on electronic trading platform.
Terms of contracts	Standardized Contract	Non-Standardized. Each Contract is custom designed and hence unique in terms of contract size, expiration date, asset quality, asset type, etc.
Available Product	Mainly European Interest Rate Options	European Interest Rate Options (IRO) including caps, floors, collars and reverse collars. Also, swaptions and structured derivative products
Price Discovery	Price discovery through free interaction of buyers and sellers on centralized trading platform	Mainly through negotiation. Not efficient
Liquidation Profile	High, as contracts are standardised exchange-traded contracts.	Low, as contracts are tailor made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants
Market Maker	Currently not applicable	Scheduled Banks, PDs, AIFIs are eligible to act as market maker
Settlement	Clearing & Settlement through clearing corporation with guaranteed settlement	Mainly bilateral settlement by parties.
Quality of information and dissemination	Traded nationwide. Information is available online on trading platform and websites.	Reporting of trade to the trade repository within 30 minutes
Advantages	• Price transparency • Elimination of Counterparty credit risk as settlement guarantee by clearing corporation of Exchanges • Access to all types of market participants • Credit Agnostic • Lower liquidity risk compared to OTC • Generally lower impact cost	• Since customized product can provide perfect hedge. • Availability of multiple product
Limitations	• May lead to imperfect hedge as settlement is standardised	• Liquidity risk • Counter party risk • Not accessible for all kind of market participants

Parameters	Exchange Traded IRO	OTC IRO
	• All products may not be available on Exchanges as per the need of participants	

21.11 Market Indicators

21.11.1 Open Interest:

Total Number of options or futures contracts that are NOT closed in a particular trading cycle Key indicator of market participation and liquidity.

Date	Trading Activity	Open Interest	Volume
1-June	A Buys 1 option and B Sells 1 Option Contract	1	1
2-June	C buys 5 options and D sells 5 options	6	6
3-June	A sells his 1 option and D buys 1 option contract	5	7
4-June	E buys 5 options from C who sells 5 option contracts	5	12

General Open Interest Interpretation

Underlying	Open Interest	General Interpretation
Rising	Rising	Long build up, Bullish Signal
Rising	Falling	End of Bullish trend
Falling	Rising	Short Build up, Bearish Signal
Falling	Falling	End of Bearish Trend

21.11.2 Put Call Ratio (PCR)

An Indicator to measure sentiment of the market. High PCR indicates bearishness and Low PCR indicates bullishness. It is calculated either

Put Open Interest/Call Open interest

OR

Put Trading Volume/Call Trading Volume

A PCR above 1 indicates that the put volume has exceeded the call volume. It indicates an increase in the bearish sentiment. A PCR below 1 indicates that the call volume exceeds the put volume. It signifies a bullish market ahead. Nonetheless, it must be noted that a PCR of 1 is not a reliable point to measure market sentiment. It is because more traders tend to buy call options than put options.

Resultantly, an average PCR of 0.7 for equity options is deemed to be suitable for assessing the market sentiment. That being said, a PCR over 0.7 or 1 signifies that more traders are purchasing put options when compared to call options. With the build-up of bearish sentiment, more investors either hedge their portfolios in case of sell-offs or speculate a falling market. Conversely, a falling put-call ratio below 0.7 and approximately 0.5 signifies bullish tendencies.

A. PCR as a Contrarian Indicator:
    a. PCR is often used as a contrarian indicator, meaning it signals potential reversals when it reaches extreme levels.
    b. Very high PCR may signal an oversold market, potentially leading to a price rebound. Traders might consider buying calls.
    c. Very low PCR may signal an overbought market, potentially leading to a price decline. Traders might consider buying puts.
B. Limitation of PCR
    a. Even though it is a contrarian indicator, investors must weigh in other prominent factors before betting on the prevailing market sentiments.
    b. To arrive at effective outcomes, one must use PCR in addition to other potent indicators.
    c. Investors must know how to read the put-call ratio chart correctly; as even a small shift serves as an essential indicator of the plausible market movement.

Chapter 21: Sample Questions

1. The price which option buyer pays to option seller to acquire the right is called as _____.
    a. Agreed Price
    b. Strike Price
    c. Sell Price
    d. **Premium**

2. Option buyer faces _____ risk and option seller faces _____ risk.
    a. **Limited, Unlimited**
    b. Limited, Limited
    c. Unlimited, Limited
    d. Unlimited, Unlimited

3. An option is _____, if on exercising it, the option buyer gets negative cash flow.
    a. In the money
    b. At the money
    c. **Out of the money**
    d. None of the above

4. The difference between option premium and intrinsic value is _____.
    a. Strike Price
    b. **Time Value**
    c. Expiry Value
    d. Option Value

5. Participants buy a put option with strike price of 98.50 at a premium of Rs. 0.20. On Expiry the bond price is Rs. 98.50. What is his net pay-off?
    a. Profit of Rs. 0.20
    b. Profit of Rs. 0.25
    c. No profit & no loss
    d. **Loss of Rs. 0.20**

CHAPTER 22: STRATEGIES USING EXCHANGE TRADED INTEREST RATE DERIVATIVES

LEARNING OBJECTIVES:

After studying this chapter, you should know about following:

- Role of Hedgers, Speculators and Arbitragers
- Hedging, Speculative and Arbitrage Transaction using ETIRD
- Option Trading Strategies with their Pay-off
- Spread Trading using ETIRD
- Limitation of Interest Rate Derivatives for Hedgers

22.1 Market participants

The uses of Exchange Traded Interest Rate Derivatives (ETIRD) market could be better understood by first understanding different type of market participants and their objectives. There could be three different types of market participants. The description of these participants and their objective is given below:

Hedgers

Hedgers are traders who wish to protect themselves from the risk involved in price movements of underlying i.e., interest rate or interest rate instruments. These types of participants have a real exposure to interest rate risk on account of their underlying business and their objective is to remove the interest rate risk using Exchange Traded Interest Rate Derivatives. Interest rate risk exists in an interest-bearing asset, such as a loan or a bond, due to the possibility of a change in the asset's value resulting from the variability of interest rates. Since interest rates and bond prices are inversely related, the risk associated with a rise in interest rates causes bond prices to fall, and vice versa.

Bond investors, specifically those who invest in long-term fixed-rate bonds, are more directly susceptible to interest rate risk. For example, an entity (bond holder) invested Rs. 10 Crores in 6.10% 10-year GOI securities. This bond will pay them Rs. 61,00,000 per year till maturity. If there is an increase in interest rate to 6.50%, the new bond will pay Rs. 65,00,000 till maturity. If the 6.10% bondholder continues to hold his bond through maturity, he loses out on the opportunity to earn a higher interest rate. Alternatively, he could sell his 6.10% bond in the market and buy the bond with the higher interest rate. However, doing so results in the investor getting a lower price on his sale of 6.10% bonds as bond prices are inversely related to interest rate, the price of the 6.10% bond will decrease with increase in interest rate. The bondholder wants to hedge the interest rate risk. In this example, the bond holder is a hedger.

Speculators

This set of market participants does not have a real exposure to interest rate risk. These participants assume interest rate risk by taking a view on the market direction and hope to make returns by

taking the price risk. Speculators play a vital role in the ETIRD markets. Derivatives are designed primarily to assist hedgers in managing their exposure to price risk; however, this would not be possible without the participation of speculators. Speculators, or traders, assume the price risk that hedgers attempt to lay off in the markets. In other words, hedgers often depend on speculators to take the other side of their trades (i.e., act as counter party) and to add depth and liquidity to the markets that are vital for the functioning of an interest rate derivatives market.

Let's understand the same with an example:
For instance, assume, a farmer expects the price of wheat to fall in near future. He wants to hedge his price risk on wheat produce for next 3 months till the time he has actual produce in his hands and so would like to lock at the forward/ futures price now. Accordingly, farmer can sell futures contracts on the expected quantity of produce. In order to sell this futures contract, he needs a buyer. This buyer may be someone who needs wheat after three months, may be a flour mill or a bakery. However, most of the times, there is a demand supply mismatch in the market and the trader fills the gap between demand and supply. Here trader, counterparty to the farmer, is thinking in contrary i.e., this buyer will buy only if he thinks that actual price of wheat is going to be higher than the contract price for futures three months down the line. Further, the profit of trader would depend upon actual wheat price being more than the contracted futures price at the maturity of futures contract. If it is so, trader would make money otherwise he would lose money.

Arbitragers

In addition to hedgers and traders, to establish a link between various markets like spot and derivatives, we need a third type of participants called arbitragers. These arbitragers continuously hunt for the profit opportunities across the markets and products and seize those by executing trades in different markets and products simultaneously. Importantly, arbitragers generally lock in their profits unlike traders who trade naked contracts. This set of market participants identify mispricing in the market and use it for making profit. They have neither exposure to risk and nor do they take the risk. Arbitragers lock in a profit by simultaneously entering opposite side transactions in two or more markets. For example, if the relation between forward prices and futures prices differs, it gives rise to arbitrage opportunities. Difference in the equilibrium prices determined by the demand and supply at two different markets also gives opportunities to arbitrage. As more and more market players will realize this opportunity, they may also implement the arbitrage strategy and in the process will enable market to come to a level of equilibrium and the arbitrage opportunity may cease to exist.

For example, at the end of day (1st January 2020):
Market price of underlying asset (in Rs.) 100
March futures 110
Lot size 50
Here an arbitrageur will buy in the cash market at Rs. 100 and sell in the Futures market
at Rs. 110, thereby locking Rs. 10 as his profit on each unit. On the expiration date, suppose price (in Rs.) of the underlying asset is 108.

Cash Market	Futures
Buy 100	Sell 110
Sell 108	Buy 108
+8	+2

Total profit would therefore be (8+2=10) 10*50 = Rs. 500.

Suppose price (in Rs.) of the underlying asset is 95 on the expiration date.

Cash Market	Futures
Buy 100	Sell 110
Sell 95	Buy 95
-5	+15

Total profit is (-5+15=10) 10*50 = Rs. 500.

In the entire activity, the transaction cost, impact cost, carry cost/opportunity cost/borrowing cost, etc. have not been considered. In real life, all these costs have to be considered.

Here, it may be interesting to look at the risks these arbitragers carry. As seen before, arbitragers are executing positions in two or more markets/products simultaneously. Even if the systems are seamless and electronic and both the legs of transaction are liquid, there is a possibility of some gap between the executions of both the orders. If either leg of the transaction is illiquid then the risk on the arbitrage deal is huge as only one leg may get executed and another may not, which would open the arbitrager to the naked exposure of a position. Similarly, if contracts are not cash settled in both or one of the markets, it would need reversal of trades in the respective markets, which would result in additional risk on unwinding position with regard to simultaneous execution of the trades. These profit focused traders and Arbitragers fetch enormous liquidity to the products traded on the exchanges. This liquidity in turn results in better price discovery, lesser cost of transaction and lesser manipulation in the market.

22.2 Hedging through Exchange Traded Interest Rate Derivatives

For hedging and/or trading, we must decide three parameters: (1) instrument; (2) market size; and (3) Contract Month.

Instrument (i.e., T Bill or GOI Bond futures/options) will depend on the tenor of interest rate we want to trade. T-Bills price is determined by short-term rate of three months (because the underlying has a maturity of 91 days) and GOI Bond price is mainly determined by long term rate (assuming underlying is a 10Y bond).

Market side (i.e., buy or sell futures contract) will depend on our expectation about the direction of rate change in future/option and underlying instrument. If we expect the rate to go up in future, then the GOI bond price will fall in future, implying that we should sell futures contract/buy put option with underlying as GOI bond now and subsequently buy it when its price falls. Similarly, if we expect the rate to go down in future, then the GOI bond prices will rise in future, implying that we should buy futures contract/buy call option with underlying as GOI bond now and subsequently sell it later when its price rises. However, if underlying instrument is overnight MIBOR future, then for expectation of short-term rate will increase we should go long on overnight MIBOR future and for

expectation of short-term rate will decrease we should go short on overnight MIBOR futures. In case of hedging, market side will depend on what kind of risk participant have and what kind of derivatives product participant using for hedging the interest rate risk. For e.g. if participant wants to borrow money after 3 months, they will have risk of interest rate increasing. In such case they will take long position on interest rate. Now for hedging this risk through single bond interest rate futures, participant will sell futures (due inverse relation between interest rate and price of bonds), however if participant wants to hedge the risk through MIBOR futures, participant will go long on MIBOR futures.

Contract Month will depend on the timing of expected rate change. If we expect the rate change to occur in one month, we should choose a contract that expires in one month; if we expect the rate change to occur in three months, we should choose a contract that expires in three months; and so on. The following summarizes the selection of these parameters.

<table>
<tr><th>Parameter</th><th>Selection</th></tr>
<tr><td>Instrument</td><td>Linked to tenor of rate being traded
For 3M rate, use T Bill futures.
For 10Y rate, use 10Y GOI Bond futures/Option</td></tr>
<tr><td>Market side</td><td>Linked to expected change in the direction of rate.

<table>
<tr><th>Interest Rate Expectation</th><th>Market Side</th><th>Position</th></tr>
<tr><td>Interest Rate will increase.</td><td>Long on Interest Rate</td><td>Sell GOI bond futures
Buy GOI bond put option
Sell T-Bills Futures
Buy Overnight MIBOR future</td></tr>
<tr><td>Interest Rate will decrease</td><td>Short on Interest Rate</td><td>Buy GOI bond futures Buy GOI bond call option
Buy T-Bills futures
Sell overnight MIBOR futures</td></tr>
</table>
</td></tr>
<tr><td>Contract Month</td><td>Linked to when we expect the change in rate to occur
The timing of expected change in rate should be the same as contract month of futures/option</td></tr>
</table>

Hedging with futures: Hedging with futures can be implemented by undertaking a futures position as a temporary substitute for transactions to be made in the spot market at a later date. If a cash and futures prices move together any loss realized by the hedger from one position (either cash or futures) will be offset by a profit on the other position.

22.2.1 Short Hedge

A short hedge is used to protect against a decline in the cash price of a fixed income security. To execute a short hedge futures contracts are sold. By establishing a short hedge, a hedger has fixed future cash price and transferred the price risk of ownership to the buyer of the futures contract.

Example:

Date: September 20, 2021.

Investor 'X' holds 6.10% G-Secs 2031 worth Rs. 5 Crores at Rs. 100.00 (yield of bond 6.10%). There is a monetary policy review scheduled in October 2021 and investor expecting increase in yield of G-Sec securities post monetary policy, which will lead to reduction in G-Sec prices. Also, the investor is expecting new bond issuance in October 2021 with a higher coupon rate. Investor wants to sell the old bond and want to invest in new bond with higher coupon. What choices the investor has?

I. Sell bond now and invest in short maturity paper (T-Bills @3.20%)
II. Hold bond till October 28, 2021
III. Hold bond and hedge with interest rate futures.

As investor holding a bond, he is long on debt securities and short on interest rate. Investor is exposed to risk of increasing interest rate. So, Investor should go long on interest rate by taking short position in bond futures. To hedge the position, investor has sold 6.10% G-Secs 2031 October 2021 expiry (October 28, 2021) futures at Rs. 99.95. Since one contract is of notional value of Rs. 200000, investor will sale 250 lots (= Rs 5 Crores / Rs 2 lacs).

On expiry, October 28, 2021, the price of a bond is Rs. 98.36 (yield 6.32%). Let us examine the pay-off on expiry on all three scenarios.

Scenario I : Sell bond now and invest in T-Bills		
Trade Date	September 20, 2021	
Settlement Date	September 21, 2021	G-Secs are settled on T+1
Clean Price	Rs. 100	
Accrued Interest	Rs.1.169167	For 69 Days (Basis-30/360)
Total Consideration	Rs. 50584583.33	
Amount invested in T-Bills	Rs. 50584583.33	
No. of Days for investment	38	
Return on T-Bills	Rs. 168522.89	38 days return on T-Bills @3.20%
Amount available on Expiry	**Rs. 50753106.22**	

Scenario II : Hold Bond till October 28, 2021		
Trade Date	October 28, 2021	
Settlement Date	October 29, 2021	G-Secs are settled on T+1
Clean Price	Rs. 98.36	
Accrued Interest	Rs.1.81306	107 Days (Basis-30/360)
Amount available on Expiry	**Rs. 50086527.78**	

Scenario III: Hold bond and hedge with interest rate futures		
Underlying Transaction		
Trade Date	October 28, 2021	
Settlement Date	October 29, 2021	G-Secs are settled on T+1
Clean Price	Rs. 98.36	

Accrued Interest	Rs.1.81306	For 107 Days (Basis-30/360)
Total Consideration (A)	50086527.77	
Interest Rate Future Transaction		
Trade Date	September 20, 2021	
Short Futures @	Rs.99.95	250 lots
On Expiry	October 28, 2021	
Expiry Price	Rs.98.36	
Profit on Futures (B)	Rs. 795000	(99.95-98.36)*250*2000
Amount available on Expiry (A) +(B)	**Rs. 50881527.78**	

Similarly, a fund manager knows that bonds must be liquidated in 45 days to make a payment to beneficiaries. If interest rates rise during the 45 days, more bonds need to be liquidated at a lower price than todays to realize the payment to beneficiary. To protect against this possibility, fund manager can sell bonds futures in the futures market to lock selling price.

Scenario Comparison

	Scenario 1	**Scenario 2**	**Scenario 3**
Total amount available on expiry	Rs. 50753106.22	Rs. 50086527.78	Rs. 50881527.78
Advantage	Avoid interest rate risk by investing in short term paper	Accrued interest on holding security Beneficial if price of bond increase	Accrued interest on holding security No exposure to interest rate risk
Limitation	Loosing on accrued interest	Expose to interest rate risk	Impact cost in IRF Matching of Expiry price with trade price on expiry (As cash settled transaction) Opportunity loss in case of increase in GOI price

One need to considered cost of transaction, liquidity, etc., while executing such strategy.

22.2.2 Portfolio Based Hedging:

In the above example, we have seen the hedging of same bond through interest rate futures. However, in reality the investors/bond holder will hold multiple bonds of different maturity and interest rate futures may not be available on all these bonds. How will investor hedge its position with single bond futures?

A duration-based hedge ratio is a hedge ratio constructed when interest rate futures contracts are used to hedge positions in an interest-dependent asset, usually bonds money market securities. To

reduce interest rate risk in a debt portfolio, investor may hedge the portfolio or part of the portfolio (including one or more securities) on weighted average modified duration basis by using Interest Rate Futures (IRFs). The maximum extent of short position that may be taken in IRFs to hedge interest rate risk of the portfolio, or part of the portfolio, is as per the formula given below:

$$\frac{\text{(Portfolio Modified Duration * Market Value of the Portfolio)}}{\text{(Futures Modified Duration * Futures Price / PAR)}}$$

The above ratio can be used to make the duration of the entire position zero.

Example: An investor has a Rs. 26 Crores portfolio of GOI bonds with portfolio duration of 6.1. The bond futures have duration of 4.7. The one-month GOI bond futures price is Rs. 98.50. What is the number of futures contracts to fully hedge the portfolio?

$$\text{Number of lots} = \frac{(26,00,00,000 * 6.1)}{(98.50 * 4.7 * 2000)}$$ (as 1 lot = 2000 units)

Therefore, Number of lots = 1713 lots (approx.)

The limitation of employing a duration-based hedging strategy has much to do with the fact that duration measures are only accurate for small changes in yield. For large changes in yield, the price/yield relationship is not linear but is actually convex. Thus, using the strategy in the face of large moves in yield will result in "underhedging". Further, the price of portfolio & futures contract may not move in tandem leads to basis risk.

22.2.3 Hedging Future Borrowing

In case a participant wants to borrow money in future and expecting that the interest rate will rise in future, he/she can use bond futures for hedging against such scenario.

For example, a corporate wants to issue NCDs for 10 years after 1 month. Generally, they are able to borrow at 50 basis point spread over the G-Secs. In such case the Institution sells IRF contracts to hedge against the rise in interest rates.

Trade Date	14th August 20XX	24th September 20XX
IRF	7.59% GOI 20XX	7.59% GOI 20XX
Expiry Date	24th September 20XX	24th September 20XX
Position	Sell	Settlement @ FSP
Futures Price / FSP	Rs. 95.60	Rs. 94.80
Yield @ Futures Price	7.93%	8.08%

The Institution gains Rs 0.80 (=95.60-94.80) per bond in IRF. Hence, borrowing cost for institution will reduce to the extent of its gain in IRF. The Institution has effectively locked its borrowing cost

at lower rate. Please note that, this will not provide perfect hedge to market participants as the underlying instruments are different and hence there will be a basis risk.

22.2.4 Long Hedge

Long hedges are usually initiated by traders who intend purchasing an asset in the future and are concerned that prices may rise in the interim period. In case of interest rate derivatives, investors want to invest in fixed income securities in future and are concerned that the interest rate will go down in futures (i.e., prices may rise in futures) and wants to hedge against the same. In a long hedge, the hedger buys a futures contract to lock in purchase price / yield. An insurance company's Fund Manager may use a long hedge when substantial cash contributions are expected and the manager is concerned that the interest rate will fall. Also, a bond trader who knows that bonds are maturing in near future and expects that interest rate will fall can employ a long hedge to lock in a rate.

Example:

An Insurance company 'X' is expecting to receive policy premiums worth Rs. 200 Crores in the month of March 2020. However, fund manager is concerned about the fall in interest rate. On February 12, 20XX, the underlying 6.45% G-Secs 2029 was trading at Rs. 99.79 (yield of bond 6.48%) the March 20XX expiry series of 6.45% G-Secs 2029 future was trading at Rs. 99.60 (future yield 6.51%). Fund manager has taken long position for RS. 200 Crores (10000 lots) in 6.45% G-Secs 2029 March' XX expiry futures contract.

On March 26, 20XX (expiry date) the 6.45% G-Secs 2029 was trading at Rs. 101.58 (yield of 6.23%). If the contract is physically settled, the fund manager will receive the bond at Rs. 99.60 with yield of 6.51%. In case of cash settlement, the profit from future for fund manager Rs. 3.96 Crores { = (101.58-99.60)*10000 lots*2000 units} which can be invested in bond to earn higher interest/yield.

Hedging is a risk management strategy employed to offset losses in investments by taking an opposite position in a related asset. The reduction in risk provided by hedging also typically results in a reduction in potential profits. So, in case of long hedge example (section 5.2.4), if on March 26, 20XX (expiry date) the 6.45% G-Secs 2029 was trading at Rs. 99.00 (6.59%). The insurance company will have loss from the futures position which will be a loss of Rs. 1.20 Crores { = (99.60-99.00)*10000 lots*2000 units} which will reduce the overall return for the insurance company.

Since an option contract provides the contract buyer the right, but not the obligation, to buy or sell an asset or financial instrument at a fixed price on or before a predetermined future month, the participant can also use option to hedge their position. The maximum risk to the buyer of an option is limited to the premium paid. So, in case of long hedge example (section 5.2.4) the company may buy GOI bond call option and hedge the position. Similarly, for short hedge (section 5.2.1) and hedging future borrowing (section 5.2.3) the company hedge by buying GOI bond put option. We will discuss about various option strategies in detail in next section.

22.3 Option Trading Strategies

Having understood the risk / return profiles for vanilla call / put options in earlier chapter, now we turn to using these products to our advantage – called option strategies. The only limiting factor for strategies is the thought of the trader / strategy designer. As long as the trader can think of innovative combinations of various options, newer strategies will keep coming to the market. Exotic products (or 'exotics') are nothing but a combination of different derivative products. In this section, we will see some of the most commonly used strategies.

22.3.1 Option Spreads

Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities. These are limited profit and limited loss positions. They are primarily categorized into three sections as:

- Vertical Spreads
- Horizontal Spreads
- Diagonal Spreads

Vertical Spreads

Vertical spreads are created by using options having same expiry but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:

- Bullish Vertical Spread
  - Using Calls
  - Using Puts
- Bearish Vertical Spread
  - Using Calls
  - Using Puts

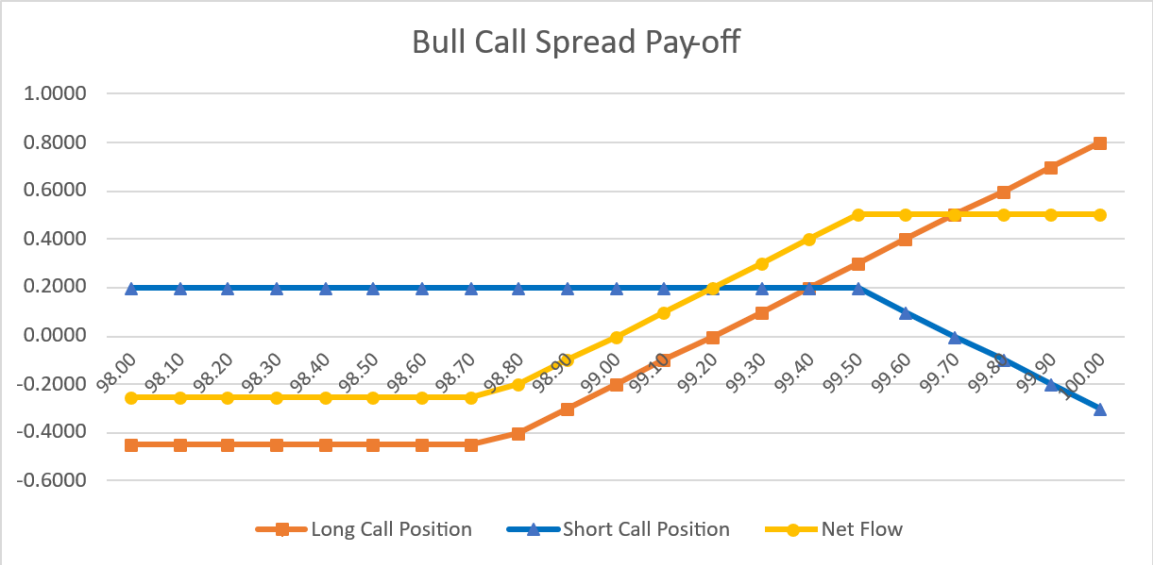
22.3.1.1 Bullish Vertical Spread using Calls

A bull spread is created when the underlying view on the market is positive, but the trader would also like to reduce his cost on position. So, he takes one long call position with lower strike and sells a call option with higher strike. As lower strike call will cost more than the premium earned by selling a higher strike call, although the cost of position reduces, the position is still a net cash outflow position to begin with. Secondly, as higher strike call is shorted, all gains on long call beyond the strike price of short call would get negated by losses of the short call. To take more profits from his long call, trader can short as high strike call as possible, but this will result in his cost coming down only marginally, as higher strike call will fetch lesser and lesser premium.

Say, for example, a trader is bullish on bond (assumes interest rate will go down), so he decides to go long on 98.75 strike call option by paying a premium of 0.45 and he expects market to not go above 99.50, so he shorts a 99.50 call option and receives a premium of 0.20. His pay off for various price moves will be as follows:

Option Type	Call	Call
Long/Short	Long	Short
Strike Price	98.75	99.50
Premium	0.45	0.20
Spot	99.000	

GOI Security Price @ Expiry	Long Call Position	Short Call Position	Net Flow
98.00	-0.4500	0.2000	-0.2500
98.10	-0.4500	0.2000	-0.2500
98.20	-0.4500	0.2000	-0.2500
98.30	-0.4500	0.2000	-0.2500
98.40	-0.4500	0.2000	-0.2500
98.50	-0.4500	0.2000	-0.2500
98.60	-0.4500	0.2000	-0.2500
98.70	-0.4500	0.2000	-0.2500
98.80	-0.4000	0.2000	-0.2000
98.90	-0.3000	0.2000	-0.1000
99.00	-0.2000	0.2000	0.0000
99.10	-0.1000	0.2000	0.1000
99.20	0.0000	0.2000	0.2000
99.30	0.1000	0.2000	0.3000
99.40	0.2000	0.2000	0.4000
99.50	0.3000	0.2000	0.5000
99.60	0.4000	0.1000	0.5000
99.70	0.5000	0.0000	0.5000
99.80	0.6000	-0.1000	0.5000
99.90	0.7000	-0.2000	0.5000
100.00	0.8000	-0.3000	0.5000



As can be seen from the above pay off chart, it is a limited profit and limited loss position. Maximum profit in this position is Rs.0.50 (99.50-98.75-0.25), which will be when both options will get exercised i.e., on and above Rs. 99.50 and maximum loss is Rs.0.25 (0.45-0.20) when both option unexercised i.e., on or below Rs. 98.75 and BEP for this is Rs. 99.00 (98.75+0.45-0.20).

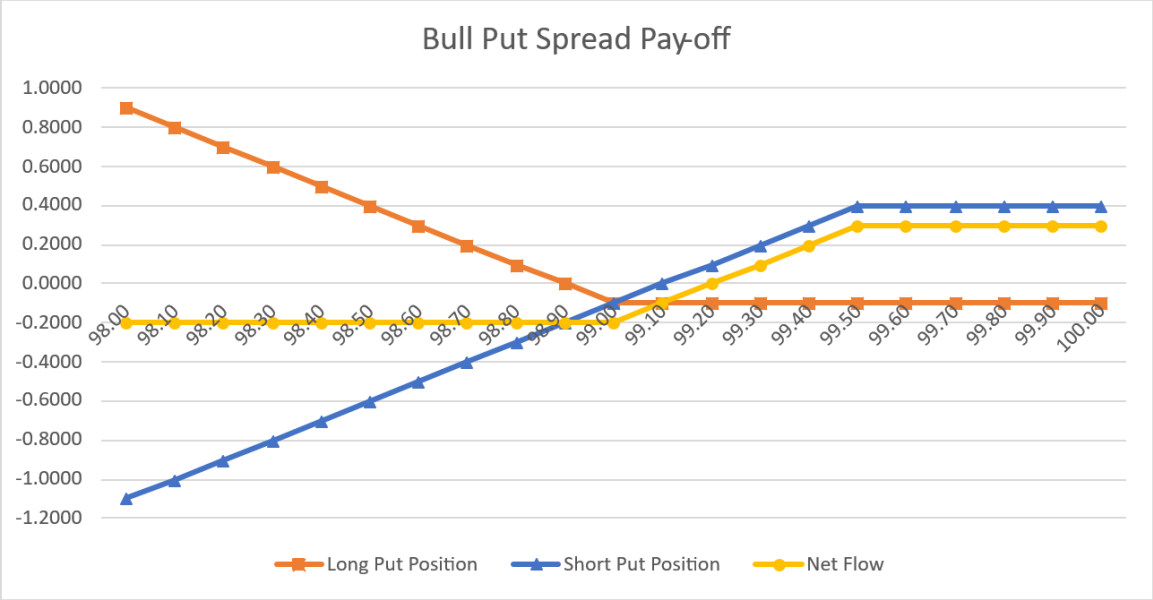
22.3.1.2 Bullish Vertical Spread using Puts

Here again, the call on the market is bullish, hence, the trader would like to short a put option. If prices go up, trader will end up with the premium on sold puts. However, in case prices go down, the trader would be facing risk of unlimited losses. In order to protect to his downside, he may buy a put option with a lower strike. While this would reduce his overall upfront premium, benefit would be the embedded insurance against unlimited potential loss on short put. This is a net premium receipt strategy.

Let us see this with the help of an example, where the trader goes short in a put option of strike 99.50 and receives a premium of 0.40 and goes long in a put option of strike 99.00 and pays a premium of 0.10:

Option Type	Put	Put
Long / Short	Long	Short
Strike Price	99	99.50
Premium	0.10	0.40
Spot	99.60	

GOI Security Price @ Expiry	Long Put Position	Short Put Position	Net Flow
98.00	0.9000	-1.1000	-0.2000
98.10	0.8000	-1.0000	-0.2000
98.20	0.7000	-0.9000	-0.2000
98.30	0.6000	-0.8000	-0.2000
98.40	0.5000	-0.7000	-0.2000
98.50	0.4000	-0.6000	-0.2000
98.60	0.3000	-0.5000	-0.2000
98.70	0.2000	-0.4000	-0.2000
98.80	0.1000	-0.3000	-0.2000
98.90	0.0000	-0.2000	-0.2000
99.00	-0.1000	-0.1000	-0.2000
99.10	-0.1000	0.0000	-0.1000
99.20	-0.1000	0.1000	0.0000
99.30	-0.1000	0.2000	0.1000
99.40	-0.1000	0.3000	0.2000
99.50	-0.1000	0.4000	0.3000
99.60	-0.1000	0.4000	0.3000
99.70	-0.1000	0.4000	0.3000
99.80	-0.1000	0.4000	0.3000
99.90	-0.1000	0.4000	0.3000
100.00	-0.1000	0.4000	0.3000



As can be seen from the above pay off chart, it is a limited profit and limited loss position. Maximum profit in this position is 0.30 (0.40-0.10) and maximum loss is 0.20 (99.50-99.00-0.30) BEP for this spread is 99.20 (99.50-0.30). Maximum profit in this position will be when both the options expire unexercised and the maximum loss will be when both the options get exercised.

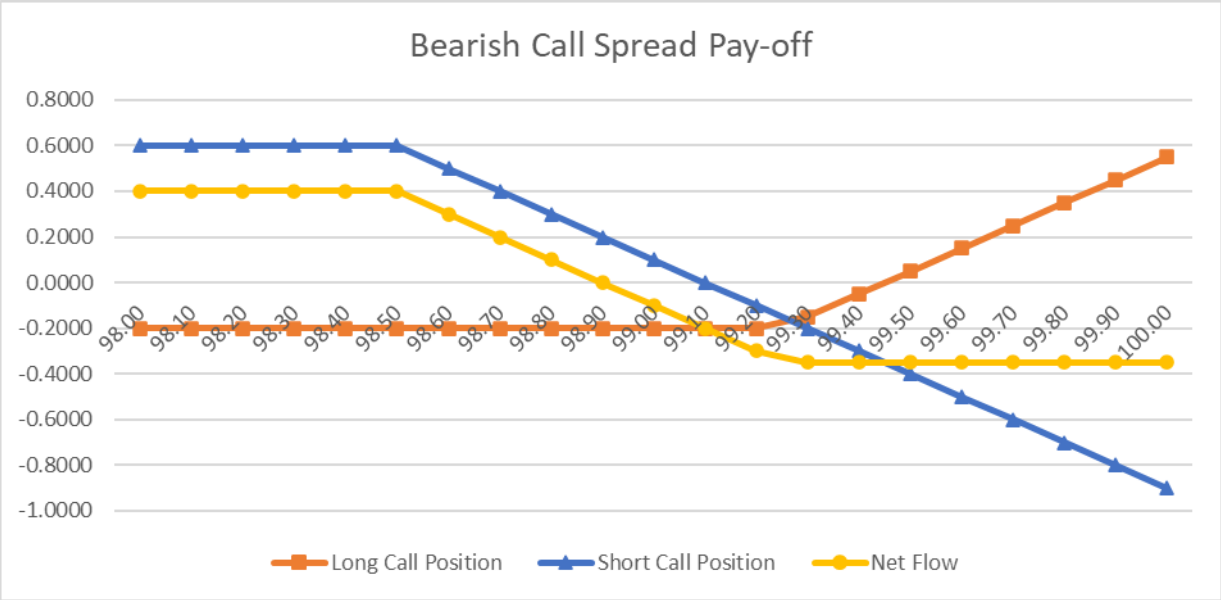
22.3.1.3 Bearish Vertical Spread using Calls

Here, the trader is bearish on the bond prices (i.e., assumes interest rate will go up) and so he shorts a low strike high premium call option. The risk in a naked short call is that if prices rise, losses could be unlimited. So, to prevent his unlimited losses, he longs a high strike call and pays a lesser premium. Thus, in this strategy, he starts with a net inflow.

Option Type	Call	Call
Long/Short	Long	Short
Strike Price	99.25	98.5
Premium	0.20	0.60
Spot	99.000	

GOI Security Price @ Expiry	Long Call Position	Short Call Position	Net Flow
98.00	-0.2000	0.6000	0.4000
98.10	-0.2000	0.6000	0.4000
98.20	-0.2000	0.6000	0.4000
98.30	-0.2000	0.6000	0.4000
98.40	-0.2000	0.6000	0.4000
98.50	-0.2000	0.6000	0.4000
98.60	-0.2000	0.5000	0.3000
98.70	-0.2000	0.4000	0.2000
98.80	-0.2000	0.3000	0.1000
98.90	-0.2000	0.2000	0.0000

GOI Security Price @ Expiry	Long Call Position	Short Call Position	Net Flow
99.00	-0.2000	0.1000	-0.1000
99.10	-0.2000	0.0000	-0.2000
99.20	-0.2000	-0.1000	-0.3000
99.30	-0.1500	-0.2000	-0.3500
99.40	-0.0500	-0.3000	-0.3500
99.50	0.0500	-0.4000	-0.3500
99.60	0.1500	-0.5000	-0.3500
99.70	0.2500	-0.6000	-0.3500
99.80	0.3500	-0.7000	-0.3500
99.90	0.4500	-0.8000	-0.3500
100.00	0.5500	-0.9000	-0.3500



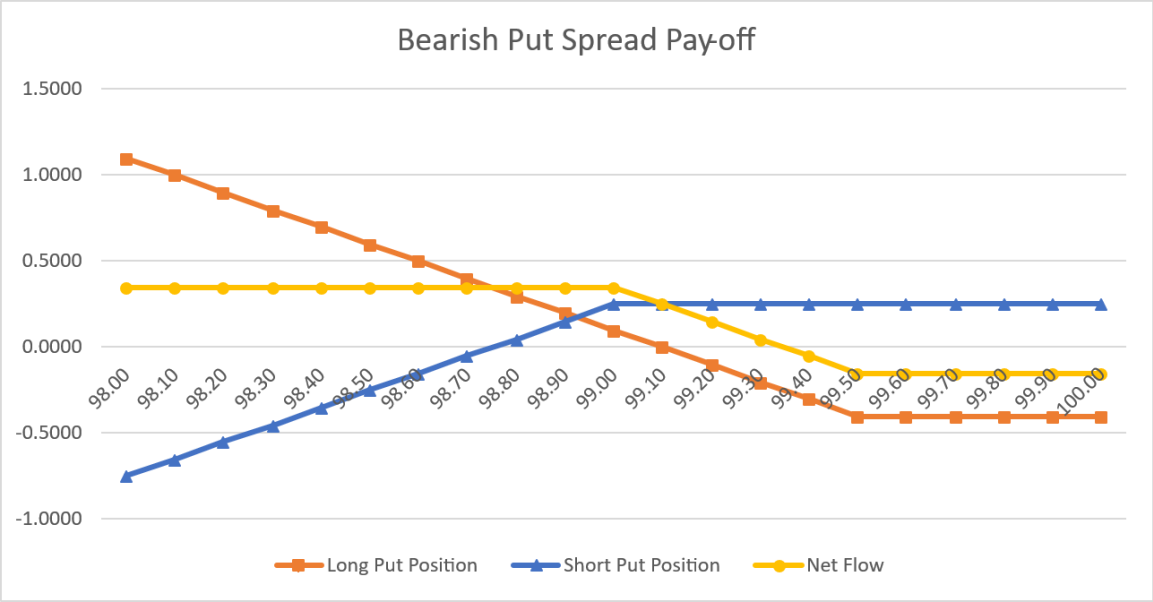
As can be seen from the above pay-off chart, it is a limited profit and limited loss position. Maximum profit in this position is Rs. 0.40 and maximum loss is Rs.0.35. BEP for this position is 98.90. Maximum profit in this position when bond prices will go down and both options will get unexercised and maximum loss when bond prices will go up and both options get exercised.

22.3.1.4 Bearish Vertical Spread using Puts

Here, again the trader is bearish on the market and so goes long in one put option by paying a premium. Further, to reduce his cost, he shorts another low strike put and receives a premium.

Option Type	Put	Put
Long / Short	Buy	Sell
Strike Price	99.5	99
Premium	0.40	0.25
Spot	99.400	

GOI Security Price @ Expiry	Long Put Position	Short Put Position	Net Flow
98.00	1.1000	-0.7500	0.3500
98.10	1.0000	-0.6500	0.3500
98.20	0.9000	-0.5500	0.3500
98.30	0.8000	-0.4500	0.3500
98.40	0.7000	-0.3500	0.3500
98.50	0.6000	-0.2500	0.3500
98.60	0.5000	-0.1500	0.3500
98.70	0.4000	-0.0500	0.3500
98.80	0.3000	0.0500	0.3500
98.90	0.2000	0.1500	0.3500
99.00	0.1000	0.2500	0.3500
99.10	0.0000	0.2500	0.2500
99.20	-0.1000	0.2500	0.1500
99.30	-0.2000	0.2500	0.0500
99.40	-0.3000	0.2500	-0.0500
99.50	-0.4000	0.2500	-0.1500
99.60	-0.4000	0.2500	-0.1500
99.70	-0.4000	0.2500	-0.1500
99.80	-0.4000	0.2500	-0.1500
99.90	-0.4000	0.2500	-0.1500
100.00	-0.4000	0.2500	-0.1500



As can be seen from the above pay-off chart, it is a limited profit and limited loss position. Maximum profit in this position is Rs. 0.35 and maximum loss is Rs.0.15. BEP for this position is 99.35. Maximum profit in this position when bond prices will go down and both options will get exercised and maximum loss when bond prices will go up and both options get unexercised.

22.3.2 Horizontal Spread

Horizontal spread involves same strike, same type but different expiry options. This is also known as time spread or calendar spread. Here, it is not possible to draw the payoff chart as the expiries underlying the spread are different. Underlying reasoning behind horizontal spreads is that these two options would have different time values and the trader believes that difference between the time values of these two options would shrink or widen. This is essentially a play on premium difference between two options prices squeezing or widening.

22.3.3 Diagonal spread

Diagonal spread involves combination of options having same underlying but different expiries as well as different strikes. Again, as the two legs in a spread are in different maturities, it is not possible to draw pay offs here as well. These are much more complicated in nature and in execution.

22.3.4 Straddle

This strategy involves two options of same strike prices and same maturity. A long straddle position is created by buying a call and a put option of same strike and same expiry whereas a short straddle is created by shorting a call and a put option of same strike and same expiry.

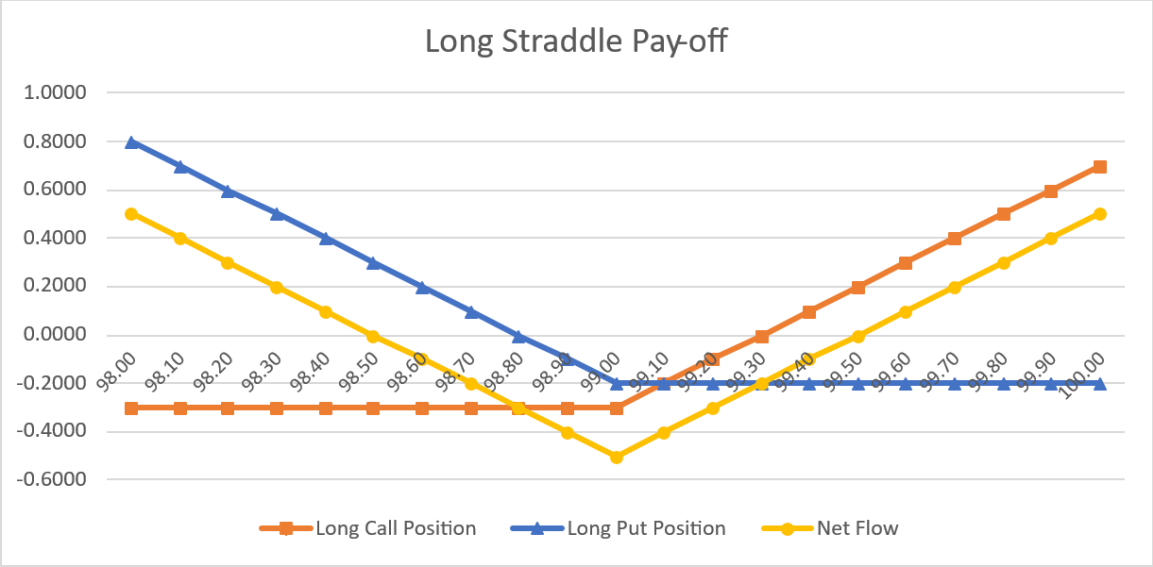
22.3.4.1 Long Straddle

If a person buys both a call and a put at same strike price, then his maximum loss will be equal to the sum of these two premiums paid and, price movement from here (in either direction) would first result in that person recovering his premium and then making profit. This position is undertaken when trader's view on bond price of the underlying is uncertain (due to uncertainty about interest rate / bond yield movement), but he thinks that in whatever direction the market moves, it would move significantly in that direction.

As the bond price keeps moving up, loss on long put position is limited to premium paid, whereas profit on long call position keeps increasing. Thus, it can be seen that for huge swings in either direction, the strategy yields profits. However, there would be a band within which the position would result into losses. This position would have two Break even points (BEPs) and they would lie at "Strike – Total Premium" and "Strike + Total Premium". Combined pay-off may be shown as follows:

Option Type	Call	Put
Long/Short	Long	Long
Strike Price	99	99
Premium	0.3	0.2
Spot	99.000	

GOI Security Price @ Expiry	Long Call Position	Long Put Position	Net Flow
98.00	-0.3000	0.8000	0.5000
98.10	-0.3000	0.7000	0.4000
98.20	-0.3000	0.6000	0.3000
98.30	-0.3000	0.5000	0.2000
98.40	-0.3000	0.4000	0.1000
98.50	-0.3000	0.3000	0.0000
98.60	-0.3000	0.2000	-0.1000
98.70	-0.3000	0.1000	-0.2000
98.80	-0.3000	0.0000	-0.3000
98.90	-0.3000	-0.1000	-0.4000
99.00	-0.3000	-0.2000	-0.5000
99.10	-0.2000	-0.2000	-0.4000
99.20	-0.1000	-0.2000	-0.3000
99.30	0.0000	-0.2000	-0.2000
99.40	0.1000	-0.2000	-0.1000
99.50	0.2000	-0.2000	0.0000
99.60	0.3000	-0.2000	0.1000
99.70	0.4000	-0.2000	0.2000
99.80	0.5000	-0.2000	0.3000
99.90	0.6000	-0.2000	0.4000
100.00	0.7000	-0.2000	0.5000



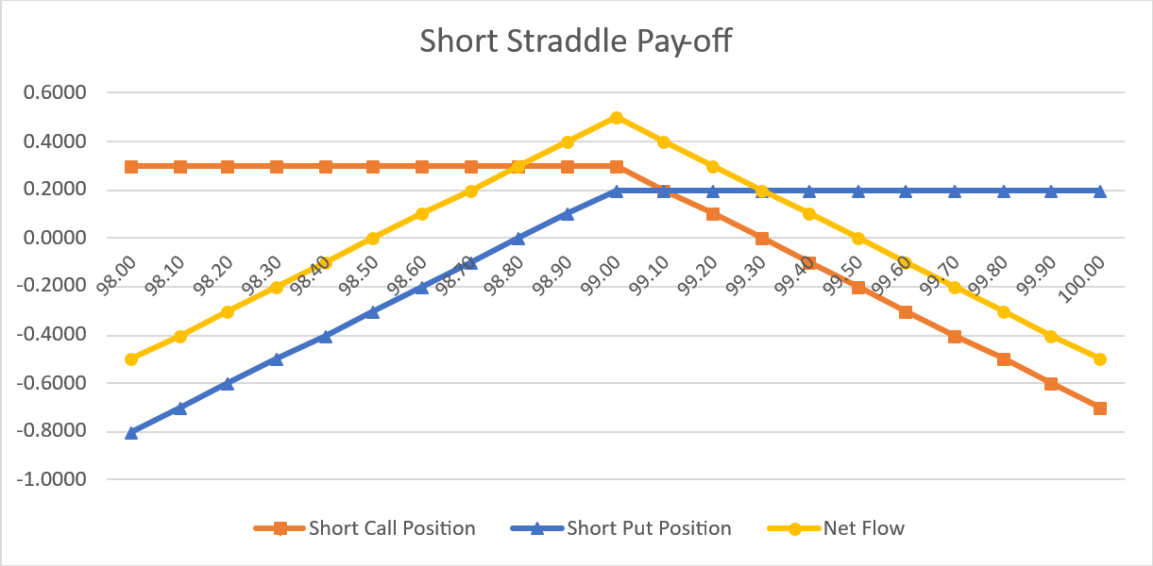
As can be seen from the above pay-off chart, it is limited loss and unlimited profit strategy. It may be noted from the table and picture, that maximum loss of Rs. 0.50 would occur to the trader if underlying expires at strike of option Rs.99.00. Further, as long as underlying expires between Rs.98.50 and Rs.99.50, he would always incur the loss and that would depend on the level of underlying. His profit would start only after recovery of his total premium of Rs.0.50, in either direction, and that is the reason there are two breakeven points in this strategy.

22.3.4.2 Short Straddle

This would be the exact opposite of long straddle. Here, trader's view is that the price of underlying would not move much or remain stable (i.e., not much movement in interest rate/yield of bond). So, he sells a call and a put so that he can profit from the premiums. As position of short straddle is just opposite of long straddle, the payoff chart would be just inverted, so what was loss for long straddle would become profit for short straddle. Position may be shown as follows:

Option Type	Call	Put
Long/Short	Short	Short
Strike Price	99	99
Premium	0.3	0.2
Spot	99.000	

GOI Security Price @ Expiry	Short Call Position	Short Put Position	Net Flow
98.00	0.3000	-0.8000	-0.5000
98.10	0.3000	-0.7000	-0.4000
98.20	0.3000	-0.6000	-0.3000
98.30	0.3000	-0.5000	-0.2000
98.40	0.3000	-0.4000	-0.1000
98.50	0.3000	-0.3000	0.0000
98.60	0.3000	-0.2000	0.1000
98.70	0.3000	-0.1000	0.2000
98.80	0.3000	0.0000	0.3000
98.90	0.3000	0.1000	0.4000
99.00	0.3000	0.2000	0.5000
99.10	0.2000	0.2000	0.4000
99.20	0.1000	0.2000	0.3000
99.30	0.0000	0.2000	0.2000
99.40	-0.1000	0.2000	0.1000
99.50	-0.2000	0.2000	0.0000
99.60	-0.3000	0.2000	-0.1000
99.70	-0.4000	0.2000	-0.2000
99.80	-0.5000	0.2000	-0.3000
99.90	-0.6000	0.2000	-0.4000
100.00	-0.7000	0.2000	-0.5000



It should be clear that this strategy is limited profit and unlimited loss strategy and should be undertaken with significant care. Further, it will incur the loss for trader if market moves significantly in either direction – up or down.

22.3.5 Strangle

This strategy is similar to straddle in outlook but different in implementation, aggression and cost.

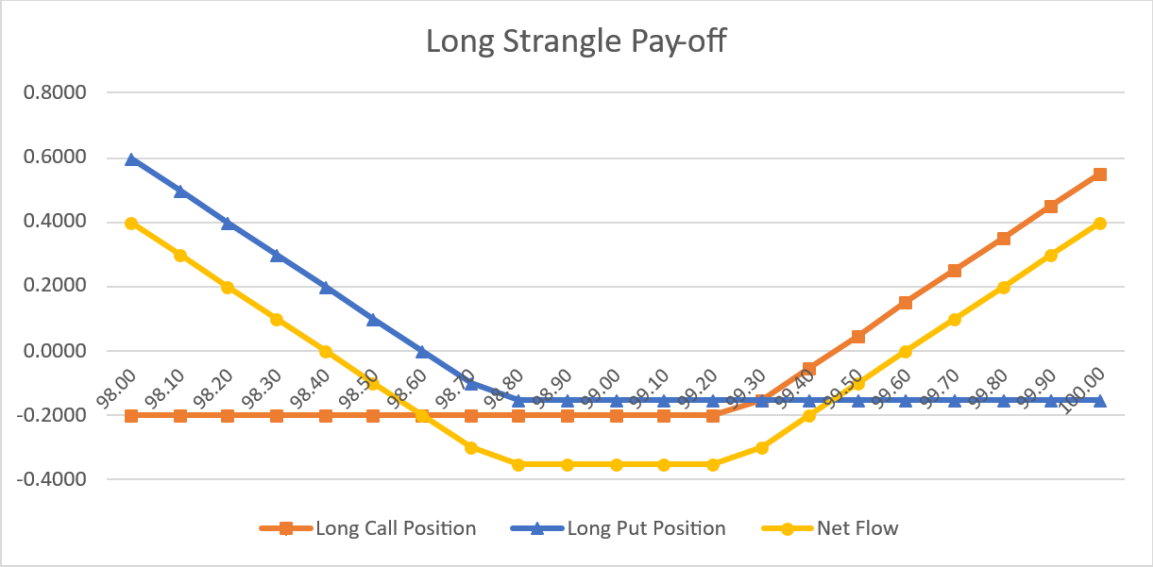
22.3.5.1 Long Strangle

As in case of long strangle, the outlook here (for the long strangle position) is that the market will move substantially in either direction, but while in straddle, both options have same strike price, in case of a strangle, the strikes are different. Also, both the options (call and put) in this case are out-of-the-money and hence premium paid is low.

Let us say the underlying bond price Rs.99. Rs. 99.25 strike call is available at 0.20 and Rs.98.75 put is trading at a premium of 0.15. Both these options are out-of-the-money. If a trader goes long on both these options, then his maximum cost would be equal to the sum of the premiums of both these options. This would also be his maximum loss in worst case situation. However, if market starts moving in either direction, his loss would remain same for some time and then reduce. And, beyond a point in either direction, he would make money.

Option Type	Call	Put
Long/Short	Long	Long
Strike Price	99.25	98.75
Premium	0.2	0.15
Spot	99.000	

GOI Security Price @ Expiry	Long Call Position	Long Put Position	Net Flow
98.00	-0.2000	0.6000	0.4000
98.10	-0.2000	0.5000	0.3000
98.20	-0.2000	0.4000	0.2000
98.30	-0.2000	0.3000	0.1000
98.40	-0.2000	0.2000	0.0000
98.50	-0.2000	0.1000	-0.1000
98.60	-0.2000	0.0000	-0.2000
98.70	-0.2000	-0.1000	-0.3000
98.80	-0.2000	-0.1500	-0.3500
98.90	-0.2000	-0.1500	-0.3500
99.00	-0.2000	-0.1500	-0.3500
99.10	-0.2000	-0.1500	-0.3500
99.20	-0.2000	-0.1500	-0.3500
99.30	-0.1500	-0.1500	-0.3000
99.40	-0.0500	-0.1500	-0.2000
99.50	0.0500	-0.1500	-0.1000
99.60	0.1500	-0.1500	0.0000
99.70	0.2500	-0.1500	0.1000
99.80	0.3500	-0.1500	0.2000
99.90	0.4500	-0.1500	0.3000
100.00	0.5500	-0.1500	0.4000



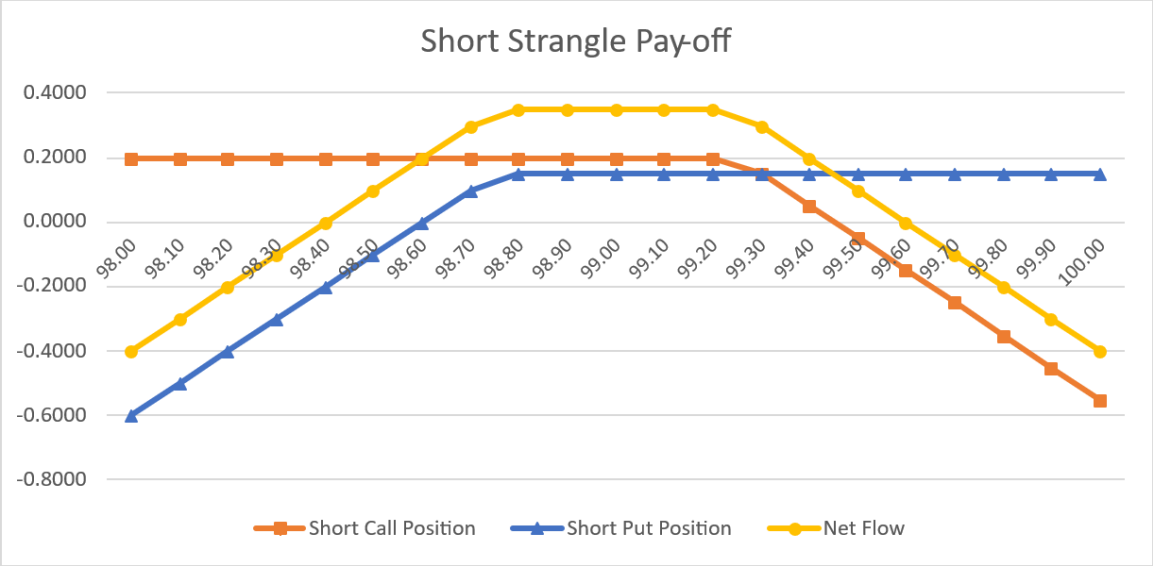
In this position, maximum profit for the trader would be unlimited in both the directions– up or down and maximum loss would be limited to Rs. 0.35, which would occur if underlying expires at any price between 98.75 and 99.25. Position would have two BEPs at 98.40 and 99.60. Until underlying crosses either of these prices, trader would always
incur loss.

22.3.5.2 Short Strangle

This is exactly opposite to the long strangle with two out-of-the-money options (call and put) shorted. Outlook, like short straddle, is that market will remain stable over the life of options. Pay offs for this position will be exactly opposite to that of a long strangle position. As always, the short position will make money, when the long position is in loss and vice versa.

Option Type	Call	Put
Long/Short	Short	Short
Strike Price	99.25	98.75
Premium	0.2	0.15
Spot	99.000	

GOI Security Price @ Expiry	Short Call Position	Short Put Position	Net Flow
98.00	0.2000	-0.6000	-0.4000
98.10	0.2000	-0.5000	-0.3000
98.20	0.2000	-0.4000	-0.2000
98.30	0.2000	-0.3000	-0.1000
98.40	0.2000	-0.2000	0.0000
98.50	0.2000	-0.1000	0.1000
98.60	0.2000	0.0000	0.2000
98.70	0.2000	0.1000	0.3000
98.80	0.2000	0.1500	0.3500
98.90	0.2000	0.1500	0.3500
99.00	0.2000	0.1500	0.3500
99.10	0.2000	0.1500	0.3500
99.20	0.2000	0.1500	0.3500
99.30	0.1500	0.1500	0.3000
99.40	0.0500	0.1500	0.2000
99.50	-0.0500	0.1500	0.1000
99.60	-0.1500	0.1500	0.0000
99.70	-0.2500	0.1500	-0.1000
99.80	-0.3500	0.1500	-0.2000
99.90	-0.4500	0.1500	-0.3000
100.00	-0.5500	0.1500	-0.4000



In this position, maximum loss for the trader would be unlimited in both the directions –up or down and maximum profit would be limited to Rs. 0.35, which would occur if underlying expires at any price between 98.75 and 99.25. Position would have two BEPs at 98.40 and 99.60. Until underlying crosses either of these prices, trader would always
make profit.

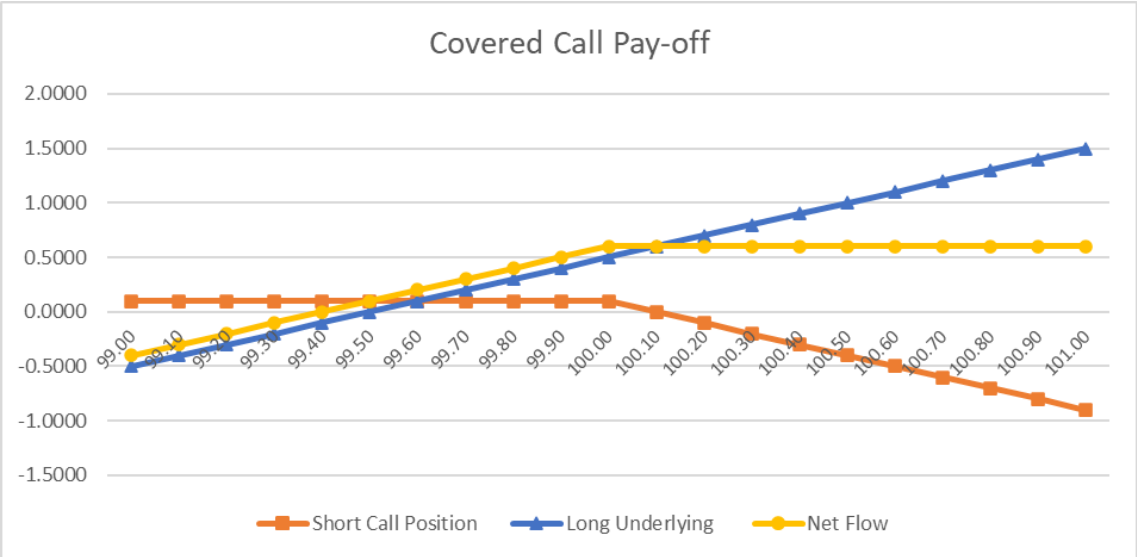
22.3.6 Covered Call

Writing covered calls is a strategy that sells volatility in return of fees. This strategy is used to generate extra income from existing holdings in the bonds. If an investor has bought bond and intends to hold them for some time, then he would like to earn some additional income on that bond (other than coupon), without selling it, thereby reducing his cost of acquisition/increasing the return on bond.

Suppose an investor buys a bond in the underlying market at Rs. 99.50 and also sells a call option with a strike price of Rs.100 at a premium of Rs.0.10, thereby earning Rs. 0.10 as premium. Combined position of long bond and short call would generate the pay-off as defined in the table and picture below:

Option Type	Call	-
Long/Short	Short	Long Underlying
Strike Price	100	99.5
Premium	0.1	-

GOI Security Price @ Expiry	Short Call Position	Long Underlying	Net Flow[133]
99.00	0.1000	-0.5000	-0.4000
99.10	0.1000	-0.4000	-0.3000
99.20	0.1000	-0.3000	-0.2000
99.30	0.1000	-0.2000	-0.1000
99.40	0.1000	-0.1000	0.0000
99.50	0.1000	0.0000	0.1000
99.60	0.1000	0.1000	0.2000
99.70	0.1000	0.2000	0.3000
99.80	0.1000	0.3000	0.4000
99.90	0.1000	0.4000	0.5000
100.00	0.1000	0.5000	0.6000
100.10	0.0000	0.6000	0.6000
100.20	-0.1000	0.7000	0.6000
100.30	-0.2000	0.8000	0.6000
100.40	-0.3000	0.9000	0.6000
100.50	-0.4000	1.0000	0.6000
100.60	-0.5000	1.1000	0.6000
100.70	-0.6000	1.2000	0.6000
100.80	-0.7000	1.3000	0.6000
100.90	-0.8000	1.4000	0.6000
101.00	-0.9000	1.5000	0.6000



From the table and the pay-off chart we can see that the net position of a covered call strategy looks like 'short put' with a strike of 100 with premium Rs.0.60. This is called synthetic short put position. If at that point of time, a Rs.100 strike put is available at say 0.50, an arbitrage opportunity exists, where the trader can create a synthetic short put position (covered call), earn a Rs. 0.60 premium and use the proceeds to buy a Rs.100 strike put for Rs.0.50, thereby making a risk-free profit of

133 The coupon / accrued interest earned on holding bond is not considered for the calculation

Rs.0.10. Indeed, one needs to also provide for frictions in the market like brokerage, taxes, administrative costs, funding costs etc.

The most important factor in this strategy is the strike of the sold call option. If strike is close to the prevailing price of underlying bond, it would fetch higher premium upfront but would lock the potential gain from the bond early. And, if strike is too far from the current price of underlying, while it would fetch low upfront premium, would provide for longer ride of money on underlying bond. One has to decide on this subject based on one's view on the bond and choice between upfront premium from the option and potential gain from underlying.

A simple perspective on strike choice for covered call is that, till the time the cash market price does not reach the pre-determined exit price, the long cash position can be used to sell calls of that target strike price.

22.3.7 Protective Put

Any investor, long in the underlying bond market, always runs the risk of a fall in prices and thereby reduction of portfolio value and MTM losses. A fund manager, who is anticipating a fall, can either sell his entire portfolio or short futures to hedge his portfolio. In both cases, he is out of the market, as far as profits from upside are concerned. What can be done to remain in the market, reduce losses but gain from the upside? By buying put options, the fund manager is effectively taking a bearish view on the bond prices (view that interest rate will go up) and if his view turns right, he will make profits on long put, which will be useful to negate the MTM losses in the cash market portfolio.

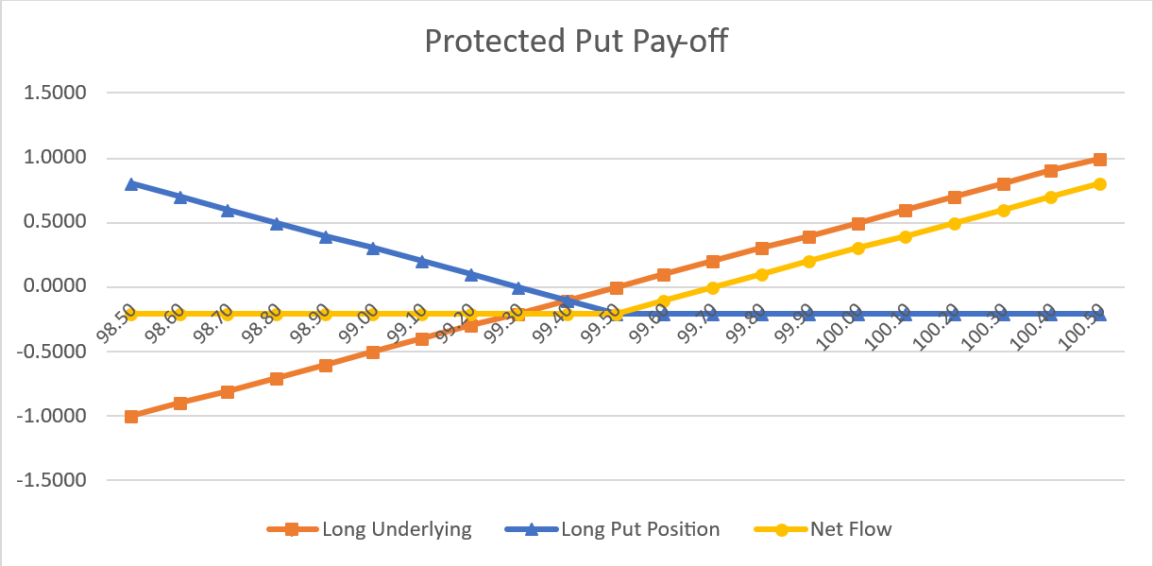
Suppose an investor buys a bond in the underlying market at Rs. 99.50 and also buy put option with a strike price of Rs.99.50 at a premium of Rs.0.20. Combined position of long bond and long put would generate the pay-off as defined in the table and pay-off chart below:
As price keeps rising, the profits will keep rising as losses in long put will be maximum to the extent of premium paid, but profits in long cash will keep increasing. Combined position would look like as follows:

Option Type	-	Put
Long/Short	Underlying Long	Long
Strike Price	99.5	99.5
Premium	-	0.2

GOI Security Price @ Expiry	Long Underlying	Long Put Position	Net Flow[134]
99.00	-0.5000	0.3000	-0.2000
99.10	-0.4000	0.2000	-0.2000
99.20	-0.3000	0.1000	-0.2000
99.30	-0.2000	0.0000	-0.2000
99.40	-0.1000	-0.1000	-0.2000
99.50	0.0000	-0.2000	-0.2000

[134] The coupon / accrued interest earned on holding bond is not considered for the calculation

GOI Security Price @ Expiry	Long Underlying	Long Put Position	Net Flow[134]
99.60	0.1000	-0.2000	-0.1000
99.70	0.2000	-0.2000	0.0000
99.80	0.3000	-0.2000	0.1000
99.90	0.4000	-0.2000	0.2000
100.00	0.5000	-0.2000	0.3000
100.10	0.6000	-0.2000	0.4000
100.20	0.7000	-0.2000	0.5000
100.30	0.8000	-0.2000	0.6000
100.40	0.9000	-0.2000	0.7000
100.50	1.0000	-0.2000	0.8000
100.60	1.1000	-0.2000	0.9000
100.70	1.2000	-0.2000	1.0000
100.80	1.3000	-0.2000	1.1000
100.90	1.4000	-0.2000	1.2000
101.00	1.5000	-0.2000	1.3000



This strategy can be used to hedge against the bond holding. This will limit loss in case of increase in bond prices as against short futures where profit of underlying bond is getting set-off against loss in futures.

22.3.8 Butterfly Spread

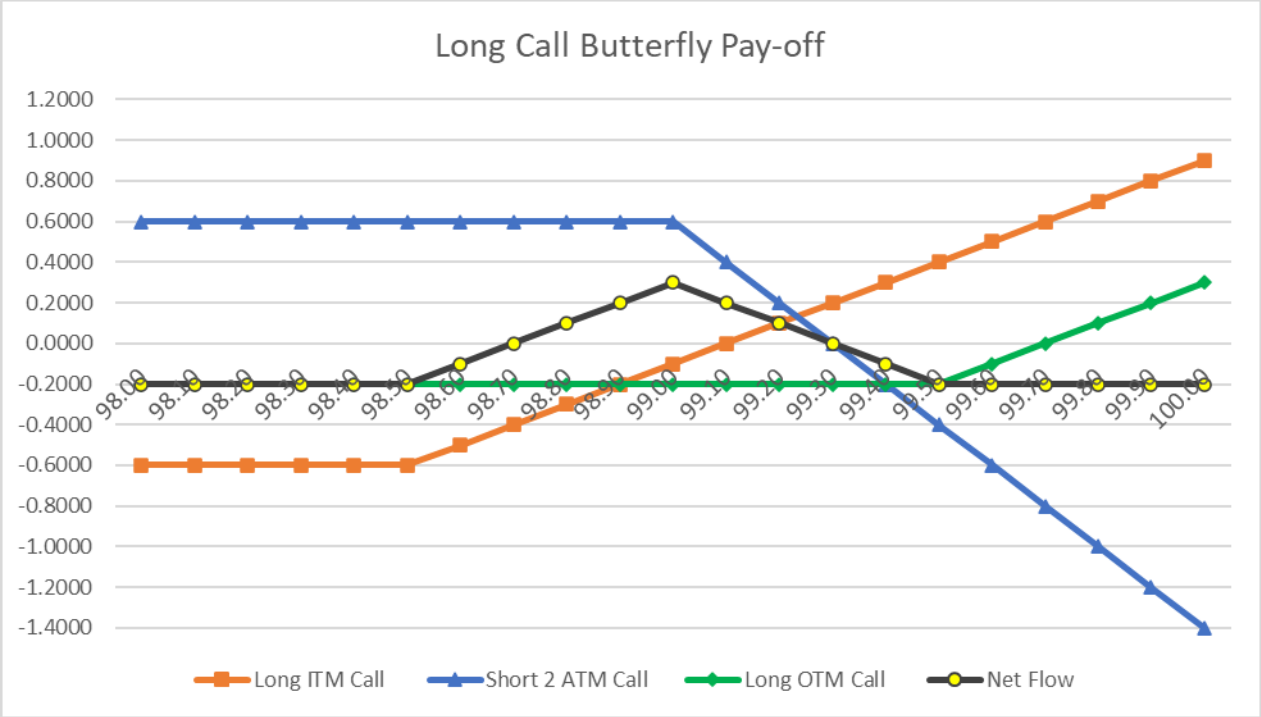
A butterfly spread is an options strategy that combines both bull and bear spreads. These are neutral strategies that come with a fixed risk and capped profits and losses. These spreads use four options and three different strike prices. There are multiple butterfly spread strategies like long call butterfly spreads, Short call butterfly spreads, Long put butterfly spread, Short put butterfly spread, Iron Butterfly Spread etc. We will see in detail "Long Call Butterfly spread" for understanding purpose.

Long Call Butterfly

Long Call Butterfly is a neutral strategy where very low volatility in the price of underlying is expected. The strategy is a combination of Bull Spread and Bear Spread. It involves Buy 1 ITM Call, Sell 2 ATM Calls and Buy 1 OTM Call. The strike prices of all Options should be at equal distance from the current price. The risk limited to net premium paid and profit is limited to difference between adjacent strikes minus net premium debit.

Option Type	Call	Call	Call
Long/Short	Long	Short	Long
Strike Price	98.5	99	99.5
Premium	0.6	0.3	0.2
No. of Lot	1	2	1
Spot	99.000		

GOI Security Price @ Expiry	Long ITM Call	Short 2 ATM Call	Long OTM Call	Net Flow
98.00	-0.6000	0.6000	-0.2000	-0.2000
98.10	-0.6000	0.6000	-0.2000	-0.2000
98.20	-0.6000	0.6000	-0.2000	-0.2000
98.30	-0.6000	0.6000	-0.2000	-0.2000
98.40	-0.6000	0.6000	-0.2000	-0.2000
98.50	-0.6000	0.6000	-0.2000	-0.2000
98.60	-0.5000	0.6000	-0.2000	-0.1000
98.70	-0.4000	0.6000	-0.2000	0.0000
98.80	-0.3000	0.6000	-0.2000	0.1000
98.90	-0.2000	0.6000	-0.2000	0.2000
99.00	-0.1000	0.6000	-0.2000	0.3000
99.10	0.0000	0.4000	-0.2000	0.2000
99.20	0.1000	0.2000	-0.2000	0.1000
99.30	0.2000	0.0000	-0.2000	0.0000
99.40	0.3000	-0.2000	-0.2000	-0.1000
99.50	0.4000	-0.4000	-0.2000	-0.2000
99.60	0.5000	-0.6000	-0.1000	-0.2000
99.70	0.6000	-0.8000	0.0000	-0.2000
99.80	0.7000	-1.0000	0.1000	-0.2000
99.90	0.8000	-1.2000	0.2000	-0.2000
100.00	0.9000	-1.4000	0.3000	-0.2000



Cost of creating long call butterfly spread = (0.30*2)-0.60-0.20 = -0.20
Lower BEP = 98.50+0.20 = 98.70
Upper BEP= 99.50-0.20=99.30
This position can also be created with the help of only puts or combination of calls and puts.

22.4 Use of Interest Rate Derivatives for Speculative Transaction

In the earlier sections we have seen use of interest rate derivatives for hedging an actual interest rate exposure. In this section, we will see its use by speculators. As explained earlier, speculators take a view on the market with an objective to profit from it. Let us take an example.

22.4.1 View Based Trading - Long Position in Bond:

A trader has a view that interest rate/yield will decrease in near futures, so bond prices will go up. Trader can either buy bond or take long position in bond future. Let us compare the return in both scenarios:

Particular	**Underlying Bond**	**10-yr Futures**
Underlying	6.45% GOI 2029	6.45% GOI 2029 Expiry March 2020
Strategy	Buy Underlying Bond	Take long position in GOI bond IRF
Trade date	**March 02, 2020**	
Trade Price (A)	Rs.100.70	Rs. 100.62
Traded value (B)	Rs 5 lac (5000 bonds)	Rs 1 Crore (Assuming 5% Margin able to leverage 20 times)

Trade date/Expiry	**March 26, 2020**	
Trade Price (C)	Rs. 101.59	Rs.101.59
Strategy	Sell underlying	Position will expire
Profit D= (C-A)*B/100	Rs. 4450.00	Rs.97000.00
Accrued interest (E)	Rs. 2150.00	Nil
Total Income (D+E)	**Rs. 6600**	**Rs. 97000**

Since IRD is a leverage product there is a possibility of higher profit at the same time there is possibility of higher loss. In above case if view of the speculator is not right, he will incur loss multiple times compared to underlying bond also speculator will not earn any accrued interest for long position in interest rate futures.

Let us see another example without leveraging and investing remaining funds in money market instrument.

Particular	**Underlying Bond**	**10-yr Futures**
Underlying	6.45% GOI 2029	6.45% GOI 2029 Expiry March 2020
Strategy	Buy Underlying Bond	Take long position in GOI bond IRF and invest surplus in CD for 24 days
Trade date	**March 02, 2020**	
Trade Price (A)	Rs.100.70	Rs. 100.62
Traded value (B)	Rs. 5 lacs (5000 bonds)	Rs.5 Lacs – IRF and invest remaining amount in 24 days CD
Trade date/Expiry	**March 26, 2020**	
Trade Price (C)	Rs. 101.59	Rs.101.59
Strategy	Sell underlying	Position will expire
Profit D= (C-A)*B/100	Rs. 4450.00	Rs.4850
Accrued interest (E)	Rs. 2150.00	Nil
Return on CD (F)	Nil	Rs. 2300
Total Income (D+E+F)	**Rs. 6600**	**Rs. 7150**

In both the example given above in case price of bonds decreases the trader will have loss and the loss can be unlimited. With the help of option contract the trader can limit his loss and maximize the profit. For taking long position, the trader can buy call option instead of buying future contract.

22.4.2 View Based Trading - Short Position in Bond

A trader has a view that interest rate will increase/bond yield will reduce in near futures, so bond prices will go down. In India, not all participants are allowed to do short sell in government of India securities. Hence, Interest rate derivatives will be the good choice to take such view. The trader can

either sell GOI bond futures or he can buy the GOI bond put option contracts to take the short position in bond.

22.4.3 Changing the duration of the portfolio

Fund manager who have strong expectations about the direction of interest rates, will adjust the duration of their portfolio to capitalize on their expectations. If they expect interest rates to increase, they will lengthen the duration of portfolio and vice versa. Also, anyone using structured portfolio strategies must periodically adjust the portfolio duration to match the duration of some benchmark.

Although money managers can alter the duration of their portfolio with cash market instruments, a quick and less expensive means for doing so is to use futures contracts. By buying futures contract on GOI bond, they can increase the duration of portfolio and vice versa.

22.5 Use of Interest Rate Derivatives by Arbitragers

As mentioned earlier, Arbitragers look for mispricing in the market and execute simultaneous buy and sell to capture the mispricing and make profit. They do not take any view on the market direction. Let us take an example.

22.5.1 Regular Arbitrage with Single Bond Interest Rate Futures

In this strategy, arbitrageur buy bond in underlying market and sell futures of same bond. This strategy is generally possible when futures price is more than the theoretical future price.

Example:

Strategy: Buy GOI bond in underlying and sell GOI bond Futures.
On August 03, 20XX, 7.59% GOI 20XX trading at 102.60 and IRF August Expiry trading at 102.62.
Sell Interest Rate Futures at INR 102.62. Lot = 500
Buy Underlying at INR 102.60 Face Value = INR 10 Crores
Cost of Borrowing in Repo 5%

On August Expiry - if 7.59% GOI 20XX price

Case I
INR 102.30

Case II
INR – 102.80

Net Pay-off:

CASE I			**CASE II**	
Accrued Interest	442750		Accrued Interest	442750
Profit in IRF position	320000		Profit on Underlying	200000
Cash Inflow (A)	**762750**		**Cash Inflow (A)**	**642750**

Loss in Underlying Bond	(300000)		Loss in IRF	(180000)
Cost of Borrowing	(295151)		Cost of Borrowing	(295151)
Cash Outflow (B)	**(595151)**		**Cash Outflow (B)**	**(475151)**
Net Pay-off (A-B)	**167599**		**Net Pay-off (A-B)**	**167599**

You can see that in both the cases (increase in bond prices / decrease in bond prices) there is positive net pay-off and it remains the same. One needs to also provide for frictions in the market like brokerage, taxes, administrative costs, funding costs etc.

22.5.2 Reverse Arbitrage with Single Bond Interest Rate Futures

In this strategy arbitrageur sell GOI bond in underlying market, lend money in repo market against same GOI bond and buy futures of same GOI bond. This strategy is generally possible when futures price is lower than the theoretical future price.

Example:

Strategy: Sell GOI bond in underlying and buy GOI bond Futures and lend money in repo market (against the same GOI bond to make delivery in underlying market). In case, arbitrageur already holds the underlying bond, he can lend money till expiry of bonds in any risk-free instruments.

On August 03, 20XX, 7.59% GOI 20XX trading at 102.60 and IRF August Expiry trading at 102.40.
Buy Interest Rate Futures at INR 102.40. Lot = 500
Sell Underlying at INR 102.60. Face Value = INR 10 Crores
Lend money in repo against 7.59% GOI 20XX @ 5%

On August Expiry - if 7.59% GOI 20XX price

Case I
INR 102.30

Case II
INR – 102.80

Net Pay-off:

CASE I	
Profit on Underlying	300000
Income from lending	295151
Cash Inflow (A)	**595151**
Accrued Interest	(442750)
Loss on IRF	(100000)
Cash Outflow (B)	**(542750)**
Net Pay-off (A-B)	**52401**

CASE II	
Profit on IRF	400000
Income from lending	295151
Cash Inflow (A)	**695151**
Accrued Interest	(442750)
Loss on Underlying	(200000)
Cash Outflow (B)	**(642750)**
Net Pay-off (A-B)	**52401**

You can see that in both the cases (increase in bond prices / decrease in bond prices) there is positive net pay-off and it remains the same. One needs to also provide for frictions in the market like brokerage, taxes, administrative costs, funding costs etc.

22.5.3 Creating Synthetic Securities for Yield Enhancement

A cash security can be synthetically created by using position of futures contract together with underlying bonds. The yield on the synthetic security should be same as the yield on the cash market security.

Consider an investor who wants to invest money for three months. This Investor can take long position in 15-yr GOI bond in underlying market and short three month futures of the same bond. The maturity of the bond is 15 years, but the investor has effectively shortened the maturity of the bond to three months. Consequently, the long position in 15-yr bond and the short position in futures are equivalent to a long position in three month riskless security. The position is riskless because the investor has locked-in the price he/she will receive after three months. With long position in 15-yr bond and the short position in futures, the investor has synthetically created a 3 month T-Bills. In case the yield of 3 month synthetic T-Bills is greater than the yield of cash market 3 month T-Bills yield, the investor can realize the enhance yield by creating synthetic short term security.

Here, it may be interesting to look at the risks these arbitragers carry. As seen before, arbitragers are executing positions in two or more markets/products simultaneously. Even if the systems are seamless and electronic and both the legs of transaction are liquid, there is a possibility of some gap between the executions of both the orders. If either leg of the transaction is illiquid then the risk on the arbitrage deal is huge as only one leg may get executed and another may not, which would open the arbitrager to the naked exposure of a position. Similarly, based on settlement type (cash/physical delivery), it may need reversal of trades in the respective markets, which would result in additional risk on unwinding position with regard to simultaneous execution of the trades. Further, in certain cases regulation does not permit to take certain kind of transaction: for example, in case of reverse arbitrage example, short sell of bonds in underlying market may not be allowed to all participants. Also, in above examples, the transaction cost and impact cost have not been considered. In real life, the transaction cost like the brokerage, stamp duty, margin cost and impact cost etc. need to be taken into account before entering into any strategies. There are certain other limitations of exchange traded interest rate derivatives contract which we will discuss in detail in subsequent section.

22.6 Trading spreads using ETIRD

Spread refers to difference in prices of two futures / option contracts. A good understanding of spread relation in terms of contract spread is essential to earn profit. Considerable knowledge of a particular bond is also necessary to enable the trader to use spread trading strategy.

Calendar Spread: A calendar spread is a contract where a trader buys/sells a particular month contract (Futures or Options) and sells/buys (take an opposite position) of the same contract of a different month. Both have the same underlying but different maturities. In calendar trade position trader does not have risk of underlying security movement but only have basis risk due to change in the spread between two contracts. Hence, the margins applicable on this position are much lower than the normal margin[135].

Example: Trader is of a view that the spread between near month and mid-month may widen. On the basis of this view, he decides to sell September (Near month contract) 6.10% GOI 2031 bond futures @99.00 and at the same time buy October (mid-month) futures contract @99.05; the spread between the two contracts is Rs. 0.05. Let's say after 10 days, as per his expectation spread widen and now the September futures contract is trading at 98.80 and October futures contract is trading at 98.95, the spread now stands at Rs. 0.15. He decides to square off his both the positions, making a gain of Rs. 200 per contract (= 0.15 – 0.05 = 0.10 and this 0.10 x 2000) in whole transaction. The issue with entering a calendar spread in 2 different orders like above is that there is a risk that the price moves between placing both the orders i.e., execution risk. Such risk can be avoided by using spread order[136] facility provided by Exchanges.

Inter-Bond Spread: An inter-bond pair spread is a long-short position in futures on different underlying GOI bonds. Both typically have the same expiry date. For example, a trader can buy 6.10% GOI bond 2031 futures and sell 5.85% GOI bond 2030 futures both of October expiry. (10-yr maturity bucket bonds) or can buy 6.10% GOI bond 2031 futures and sell 7.27% GOI bond 2026 futures both of October expiry (10-yr bond vs 5-yr bond trading). Generally, if trader anticipates steepening or flattening of yield curve, trader may use inter-bond spread strategy.

22.7 Limitation of Interest Rate Derivatives for Hedgers

Exchange traded interest rate derivatives contracts are standard contracts which are mainly settled in cash i.e., without delivery of securities. This may lead to imperfect hedging and have certain basis risk for Hedgers.

For example, GOI single bond derivatives contract expires on the last Thursday day of contract month. If the exposure to be hedged has maturity of some other day in the month, there will be mismatch in the maturity and leads to imperfect hedging.

The Exchange Traded Interest Rate Derivatives (ETIRD) are not available on all kinds of fixed income instruments and all maturity tenors. However, participants may have various kinds of fixed income instruments. The movement in underlying instrument of ETIRD and portfolio of participant may not be identical which leads to imperfect hedge. For example, hedging of different maturity GOI bond and corporate bond portfolio with single GOI bond futures and options or Investor wants to hedge

135 Refer calendar spread charge section 7.10.1.1.3
136 Refer spread order book section 6.2.5

against floating housing loan through ETIRD may not be possible as the underlying interest rate for housing loan and ETIRD may not have much correlation.

As ETIRD are mainly cash settled, there might be a mismatch in the time/price of cancellation of contract in ETIRD and the time/price of actual underlying trade. This mismatch may result in small loss of value.

However, the transparency, small lot size and ease of trade execution may offset the above limitation of ETIRD.

Chapter 22: Sample Questions

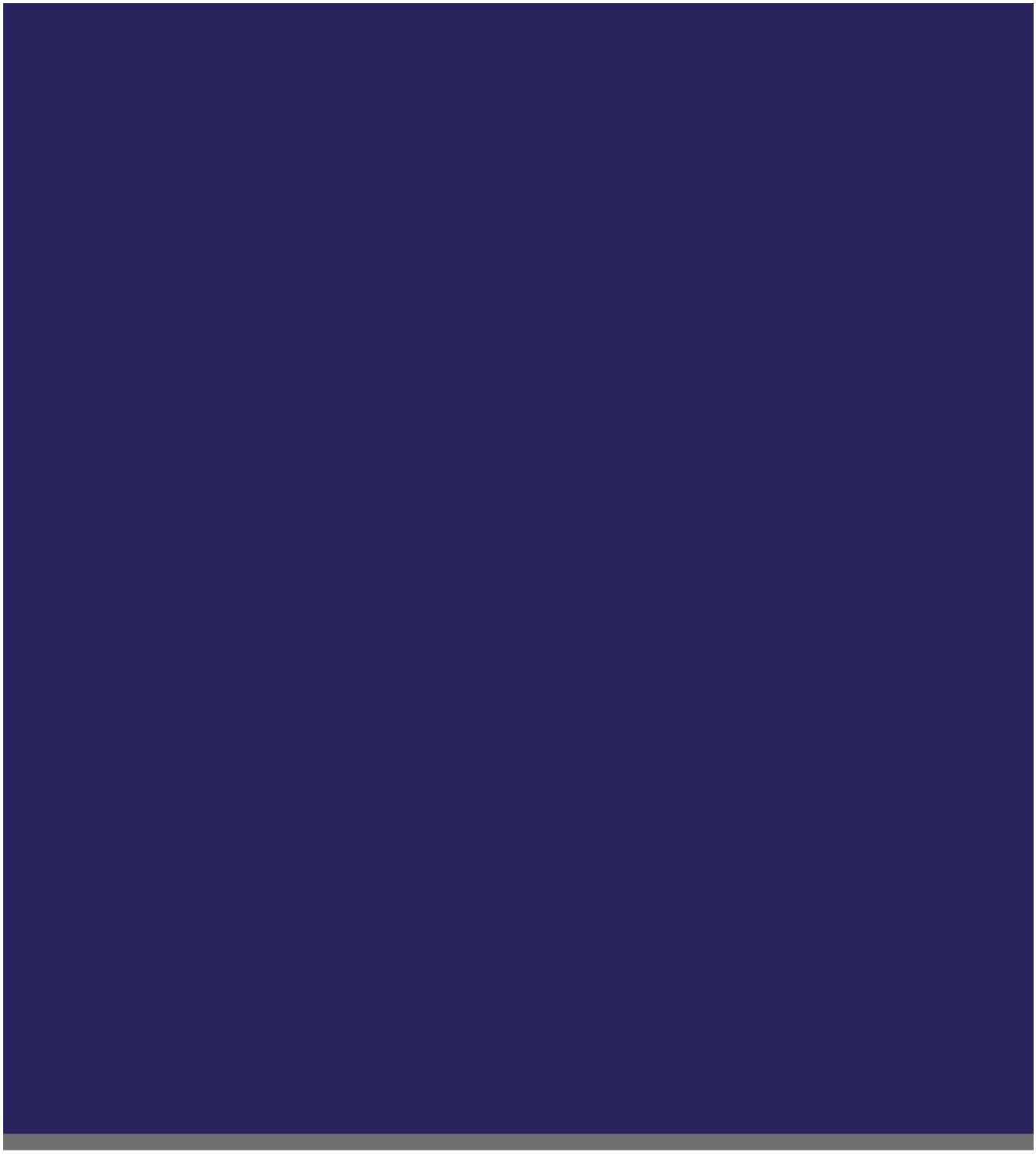
1. Hedging for multiple bonds in portfolio can be done by using _____.
    a. **Duration based hedge ratio**
    b. Market value ratio
    c. Year to maturity ratio
    d. None of the above

2. In Bullish vertical spread using put strategy, trader _____.
    a. **buy put option with lower strike and sell a put option with higher strike**
    b. buy put option with higher strike and sell a put option with lower strike
    c. buy call with lower strike and sell a put option with higher strike
    d. None of the above

3. If you expect the interest rate will go up in future, today you should _____.
    a. **Sell GOI Bond futures**
    b. Buy GOI bond futures
    c. Buy underlying bond
    d. None of the above

4. A _____ is where a trader buys a particular month contract (Futures or Options) and sell (i.e., take an opposite position) of the same contract of a different month.
    a. **Calendar spread**
    b. Option spread
    c. Contract spread
    d. All of the above

5. Limitation of Interest Rate Derivatives for Hedgers is mainly due to _____.
    a. Standardised Contract
    b. Non-availability on all kind of underlying instruments
    c. **Both (a) and (b) above**
    d. None of the above



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[i]MFs/ AMCs can offer Instant Access Facility (IAF) only in Overnight and Liquid Schemes of the MF. https://www.sebi.gov.in/legal/circulars/jul-2021/deployment-of-unclaimed-redemption-and-dividend-amounts-and-instant-access-facility-in-overnight-funds_51513.html