Block

2

COMPONENTS AND INSTRUMENTS IN GLOBAL FINANCIAL MARKETS

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BLOCK 2: COMPONENTS AND INSTRUMENTS IN GLOBAL FINANCIAL MARKETS

This is the second block of Global Financial Markets. This block introduces the valuation of bonds, bond investment strategies, types of mortgages, growing importance of global stock markets along with money markets, commodity markets and derivate markets. This block contains six units.

Unit 4: *Valuation of Securities* deals with the concept of time value of money which provides a fundamental background for the valuation of bonds and stocks. This unit discusses about valuation of bonds, bond value theorems, valuation of warrants and convertibles. This unit also focuses on various aspects of equity valuation by dividend capitalization approach and ratio approach.

Unit 5: *Global Bond Markets* discusses various types of bonds which are issued in global market along with other instruments. This unit also discusses on basics of bonds, bond investment strategies, corporate bonds, government bonds, structure of bonds & risks associated with bonds, bond market liquidity and basics of global bond markets.

Unit 6: *Mortgage and Mortgage Instruments* explains about one of the largest market segments which are "Mortgages". This unit also explains the meaning and concept of mortgage, various types of mortgage instruments, distinguishes between mortgage, pledge and hypothecation and mortgage financing in India and in US.

Unit 7: *Global Stock Markets* outlines the reasons for the development of international stock markets in terms of volumes and number of investors. The diversification of portfolios is becoming imperative in the global markets. The portfolio diversification increases the complexity in measuring the financial performance of companies. This unit covers various global stock markets such as New York, London, Euro, Japan, Shanghai and Hong Kong, performance of international investments, movement of major indices in the last decade, ways and means to invest in foreign securities and risks of investments in global markets.

Unit 8: *Global Perspective of Money Market and Commodities Markets* enumerates the role of money markets in integrated financial market. Money markets deal with highly liquid financial instruments with shorter maturity. This unit also discusses the importance of money market instruments and commodities markets in global financial markets and future outlook of these markets.

Unit 9: *Global Derivative Markets and Instruments* explains about the international derivatives market, various types of derivative instruments such as currency futures, currency options, commodity futures, interest rate swaps etc. This unit gives a clear understanding about the various options available while trading in international markets.

Unit 4

Valuation of Securities

Structure

"Einstein was right about relativity, but even he would have had a difficult time applying relative valuation, in today's stock markets."

- Aswath Damodaran, Finance Professor

4.1 Introduction

An individual investor or finance manager needs to understand the valuation of securities, in order to make informed decisions such as buy, hold, or sell the securities. Let us discuss valuation concept and techniques in detail, in this unit.

The first block of this course dealt with the globalization perspectives, global financial market, various ways of raising long term and short term funds from global markets. The macro issues that can impact the global markets and the role of multilateral institutions including that of the Bank for International Settlements were discussed.

In this opening unit of the second block, the fundamentals of an investment decision relating to bonds and equity will be dealt with. The investment goal of any individual or a firm is maximization of profits or rate of return or the market value of one's investments. Thus, investment management is an ongoing process that needs to be constantly monitored by way of information as this may affect the value of securities or rate of returns of such securities. Therefore, a finance manager needs to have basic knowledge and understanding of the framework of

security valuation, which is based on conceptual understanding of time value of money and risk-return relationship. While making judgments on valuation of securities, analysts attempt to estimate the future profitability and its growth and the reliability of such estimates leading to translation of all these estimates into valuation of the company and its securities.

4.2 Objectives

After reading through the unit, you should be able to:

- Explain various concepts and measures of valuation of securities – both equity and debt - that aid in financial decision making
- Define the terms associated with bonds to understand their usage in bond valuation
- Apply the bond value theorems to analyse the factors that affect valuation of bonds
- Analyse warrants and convertibles as alternative investment options

4.3 Valuation Concept

An investor, who subscribes to the shares or securities of a company, has two main objectives:

- To ensure that his investment in the company grows
- To ensure that he receives a reasonable return on his investment

Valuation of securities is essential to check whether the above objectives are being realized or not. It also becomes the basis for the decision to buy, hold or sell the securities. This concept is also equally significant for a finance manager as knowledge of the values of stocks and bonds is a precursor to achieving the objective of maximization of the value of the firm.

A security can be regarded simply as a series of dividends or interest payments receivable over a period. Therefore, value of any security can be defined as the present value of these future cash streams i.e., the intrinsic value[1] of an asset is equal to the present value of the benefits associated with it. Symbolically, it can be represented as:

$$V_0 \text{ (or } P_0) \text{ i} = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + \ldots + \frac{C_n}{(1+k)^n}$$

$$= \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} \qquad \ldots\ldots(1)$$

[1] It may be noted that value of a bond is computed while price of a bond is the one quoted in the market. An investor likes to buy a bond if the value computed is more than the price of the bond. 'value' is what it is worth and 'price' is what you pay to buy.

where, V_0 = Value of the asset at time zero

P_0 = Present of the asset

C_t = Expected cash flow at the end of period t

k = Discount rate of or required rate of return on the cash flows

n = Expected life of an asset.

Illustration 4.1

Calculate the value of an asset if the annual cash inflow is ₹ 2,000 per year for the next 7 years and the discount rate is 18%.

Solution

The value of an asset can be calculated as:

$$V_0 = \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} = \sum_{t=1}^{7} \frac{2,000}{(1+0.18)^t}$$

$$= \sum_{t=1}^{7} \frac{2,000}{(1+0.18)^t} = ₹\ 2,000\ (PVIFA_{18\%,\ 7yrs})$$

$$= ₹\ 2,000 \times 3.812 = ₹\ 7,624.$$

4.3.1 Different Measures of Value

There are various usages of the term 'value' depending upon the purpose for which it is ascertained. These measures of value aid in financial decision making. For instance, replacement value of an asset is considered to arrive at the decision as to whether the existing asset should be replaced or not. These various measures of value are:

- **Book Value** is an accounting concept. Assets are recorded at historical costs and they are depreciated over the years. Book value may include intangible assets at acquisition cost minus amortized value. The book value of debt is stated as the outstanding amount. The difference between the book value of assets and liabilities is equal to the shareholder's funds or net worth (which is equal to paid-up equity capital plus reserves and surplus).
- **Replacement Value** is the amount that a company would be required to spend if it were to replace its existing assets in the current condition.
- **Liquidation Value** is the amount that a company could realize if it sold its assets after having terminated its business. It is generally a minimum value that a company might accept if it sells its business.
- **Going Concern Value** is the amount that a company could realize if it sold its business as an operating one. Its value would always be higher than the liquidation value, the difference accounting for the usefulness of assets and value of intangibles.

- **Market Value** of an asset or security is the current price at which the asset or the security is being sold or bought in the market.

Example: Valuation in Indian Stock Markets, 2022

Economic Times, dated 26th May, 2022, reported that the Indian stock markets had seen a realignment of valuations, after a recent selloff. However, there were still concerns about how costly they might turn, after the record gains of the previous two years. The market capitalization to GDP ratio was close to 100%, which showed that there was an over-expensive valuation of securities. This is called as Buffett Indicator and Buffet expected the market to touch 200 percent in Dalal street. In the US market, the market capitalization to GDP ratio was 200 percent and Taiwan's stock market's m-cap-to-GDP ratio was 300 percent. According to Motilal Oswal Global Partner Summit - Sanjeev Prasad, MD and Co-head at Kotak Institutional Equities, there was no limit to this m-cap-to-GDP ratio, as companies like Netflix, Amazon, Google, and Facebook had already crossed the limits in all countries. Soon, India's market capitalization ratio will go up to $5 trillion mark.

Source: https://economictimes.indiatimes.com/markets/stocks/news/buffett-indicator-above-100-is-bad-for-stocks-d-street-says-indias-can-hit-200/articleshow/84543481.cms?from=mdr. Dated 26th May, 2022, accessed on 12th June, 2022.

4.4 Valuation of Bond

Bonds are negotiable promissory notes, redeemable after a specific period. The expected cash flows of the bond consist of annual interest payments plus repayment of principal amount on the face value. Since bond has a series of cash flows the value of the bond is to be computed. These bonds are used by individuals, business firms, governments or government agencies. The following paragraphs deal with various aspects related to valuation of the security (bond in this case).

Bonds issued by the government or public sector companies in India are generally secured. Private sector companies may issue secured or unsecured bonds. However, unsecured bonds can be issued by private companies only to their shareholders/directors and relatives. In case of the bond, the rate of interest is fixed and known to investors. Before going into the valuation of bonds, it is necessary to familiarize oneself with certain bond-related terms.

4.4.1 Face Value

This is the value stated on the face of the bond and is also known as par value. It represents the amount of borrowing by the firm that it specifies to repay after a specific period, i.e., the time of maturity. A bond is generally issued at face value or par value, which is usually ₹ 100 and may sometimes be ₹ 1,000. For instance, in February 2017, the Government of India came forward with the issue of 8% Government of India bonds which had a face value of ₹ 1,000.

A bond can also be issued at a discount to face value.

4.4.2 Coupon Rate of Interest

A bond carries a specific rate of interest, which is also called the coupon rate. The interest rate payable is simply the par value of the bond multiplied by the coupon rate. Interest paid on a bond is tax deductible for the issuer company. For instance, in the example given above, 8% refers to the coupon rate or interest rate on the bonds issued by Government of India.

4.4.3 Maturity

A bond is issued for a specific period. It is repaid on maturity. Typically, corporate bonds have a maturity period of 7-10 years, whereas government bonds have a maturity period up to 20-25 years. The 8% Government of India bonds were issued for a period of 6 years.

4.4.4 Redemption Value

The value that a bondholder gets on maturity is called redemption value. A bond may be redeemed at par, at a premium (more than par) or at a discount (less than par value).

4.4.5 Market Value or price

A bond may be traded in a stock exchange. Market value is the price at which the bond is bought or sold. Market value may be different from par value or redemption value.

4.4.6 Premium Bond

A bond trading above its par value is known as premium bond. Investors are willing to pay the premium[2] amount because it offers a coupon rate higher than the existing interest rates being offered for new bonds.

4.4.7 Discount Bond

A bond currently trading for less than its par value is known as a *discount bond.* Investors will pay less for a discount bond as it offers a coupon rate that is lower than prevailing interest rates

4.4.8 Basic Bond Valuation Model

With the above background, it is quite clear that the holder of a bond receives a fixed annual interest payment for a certain number of years and a fixed principal repayment (equal to par value) at the time of maturity. Therefore, the intrinsic value or the present value of a bond can now be written as:

$$V_0 \text{ (or } P_0) = \sum_{t=1}^{n} \frac{C_t}{(I + k_d)^t} + \frac{F}{(I + K_d)^n}$$

$$V_0 = I\,(PVIFAk_{d,\,n}) + F(PVIFk_{d,\,n}) \qquad \text{.....(2)}$$

[2] There is another dimension to this. When rating agencies like ICRA, CARE, S&P etc offer higher rating to a bond issue of a firm, (say AAA or AAA+ etc) which indicates that the investment has least credit risk, then the issuer may offer them at a price higher than the par value. Similarly the opposite of this can happen, when bonds are sold at "discount".

where, V_0 = Intrinsic value of the bond

P_0 = Present price of the bond

I = Annual interest payable on the bond

F = Principal amount (par value) repayable at the maturity time

n = Maturity period of the bond

k_d = Required rate of return

Illustration 4.2

A bond whose par value is ₹ 1,000 bears a coupon rate of 12% and has a maturity period of 3 years. The required rate of return[3] on the bond is 10%. What is the present value of this bond?

Solution

Annual interest payable = ₹ 1,000 x 12% = ₹ 120

Principal repayment at the end of 3 years = ₹ 1,000

∴ The value of the bond will be:

V_0 = ₹ 120 ($PVIFA_{10\%, 3 yrs.}$) + ₹ 1,000 ($PVIF_{10\%, 3yrs.}$)

= ₹ 120 x (2.487) + ₹ 1,000(0.751)

= ₹ 298.44 + ₹ 751

= ₹ 1,049.44.

Illustration 4.3

Consider the case where an investor purchases a bond whose face value is ₹ 1,000, maturity period is 5 years and the nominal (coupon) rate of interest is 7%. The required rate of return is 8%. What should he be willing to pay now to purchase the bond if it matures at par?

Solution

Annual interest payable for 5 years = ₹ 70

Principal repayable amount at the end of 5 years = ₹ 1,000

∴ The intrinsic value or the present value of the bond

= ₹ 70 ($PVIFA_{8\%, 5yrs.}$) + ₹ 1,000 ($PVIF_{8\%,5 yrs.}$)

= ₹ 70 x 3.993 + ₹ 1,000 x 0.681

= ₹ 279.51 + ₹ 681 = ₹ 960.51

The above implies that the bond of ₹ 1,000 is worth ₹ 960.51 on the day of purchase if the required rate of return is 8%. The investor would not be willing to pay more than ₹ 960.51 for purchasing the bond.

[3] It may be noted that required rate of return is investor-specific which is based on the risk-appetite of the investor.

4.4.9 Bond Values with Semi-Annual Interest

Some of the bonds carry interest payment semi-annually. As half-yearly interest amounts can be reinvested, the value of such bonds would be more than the value of the bonds with annual interest payments. Hence, the bond valuation equation can be modified as:

i. Annual interest payment, i.e., I, must be divided by two (I/2) to obtain interest payment semi-annually.

ii. Number of years to maturity will have to be multiplied by (n x 2) two to get the number of half-yearly periods.

iii. Discount rate has to be divided by two (k_d /2) to get the discount rate for half-yearly period.

Thus, with the above modifications, the bond valuation equation becomes:

$$V_0 = \sum_{t=1}^{2n} \frac{1/2}{(1+k_d/2)^t} + \frac{F}{(1+K_d/2)^{2n}}$$

$$= I/2\ (PVIFAk_d/2,2n) + F^4\ (PVIFk_d/2,\ 2n) \qquad .....(3)$$

where,

V = Value of the bond

I/2 = Semi-annual interest payment

F = Par value of the bond payable at maturity

$k_d/2$ = Required rate of return for the half-year period

2n = Maturity period expressed in half-yearly periods

Illustration 4.4

A bond of ₹ 1,000 face value carries a coupon rate of 10% and a maturity period of 6 years. Interest is payable semi-annually (note that the number of periods becomes 12 in the formula of present values). If the required rate of return is 12%, calculate the value of the bond.

Solution

$$V_0 = \sum_{t=1}^{12} \frac{100/2}{(1+0.12/2)^t} + \frac{1,000}{(1+0.12/2)^{12}}$$

$$= ₹\ 50(PVIFA_{6\%,\ 12}) + ₹\ 1,000(PVIF_{6\%,\ 12})$$

$$= ₹\ 50\ (8.384) + ₹\ 1,000\ (0.497)$$

$$= ₹\ 419.2 + ₹\ 497$$

$$= ₹\ 916.20$$

[4] F is very likely to be confused with the face value… Note that it is the redemption value.

4.4.10 Bond-Yield Measures

The bond yield can be computed as follows:

One Period Rate of Return

If a bond is purchased and then sold one year later, its rate of return over this single holding period can be defined as one period rate of return.

$$= \frac{\begin{pmatrix}\text{Price gain or loss}\\ \text{during holding period}\end{pmatrix} + \begin{pmatrix}\text{Coupon interest}\\ \text{if paid}\end{pmatrix}}{\begin{pmatrix}\text{Purchase price at the beginning of}\\ \text{the holding period}\end{pmatrix}} \quad \text{.....(4)}^{5}$$

The holding period can be calculated on a daily, monthly or annual basis. If the bond price falls by an amount that exceeds coupon interest, the rate of return assumes negative values.

Illustration 4.5

X purchased ₹ 1,000 par value bond for ₹ 900. The coupon payment on this bond is ₹ 80[6] i.e., 8%. One year later, he sells the bond for ₹ 800. What is the rate of return of Mr. X for one year period?

Solution

$$\text{Holding period return} = \frac{(800 - 900) + 80}{900}$$

$$= \frac{-100 + 80}{900}$$

$$= \frac{-20}{900} = -0.02.22 \text{ or } 2.22\ \%$$

Current Yield

Current yield measures the rate of return earned on a bond if it is purchased at its current market price and if the coupon interest is received.

$$\therefore \text{ Current Yield} = \frac{\text{Coupon Interest}}{\text{Current Market Price}} \quad \text{.....(5)}$$

In the example cited above, if the current market price of the bond is also ₹ 800, then the

$$\text{Current Yield} = \frac{80}{800} = 10\%.$$

[5] This equation (4) can be understood in two parts: the numerator capturing the benefits received and the denominator capturing the amount invested. This gives out the amount of benefit received for Re.1 of investment, which will be in decimals. For the sake of convenience and as a popular convention, it is multiplied by 100 and expressed as %.

[6] Coupon interest is paid on the par value of the bond and NOT on the price of the bond.

Coupon rate and current yield are two different measures. Coupon rate and current yield will be equal if the bond's market price equals its face value.

Yield to Maturity (YTM)

It is the rate of return earned by an investor who purchases a bond and holds it until maturity. The YTM is the discount rate that equals the present value of promised cash flows to the current market price/purchase price.

Illustration 4.6

Consider a ₹ 1,000 par value bond whose current market price is ₹ 850. The bond carries a coupon rate of 8% and has a maturity period of 9 years. What would be the rate of return that an investor earns if he purchases the bond and holds until maturity?

Solution

The rate of return earned also referred to as yield to maturity, is the value of k_d in the following equation[7].

$$P_0 = \sum_{t=1}^{n} \frac{I}{(1+k_d)^t} + \frac{F}{(1+K_d)^n}$$

$$₹\ 850 = \sum_{t=1}^{9} \frac{80}{(1+k_d)^t} + \frac{F}{(1+k_d)^9}$$

$$= ₹\ 80\ (PVIFA_{kd\%,\ 9\ yrs}) + ₹\ 1,000\ (PVIF_{kd\%,\ 9\ yrs.})$$

To find out the value of k_d in the above equation, several values of k_d will have to be tried out in order to reach the input value. Therefore, to start[8] with, consider a discount rate of 12% for k_d for which the expression becomes equal to

$$₹\ 80\ (PVIFA_{\ 12\%,\ 9\ yrs}) + ₹\ 1,000\ (PVIF_{\ 12\%,\ 9\ yrs.})$$

$$= ₹\ 80 \times 5.328 + ₹\ 1,000\ (0.361)$$

$$= ₹\ 426.24 + ₹\ 361 = ₹\ 787.24$$

Since, the above value is less than ₹ 850, we have to try a less value for k_d. So, let k_d = 10%, then the equation becomes:

$$₹\ 80\ (PVIFA_{10\%,\ 9\ yrs.}) + ₹\ 1,000\ (PVIF_{10\%,\ 9\ yrs.})$$

$$= ₹\ 80 \times 5.759 + ₹\ 1,000 \times 0.424$$

$$= ₹\ 460.72 + ₹\ 424 = ₹\ 884.72$$

[7] Refer to the equation (2), which is used for finding out the value of the bond or price of the bond, when all the variables on the right hand side are known. The same equation is used to find out k_d when the price, coupon interest amount, redemption amount and the time period are known, except k_d.

[8] 'Where to start from' can be known using the equation (6) which gives an approximate value of YTM. Using 'trial and error' method and interpolation, YTM value can be found out.

From the above it is clear that k_d lies between 10% and 12%. Now we have to use linear interpolation in the range of 10% and 12%. Using it, we find that k_d is equal to the following:

$$10\% + (12 - 10\%) \times \frac{884.72 - 850}{884.72 - 787.24}$$

$$= \quad 10\% + 2\% \times \frac{34.72}{97.48}$$

$$= \quad 10\% + 2\% \times 0.356$$

$$= \quad 10\% + 0.71$$

$$= \quad 10.71\%$$

$\therefore$ The yield to maturity is 10.71%[9]

An Approximation: As trial and error method calculations are too tedious, the following approximation formula can be employed to find out the approximate YTM on a bond.

$$YTM = \frac{I + (F - P)/n}{0.4F + 0.6P} \quad \text{or} \quad \frac{I + (F - P)/n}{(F + P)/2} \qquad \text{.....(6)}$$

where,

YTM	=	Yield to maturity
I	=	Annual interest payment
F	=	Par value or redemption value of the bond[10]
P	=	Current market price of the bond
N	=	Years to maturity.

Illustration 4.7

The bond of Zeta Industries Ltd. with a par value of ₹ 500 is currently traded at ₹ 435. The coupon rate is 12% and it has a maturity period of 7 years. What is the yield to maturity?

Solution

$$YTM = \frac{I + (F - P)/n}{0.4F + 0.6P}$$

$$= \frac{60 + (500 - 435)/7}{0.4 \times 500 + 0.6 \times 435}$$

$$= \frac{60 + 9.285}{200 + 261} = \frac{69.285}{461} = 150$$

$$= \quad 15\%$$

[9] This method is called interpolation. To illustrate, a difference of 2% between the two options (10% and 12%) has been considered in this example. It would be advisable to consider a difference of 1%, so that a more accurate value can be achieved. You may repeat the same calculations with 10% and 11% and check your value of YTM.

[10] If no specific amount of redemption is mentioned, it means that the redemption value is same as the par value.

Example: Bonds Buying Signals

Economic Times, dated 8th June 2022, reported that there was an increase in the bond price, as some of the traders expected a sharp increase in the rate, which was above 50-bps increase, announced by the Reserve Bank of India. RBI stopped from further whittling down of the liquidity surplus for financial institutions, through a new increase in the cash reserve ratio, on 7th June 2022. When the price of the bond increases, the bond yield decreases. The decreasing government bond yield results in lower borrowing cost across the country.

Source:https://economictimes.indiatimes.com/markets/bonds/bonds-rally-despite-50-bps-rbi-rate-hike-heres-why/articleshow/92077018.cms. Dated 8th June, 2022, accessed on 12th June, 2022.

4.5 Bond Value Theorems

What will happen to bond price if the interest rates in the market move up or interest rates move down? What is the relationship between interest rates and pricing of a bond? The important concepts related to maturity of the bond under reference and the yield on the bond are explained through bond theorems.

Based on the bond valuation model, several bond value theorems have been derived which state the effect of the following factors on bond values:

I. Relationship between the required rate of return and the coupon rate

II. Number of years to maturity

III. Yield to maturity

I. Relationship between the required rate of return and the coupon rate

The following are the theorems, which show the effect on the bond values influenced by the relationship between the required rate of return and the coupon rate.

i. When the required rate of return is equal to the coupon rate, the value of the bond is equal to its par value.

i.e., If k_d = Coupon rate;

then, Value of a Bond = Par value

Illustration 4.8

a. Consider a bond of Ken Star Intermediaries Ltd. with the following features:

Par value	:	₹ 100
Coupon rate	:	12%
Years to maturity	:	5 years.

Find out the value of Ken Star's bond if the required rate of return is 12%.

If the required rate of return is 12% (same as the coupon rate), the value of the bond is

$V = I(PVIFAk_{d,n}) + F(PVIFk_{d,n})$

$= ₹ 12(PVIFA12\%, 5) + ₹ 100(PVIF12\%, 5)$

$= ₹ 12(3.605) + ₹ 100(0.567)$

$= ₹ 43.26 + ₹ 56.7 = ₹ 99.96 = ₹ 100.$

ii. When the required rate of return (k_d) is greater than the coupon rate, the value of the bond is less than its par value.

If k_d > coupon rate;

then, Value of bond < Par value.

b. Consider the same bond as above except that its required rate of return is 14%. Find out the value of the bond.

If the required rate of return is 14% (greater than the coupon rate)[11], then the value of the bond is

$V_0 = I(PVIFA_{kd,n}) + F(PVIF_{kd,n})$

$= ₹ 12(3.433) + ₹ 100(0.519)$

$= ₹ 41.196 + ₹ 51.9$

$= ₹ 93.1$

iii. When the required rate of return is less than the coupon rate, the value of the bond is greater than its par value.

i.e. if k_d < coupon rate;

then, Value of bond > Par value.

If the required rate of return is 10% (less than the coupon rate), then the value of the above bond is

$V_0 = I(PVIFAk_{d,n}) + F(PVIFk_{d,n})$

$= ₹ 12(PVIFA_{10\%, 5}) + ₹ 100(PVIF_{10\%, 5})$

$= ₹ 12(3.791) + ₹ 100(0.621)$

$= ₹ 45.492 + ₹ 62.1$

$= ₹ 107.59$

[11] WHY DOES IT HAPPEN? If the rate of interest prevailing in the market is 14%, then you as investor also expect same return on the bond, in which case, it becomes your required rate of return. When the market is offering 14%, and the bond offers 12% no one will be interested to buy; so the demand falls and the price of the bond also falls as a consequence; this is referred to as 'the bond is sold at discount'. In the example 4.8 (b), the investor gets interest at 12% on ` 100 for an amount of ` 93.1 invested. Thus she gets compensated for the difference of 2% between the required rate and coupon rate of interest. Similar explanation for bonds sold at premium can be extended.

II. Number of years to maturity

The following theorems show the effect of the number of years to maturity on bond values.

a. When the required rate of return (k_d) is greater than the coupon rate, the discount on the bond declines as maturity approaches.

Illustration 4.9

To illustrate the above bond theorem, consider a bond of Enucon Ltd., with the following features:

Par value : ₹ 1,000

Coupon rate : 11%

Years to maturity: 7

If the required rate of return is 13%, then the value of the bond is

$V = I(PVIFAk_{d,n}) + F(PVIFk_{d,n})$

$= ₹\ 110(PVIFA_{13\%,7}) + ₹\ 1,000(PVIF_{13\%,7})$

$= ₹\ 110(4.423) + ₹\ 1,000(0.425)$

$= ₹\ 486.53 + ₹\ 425 = ₹\ 911.53.$

One year from now, when the maturity period will be 6 years, the value of the bond will be:

$V = ₹\ 110(PVIFA_{13\%,6}) + ₹\ 1,000(PVIF_{13\%,6})$

$= ₹\ 110(3.998) + ₹\ 1,000(0.480)$

$= ₹\ 439.78 + ₹\ 480 = ₹\ 919.78$

For a required rate of return of 13%, the value of the bond will increase with the passage of time, i.e., until its maturity.

Years to maturity	Bond value (₹)
5	929.87
4	940.14
3	952.71
2	966.48
1	982.35
0	1,000.00

b. When the required rate of return (k_d) is less than the coupon rate, the premium on the bond declines as maturity approaches.

If the required rate of return on the bond of Enucon Limited is 9%, it will have a value of

$V = ₹\ 110(PVIFA_{9\%,\ 7}) + ₹\ 1,000(PVIF_{9\%,\ 7yrs.})$

= ₹ 110(5.033) + ₹ 1,000(0.547)

= ₹ 553.63 + ₹ 547 = 1,100.63

One year hence, when the maturity period will be 6 years the value of the bond will be

V = ₹ 110($PVIFA_{9\%, 6}$) + ₹ 1,000($PVIF_{9\%, 6}$)

= ₹ 110(4.486) + ₹ 1,000(0.596)

= ₹ 493.46 + ₹ 596 = ₹ 1,089.46.

For a required rate of return of 9%, the value of the bond decreases with the passage of time, i.e. until maturity.

Years to maturity	Bond value (₹)
5	1,077.90
4	1,064.40
3	1,050.41
2	1,035.49
1	1,017.87
0	1,000.00

III. Yield to maturity

As YTM determines a bond's market price and vice-versa, we can say that the bond's price will fluctuate in response to the change in market interest rates in the following ways:

i. A bond's price moves inversely proportional to its yield to maturity.

The present value principle states that the present value of a cash flow varies in inverse proportion to the interest rate used as a discount rate. As such, if the YTM of the bond rises, the bond's market price drops and if the YTM falls, the bond's market price rises.

Illustration 4.10

The YTM of a ₹ 1,000 par value bond bearing a coupon rate of 10% and maturing in 10 years is 12%. Thus, the market value of the bond is

= ₹ 100 ($PVIFA_{12\%, 10}$) + ₹ 1,000 ($PVIF_{12\%, 10}$)

= ₹ 100 x 5.650 + ₹ 1,000 x 0.322

= ₹ 887

If the YTM increases to 14%, the market value of the bond will drop to ₹ 791.60, as calculated below

= ₹ 100 ($PVIFA_{14\%,10}$) + ₹ 1,000 ($PVIF_{14\%,10}$)

= ₹ 100 x 5.216 + ₹ 1,000 x 0.270

= ₹ 791.60.

If the YTM of the same bond comes down to 8%, then the market value of the bond rises to ₹ 1,134.

ii. For a given difference between YTM and coupon rate of the bonds, the longer the term to maturity, the greater will be the change in price with change in YTM. It is so because, in case of long maturity bonds, a change in YTM is cumulatively applied to the entire series of the coupon payments and the principal payment is discounted at the new rate for the entire number of years to maturity; whereas in case of short-term maturity bonds, the new YTM is applied to comparatively fewer coupon payments; and also, principal payment is discounted for only a short period of time. Thus, long-term bonds are more prone to changes in interest rates than short-term bonds.

Illustration 4.11

Let us take two bonds differing only in term to maturity.

Particulars	A	B
Face Value	₹ 1,000	₹ 1,000
Coupon Rate	10%	10%
YTM	11%	11%
Years to Maturity	3	6
Market Value at YTM of 10%	₹ 1,000	1,000
Market Value at YTM of 11%	100 $PVIFA_{11\%,3}$ + 1,000 $PVIF_{11\%,3}$ = ₹ 975	100 $PVIFA_{11\%,6}$ + 1,000 $PVIF_{11\%,6}$ = ₹ 958
Change in Price	2.5%	4.2%

The market value of the bonds when the YTM was equal to coupon rate was equal to the face value of the bonds i.e., ₹ 1,000. When, however the YTM increased to 11%, the market value of the bond with shorter maturity period dropped by only 2.5% to ₹ 975 whereas the market value of the bond with longer maturity period of 6 years has dropped by 4.2% to ₹ 958. Thus, the long-term bonds are characteristically more sensitive to interest rate changes than short-term bonds.

iii. Given the maturity, the change in bond price will be greater with a decrease in the bond's YTM than the change in bond price with an equal increase in the bond's YTM. That is, for equal sized increases and decreases in the YTM, price movements are not symmetrical.

Illustration 4.12

Take ₹ 1,000 par value bond with a coupon rate of 10% and maturity period of 5 years. Let the YTM be 10%. Market price of the bond will be equal to ₹ 1,000. A 1% increase in YTM to 11% changes price to ₹ 962.6 (100 $PVIFA_{11\%,5}$ + 1,000 $PVIF_{11\%,5}$), a decrease of 3.74%. A decrease of 1% YTM to 9% changes the price to ₹ 1,039 (₹ 100 $PVIFA_{(9\%, 5)}$ + ₹ 1,000 $PVIF_{(9\%, 5)}$) an increase of 3.9%.

Thus, an increase in bond's yield caused a price decrease that is smaller than the price increase caused by an equal-size decrease in yield.

iv. For any given change in YTM, the percentage price change in case of bonds of high coupon rate will be smaller than in the case of bonds of low coupon rate, other things remaining the same.

Consider two bonds A and B with the par value of ₹ 1,000, maturing in 4 years and YTM of 10%. Bond A bears coupon rate of 10% whereas bond B bears coupon rate of 12%.

	Bond A	**Bond B**
Market price at YTM of 10% (₹)	1,000.0	1,063.40
Market price at the changed YTM of 12% (₹)	939.7	1,000.44
Change in price	6.03%	5.92%

Change in the price with the change in YTM in case of bond B carrying a higher coupon rate of 12% is only 5.92%, whereas in case of bond A with a coupon rate of 10% the change in the price is 6.03%.

v. A change in the YTM affects the bonds with a higher YTM more than it does bonds with a lower YTM.

Consider a ₹ 1,000 par value ABC bond with a coupon rate of 12%, maturity period of 6 years and YTM of 10%. The market value of the bond will be ₹ 1,087.

Consider another identical bond XYZ but with differing YTM of 20%. The market value of this bond will be ₹ 734.

Suppose there is an increase in YTM by 20% i.e. YTM of bond ABC rises to 12% (10 x 1.2) and bond XYZ rises to 24% (i.e. 20 x 1.2). Then the market value of both bonds will change to –

Bond ABC: 120 $PVIFA_{12\%,6}$ + 1,000 $PVIF_{12\%,6}$ = ₹ 1,000

Bond XYZ: 120 $PVIFA_{24\%,6}$ + 1,000 $PVIF_{24\%,6}$ = ₹ 637.4

Market value of ABC bond with a lower YTM decreased by 8% whereas in case of XYZ bond with a higher YTM the decrease is 13.2%.

Example: Punjab National Bank (PNB) Housing Finance issue of Non-Convertible Debentures

Economic Times, dated 14th June, 2022, reported that on 14th June, the Board of Directors of PNB Bank Housing Finance approved an issue of non-convertible debentures, worth ₹ 2000 crore, for private placement. The Bond was issued, with a coupon rate of 7.59% and its maturity date was 27th July 2022, with the YTM (Yield to Maturity) of 7.45%. PNB Housing Finance company was initially planning to raise equity capital worth ₹ 4000 crores, with their Joint venture partner – Carlyle Group, in the year 2021. But the deal did not work out in October 2021, due to regulatory issues. Further, Carlyle Group held 32% stake in PNB Housing Finance, through its unit Quality Investment Holdings.

Source: https://economictimes.indiatimes.com/markets/bonds/pnb-housing-finance-to-raise-up-to-rs-2000-cr-via-onds/articleshow/92211252.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 14th June, 2022, accessed on 12th June, 2022.

Check Your Progress - 1

1. Arjuna Limited sold its block of assets in the month of April 2016, fetching a yield of ₹ 2,20,000, when the market value of such block of assets was ₹ 7,00,000 on the date of sale. The book value of the assets stood at ₹ 4,80,000 after charging depreciation of 20% p.a. using straight line method. When valuation of assets is done based on its historical cost, Which of the following terms is used?
   a. Liquidation Value
   b. Book Value
   c. Market Value
   d. Replacement Value
   e. Going Concern Value
2. What term is used to refer to a value that an investor gets, at the time of maturity of an investment issued either at par, at premium or at discounted value?
   a. Face value
   b. Market Value
   c. Liquidation Value
   d. Redemption Value
   e. Coupon rate
3. A bond carrying a face value of ₹ 1,000 is currently traded at ₹ 1,234. The coupon rate of interest is at 12% and has a maturity period of 10 years.

How would you compute the required rate of return that the bond will fetch at the time of maturity?

a. I ($PVIFAk_{d, n}$) + F ($PVIFk_{d, n}$)
b. [Gain or loss during holding period + Coupon interest] / Purchase price
c. [I + (F-P)/n] / (F+P) /2
d. Coupon Interest / Current Market Price
e. I/2 ($PVIFAk_{d/2, 2n}$) + F ($PVIFk_{d/2, 2n}$)

4. Identify the statement that is conflicting to the fundamental factors of the bond value theorems.
   a. If k_d > coupon rate; then, Value of bond > Par value
   b. When the required rate of return (k_d) is greater than the coupon rate, the bond value increases with the passage of time
   c. A bond's price moves inversely proportional to its yield to maturity
   d. The long-term bonds are characteristically more sensitive to interest rate changes than short-term bonds
   e. A change in the YTM affects the bonds with a higher YTM more than it does bonds with a lower YTM
5. What will be the bond's current yield that holds a market price of ₹ 500 pays a coupon interest amount of ₹ 75?
   a. 16%
   b. 10%
   c. 12%
   d. 15%
   e. 11%

4.6 Valuation of Warrants and Convertibles

In the above section we have dealt with bond valuation and the various concepts associated with such valuation. Will the same logic holds good if the security under consideration is equity instrument instead of bond or debt instrument? The computational methodology changes depending on the nature of the security.

The next section will cover the concept of equity valuation. However, besides bonds or debts and equity, there are other forms of financing too. Two such important forms of financing and their valuation are discussed below:

4.6.1 Warrants and Convertibles

Warrants and convertible debentures are commonly used instruments of financing all over the world. The wide usage of these instruments is explained with different concepts focusing on cheaper debt, matching cash flows, financial synergy and lower agency costs, etc.

Definition

A warrant is a call option to buy a stated number of shares. They are like calls to the extent that they entitle the holder to buy a fixed number of shares at a predetermined price during some specified period. It gives the holder the right to subscribe to the equity shares of a company. Like call options, warrants may expire at a certain date. They may also be perpetual warrants, which never expire. Most warrants are detachable from the bond or preferred stock to which they were attached at the time of issue. If detached, warrants can be traded as independent securities, like call options.

Warrants are distributed to stockholders in lieu of a stock or cash dividend or sold directly as a new security issue. Sometimes, the companies issue preference shares or debentures with less favorable terms (than those investors would get otherwise). Hence, to compensate, it issues warrants to "sweeten" the offer. For example, the company may sell a debenture or a bond along with warrants.

Warrant Price

The exercise price of a warrant is what the holder must pay to purchase the stated number of shares.

A warrant holder (investor) has no rights unlike a shareholder. A warrant holder neither receives dividends nor holds voting rights. The terms are specified for number of shares that can be purchased for each warrant, based on the exercise (purchase) price per share, and the expiry date of warrant. Usually, the ratio is 1:1, i.e., one share for each warrant.

When a warrant is issued, the exercise price is always greater than the current market price. This price may be fixed for the entire life of the warrant or increased periodically.

The existence of the positive premium on a warrant means that it will be more beneficial for the warrant holder to sell his warrant, thus realizing its theoretical value plus premium, when he exercises it. The premium associated with a warrant will shrink as the expiry date approaches. The actual value of the warrant will be equal to the theoretical value on the expiry date.

4.6.2 Convertible Debentures

A financial instrument that can be converted into a different security of the same company under specific conditions is referred to as convertible security.

A convertible debenture, as the name suggests, is a debenture that is convertible partly or fully, into equity shares. If it is partially converted, it is referred to as 'partly convertible debenture' and if the debentures are converted fully into equity shares at the end of maturity, it is referred to as 'fully convertible debentures'. The option of conversion is either at the discretion of investor i.e., optional or compulsory (if it is specified).

Convertible bond or a preferred stock is converted into specified number of shares. Usually, in this conversion, no cash is involved; simply, the old security is traded and an appropriate number of new securities are issued in turn.

4.6.3 Conversion Ratio and Conversion Value

As said above, the conversion ratio gives the number of shares of stock received for each convertible security. If only the conversion ratio is given, the par conversion price can be obtained by dividing the conversion ratio multiplied by the face or par value of the convertible security.

The conversion value represents the market value of the convertible, if it were converted into stock; this is the minimum value of the convertible based on the current price of the issuer's stock.

Conversion value is obtained by multiplying the conversion ratio by the stock's current market price. For example, consider a convertible bond with ₹ 1,000 (par value) converted into 20 equity shares. If the market price of the share is, say, ₹ 55, then the conversion value of the bond is ₹ 1,100 (20 x 55). If the conversion price of the bond is, say, ₹ 1,200, then conversion premium of the bond is ₹ 1,200 – ₹ 1,100, i.e., ₹ 100.

As the converted stock is affected by tax, corporate investors are less keen to invest, whereas the individual investors are attracted towards converted securities, as they need not pay tax.

Convertible securities have great complexity in their maturities. Some may be converted only after an initial period. Some may be converted up to the bond's maturity date and others only for stated, shorter periods. Some securities may have different conversion ratios for different years.

Illustration 4.13

Let us consider the following example.

M/s. AMA Ltd. has issued fully convertible debentures at a face value of ₹ 200 with coupon rate of 15% p.a., which is converted into 4 equity shares (at a price of ₹ 50 each) at the end of 3 years.

An investor, Vinay, wanted to buy debentures in the secondary market after a year of issue. Let us find out the value of the convertible, if his required rate of return is 18% and price of share is expected to be ₹ 60 at the end of 3 years.

Solution

The value of convertible is determined as:

$$\sum_{t=1}^{n} \frac{C}{(1+r)^t} + \frac{P_n \text{ x Conversion Ratio}}{(1+r)^n}$$

where,

C = Coupon rate

r = required rate of return

P_n = Expected price of equity share on conversion

n = No. of years to maturity

$$= \frac{30}{(1.18)^1} + \frac{30}{(1.18)^2} + \frac{60 \times 4}{(1.18)^2}$$

$$= 25.42 + 21.54 + \frac{240}{(1.18)^2}$$

$$= 25.42 + 21.54 + 172.36$$

= ₹ 219.32

Thus, the value of the convertible is approximately ₹ 220.

The investors preferring to minimize the risk can opt for warrants, as they act like a call option unlike convertible preferred stocks or bonds, for they combine the benefits of fixed income by investing with the option of sharing the price appreciation benefits normally reserved for the common stockholders.

Example: Warrant terms of Adani group's bid for NDTV

NDTV took a loan of ₹ 403.85 crores, against warrants given to RRPR Holding Pvt Ltd. With the warrant, Vishvapradhan Commercial Pvt. Ltd. (VCPL) had the right to convert them to 99.9% stake in RRPR, if the loan was not paid. Adani Group first bought the VCPL and then they exercised an option, to convert their unpaid debt into 29.18% stake, in the news channel company-NDTV. This was a hostile takeover bid for NDTV on 24th August 2022. The legal team opined that the convertible warrants that were issued in the year 2009-10 will get affected, if there was any dispute on the contractual terms mentioned earlier. They also made an offer for ₹ 493 crore, to buy additional 26% stake from the public.

Source: https://economictimes.indiatimes.com/industry/media/entertainment/media/contractual-terms-of-warrants-will-be-crucial-in-adani-groups-hostile-bid-for-ndtv-legal-experts/articleshow/93760279.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 26th August, 2022, accessed on 30th September, 2022.

Activity 4.1

1. A bond has a face value of ₹ 1,000 and coupon rate of 8%. The maturity of the bond is 9 years and the required rate of return is 10%. What will be the fair value of the bond, if it is redeemed at a premium of ₹ 100?

2. The bonds of Sigma Ltd. are presently selling at a premium of 5 percent against its face value as well as the maturity value of ₹ 100. The current yield on these bonds is 9.52 percent. The coupons are paid yearly. If the bonds are to mature 3 years hence, what should be the annualized yield to an investor of today by the approximation method?

4.7 Equity Valuation: Dividend Capitalization Approach

Why would individuals or the corporate entities or any investor invest in equity? The expectation is a decent return on his investment beating inflation and some capital appreciation on his investments. Can anyone guarantee that the investments by the legal entities in equity or bonds always yield desired yield?

The safety and attractiveness of common stock investment would be jeopardized if equity stocks were bought at an excessively high general market value or too much was paid for the promising prospects of favored issues.

The following paras will explain the different models of valuing the equity stock.

People hold common stocks or equity in their portfolios for two reasons; (i) A representative group of common stocks (like growth stocks and blue chips) bought at a reasonable price level can be counted to provide a higher total return than bonds; (ii) Common stocks can be held as a protective measure during inflation because unlike equity, a bond's value declines as inflation rises. However, the safety and attractiveness of common stock investment would be jeopardized if stocks were bought at an excessively high general market value or too much was paid for the promising prospects of favored issues. Thus, there should be a standard value for judging whether a stock is under or overpriced in the market place. We call this standard value the intrinsic value.

Intrinsic value is the value of a stock that is justified by assets, earnings, dividends, definite prospects and the factor of the management of the issuing company.

The major components of intrinsic value are:

a. Earning power and profitability of the management in the employment of assets;

b. Dividends paid and the ability to pay such dividends in the future;

c. Estimates of the growth of earnings;

d. Stability and predictability of these quantitative and qualitative projections.

Thus, in essence, the intrinsic value of a firm's shares is its economic value as a going concern, taking account of its characteristics, the nature of its business and the investment environment.

According to the dividend capitalization approach, which is a conceptually sound approach, the value of an equity share is the discounted present value of dividends received plus the present value of the resale price expected when the equity share is sold. Therefore, to apply this approach to the valuation of equity stock the following assumptions are to be made:

i. Dividends are paid annually, which is a common practice for business firms in India, and

ii. The 1st payment of dividend is to be made one year after the equity share is bought.

4.7.1 Single Period Valuation Model

This model is for an equity share wherein an investor holds it for one year. The price of such equity share will be:

$$P_0 = \frac{D_1}{(1+k_e)} + \frac{P_1}{(1+k_e)} \quad \text{.....(7)}$$

where,

P_0 = Current market price of the share

D_1 = Expected dividend a year hence

P_1 = Expected price of the share a year hence

k_e = Required rate of return on the equity share

Illustration 4.14

Mercury India Ltd. is expected to declare a dividend of ₹ 2.50 and reach a price of ₹ 35.00 a year hence. What is the price at which the share would be sold to the investors now if the required rate of return is 13 percent?

Solution

$$\text{The current price } P_0 = \frac{D_1}{(1+k_e)} + \frac{P_1}{(1+k_e)}$$

$$= \frac{2.50}{(1+0.13)} + \frac{35.00}{(1+0.13)}$$

$$= \frac{2.50}{1.13} + \frac{35.0}{1.13}$$

$$= ₹\ 2.21 + ₹\ 31.00$$

$$= ₹\ 33.21$$

4.7.2 Multi-Period Valuation Model

Since there is no maturity period for equity share, the value of an equity share of infinite duration is equal to the discounted value of the stream of dividends of infinite duration.

Thus,

$$P_0 = \frac{D_1}{(1+k_e)^t} + \frac{D_2}{(1+k_e)^2} + \ldots + \frac{D_¥}{(1+k_e)^¥}$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+k_e)^t} \qquad \ldots\ldots(8)$$

where,

P_0 = Current market price of the equity share

D_1 = Expected dividend a year hence

D_2 = Expected dividend two years hence

$D_¥$ = Expected dividend at infinite duration

k_e = Expected rate of return or required rate of return

The above equation is the valuation for an equity share of infinite duration. The same can be applied to the valuation of an equity share with a finite duration provided the investor holds the same for n years and then sells it at a price P_n. The value of an equity share of finite duration would thus be:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \ldots + \frac{D_n}{(1+k_e)^n} + \frac{P_n}{(1+k_e)^n}$$

$$= \sum_{t=1}^{n} \frac{D_t}{(1+k_e)^t} + \frac{P_n}{(1+k_e)^n} \qquad \ldots\ldots(9)$$

Using the dividend capitalization principle, the value of P_n in the above equation (9) would be the present value of the stream of dividend beyond the nth period, which is evaluated at the end of nth year. Therefore

$$P_n = \frac{D_{n+1}}{(1+k_e)} + \frac{D_{n+2}}{(1+k_e)^2} + \ldots + \frac{D_\infty}{(1+k_e)^{\infty-n}} \qquad \ldots\ldots(10)$$

Substituting the value of P_n in the above equation (9) and simplifying it, we get

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+k_e)^t} \qquad \ldots\ldots(11)$$

This equation is same as equation (8) which is regarded as a generalized multi-period formula used for rising, declining, constant or randomly fluctuating dividend stream.

Three such instances are discussed below:

i. Constant dividends

ii. Constant growth of dividends

iii. Changing growth rates of dividends

i. **Valuation with Constant Dividends:** Assume that the dividend per share is constant year after year, whose value is D, then eqn. (10) becomes

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \ldots + \frac{D_\infty}{(1+k_e)^\infty}$$

On simplification the above equation becomes

$$P = \frac{D}{k_e} \qquad \ldots\ldots (12)^{12}$$

ii. **Valuation with Constant Growth in Dividends:** It is assumed that dividends tend to increase over time because business firms usually grow over time. Therefore, if the growth of the dividends is at a constant compound rate then:

$$D_t = D_o (1+g)^t$$

where,

D_t = Dividend for year t

D_o = Dividend for year 0

g = Constant compound growth rate

The valuation of the share where dividend increases at a constant, compound rate is given as:

$$P_0 = \frac{D_1}{(1+k_e)} + \frac{D_1(1+g)}{(1+k_e)^2} + \frac{D_1(1+g)^2}{(1+k_e)^3} + \ldots$$

On simplification

$$P_0 = \frac{D_1}{k_e - g} \qquad \ldots\ldots (13)^{13}$$

Illustration 4.15

Shetkani Solvents Ltd. is expected to grow at the rate of 7% per annum and dividend expected a year hence is ₹ 5.00. If the rate of return is 12%, what is the price of the share today?

Solution

The price would be $P_0 = \frac{5.00}{0.12 - 0.07} = \frac{5.00}{0.05} = ₹\ 100$

[12] Refer to a geometric progression (GP); sum of infinite terms GP terms = a / (1-r) where r is the multiple. In this equation 'r' is 1 / (1+k_e) and 'a' is D ; substituting, we get D / k_e

[13] The sum of infinite GP series, with 'r' being (1+g) / (1+k_e), we get D_1 / k_e -g

iii. **Valuation with Variable Growth in Dividends:** Some firms have a super normal growth rate followed by a normal growth rate. If the dividends move in line with the growth rate, the price of the equity share of such firm would be

$$P_0 = \frac{D_1}{(1+k_e)} + \frac{D_1(1+g_a)}{(1+k_e)^2} + \cdots \frac{D_1(1+g_a)^{n-1}}{(1+k_e)^n} + \frac{D_n(1+g_n)}{(1+k_e)^{n+1}} + \frac{D_n(1+g_n)^2}{(1+k_e)^{n+2}} + \ldots\ldots$$

Where

P_0 = Price of the equity share

D_n = $D_1 (1 + g_a)^{n-1}$

D_1 = Expected dividend a year hence

g_a = Super normal growth rate of dividends

g_n = Normal growth rate of dividends

For computation of P_0 in the above equation, the following procedure may be adopted.

1. Expected dividend stream during the supernormal period of the super normal growth is to be specified and the present value of this dividend stream is to be computed for which the equation to be used is

$$= \sum_{t=1}^{n} \frac{D_t}{(1+k_e)^t}$$

2. The value of the share at the end of the initial growth period is calculated as follows:

$$P_n = \frac{D_{n+1}}{k_e - g_n} \text{ (as per the constant growth model)}$$

It is then discounted to the present value. The discounted value therefore is

$$\frac{D_{n+1}}{k_e - g_n} \times \frac{1}{(1+k_e)^n}$$

3. Then add both the present value composites to find the value (Po) of the share, which is

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+k_e)^t} + \frac{D_{n+1}}{K_e - g_n} \times \frac{1}{(1+k_e)^n} \quad \ldots\ldots(14)$$

Illustration 4.16

Consider the equity share of Venus Lab Limited.

D_0 = Current dividend per share = ₹ 3.00

n = Duration of the period of super normal growth = 5 years

g_a = Growth rate during the period of super normal growth = 25%

g_n = Normal growth rate after super normal growth period is over = 7%

k_e = Investor's required rate of return = 14%

The following are the steps involved.

1. Dividend stream during super normal growth period:

D_1 = ₹ 3.00 (1.25)

D_2 = ₹ 3.00 $(1.25)^2$

D_3 = ₹ 3.00 $(1.25)^3$

D_4 = ₹ 3.00 $(1.25)^4$

D_5 = ₹ 3.00 $(1.25)^5$

The present value of the above stream of dividends is

$$= \frac{3.00\,(1.25)}{(1.14)} + \frac{3.00\,(1.25)^2}{(1.14)^2} + \frac{3.00\,(1.25)^3}{(1.14)^3} + \frac{3.00\,(1.25)^4}{(1.14)^4} + \frac{3.00\,(1.25)^5}{(1.14)^5}$$

= ₹ 3.29 + 3.61 + 3.96 + ₹ 4.34 + ₹ 4.76

= ₹ 19.96.

2. The price of the share at the end of 5 years, applying the constant growth model at that point of time will be:

$$P_5 = \frac{D_6}{k_e - g_n} = \frac{D_5(1+g_n)}{k_e - g_n}$$

$$= \frac{3.00\,(1.25)^5\,(1.07)}{0.14 - 0.07} = \frac{9.8}{0.07} = ₹\ 140$$

The discounted value of this price is

$$= \frac{140.00}{(1.14)^5} = ₹\ 72.71$$

3. The sum of the above components is:

P_0 = ₹ 19.96 + ₹ 72.71

= ₹ 92.67

∴ The value of the share P_0 = ₹ 92.67.

4.7.3 Impact of Growth on Price, Returns and P/E Ratio

Different companies have varied expected growth rates. While some companies remain stagnant, other companies show normal growth and still others grow at a super normal growth rate. Assuming a constant required rate of return, varying growth rates mean difference in stock prices, dividend yields, capital gain yield and price earnings ratio.

To illustrate the above, three cases can be considered.

	Growth rate (%)
Firm with no growth	0
Firm with normal growth rate	6
Firm with super normal growth rate	10

The expected earnings per share and dividend per share of each of the above firms are ₹ 5.00 & ₹ 4.00 respectively. The required rate of return from equity investments is 16%.

We can calculate the stock price, dividend yield, capital gain yield and price-earnings ratio for all the above cases with the given information.

Price, Dividend yield, Capital gains yield, & Price-earnings ratio under differing growth assumption for 16% required rate of return.

Price	Dividend Yield	Capital Gain Yield	P/E Ratio (P/E)
	$\left(\frac{D_1}{P_0}\right)$	$\left(\frac{P_1 - P_0}{P_0}\right)$	
No growth firm $P_0 = \frac{D_1}{K}$	16%	0%	5
Normal growth firm $P_0 = \frac{D_1}{K-g}$	10%	6%	8
$\frac{₹\ 4.00}{0.16 - 0.06} = ₹\ 40$			
$\frac{₹4.00}{0.16}$ ₹25+	6%	10%	13.4
$\frac{₹\ 4.00}{0.16 - 0.06} = ₹\ 40$			
Super normal growth $P_0 = \frac{D_1}{K-g}$			
$\frac{₹\ 4.00}{0.16 - 0.10} = ₹\ 67$			

Looking at the table, we can say that:

1. Other things being equal, as the expected growth in dividend increases, the expected return, i.e., (the total return = dividend yield + capital gain yield) depends more on the capital gain yields, less on the dividend yield.
2. Other things being equal, the price-earnings ratio increases as the expected growth rate in dividend increases.
3. High dividend yield and low price earnings ratio imply limited growth prospects.
4. Low dividend yield and high price earnings ratio imply considerable growth prospects.

Example: Antsy LIC Investors Seek Aramco-Style Dividend

Economic times, dated 18th May 2022, reported that Life Insurance Corporation, India's leading insurance company for the last 65 years went in for IPO. It was India's biggest initial public offer for $2.7 billion, in the month of May 2022. The market priced it, at ₹ 949 per share. When the market opened next day, the price decreased by 9.4% and came down to ₹ 860. Many investors and analysts were worried and also forecasted that the price might fall further, as the scope of company's growth was less in this type of companies. There was another risk, for this legacy business, of Government going for disinvestment, which was not favorable for the shareholders. Though the company might declare annual dividends, it might not be convincing.

Source:https://economictimes.indiatimes.com/markets/stocks/news/antsy-lic-investors-seek-aramco-style-dividend/articleshow/91624807.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 18th May, 2022, accessed on 12th June, 2022.

Activity 4.2

1. Alfa Ltd., which is experiencing constant growth rate, has generated earnings per share of ₹ 18.50 and ₹ 24.00 in the previous and current year respectively. The company follows a dividend payout ratio of 28%, which is expected to remain at the same level. What would be the price of the share, if the required rate of return is 35% p.a?

2. The face value of the equity share of Blue Line Ltd., is ₹ 10 and the current market price of the share is ₹ 8. The company is expected to declare a dividend of 20% during the current year. If the dividends are expected to decline at the rate of 10% p.a., then, what will be the expected rate of return on the shares?

4.8 Equity Valuation: Ratio Approach

In the earlier sub topic 4.7 we have seen how the Dividend Capitalization Approach model explains equity valuation. In the topic let us understand another model of equity valuation "the ratio approach" that is simple to use and followed by most practitioners. Some of the ratios employed in the context of valuation are discussed hereunder.

a. Book value

b. Liquidation value

c. Price/Earnings ratio

4.8.1 Book Value

The book value per share is the net worth of the company (paid-up equity capital plus reserves and surplus) divided by the number of outstanding equity shares.

Book Value = Net worth (Paid equity capital + reserves + surplus) □□□Number of outstanding equity shares.

4.8.2 Liquidation Value

Liquidation value per share is equal to:

$$\frac{\left(\text{Value realized from liquidating all the assets of the firm}\right) - \left(\text{Amount to be paid to all the creditors and preference shareholders}\right)}{\text{No. of outstanding equity shares}}$$

This is more realistic than the book value. However, it has two obstacles (1) It would be difficult to estimate the amount realized from liquidation of various assets (2) Liquidation value does not reflect earning capacity.

4.8.3 Price-Earnings Ratio

Financial analysts have used this P/E model more frequently than other models. According to this, the intrinsic value of the share is:

Expected earnings per share x appropriate price–earnings ratio.

The expected earnings per share is:

$$\frac{\text{Expected PAT} - \text{Preference dividend}}{\text{Number of outstanding equity shares}}$$

Preference dividends and the number of outstanding equity shares can be defined, but the expected PAT is quite difficult to estimate. Therefore, factors like sales, gross profit margin, depreciation, interest burden and tax rate will have to be considered to arrive at an appropriate figure for PAT.

To establish an appropriate price-earnings ratio for a given share, to start with, the price-earnings ratio for the market as a whole and also for the industry will have to be considered. Then the P/E ratio applicable to the particular share under consideration should be judged for which the following factors are to be considered.

1. Growth rate
2. Stability of earnings
3. Size of the company
4. Quality of management
5. Dividend pay-out ratio

The impact of the above factors in P/E ratio is rather difficult to quantify. However, qualitative observation can be made.

The higher the growth rate, the higher the P/E ratio; the greater the stability of earnings, the higher the P/E ratio; the larger the size of the company, the higher the P/E ratio; and the higher the dividend pay-out ratio, the higher the P/E ratio.

4.8.4 E (P/E) Ratio

The Expected P/E ratio E (P/E) is formed by dividing the present value of the share by the expected earnings per share denoted by E(EPS).

$$\therefore \text{E (P/E)} = \frac{\text{PV per share}}{\text{E(EPS)}}$$

Substituting the present value per share with the present value formula as per dividend discount model, we get

$$\text{E (P/E)} = \frac{\text{D}}{\text{k} - \text{g}} \text{ x } \frac{1}{\text{E(EPS)}} \text{ or } \frac{\text{D}/\text{E (EPS)}}{(\text{k} - \text{g})}$$

Where, the numerator is the expected dividend pay-out ratio. It is also known as the forward P/E ratio.

4.8.5 Comparing Expected and Actual P/E Ratios

Step 1: Estimate the stock's expected price-earnings ratio, E (P/E), by studying fundamental facts about the firm.

Step 2: Observe the stock's current P/E by checking price and earnings data in newspapers or investment periodicals.

Step 3: Compare the stock's actual P/E with its E(P/E) and then consult the investment decision rules below:

a. If the E (P/E) exceeds the actual P/E, the stock is currently underpriced and this is the time to buy.

b. If the E (P/E) is less than the actual P/E, the stock is currently overpriced and this is the time to sell (or sell short).

c. If the E (P/E) equals the actual P/E, the stock is correctly priced – neither buying nor selling is desirable.

Example: Look at Valuations but don't get Trapped by that Alone

Economic times dated 6th June 2022 reported that Hindustan Unilever Company, in its annual report, mentioned that its EPS had grown at a CAGR of 8 percent, in the last two decades. When it was verified, whether the HUL's market capitalization increased in the last two decades to the same level, it was found that market cap was ₹ 5.4 trillion. It should have been ₹ 2.4 trillion, when compared with the EPS growth rate. This rerating in valuations was responsible for 56% of HUL's market cap growth. Always, change in the valuation increases the company's annual returns and gives better results.

Source: https://economictimes.indiatimes.com/markets/stocks/news/look-at-valuations-but-dont-get-trapped-by-that-alone/articleshow/92034764.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 6th June, 2022, accessed on 12th June, 2022.

Check Your Progress - 2

6. "A warrant entitles the holder to buy a fixed number of shares at an exercise price that can be traded as independent securities, like call option". Which of the following is true with respect to this financial instrument?
   a. Perpetual warrants may expire at a certain date
   b. A warrant holder (investor) has rights unlike a shareholder
   c. A warrant holder receives dividends and holds voting rights
   d. Warrants are distributed to stockholders in lieu of a stock or cash dividend or sold directly as a new security issue
   e. When a warrant is issued, the exercise price is less than the current market price
7. Which of the following is not a component of intrinsic value of the firm?
   a. Profitability of management in employment of assets
   b. Ability to pay present and future dividends
   c. Estimates of the growth of earnings
   d. Stability in quantitative and qualitative projections
   e. Values stock based on trader ability to pay the premium price
8. Which valuation model would you use to ascertain the current market price of a share for a given required rate of 12 percent with an expected dividend and share price after a year at ₹ 5 and ₹ 50?
   a. Basic Valuation Model
   b. Single Period Valuation

c. Multi-Period Valuation

d. Yield to Maturity

e. Current Yield

9. What is the current price of share of M/s Shantiniketan, if the required rate of return is 10% with an expected growth rate of 7% per annum and dividend expected a year hence is ₹ 6?

a. ₹ 100

b. ₹ 200

c. ₹ 85

d. ₹ 120

e. ₹ 60

10. P/E Model is the most frequently used model in valuation of equity stocks. Identify the factor that is not considered in calculation of price earnings ratio.

a. Growth rate

b. Stability of earnings

c. Dividend pay-out ratio

d. Management quality

e. Liquidity value

4.9 Summary

- The concept of time value of money provides a fundamental background for the valuation of bonds and stocks. Value of any security can be defined as the present value of its future cash streams i.e.,

$$V_0 = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + ... + \frac{C_n}{(1+k)^n} = \sum_{t=1}^{n} \frac{C_n}{(1+k)^t}$$

Where

V_0 = Value of the asset at time zero,

C_t = Expected cash flow at the end of period t,

k = Discounted rate of required rate of return on the cash flow,

n = Expected life of an asset.

- Face value of a bond is the value stated on the bond. A bond carries a rate of interest, which is called coupon rate. Bond is issued for a specific period, which is called maturity of the bond. The value that a bondholder gets on maturity is called redemption value.
- Yield of a bond can be measured using several methods viz. single period rate of return, current yield and yield to maturity.

- When the required rate of return is equal to the coupon rate, the value of bond is equal to its par value.
- When the required rate of return is greater than the coupon rate, the value of bond is less than its par value.
- When the required rate of return is less than the coupon rate, the value of bond is greater than its par value.
- When the required rate of return is greater than the coupon rate, the discount on the bond declines as maturity approaches.
- When the required rate of return is less than the coupon rate, the premium on the bond declines as maturity approaches.
- A bond's price moves inversely proportional to its yield to maturity.
- For a given difference between YTM and coupon rate of the bonds, the longer the term to maturity, the longer will be the change in price with change in YTM.
- Given the maturity, the change in bond price will be greater with a decrease in the bond's YTM than the change in bond price with an equal increase in the bond's YTM.
- For any given change in YTM, the percentage price change in case of bonds of high coupon rate will be smaller than in the case of bonds of low coupon rate, other things remaining the same.
- A change in the YTM affects the bonds with a higher YTM more than it does bonds with lower YTM.
- The value of a convertible is determined as:

$$V_0 = \sum_{t=1}^{n} \frac{C}{(1+r)^t} + \frac{(P^n) \times \text{Conversion ratio}}{(1+r)^n}$$

- The book value, liquidation value and Price/Earnings ratio are the three frequently used values of equity shares.
- The Expected P/E ratio E (P/E) ratio is formed by dividing the present value of the share by the expected earnings per share denoted by E (EPS).

4.10 Glossary

Bond is an instrument for long-term debt.

Book Value is an accounting concept. Assets are recorded at historical costs and they are depreciated over the years. Book value may include intangible assets at acquisition cost minus amortized value.

Book Value per Share is the net worth of the company (paid-up equity capital plus reserves and surplus) divided by the number of outstanding equity shares.

Conversion Ratio gives the number of shares of stock received for each convertible security.

Conversion Value represents the market value of the convertible, if it were converted into stock. This is the minimum value of the convertible based on the current price of the issuer's stock.

Convertible Debenture is a debenture that is convertible partly or fully, into equity shares.

Convertible Security is a financial instrument that can be converted into a different security of the same company under specific conditions.

Coupon Rate is the stated interest rate on a bond.

Current Yield is the annual interest or dividend currently received divided by the current market price.

E (P/E) Ratio is formed by dividing the present value of the share by the expected earnings per share denoted by E (EPS).

Face Value is the par value of the bond that a firm assures to repay at the time of maturity.

Fully Convertible Debentures are debentures which are converted to equity or preference shares after a specific period of time.

Going Concern Value is the amount that a company could realize if it sold its business as an operating one. Its value would always be higher than the liquidation value, the difference accounting for the usefulness of assets and value of intangibles.

Liquidation Value is the amount that a company could realize if it sold its assets after having terminated its business. It is generally a minimum value that a company might accept if it sells its business.

Market Value is the price at which the bond is usually bought or sold.

Partly Convertible Debenture is a type of convertible debenture which is partly redeemed after a specific period of time and the other part is convertible to equity shares or preference shares or a new type of debentures.

Pay-out Ratio is the proportion of earnings paid out by way of dividends.

Price/Earnings (P/E) Ratio is the ratio of market price per share to earnings per share.

Redemption Value is the value that a holder gets on maturity which is redeemed either at par or premium or discount.

Replacement Value is the amount that a company would be required to spend if it were to replace its existing assets in the current condition.

Required Rate of Return is the rate of return required by investors on their investment.

Shareholder's Funds or Net worth is the difference between the book value of assets and liabilities is equal to the (which is equal to paid-up equity capital plus reserves and surplus).

Warrant is the call option to buy a stated number of shares.

Warrant Price is the exercise price of a warrant that the holder must pay to purchase the stated number of shares.

4.11 Self-Assessment Test

1. Give a brief note on valuation concept.
2. Calculate the value of a bond with a given par value of ₹ 500, bearing a coupon rate of 8% and that has a maturity period of 3 years. The required rate of return on the bond is 6%.
3. Write a short note on different parameters based on which the bonds are valued.
4. Describe the ways in which the bond yields are measured.
5. Briefly explain the factors the bond value theorems are derived from with necessary examples.
6. Enumerate on equity valuation based on dividend capitalization approach.
7. Explain the ratio approach employed by practitioners for bond valuation.

4.12 Suggested Readings/Reference Material

1. Anthony Saunders, Marcia Cornett, Anshul Jain (2021). Financial Markets and Institutions. McGraw-Hill. 7th edition
2. I.M. Pandey, Financial Management (2021). 12th edition, Vikas Publishing House.
3. Jeff Madura (2020). Financial Markets and Institutions – Asia Edition, 13th edition; Cengage Learning
4. P. G. Apte (2020). International Financial Management; Tata McGraw-Hill Education Private Limited; 8th edition
5. Prasanna Chandra (2019). Financial Management – Theory and Practice, 10th edition, New Delhi: Tata McGraw-Hill
6. Frank J. Fabozzi, Frank J. Jones (2019). Foundations of Global Financial Markets and Institutions. Mit Press. 5th edition
7. Brealey Myers (2018). Principles of Corporate Finance, 12th edition, USA: McGraw-Hill Companies Inc.

4.13 Answers to Check Your Progress Questions

1. (b) Book Value

Book value is an accounting concept. Assets are recorded at historical costs and they are depreciated over the years.

2. (d) Redemption value

The value that a bondholder gets on maturity is called redemption value. A bond may be redeemed at par, at a premium (more than par) or at a discount (less than par value).

3. (c) [I + (F-P)/n] / (F+P) /2

The required rate of return (k_d) is the return that an investor will receive on maturity by purchasing a bond.

4. (a) If k_d > coupon rate; then, Value of bond > Par value

When the required rate of return (k_d) is greater than the coupon rate, the value of the bond is less than its par value.

5. (d) 15%

Current Yield = Coupon Rate / Current Market Price

= 75 / 500 = 15%

6. (d) Warrants are distributed to stockholders in lieu of a stock or cash dividend or sold directly as a new security issue

A warrant is a call option to buy a stated number of shares. Warrants are distributed to stockholders in lieu of a stock or cash dividend or sold directly as a new security issue.

7. (e) Values stock based on trader ability to pay the premium price

Values stock based on trader ability to pay the premium price is not a component of the intrinsic value of a firm.

8. (b) Single Period Valuation

This model is for an equity share wherein an investor holds it for one year. The price of such equity share will be:

$$P_0 = \frac{D_1}{(1 + k_e)} + \frac{P_1}{(1 + k_e)}$$

9. (b) ₹ 200

The price would be P_0 = 6.00 / (0.10 – 0.07) = ₹ 200.

10. (e) Liquidity Value

Liquidity Value is not a factor considered in calculation of the P/E valuation model.

Unit 5

Global Bond Markets

Structure

"It's important to remember how fortunate we are as a country, to have a currency and a bond market that is seen in every way, as a source of strength and it's a huge responsibility for us to keep it that way."

- Lawrence Summers, American Economist

5.1 Introduction

Let's discuss how government and non-government companies mobilize capital, using bonds, basics of bonds, bond investment strategies, structure of bonds, risk associated with bonds, global bond markets, international organization of securities commission, and central government debt securities, in detail.

In the previous unit you have studied about valuation concept, valuation of bond, bond value theorems, valuation of warrants and convertibles, equity valuation with dividend capitalization approach, equity valuation with ratio approach and comparing expected and actual P/E ratio.

After understanding the basics of bonds and equity valuation we move to the operational issues regarding the bonds in global markets. The bonds in the global markets are issued in different currencies. Since they are denominated in different currencies, the bonds are exposed to exchange risk apart from interest rate risk while computing their valuations.

In this unit you will study about basics of bonds, bond investment strategies, structure of bonds, risk associated with bonds, global bond markets and International Organization of Securities Commission and central government debt securities.

5.2 Objectives

After reading this unit, you will be able to:

- Explain the basic purpose of bonds in order to determine the reasons for issuing them in global financial markets
- Describe various bond investment strategies to target global investors
- Discuss the structure of bonds and know various bonds issued in the global market
- Analyse various risks exposed by bonds in global financial markets
- Evaluate the size and volume of global bond market and its impact on global economy

5.3 Basics of Bonds

The government and corporate organizations mobilize funds from public for meeting their operational expenses or capital expenditures (CAPEX) requirements / developmental activities. The capital mobilized can be broadly categorized as equity capital and debt capital. This mode of operation is common in all economies. Bonds are the main debt instruments used by the business entity (or the Government / Non-Government organization).

Government entities issue other types of debt instruments also. A bond is generally a medium to long term debt instrument, a debt security, similar to an IOU. The investor in bonds is a lender to the issuer of the bonds, either corporate or the government. The issuer of the bond undertakes to pay a fixed (or floating or exchange linked or inflation linked) interest periodically to the investor during the life of the bond and repay the principal, called the face value on maturity. Bonds are issued for a fixed maturity period.

Corporate bonds are a primary source of long term liabilities for corporates and sovereign bonds (otherwise called government bonds) are long term borrowings by the government, as an integral part of its policy of fiscal management. Generally speaking, sovereign bonds are considered risk free, even though there were nations in the past which had defaulted in servicing the bonds. Sovereign bonds also include foreign government bonds, sub-sovereign bonds, supra national and quasi government bonds. Corporate bonds are either unsecured or collateralized.

Bonds are tradable financial instruments. An efficient secondary market promotes bond market in terms of depth, liquidity and volumes.

Any rational investor aims to create a well-diversified portfolio of securities like bank fixed deposits, bonds, equities, mutual funds, gold, silver, real estate and even commodities. Generally bonds occupy significant percentage in many investment portfolios because bonds provide the investor with predictable periodical cash flows (in the form of interest payments) and ensure repayment of principal on maturity. Further, liquidity is ensured for him because of the presence of secondary market and loan facilities by banks when pledged.

As a medium to long term instrument, bonds are particularly attractive as a dependable source for retirees, pensioners, etc. Globally the traditional fixed benefit pension and retirement plans have been gradually replaced by defined contribution plans, throwing the responsibility on individuals to construct a predictable source of periodical income as a substitute for defined pension plans of yester years. Bonds ideally answer this requirement.

Example: Navi Finserv ₹ 300-Crore Debt Bond Lists with 1.65 Times Subscription

In Economic Times, dated 10th June, 2022, NFS chairman and CEO Sachin Bansal made a statement that the debt bond issued by Navi Finserv was for ₹ 300 crore and was very successful in the bond market. The bond was listed as a redeemable Non-Convertible Debenture, with a value of ₹ 600 crore, which included the green shoe option of ₹ 300 crore. The bond was listed until 10th June 2022. Since it was 1.65 times oversubscribed, the issue was closed on 2nd June 2022 itself. The company had the base value of ₹ 300 crore but received ₹ 495.72 crore, which was 65% above the base value.

Source:https://economictimes.indiatimes.com/markets/bonds/navi-finserv-rs-300-crore-debt-bond-lists-with-1-65-times-subscription/articleshow/92133834.cms. Dated 10th June, 2022, accessed on 18th June, 2022.

5.4 Bond Investment Strategies

As already stated, bonds are the principal long term source of funds for the borrowers.

Who are all interested in Bond Investments? What is the motivation for the investors to opt for bonds as Investment Avenue? What are the risk elements associated with the duration of the investments in Bonds? An investor is interested in all these issues whether he is a small investor / High Net-worth Individual (HNI) / Mutual fund or big corporate investor.

While investing in bonds the following factors are considered: The maturity period of the bond, redemption features, credit quality, rate of interest (called the coupon) and price (the face value at the time of initial issue and market value subsequently), yield, tax and fiscal status. A holistic view has to be taken by a bond investor, keeping the aforesaid factors while investing in bonds.

Apart from these basic factors, following are the critical factors: credit quality, credit rating, financial guarantee insurance if available, price and yield, market dynamics that cause different linkages between price and yield, the link between maturity and interest rates and the interest rate dynamics (Inflation rate and central bank's policy rates), tax status and overall assessment of risk.

Individual Investors in Bonds

Traditionally both corporate bonds and government bonds target banks and other financial institutions for investment. Investment by individuals doesn't exceed 5% on average globally. This percentage is expected to rise in future because of the growing awareness among individuals as to the benefits and desirability of including higher percentage of bonds in their portfolios.

Individual's investment in bonds could be either in direct bonds or bond funds or unit trusts.

Major Investment Strategies

Following are the strategies for investments in bonds:

- **A diversified portfolio among various classes of assets:** Rational investors prefer a well-diversified portfolio with a view to minimize risks. The percentage of bonds in such a portfolio depends on the risk preferences of the investor.
- **Diversification among types of bonds:** Suppose the portfolio held a variety of high yield and investment grade bonds, the investment grade bonds may generate lower yields but their ability to withstand economic downturns could offset potential credit quality concerns which could affect the high yield securities in the portfolio. Similarly there could be a balance between corporate bonds and the government bonds.
- **Bond laddering strategy:** This is also a diversification strategy among bonds, with focus on various maturities. Under this strategy the portfolio's sensitivity to interest rate risk is reduced. Illustratively, suppose an investor invests only in short term securities, which are generally least sensitive to changing interest rate risks, there is high degree of stability but lower yields. Conversely, if the individual invests in long term securities he earns higher returns but there is more price volatility, which could even result in losses. This is because bonds are highly rate sensitive. When interest rates rise the bond value falls and the yield there on rises. When interest rates fall the bond price rises and its yield falls. Under bond laddering technique, the investor has to buy an assortment of bonds with maturities distributed over time. Illustratively, investments may be made in equal amounts in securities maturing in two, four, six, eight, ten years and so on. In two years, when the first set of bonds mature the investors would reinvest the money in a ten year maturity, in the process maintaining the ladder.

- **Barbell Strategy:** This strategy involves investment in bonds of more than one maturity to limit the risk against price fluctuations. The focus here is investing in bonds with maturity at both ends of the spectrum, long and short term. For example bond maturing in 6 months or a year and a 20 or a 30 year bond.
- **Bond Swaps:** A swap involves simultaneous sale of one security and the purchase of another with the following objectives:

  Change in maturities, change in asset classes, change from fixed to floating rates (or vice versa), upgrade the credit quality of the portfolio, increase current income, realize tax benefits or to achieve a number of other objectives as well. These are generally called switches. Bond Swapping is done to achieve one or some of the aforesaid objectives.
- **Buy and hold Strategy:** This strategy involves holding the bond till maturity. This allows investors to have steady and predictable income streams.
- **Active *versus* passive investment strategy:** Active strategy involves maximization of the return on a bond portfolio and outperforming return of a selected market benchmark or index by making adjustments in the bond portfolio. Passive strategy on the other hand involves in approximating or replicating the returns of a whole or a sector of the bond market. Incidentally, bond laddering may be classified as a more passive strategy as it focuses on maintaining returns rather than maximizing them.
- **Bond Funds:** In Europe, this is a popular strategy. A bond fund is a fund invested primarily in bonds and other debt instruments. Investing in such funds, which are professionally managed, could be advantageous to the investor because professional management could be superior to the investment decisions of the individual investor. Such funds have diversification across bonds with lower capital outlay and lower level of risks.

Bond Investments and Skill Building

Institutional investors in bonds prefer to depend on in house knowledge and talent. They may generally lack such skills and have to invariably depend on professional advice. However, bond investment strategies are not very complicated and even individuals could learn about them for their benefit in practice. This is the skill building strategy.

Example: Push for Direct Individual Bets in Govt. Bonds to Grow Market

Economic Times, dated 28th May, 2022, reported that the Reserve Bank of India (RBI) planned to increase the individual participation in the bond market. The government bond market was wide open for the individual to directly invest in the bonds.

Contd….

RBI wanted to bring in awareness about this, through its RBI Retail Direct Scheme across the country, as the bond was easily accessible for individuals and was high in liquidity. Speculations are agog, as the authorities were allowing the retail investors, to have partial tax benefits, to motivate the individuals to invest in Government bonds.

Source:https://economictimes.indiatimes.com/markets/bonds/rbi-to-promote-retail-investments-in-gsec-tax-break-likely/articleshow/91834686.cms. Dated 28th May, 2022, accessed on 18th June, 2022.

Check Your Progress - 1

1. Which of the following statements is false with regard to bonds?
   a. A medium of long term debt instruments, similar to an IOU
   b. The lenders could be corporates or governments
   c. Interest rates on bonds could be either fixed or floating
   d. Bonds are tradable financial instruments
   e. Dividends are issued for the bond holders
2. Which of the following statements is not true with regard to bond laddering strategy?
   a. It focuses on various maturities
   b. The strategy increases the portfolio's sensitivity to interest rate risk
   c. Under this strategy the investor has to buy an assortment of bonds with maturities distributed over time
   d. When the first set of bonds mature the investor would reinvest the money at the high end maturity period
   e. When interest rates rise the bond value falls and the yield there on rises
3. Which of the following is true regarding global bond market profile?
   a. Global debt security from non-financial co-operation account for about 23% in the market
   b. The majority of corporate debt outstanding is issued by US resident entities, while 30% is accounted by EURO
   c. About 90% of corporate bonds are issued by investment grade issuers
   d. US bond funds attract major inflows from all parts of the globe
   e. Corporate debt is made in USD only
4. Which of the following is not a feature of active versus passive bond strategy?
   a. Active strategy involves maximization of the return on a bond portfolio
   b. Outperforming return of a selected market benchmark or index by making adjustments in the bond portfolio

c. Passive strategy on the other hand involves in approximating or replicating the returns of a whole or a sector of the bond market

d. Bond laddering may be classified as a more passive strategy as it focuses on maintaining returns rather than maximizing them

e. Interest payment is made on purchase of bond

5.5 Structure of Bonds

Bonds are long term debt instruments. The investment in bonds yields some return based on the tenure of the investment. Bonds have coupon rate and the yield on the bond is dependent on market interest rates. Accordingly bond prices vary based on interest rate structure. The topic discusses the types of bonds available in market, major features of bonds and terminology used in the bond market.

As discussed in earlier paragraphs the main features of a bond are the coupon rate and the number of times interest is paid in a year. Usually bonds carry on semiannual payment structure. However, some bonds are issued with a coupon rate on quarterly basis or with some other different maturity date. Some of the instruments that are popular in the market are.

Floating rate Bonds: These are otherwise called as Floating Rate Notes (FRN. Interest rate there on varies in relation to bench mark rate plus certain spread[14]Since LIBOR London Interbank offered rate ceased to exist after 2021 the following alternative reference rates were suggested by a combination of global regulators, trade associations and financial institutions.

Table 5.1: Alternate Reference Rates

Currency	Recommended Alternative Reference Rate	Administrator
USD	SOFR (Secured Overnight Financing Rate	Federal Reserve Bank of New York
GBP	SONIA (Sterling Overnight Index Average)	Bank of England
EUR	€STR (Euro Short-Term Rate)	European Central Bank
CHF	SARON (Swiss Average Rate Overnight)	SIX Swiss Exchange
JPY	TONA (Tokyo Overnight Average Rate)	Bank of Japan

Source: https://www.eximbankindia.in/LIBOR-transition

Zero coupon Bonds: Under these bonds, interest payment is only at the time of maturity. The investor in this type of Euro bond may be looking for some kind of tax advantage or growth in their wealth as fast as possible for their risk profile.

[14] Source: https://www.eximbankindia.in/LIBOR-transition.aspx#:~:text=LIBOR%20stands%20for% 20 London% 20Inter, borrowing% 20in%20the%20interbank%20market.

STRIPS: Separate Trading of Registered Interest and Principal of Securities (STRIPS), are bonds that are created through the process of coupon stripping. They are essentially traditional treasury bonds, except that the bond's principal has been separated-stripped from its interest.

Collateralized Bonds: It's a bond backed by collateral security or whatever other compensation in the event of a default that a borrower has. The collateral or security can come from one or more sources such as mortgages or loans or asset backed securities which are explained below:

- Asset Backed Securities (ABS)

  These are bonds or notes backed by financial assets other than residential or commercial mortgages. Typically these are assets consisting of receivables such as credit card receivables, auto loans and consumer loans.

- Securitization

  It includes a diverse array of assets such as residential and commercial mortgage loans, trade receivables, credit card balances, consumer loans, lease receivables, automobile loans, insurance receivables, commercial bank loans, health care receivables, etc.

  It may be defined as the process of issuing new securities backed by a pool of existing assets. These securities are generally referred to as mortgage or Asset Backed Securities (ABS), which are issued and sold to investors and the cash flows or economic values following the assets are redirected to them.

- Residential Mortgage Backed Securities (RMBS)

  Mortgage securities represent an ownership interest in mortgage loans made by financial institutions to finance the borrower's purchase of a home or other real estate. Mortgage securities are created when these loans are packaged or pooled by issuers or servicers for sale to investors. As the underlying mortgage loans are paid off by the home owners, the investors receive payments of interest and principal.

  Investors may buy mortgage securities when they are issued or are in the secondary market.

- Collateralized Debt Obligations (CDOs)

  This is a type of securitization, whereby a diversified pool of loans or securities is packaged into various tranches backed by the cash flows of the asset pool. CDO may pay a fixed or a floating coupon, paid semi-annually, quarterly or monthly with most senior debt being rated AAA to A and subordinate debt BBB to B and/or an unrated first loss tranche.

  There are many types of CDOs. Some are backed by a diversified pool of a single asset class (such as mortgages, loans to small and medium sized companies, large companies) or a mixture of asset classes.

- Covered Bonds

  These are debts issued by banks that are fully collateralized by residential or commercial mortgage loans or by loans to public sector institutions. Covered Bonds typically have the highest credit ratings with most but not all having triple 'A' ratings. The issuing bank is also liable for repayment.

  Covered bonds are the second largest segment of the European markets after government bonds.

- Convertible Bonds

  It is a bond that can be changed over to stocks or shares of the issuer organization on the basis of a predetermined ratio. These are also called convertible debentures. They offer a low coupon rate. Compensation is provided to the bond holder with the benefit of conversion of the bond to common stock.

- Domestic Bonds and Foreign Bonds

  Domestic bonds are brought out in a local basis and domestic borrowers are responsible for issuing the local bonds. They are generally denominated in the local currency.

  Foreign bonds on the other hand, are normally designated in the local currency. They are traded in the foreign bond market. These are normally issued by governments and private sector utilities such as the railway companies. They are fully underwritten.

- Municipal Bonds

  These bonds in the United States are provided by a variety of government bodies. The primary municipal bond market and the secondary municipal bond market are the two types of municipal bond markets. In these markets the investor needs to place some capital. The bond holder gets payments on maturity along with the accumulated interest on the investment.

- Euro Bonds

  These differ from the others in that they are not sold in any particular national bond market. Euro bonds are issued by a group of multi-national banks. If it is designated in any currency, it would be sold outside the native country which uses that currency. Illustratively, if a Euro bond is denominated in US dollars it will not be sold in the US.

- Junk Bonds

  It has a below investment grade rating at the time of its purchase. This carries a greater risk of default and other associated risks. Junk bonds offer higher interest rates to attract investors.

- Bond Market Liquidity

  It is a function of the monetary policy and financial stability of a country. Inadequate liquidity can cause massive price volatilities. When the bond

market liquidity is not sufficient, the open market operations of the central banks face difficulties.

- Bond Market Association

  It is a crucial body in the context of international bond markets. It looks at the best interests of both the traders and issuers of bonds. It monitors trading in the worldwide bond market. It has its own code of ethics. It is headquartered in London, Washington and New York City.

- Certain Major Concepts in Bonds

  Bond Investors need to know the yield, current yield, and yield to maturity, yield to call and also various risks associated with bonds.

  - *Yield:* It is a rate of return on the bond investment. There are three ways of measuring yield, namely Current Yield, Yield to Maturity (YTM) and Yield to Call (YTC).
  - *Current Yield:* It is the annual return on the price of the bond, regardless of its maturity. If the bond is purchased at par, the current yield is nothing but the stated interest rate. However, if the market price of the bond is more or less than the par value, the current yield will be different. The formula for current yield is face value into coupon/ price of the bond.
  - *Yield to Maturity (YTM):* It includes interest inflows plus any capital gain. YTM helps to compare bonds with different maturities and coupons.
  - *Yield to Call (YTC):* This is the total return receivable if the bond is held until its call date. It is based on the coupon rate, the length of time to the call date and the market price of the bond.

[15]Interpretation of Quotes in Global Markets:

Each trading day, news wire services obtain data on bid and ask prices for all marketable Treasury bills, notes, and bonds. These data were reported as the U.S. Government securities quotes each day until October 1996. The market for these securities is decentralized, but because the secondary market in treasury securities is highly competitive, prices for actively traded issues tend to be similar throughout the market, which is global. For some less-active issues, with no recent trades to establish the current bid or ask level, quotations represent price estimates.

Note and Bond Quotes

A typical quote has five headings for each note and bond:

Issue	Bid	Ask	Change	Yield
6 ½ 8/15/xx-N	105.08	12	+3	5.57

[15] www.newyorkfed.org/aboutthefed/fedpoint/fed07.html

The first column of the above table under the "issue" heading identifies the specific security by the interest rate established by the Treasury when the security was first sold (in this case, 6 1/2 percent) and the maturity date (Aug. 15, 20xx). The "N" indicates that the issue is a note—an issue with an initial maturity of two to 10 years. (Treasury coupon securities with initial maturities in excess of 10 years are called bonds.) In the market, this note is referred to as "the 6 ½ s of August 20xx."

The figures under the "bid" show the price a buyer is willing to pay for the issue, and "ask" is the price at which a seller is willing to sell the issue. Both sets of figures use numerical shorthand to express the prices.

Prices Presented in 32nds

Note and bond prices are quoted in dollars and fractions of a dollar. By market convention, the normal fraction used for Treasury security prices is 1/32. In the report, the decimal point separates the full dollar portion of the price from the 32nds of a dollar, which are to the right of the decimal. Thus the bid quote of 105.08 means $105 plus 8/32 of a dollar, or $105.25, for each $100 face value of the note.

The number "12" under "ask" further abbreviates the presentation of the price sought by a seller. It shows only the 32nds of a dollar; the full dollar portion of the price carries over from the bid price. In the example above, it stands for 105—the whole dollar amount of the bid price—and 12/32, or $105.375 per $100 face value.

Ask prices are always higher than bid prices for notes and bonds, but the figure shown in the ask column of the quote sheet may be lower. This would indicate that the ask price has gone to the next higher whole dollar. If, in the example above, the ask were A1," the full price would be 106-1/32, that is, the next highest dollar amount above the bid price.

Following the ask price is the "change"—the difference between the current trading day's bid price and the bid price of the preceding trading day. It, too, is a shorthand reference to 32nds of a point. In the example, it denotes an increase of 3/32, or 9 cents per $100 face value. Often, both the bid and ask quotes change by the same amount from the previous day's levels; that is, the "spread" between bid and ask is usually maintained.

Some very active issues may be quoted in 64ths of a point. To reflect this in the quote, a plus sign (+) would follow the price. A quote of 104.07+ means 104 and 7/32 plus 1/64, or 104 and 15/64.

Determining Yield on Notes and Bonds

"Yield," 5.57 percent in the example, is the annualized percentage return that the purchaser will receive if the note is purchased on the day of the quotation at the ask price and held until maturity. It is based on a formula using the ask price, time to maturity, and the coupon rate.

Some Treasury notes were issued with the provision that they could be called in by the Treasury before the specified maturity date. These notes have two years listed in the issue description of the quotes, indicating the earliest call date and the maturity date. The treatment of yield for these issues differs from the non-callable issues. If the callable issue is quoted above par (over $100 for each $100 of face value), the call date—the first date shown in the description—is used to calculate the yield, rather than the maturity date. If, however, the callable issue is quoted below par (less than $100 for each $100 of face value), the final maturity date is used to determine the yield.

Treasury Bills Quoted on Discount Basis

Bills, which mature in a year or less, are quoted differently from notes and bonds, since bills do not pay an established rate of interest. An investor's return on a bill is the difference between the purchase and subsequent sale price or, when held to maturity, the face value paid by the Treasury. Consequently, bills are quoted at a discount from face value, with the discount expressed as an annual rate based on a 360-day year.

As with notes and bonds, a numerical shorthand is used to present the information on bills quotes. For example:

Issue	Bid	Ask	Change	Yield
12/3/2020	5.08	5.06	-.03	5.26

The first numbers refer to the bill's maturity date, December 3, 2020. For this example, assume the current date is 169 days before maturity.

The bid, 5.08 percent, is the interest rate that the dealer proposes as a buyer of this bill. He is offering to pay $9,761.52 for a Treasury bill with a face value of $10,000 maturing in 169 days. When the bill is held to maturity, the dealer would receive $10,000, or $238.48 more than the purchase price. That $238.48 represents a 5.08 percent annualized return on a "discount basis," the return based on the actual amount paid.

The ask quotation, 5.06 percent, is the interest rate that the dealer proposes as a seller of this bill. The seller always seeks a sale with a lower return (thus a higher price) than the buyer wishes to pay. Therefore, unlike the quotes on notes and bonds, bid quotes on bills are always higher than the asked.

In the example, the seller would receive $9,762.46 for a $10,000 Treasury bill if the 5.06 percent (the ask quote) were accepted.

Determining Prices on Bills

To determine bid and ask dollar prices for each $10,000 of face value, multiply the bid or ask return (excluding decimals) by the number of days to maturity and divide by 360 days. Then, subtract the result from the $10,000 face value. In the example, the bid price per $10,000 face value would be-

$$\$ 10,000 – ((508 \times 169)/360)) = \$ 9,761.52$$

The ask dollar price would use the same formula, but replace the 508 with 506. This produces a price of $9,762.46.

The "change" of -.03 in the quotation is the difference between the present day's listed bid and the preceding day's bid, in hundredths of a percentage point, called "basis points." Thus, the change in this example means the discount rate of return on the previous day's bid was 5.11 percent. Furthermore, since a decrease in the return indicates an increase in price, this quote shows that the market for this issue improved from the previous day.

The "yield" is based on the ask rate and is the annualized rate of return if held to maturity. The yield is calculated on a coupon equivalent basis, which takes into account that the investor's true return is based on a purchase amount that is less than the $10,000 face amount. In the example, the investor, receiving $237.54 more at maturity than the price paid ($10,000 minus $9,762.46), obtains a 5.26 percent annualized bond equivalent yield on the bill.

The following table is extracted from The Wall Street Journal with regard to Treasury Notes & Bonds as on 26th May, 2022.

Treasury note and bond data are representative over-the-counter quotations as of 3pm Eastern time. For notes and bonds callable prior to maturity, yields are computed to the earliest call date for issues quoted above par and to the maturity date for issues below par.

Table 5.2: Treasury Notes & Bonds

maturity	coupon	bid	asked	chg	asked yield	maturity	coupon	bid	asked	chg	asked yield
5/31/2022	0.125	100.004	100.01	0.69	-2.6983	2/15/2031	5.375	120.084	120.094	-0.01	2.742
5/31/2022	1.75	100.012	100.016	0.012	-3.1726	2/15/2032	1.875	92.144	92.154	-0.028	2.762
1/15/2023	1.5	99.296	99.302	0.004	1.586	5/15/2032	2.875	101.02	101.03	-0.012	2.749
1/31/2023	0.125	98.306	98.312	0.004	1.646	2/15/2036	4.5	120.064	120.074	-0.04	2.723
8/15/2024	2.375	99.226	99.232	0.016	2.502	2/15/2037	4.75	123.094	123.104	-0.048	2.805
8/31/2024	1.25	97.072	97.076	0.022	2.512	5/15/2037	5	126.08	126.09	-0.044	2.833
1/15/2025	1.125	96.092	96.096	0.026	2.584	2/15/2038	4.375	118.304	118.314	-0.728	2.866
1/31/2025	1.375	96.272	96.276	0.022	2.592	5/15/2038	4.5	120.192	120.202	-0.05	2.879
1/31/2025	2.5	99.236	99.242	0.016	2.593	2/15/2039	3.5	107.026	107.036	-0.058	2.957
10/31/2026	1.625	95.134	95.14	0.008	2.726	5/15/2039	4.25	117.026	117.036	-0.064	2.959
2/28/2027	1.875	96.086	96.092	0.006	2.711	8/15/2039	4.5	120.172	120.192	-0.068	2.964
3/31/2027	0.625	90.17	90.174	0.004	2.721	11/15/2039	4.375	118.17	118.19	-0.086	3
5/31/2028	1.25	91.196	91.202	0.012	2.771	2/15/2040	4.625	122.042	122.062	-0.1	3.001
6/30/2028	1.25	91.144	91.15	0.01	2.782	5/15/2040	1.125	72.03	72.05	-0.086	3.17
3/31/2029	2.375	97.174	97.18	unch.	2.768	5/15/2040	4.375	118.122	118.142	-0.098	3.036
4/30/2029	2.875	100.222	100.226	-0.004	2.761	2/15/2051	1.875	77.162	77.182	-0.14	3.053
5/15/2030	6.25	125.024	125.034	-0.006	2.723	2/15/2052	2.25	85.03	85.05	-0.116	3.009
11/15/2030	0.875	86.01	86.02	-0.014	2.73	5/15/2052	2.875	97.256	97.276	-0.816	2.983
2/15/2031	1.125	87.19	87.2	-0.006	2.729						

Source: https://www.wsj.com/market-data/bonds on 26th May, 2022, selected maturity dates are compiled in the table

Example: Who moves the Bond Rates in India?

Economic Times, dated 24th May 2022, reported that according to Parul Mittal Sinha, Head of Financial Markets, India Standard Chartered Bank, the excise duty cut caused apprehensions of sharper rate hikes, which might discourage investors from investing in bonds. The central government decision to slash the motor fuel taxes had disturbed the bond markets. The shorter end on bond yield curve resulted in decreasing anticipation of higher returns in the bond markets. The Government bonds that are going to mature in the year 2024 to 2027 were expected to yield 4.7 basis points lower than the expected rates. On the contrary, the bonds that will be maturing after 2032 were expected to mature at six basis points higher and closed with 7.39% on 23rd May 2022 against 7.36% on 27th May 2022 showing that prices have an inverse relationship. There was one basis point (0.01%) difference on the above day.

Source:https://economictimes.indiatimes.com/markets/bonds/bond-market-now-a-two-way-street/articleshow/91754275.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 24th May, 2022, accessed on 18th June, 2022.

5.6 Risks Associated with Bonds

In previous topic you had studied about various types of bonds issued by the corporate and government entities. As seen in the foregoing, the bonds are dependent on various parameters like market interest rate, credibility of the issuer of the bond, general economic conditions of the economy in which the bond is issued etc. All these factors cited are exposed to various risks. Hence the bonds are exposed to various risks. The term risk measures the deviation of the realized / actual return from the expected return. A risk-free investment should yield the same return as the expected return.

In this topic you will know about various types of risks associated while issuing bonds by the entities.

Credit Risk: Generally government bonds are considered risk free. However, there are many instances of default in servicing government bonds on the part of certain nations. Credit risk therefore has to be taken into account, not only for corporate bonds but also government bonds. Here credit risk is defined as the risk of default in servicing the bond either with regard to interest payment or principal payment or both.

Exchange Rate Risk: This is the risk exposed to by the investor in converting cash inflows on the bonds in the form of interest and the principal payments, while exchanging them from one currency into another, consequent to the adverse movement in exchange rates.

Interest Rate Risk: Bonds are highly rate sensitive. If the interest rates in the economy fall, bond prices could go up but the yield will come down. Conversely

when interest rates rise, bond prices will fall and the yield will rise. The net effect of these variations in terms of total revenue earned on bonds (interest revenue plus capital gain/loss) is the interest rate risk.[16]

Inflation Risk: In a period of low inflation and moderate shifts in interest rates, bond investors are content to hold their bonds to maturity ignoring the changes in the market value of their bonds. However, some investors strive to structure their bond holdings to minimize market risks and take advantage of market opportunities, through the strategy called laddering which has already been explained.

Inflation Risk therefore could be defined as the variance in the total revenue of the bond; i.e. interest payments plus capital gain/loss, consequent to variations in inflation rates. Normally interest rates and inflation rates move in the same direction.

Example: Various Types of Associated Risks, while issuing Bonds by the Entities

Economic Times, dated 30th April, 2022, reported, that Dr Joseph Thomas, Head of Research, Emkay Wealth Management, explained some of the risks related to bonds. The prominent risk to bond yields was the availability of central government bonds worth ₹ 32,000 to ₹ 33,000 crore that were released through primary auction. According to Dr Joseph, the fact was that Reserve Bank of India may no longer have good market for sovereign bonds, as its yield curve was unfavourable in those days. When the US Federal reserve bank tightened their monetary policy, Reserve Bank of India stopped its bond purchases. Further, increase in inflation was then around 1% higher than the RBI's comfort zone of 2 to 6%. Due to decrease in purchase of bonds by the investors, it was difficult for RBI to support the Government's massive borrowing plan. The investors were not keen on investing, as the centre did not made any announcements, regarding listing of their Bonds, in the International indices.

Source: https://economictimes.indiatimes.com/markets/bonds/looking-to-invest-in-debt-market-focus-on-ultra-short-segment-as-risks-aplenty/articleshow/91208219.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 30th April, 2022, accessed on 18th June, 2022.

[16] There is another perspective to the interest rate risk. Let us consider a government bond with semiannual coupon. The investors has to reinvest the coupon interest amounts in the market at the current market rate of interest. Thus by the time the bond is redeemed, the interest earned on the interest payments differs widely from the coupon interest rate; this implies that the expected rate of return and the realized rate of return on the bond differ which is also termed as 'risk' associated with the investment. Thus even government bonds, on the whole, are not 'risk-free' in the true sense. However for all practical purposes, they are considered as risk-free.

Activity 5.1

You are working as portfolio manager in Swift Financial Corporation. You have suggested one of your clients to invest in bonds. You are asked by your client about the risk associated with bonds. What will be your answer?

Answer:

5.7 Global Bond Markets: An Overview

After going through various risks associated with bonds in previous topic, you will now obtain an overview of global bond markets. The size of the international bond market is very huge. As at the end of September 2021, the total debt securities were at US$ 27687 billion. Exhibit 5.1 depicts the size of bond market.

Exhibit 5.1: International Bond Market Segment Wise September 2021

	Total	Financial Corporations		Non-Financial Corporations	General Government
		Total	Banks		
All countries	27,687	18,735	7,118	4,472	2,418
Developed countries	18,590	14,274	6,120	3,488	829
Offshore centres	3,887	3,621	461	174	92
Emerging market and developing economies	3,146	839	537	810	1,497
International organisations	2,063	2	...	…	…

Source: https://stats.bis.org/statx/srs/table/c1data extracted on 27th May, 2022

Summary of debt securities outstanding

By residence and sector of issuer, amounts outstanding at end-September 2021, in billions of US dollars [1]International Debt Securities.

Global Spill Over into Domestic Bond Markets

The domestic bond yields in emerging markets are strongly influenced by two global factors: Global Risk Appetite and Global Liquidity. But the vulnerability of emerging economies to these factors is not uniform and depends on country specific characteristics namely Fiscal Fundamentals, Financial Sector Openness and the External Current Account Balance.

These findings suggest that financing conditions in emerging economies could deteriorate rapidly if global conditions weaken. Risks are specifically high for financially more open countries with weak fiscal positions and sizable current account deficits. These results emphasize that countries should maintain a strong fiscal position to reduce their vulnerability to global shocks.

For some nations, a stronger fiscal balance could also help in reducing external deficits, which in turn could also help improve their resilience to shifts in external conditions. For financially more open countries, key instruments to vulnerability to external shocks include stronger regulatory oversight and macro prudential policies.

Example: Correction happening in Global Bond Markets

Economic Times, dated 15th June, 2022, reported, that Vidya Bala, Co-founder, Prime Investor in a retail research firm said there was a decline in the international equity mutual fund schemes, by 30 to 40%, as the US markets went into correction heavily. The investor's holdings decreased because of the market correction and the new investors had to identify the right time to buy and invest, in systematic investment plans, for nearly 6-8 months. Traditional investors could invest in S&P 500 or in top 50 exchange-traded funds (ETF), while the contemporary investors could invest in NASDAQ 100 fund. At present, the Indian investors cannot enter into new investments, as they have already touched the limit of $7 billion investment, in the international market. They can invest, if RBI approves and increases the limit separately for Exchange traded funds to $ 1 billion.

Source: https://economictimes.indiatimes.com/mf/analysis/hold-on-to-global-mf-schemes-avoid-lump-sum-investments/articleshow/92215739.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 15th June, 2022, accessed on 18th June, 2022.

Activity 5.2

What is the concept involved deleveraging?

Answer:

5.8 International Organization of Securities Commissions

When huge investments are involved from individuals and organizations, protection of the money is very important. A regulatory mechanism is required. While a country's individual governments frame law and regulations to protect the financial system, in the world markets identified self-regulatory bodies in sync with other international agencies take this responsibility.

The International Organization[17] of Securities Commissions (IOSCO) is the international body that brings together the world's securities regulators and is recognized as the global standards setter for the securities sector. IOSCO develops, implements and promotes adherence to internationally recognized standards for securities regulation. It works intensely with the G20 countries and the Financial Stability Board (FSB) on the global regulatory reform agenda.

Genesis of IOSCO

IOSCO was created in 1983, when 11 securities regulatory agencies from North and South America agreed to build their inter-American regional association into an international cooperative body. A year later, securities regulators from France, Indonesia, Korea and the United Kingdom became the first non-American agencies to join the new organization. In July 1986, IOSCO held its annual conference in Paris, for the first time outside the Americas and where members agreed to create a permanent General Secretariat.

In 1998 IOSCO adopted a comprehensive set of Objectives and Principles of Securities Regulation (IOSCO Principles), now recognized as the international regulatory benchmarks for all securities markets. In 2003 the organization endorsed a comprehensive methodology (IOSCO Principles Assessment Methodology). IOSCO employs this methodology to conduct an objective assessment of the level of implementation of the IOSCO Principles in members' jurisdictions and to help develop practical action plans to correct identified deficiencies.

In 2002, IOSCO adopted a Multilateral Memorandum of Understanding (MMoU) Concerning Consultation and Cooperation and the Exchange of Information (IOSCO MMoU), which was designed to facilitate cross-border enforcement and exchange of information among international securities regulators.

In 2005, IOSCO endorsed the IOSCO MMoU as the benchmark for international cooperation among securities regulators, and laid down a clear strategy and the objectives for expanding the network of IOSCO MMoU signatories by 2010.

Role

A top priority for IOSCO is to achieve the effective implementation of the IOSCO Principles and the MMoU, thereby facilitating cross-border cooperation, mitigating global systemic risk, protecting investors and ensuring fair and efficient securities markets to its members.

IOSCO Objectives

IOSCO members have resolved:

To cooperate in developing, implementing and promoting adherence to internationally recognized and consistent standards of regulation, oversight and

[17] https://www.iosco.org/about/?subsection=about_iosco

enforcement in order to protect investors, maintain fair, efficient and transparent markets, and seek to address systemic risks;

- To enhance investor protection and promote investor confidence in the integrity of securities markets, through strengthened information exchange and cooperation in enforcement against misconduct and in supervision of markets and market intermediaries;
- To exchange information at both global and regional levels on their respective experiences in order to assist the development of markets, strengthen market infrastructure and implement appropriate regulation.

Example: Global Body Seeks Regulatory Checks on Crowdfunding Investment

Economic Times, dated 10th Feb, 2022, reported that the IOSCO (International Organization of Securities Commissions) made it mandatory, to check on crowd funding on some of the investments, in order to eliminate systematic risk, in the near future. The performance of investment returns, in the segment of crowd funding, doubled in the last few years. Looking upon the statistics, in the last 5 years, India had doubled the returns and an estimated $6.4 billion was made. The peer to peer lending brought in an annual growth of 90%. The aim of IOSCO is growing steadily, in India. The US, the UK, and China are catching up fast, when compared to India.

Source:https://economictimes.indiatimes.com/news/economy/finance/global-body-seeks-regulatory-checks-on-crowdfunding-investment/articleshow/29946084.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 10th February, 2022, accessed on 18th June, 2022.

5.9 Market Liquidity, Is It Resilient?

The higher degree of market liquidity is essential for transfer of funds from investors to borrowers and hence to economic growth. Market liquidity has to be understood as the ability of the market to quickly buy or sell a significant volume of securities at a low cost and with a limited price impact.

Market players in emerging and advanced market economies are often worried that both the level of market liquidity and its resilience may be gradually declining over time, especially for bond markets. Consequently the risks associated with a liquidity shock could be rising. Higher resilient market liquidity is essential to financial stability as it is less prone to sharp declines in response to shocks. Market liquidity that is low could also be fragile, but apparently ample market liquidity can also suddenly fall.

Cyclical factors including monetary policy have a very important role in influencing the level of market liquidity. Only some markets show obvious signs of worsening market liquidity as per a recent study conducted on global market liquidity. This liquidity has different dynamics across bond classes.

Favorable cyclical conditions in the recent past could be helping market liquidity while on the other hand certain structural developments could be eroding its resilience. Also, spill overs of market liquidity across various asset classes including emerging market assets have been increasing.

These recent regulatory changes across the globe need some more time to produce the desired results before their efficacy is evaluated. Reduced market making appears to have had a detrimental impact on the level of market liquidity. However, this decline is likely to be driven by a variety of factors. The impact of regulations in European Union (EU) area, in the form of restrictions on derivative trading has in fact weakened the liquidity of the underlined assets. On the other hand higher transparency conditions have improved the level of market liquidity.

The fragile nature of market liquidity is also a function of structural changes in the market. Illustratively, a substantial holding of corporate bonds by mutual funds and a higher concentration of holdings among mutual funds, pension funds and insurance companies are associated with less resilient liquidity. Also, the proliferation of small bond issuances has certainly lowered liquidity in the bond market and helped build up liquidity mismatches in investment funds.

The bottom line therefore is that measures have to be taken to bolster both the levels of market liquidity and its resilience. Market liquidity tends to suddenly dry up. Policy makers should therefore adopt pre-emptive strategies to cope with such shifts in market liquidity. Policy makers should also carefully monitor market liquidity condition over a wide range of asset classes.

Example: Should Investor-Cum-Borrowers Invest More in the Stock Market Now or Create Liquidity, when the Stock Index Is High?

Economic Times, dated 4th August, 2021, reported that Gurgaon-based Sumit Gupta has made a plan to use the stock market investment, to clear off his home loan, when the National stock exchange index Nifty touched all-time high. Sumit took a home loan of 75 lakhs for 20 years, in the year 2019. But next year, he prepaid 10 lakhs and reduced the tenure of the loan, by 5 years. He received ₹ 15.5 lakhs from PPF upon maturity. He used 10 lakhs, for repayment of loan and 5.5 lakhs, he invested in stocks. The investment grew up to 8 Lakhs, which Sumit was going to use for prepayment of home loan. The liquidity of the stocks helps the investors and borrowers. For many investor-cum-borrowers, the current stock market rally is a good opportunity to book profits and bring down their outstanding debts. Prepayments can have a dramatic impact, on the loan tenure.

Source: https://economictimes.indiatimes.com/wealth/4-july-2021/editionlist/83867591.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 4th August, 2021, accessed on 18th June, 2022.

5.10 Central Government Debt Securities - Profile of Various Economies

The government bonds have a major share in the international bond market. In all the countries, the money supply (M3[5]) is monitored by the central bank of the country as a part of monetary policy management. The Central Bank also facilitates the Government of the country to mobilize required funding through various debt instruments (like T Bills, Dated Securities, and Bonds).

The following Table 5.3 given by BIS provides a bird's eye view of central government debt securities market

in terms of instrument and maturity. Globally such bonds are issued with fixed rates or floating rate. Total outstanding central government debt securities at the end of December 2020 for all countries was US$ 43,759.8 billion in domestic currency (amount expressed in US$) and in foreign currency US$ 1,011.3 billion and inflation adjusted figures were US$ 57,294.5 billion and US$ 1,212.1billion.

India has principally fixed rate sovereign bonds only. A very small percentage of floating rate bonds are outstanding. India doesn't yet have inflation linked or exchange rate linked bonds. Investors in the Indian government bond market are commercial banks, development financial institutions, insurance companies, mutual funds and foreign institutional investors.

United States account for US$ 16,003.3 billion out of US$ 43759.8 billion over 36.57% of the total government bond issue in terms of outstanding amount. It issues fixed rate, inflation linked bonds but doesn't issue floating rate and exchange linked bonds.

United States, United Kingdom and Canada are the principal nations that issue inflation linked bonds. Brazil, Germany and Mexico are the major economies that are primarily into floating rate bonds.

Germany, Belgium and Brazil account for over 90% of outstanding of exchange linked government bonds.

Table 5.3: Central Government Debt Securities Markets

	December 2020			
	Domestic currency, Floating rate	Domestic currency, Straight fix rate	Domestic currency, Inflation indexed	Foreign currency
Argentina	1.981959712	10.63101789	34.18968447	43.66296274
Australia	0	558.0463976	29.02551466	0
Belgium	3.163461892	458.2400942	0	3.645466482
Brazil	415.4061285	461.5366941	335.5055244	4.081669412
Canada	0	601.8466552	40.291088	0
Chinese Taipei	0	196.741453	0	0

Contd…..

Colombia	0	68.92789512	32.45651857	0
Czech Republic	9.405107602	75.84133179	0	1.59541238
Germany	15.65165106	1545.660363	75.88995374	26.09058447
Hong Kong SAR	0	13.61982779	4.630225545	0
Hungary	7.705415095	72.59849889	5.986281346	1.840869191
India	45.42352349	935.4891013	0.157739226	0
Indonesia	28.55009848	242.9784349	0	0.404082209
Israel	13.59400644	103.1215821	73.47607144	0
Korea	0	764.698796	7.811263033	0
Malaysia	0	209.4824443	0	0
Mexico	178.9742075	78.42485211	92.09294981	0
Peru	0	33.19744978	0.802898647	0
Philippines	1.203751379	117.5172661	...	0.498104019
Poland	51.53620964	146.1313934	1.318681082	0
Russia	63.17837092	112.4370422	7.710899893	0
Saudi Arabia	24.53333333	106.574936	0	0
South Africa	0	151.1763333	51.71509024	...
Spain	27.24160357	1183.046397	71.90801664	0
Thailand	0	157.1089374	0	0
Turkey	19.17476697	54.56058312	33.78383621	24.34893293
United Kingdom	0	1879.215883	611.6187081	0
United States	498.5	13931.2	1579.3	0

Source: https://www.bis.org/statistics/secstats.htm taken on 29th May, 2022

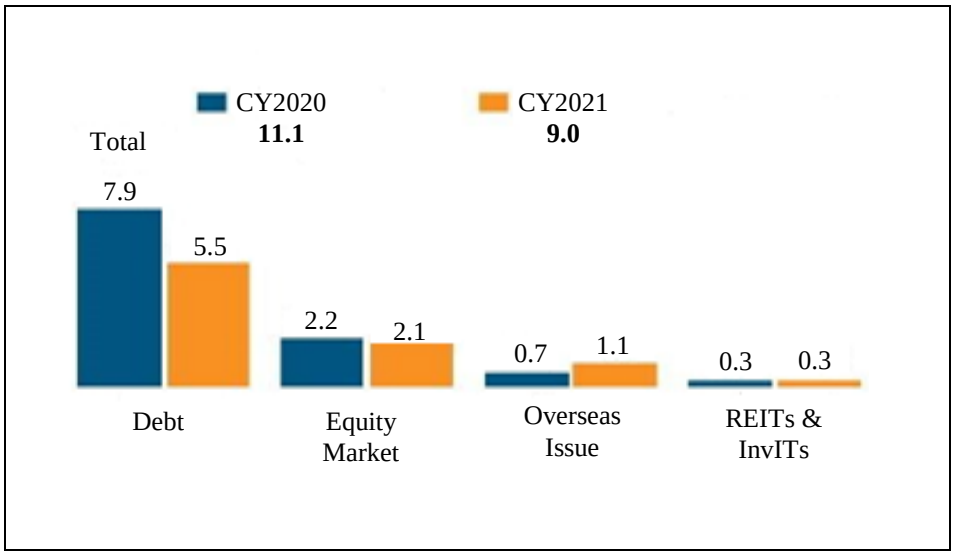
Corporate Bond Market in India

Having browsed through international bond market, let us look at our Indian bond markets.

Current Status

Indian Corporate Debt market has seen some growth in recent years, both in terms of number of issues and amount. Corporates mobilize funds through various types issued included fixed rate bonds, floating rate bonds, structured notes and other types, the fixed rate bonds were predominant both in number and value. Another characteristic of the issuances was that almost all issuances were by financial sector entities. Yet another peculiar feature of Indian Corporate Bond market is that private placements are the norm. The following Figure 5.1 illustrates the equity and debt issues made by corporates in India.

Figure 5.1: Equity and Debt Issues made by Corporates in India



Source: https://www.business-standard.com/article/companies/india-inc-raises-over-rs-9-trn-through-equity-debt-issuances-in-2021

According to Business Standard article published on 27th December 2021 out of the cumulative ₹ 9.01 trillion collected till mid-December2021, funds totaling ₹ 5.53 trillion were from the debt market, ₹ 2.1 trillion came from the equity market, ₹ 30,840 crore through REITs (Real Estate Investment Trust) and InvITs (Infrastructure Investment Trusts) and ₹ 1.06 trillion through the overseas route. This was the data compiled and showed by the analytics major Prime Database at the end of the year 2021. In the year 2020, firms raised ₹ 11 lakh crore. This includes ₹ 7.91 lakh crore raised from the debt market and ₹ 2.12 lakh crore from the equity market. Of the total ₹ 5.53 trillion raised through Indian debt markets in 2021, ₹ 5.38 trillion came from the private placement and ₹ 14,277 crore was through public issuance.

According to SEBI[18] (public issue of NCDs by corporates in 2020-21 FY was at ₹ 10,588.02 crores (18 issues) and in 2021-22 the amount was at ₹ 11,589.41 crores (28 issues).

[19]On 5th April 2022, the ministry of Finance informed Indian parliament that India's debt burden is expected to increase to 58.8 per cent of the GDP by the end of march 2022. It was 51.4% in March 2020. Covid pandemic related short falls in the economy during 2020 and 2021 and the subsequent measures taken by the government to revive the economy were the causes for increase in the debt burden.

[18] https://www.sebi.gov.in/statistics/corporate-bonds/publicissuedata.html)

[19] https://timesofindia.indiatimes.com/business/india-business/indias-debt-burden-will-rise-to-58-8-of-gdp-by-march-2022-due-to-pandemic-induced-revenue-shortfalls/articleshow/90676512.cms news item 6th April 2022

[20]The non-financial sector debt in India grew 11.9 per cent year-on-year to ₹ 371 lakh crore, or 170.2 per cent of GDP, in the September 2021 quarter. At 180.2 per cent of GDP in FY21, this was the peak as against 155 per cent in FY20. Also, the debt-to-gross domestic product (GDP) ratio contracted to 170.2 per cent of GDP in the June 2021 quarter, with the normalization of nominal GDP, which grew at 14.7 per cent. Non-financial corporate debt stood at 48.6 per cent of GDP, lower than the peak of 52.8 per cent in Q1FY21.

Trends in corporate Debt in major economies

In 2020, IMF observed the largest one-year debt surge since World War II, with global debt rising to $226 trillion as the world was hit by a global health crisis and a deep recession due to Covid in 2020. Debt was already elevated going into the crisis, but now governments must navigate a world of record-high public and private debt levels, new virus mutations and rising inflation.

Global debt rose by 28 percentage points to 256 percent of GDP, in 2020, according to the latest update of the IMF's Global Debt Database.

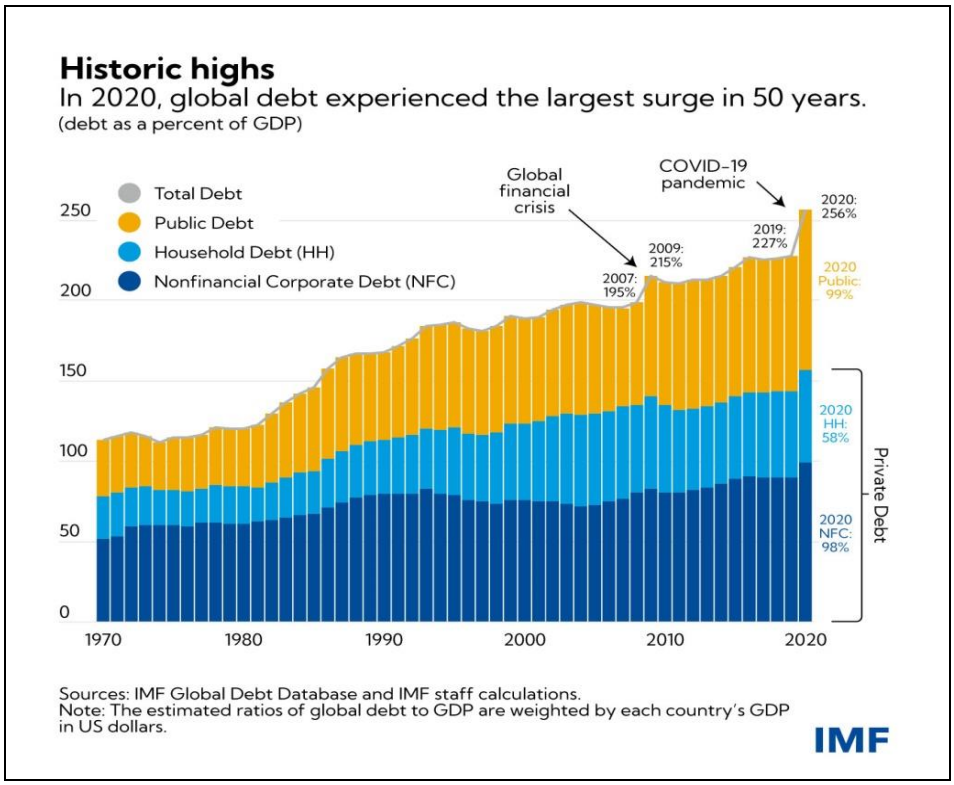
Borrowing by governments accounted for slightly more than half of the increase, as the global public debt ratio jumped to a record 99 percent of GDP. Private debt from non-financial corporations and households also reached new highs. Debt increases are particularly striking in advanced economies, where public debt rose from around 70 percent of GDP, in 2007, to 124 percent of GDP, in 2020. Private debt rose at a more moderate pace from 164 to 178 percent of GDP, in the same period.

Public debt now accounts for almost 40 percent of total global debt, the highest share since the mid-1960s. The accumulation of public debt since 2007 is largely attributable to the two major economic crises governments has faced—first the global financial crisis and then the COVID-19 pandemic.

In advanced economies, fiscal deficits soared as countries saw revenues collapse due to the recession and put in place sweeping fiscal measures as COVID-19 spread. Public debt rose 19 percentage points of GDP, in 2020, an increase like that seen during the global financial crisis, over two years: 2008 and 2009. Private debt, however, jumped by 14 percentage points of GDP in 2020, almost twice as much as during the global financial crisis, reflecting the different nature of the two crises. During the pandemic, governments and central banks supported further borrowing by the private sector to help protect lives and livelihoods. Whereas during the global financial crisis, the challenge was to contain the damage from excessively leveraged private sector.

[20] https://economictimes.indiatimes.com/news/economy/finance/non-financial-debt-jumps-11-9-to-rs-371-lakh-crore-in-sept-quarter-report/articleshow/89542226.cms

Figure 5.2: Global Debt, 2020



Source: https://blogs.imf.org/2021/12/15/global-debt-reaches-a-record-226-trillion/

Green Bonds and Masala Bonds from India

Masala bond is a bond denominated in Indian rupee and issued in overseas. Masala bonds are attractive to foreign investors who desire exposure to rupee-denominated assets. The rupee denominated bonds help deepen the process of internationalization of the rupee and involve raising money in an international currency, which is brought onshore and converted into rupee in the domestic spot market.

Debt securities in multiple foreign currency bonds, green bonds, masala bonds, notes, among others are traded Debt Securities Market platform of NSE IFSC (a subsidiary of NSE) which was launched on March 16, 2018.

Green Masala Bonds are issued to fund projects that impact environment positively such as bonds issued for green energy or sustainable energy. As per Climate Bonds Initiative, the annual issuance of green bonds is likely to be $1 trillion by 2023. The issuance in India is also gaining traction with the issue of green bonds touching $6.11 billion in the 11 months of 2021[21]. However, this represents only 0.7% of the Indian bond market. RBI and the Government of India in 2022, is involved in evolving a framework for issuing sovereign green bonds.

[21] https://economictimes.indiatimes.com/markets/bonds/decoding-green-bonds-india-market-and-how-to-invest-in-it/articleshow/90230488.cms?from=mdr

During 2021 HDFC Bank has raised ₹ 739 crores under USD 3 billion Medium Term Note Programme, during 2021 October Fortum Solar Plus Pvt., Ltd., raised USD 14.08 million by issuing rupee-denominated bonds (RDBs), popularly known as Masala bonds. HDFC Bank during September 2021 raised ₹ 739 crore by issuing the rupee-denominated Masala bonds in the overseas markets with a coupon rate of 7.55%.

These will be listed in London Stock Exchange.

Example: Indian Bond Market is Bit Slow

Economic Times, dated 6th June, 2022, reported that Shailendra Jhingan, Managing Director at ICICI Securities Primary Dealership, said that companies could not raise funds, like in previous years. For example, in the year 2021, companies raised ₹70,550 crore, as compared to ₹ 31,712 crore, in the year 2022, according to the data provided by the firm Prime Database. The fund that has been raised by companies was also through bond sale via private placement. The corporate borrowings are slow, as RBI hiked the interest rates in May 2022. Policy changes by RBI will move the interest rates in the country and the pricing of debt securities.

Source: https://economictimes.indiatimes.com/markets/bonds/corporates-wary-of-rate-swings-go-slow-on-bond-sales/articleshow/91951398.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 6th June, 2022, accessed on 18th June, 2022.

Check Your Progress - 2

5. Which of the following is not a security backing for asset backed securities?
   a. Residential or commercial mortgages
   b. Receivables
   c. Auto loans
   d. Consumer loans
   e. Personal loans
6. Which of the following is not the feature of Collateralized Debt Obligations (CDOs)?
   a. This is a type of securitization.
   b. CDOs may pay a fixed or a floating coupon.
   c. Most senior debt is rated AAA to A and Subordinate debt is rated BBB to B.
   d. There are many types of CDOs.
   e. CDOs are not backed by a diversified pool of a single asset class

7. Which of the following is not a structure of bonds?
    a. Floating rate bonds
    b. Zero coupon bonds
    c. Collateralized Bonds
    d. Security Bonds
    e. Collateralized Bonds
8. What are the factors to be considered while investing in the bonds?
    a. The maturity period of the bond
    b. Redemption features
    c. Credit quality
    d. Rate of interest (called the coupon)
    e. Conversion period of the bond
9. Which one the following bonds are denominated in Indian rupee and issued in India?
    a. Green bonds
    b. Corporate bonds
    c. Masala bonds
    d. Government bond
    e. Domestic bond
10. Which one of the following bonds is issued to fund renewable energy and emission reduction projects?
    a. Green bonds
    b. Corporate bonds
    c. Masala bonds
    d. Government bond
    e. Domestic bond

5.11 Summary

- A bond is generally a medium to long term debt instrument, a debt security, similar to an IOU. The investor in bonds is a lender to the issuer of the bonds, either corporate or the government.
- The issuer of the bond undertakes to pay a fixed (or floating or exchange linked or inflation linked) interest periodically to the investor during the life of the bond and repay the principal, called the face value on maturity. Bonds are issued for a prefixed maturity period.

- While investing in bonds the following factors are considered: The maturity period of the bond, redemption features, credit quality, rate of interest (called the coupon), and price (the face value at the time of initial issue and market value subsequently), yield, tax and fiscal status.
- A holistic view has to be taken by a bond investor, keeping the aforesaid factors while investing in bonds.
- Different types of bonds are issued such as floating rate bonds, zero coupon bonds, STRIPS and Collateralized bonds.
- There are risks in investing in bonds such as credit risk, exchange risk, interest rate risk and inflation risks.
- The debt-to-gross domestic product (GDP) ratio has increased in 2020 and 2021 due to Covid Pandemic as the sovereign governments took major decisions to revive the economy by borrowing heavily from the market.
- Global Non-financial corporate debt is also on increase as per cent of GDP and it reached a peak of 52.8 per cent in Q1FY21.
- Masala bond is a bond denominated in Indian rupee and issued in overseas. Masala bonds are attractive to foreign investors who desire exposure to Rupee-denominated assets.
- Many Indian corporate entities have started issuing masala bonds in overseas markets.
- Debt securities in multiple foreign currency bonds, green bonds, masala bonds, notes, among others are traded Debt Securities Market platform of NSE IFSC (a subsidiary of NSE) which was launched on March 16, 2018.

5.12 Glossary

Accrued Interest: Interest deemed to be earned on a security but not yet paid to the investor. The amount is calculated by multiplying the coupon rate by the number of days since the previous interest payment.

Asset Allocation: Asset allocation is an investment strategy in which an investor divides his / her assets among different broad categories of investments (such as bonds) to reduce risk in an investment portfolio while maximizing return.

Asset Swap Spread: The asset swap spread (also called the gross spread) is the aggregate price that bondholders would receive by exchanging fixed rate bonds for floating rate bonds using the swaps market, mainly used to reduce interest rate risk.

Asset-Backed Bonds or Securities (ABS): Asset-Backed Securities, called ABS, are bonds or notes backed by financial assets other than residential or commercial mortgages.

Average Annual Yield: Average annual yield is the average yearly income on an investment, such as a bond, expressed in percentage terms.

Basis Point: One one—hundredth of 1 percent (0.01%). 100 basis points equal 1%. Basis points are often used to measure differences in bond yields. For example, if the yield on a bond changes from 5.55% to 5.5%, it has dropped 5 basis points.

Bid (and Ask): The ask price is what sellers are willing to take for it. If you are selling a stock, you are going to get the bid price, if you are buying a stock you are going to get the ask price. The difference (or "spread") goes to the broker/specialist that handles the transaction. The difference between the two prices is called the spread. Bid and ask is sometimes known as a "quote."

Bond Fund: A bond fund sells investors shares of a fund that consists of a portfolio of bonds structured to meet a particular investment objective, such as providing regular income.

Bullet Payment: A bond that repays principal in full in a single payment on redemption.

Call: A call is the right of the issuer to redeem a bond it has sold before the maturity date by paying investors a stated price, usually a premium above par value.

Callable Bonds: Bonds with a redemption or call provision usually have a higher annual return to compensate for the risk that the bonds might be called early. There are two subcategories of these types of bonds: European callable bonds and American callable bonds.

Coupon: This part of a bond denotes the amount of interest due, on what date and where payment will be made.

Federal Funds Rate: The interest rate charged by US banks on loans to other banks.

Investment Grade: Bonds considered suitable for purchase by prudent investors toward preservation of invested capital.

Rating Service: A rating service such as Standard & Poor's, Moody's, Fitch Ratings, etc. evaluates bond issuers on a specific set of objective criteria that determines the level of risk their bond issues pose to investors along a spectrum from highest quality investment-grade to speculative investments (ratings AAA) (A being the highest to D being the lowest).

Reinvestment Risk: The risk to bond investors that interest income or principal repayments will have to be reinvested at lower rates in a declining rate environment. Zero-coupon bonds do not have interest payment reinvestment risk.

Senior Debt: Bonds ranked for repayment ahead of all other debt in the event of corporate liquidation except for debentures secured on specific assets.

Zero-coupon Bond: Bonds which do not carry a coupon (no coupon); the return on the bond comes from the fact that they are sold at a significant discount to the eventual redemption value.

5.13 Self-Assessment Test

1. What do you understand by structure bonds?
2. Write a short note on corporate bond market in India.
3. What are the major investment strategies?
4. Write a short note on bond investment and skill building.
5. What do you understand Collateralized Bonds?
6. What are the Risks Associated with Bonds?

5.14 Suggested Readings/Reference Material

1. Anthony Saunders, Marcia Cornett, Anshul Jain (2021). Financial Markets and Institutions. McGraw-Hill. 7th edition
2. I.M. Pandey, Financial Management (2021). 12th edition, Vikas Publishing House.
3. Jeff Madura (2020). Financial Markets and Institutions – Asia Edition, 13th edition; Cengage Learning
4. P. G. Apte (2020). International Financial Management; Tata McGraw-Hill Education Private Limited; 8th edition
5. Prasanna Chandra (2019). Financial Management – Theory and Practice, 10th edition, New Delhi: Tata McGraw-Hill
6. Frank J. Fabozzi, Frank J. Jones (2019). Foundations of Global Financial Markets and Institutions. Mit Press. 5th edition
7. Brealey Myers (2018). Principles of Corporate Finance, 12th edition, USA: McGraw-Hill Companies Inc.

5.15 Answers to Check Your Progress Questions

1. (e) All the above.

Bonds are long term debts, lenders could be corporate and government, interest rates can be fixed or floating, they are financial instruments.

2. (b) The strategy increases the portfolio's sensitivity to interest rate risk.

3. (d) US bond funds attract major inflows from all parts of the globe.13% contribution by security from non financial cooperation, majority of debts issued outside US,70% corporate bonds are issued by investment grade issuer, US bond fund attract major cash flows.

4. (e) Interest payment is made on purchase of bond

Interest payment is made on purchase of bond interest payment is at the time of maturity.

5. (a) Residential or commercial mortgages

Residential or commercial mortgages are not a security backing for asset backed securities.

6. (e) CDOs are not backed by a diversified pool of a single asset class.

CDOs are backed by diversified pool of assets which pay fixed or floating coupon and most senior debt is rated AAA to A and subordinate debt is rated BBB to B.

7. (d) Security bond is not a structure bond.

Structure bonds are usually carry a fixed coupon, on semiannual basis. However, some countries are now issuing coupons on quarterly basis.

8. (a) The maturity period of the bond

Maturity period of the bond, redemption features, credit quality etc., are to be considered while investing in a bond.

9. (c) Masala bond

Masala bond is a bond denominated in Indian rupee and issued in India. Masala bonds are attractive to foreign investors who desire exposure to Rupee-denominated assets.

10. (a) Green bonds

The proceeds of this will be used to fund renewable energy and emission reduction projects- hence the name Green bonds.

Unit 6

Mortgage and Mortgage Instruments

Structure

"Step by step, place became property, property became a mortgage, and mortgages became derivative investments."

- Douglas Rushkoff, Author, Teacher and Documentarian

6.1 Introduction

Let us discuss mortgage, types of mortgages, essentials of mortgage, general mortgage process followed by the banks, mortgage vs. pledge vs. hypothecation, and mortgage financing in India, in detail.

In the previous unit you have studied basics of bonds, bond investment strategies, structure of bonds, risk associated with bonds, global bond market, International Organisation of Securities Commission and Central government debt securities.

In this unit you will study about the meaning and concept of mortgage, types of mortgages, essentials of mortgage, general mortgage process followed by the banks, mortgage vs pledge vs hypothecation and mortgage financing in India.

Individuals generally tend to borrow when their expenses are greater than income. This is more true when the nature of expense is one-time (read: non-recurring) such as property acquisition. In a thickly populated country like India, the urbanization has become an integral part of the economic process. As in most countries, India's urban areas make a major contribution to the country's

economy. Indian cities contribute to about 2/3 of the economic output, host a growing share of the population and are the main recipients of FDI and the originators of innovation and technology. India's towns and cities have expanded rapidly as increasing numbers migrate to towns and cities in search of economic opportunity creating strong demand for property over its supply.

The upshot: appreciation in property prices. It is this northward trending of housing prices that encourages citizens in India to look at real estate as an investment. Hence, they borrow and build/acquire property. Normally, in the Indian context, the interest paid on housing loan is more than compensated by increase in the value of the housing assets.

The global real estate market reached a value of US$ 6,883 Billion in the year 2021. On this move, IMARC (International Market Analysis Research and Consulting Group) expects the market to reach a value of US$ 7,806 Billion by 2027, showcasing CAGR of 1.90% during 2022-2027.

According PwC Report Emerging Trends in Real Estate Global Outlook 2022 the Covid 19 pandemic during 2020 and 2021 coupled with Russia's invasion of Ukraine in the beginning of 2022 (February 2022) have their impact but yet to make their full mark on the world of real estate.

[22]Global volumes for completed sales of commercial properties totalled more than $1.3 trillion in 2021, 59 percent higher than the 2020 total and 22 percent ahead of the previous peak in 2019, according to MSCI Real Capital Analytics (RCA).

The transaction volume in Americas (USA, Canada, Mexico, Brazil) recorded US$729.9 billion in 2021 showing an increase of 101% over the volumes of 2020. EMEA (Europe, Middle East, Africa with a major contribution from Germany, UK, France and Netherlands Sweden) transactions recorded at US$ 380.1 billion and showed an increase of 28% over 2020 volumes. Asia Pacific recorded transactions worth US$ 205.4 billion in 2021 showing an increase of 22% over 2020.

The primary mortgage market in USA was around USD17.6 trillion in mortgages outstanding while the secondary market, or the value of mortgage-backed securities outstanding, was valued at USD 11.9 trillion in the year 2021.

In the final quarter of 2021 the total outstanding amount on residential mortgage lending reached about 1.21 trillion Euros in France, 1.74 trillion Euros in Germany and 1.86 trillion Euros in the United Kingdom (UK).

Coming to India, the Mortgage Industry is one of the major constituents of Banking Financial Services and Insurance (BFSI) sector in the country. It is synonymous with the Indian housing finance sector. Housing Development

[22] Source: PwC Report Emerging Trends in Real Estate Global Outlook 2022

Finance Corporation (HDFC) is the market leader in the Mortgage Industry in India followed by the State Bank of India (SBI), Life Insurance Corporation (LIC), Housing Finance Limited and the ICICI Bank.

National Housing Bank in its annual report 2020-21 projected strong growth in Indian Housing sector. According to the annual report 2020-21 of NHB the GDP growth estimate for FY22 stood at 10.5 per cent (RBI), as the economic recovery has gained momentum after the lifting of the localised lockdowns imposed in the aftermath of the second wave. Hence the revival in housing loan growth is anticipated in FY22 from the present level of 12.32 per cent by Schedule Commercial Banks and 8.13 per cent from Housing Finance Companies.

A 'Mortgage instrument' in India is mainly used for housing and housing finance. However, the usage of mortgage instruments is determined by the demand and supply in the country and enabling legal and regulatory environment in the country. As such, the structure and performance of mortgage markets in India is very different from that in other developed nations.

Generally, the mortgage market is divided into two segments – Primary Mortgage Market and Secondary Mortgage Market. The primary mortgage market is the market to lend to the commercial and household sector. The secondary market, is the market where the lenders tie-up together mortgages into mortgage-backed securities (MBS) and sell them to insurance companies, pension funds and other types of investors.

6.2 Objectives

After reading this unit, you will be able to

- Explain different types of mortgages loans availed by global investors for investing in global financial markets
- Discuss essentials of mortgage to determine validity of mortgage agreement while loans are taken by the borrowers in the markets
- Evaluate mortgage lending process followed by the banks while granting loans
- Assess the difference between mortgage, pledge and hypothecation while providing loans

6.3 Meaning and Concept

'Mortgage' is the most important kind of security. It facilitates transfer of rights on the said immovable property to the creditor. The mortgagee* (see below) enjoys the rights on the property during the validity of the mortgage Hence mortgage is not a transfer of absolute interest in the property mortgaged like 'sale' or 'gift'.

A mortgage may be defined as creating charge over immovable property to secure a debt payment or obligation; Sec. 58 of the Transfer of Property Act, 1882 defines mortgage as –

- "A mortgage is the transfer of an interest in specific immoveable property for the purpose of securing the payment of money advanced or to be advanced by way of loan, an existing or future debt, or the performance of an engagement which may give rise to a pecuniary liability."
- The transferor of the property is called a *mortgago*r, the transferee a *mortgagee*; the principal money and interest of which payment is secured for the time being are called the *mortgage-money*, and the instrument (if any) by which the transfer is effected is called a *mortgage-deed or instrument.*

Example: Mortgage Business in India

Economic Times, dated 22nd June, 2022, reported that mortgage business and home loan business were most of the banks' primary businesses and they wanted to focus on these and increase their business. It gives less margin to the banks. Yet, it was considered as an important business to the banks. According to Mr. Hinduja, Chairman, the IndusInd Bank, the two businesses they were focusing were mortgage and affordable housing loans. At present, they booked 2000 crore in house loans. Further, they were intending to increase it to ₹ 10000 crore, in the next 3 years. They commenced mortgage loans in the Q2. Though they were doing it on a small scale, it became a good support to their clients. For IndusInd Bank, the loan growth was very high at about 29%, during FY16-FY19, but came down in the FY19-FY22 to 7.8%, which was very less, when compared to industry average.

Source: https://economictimes.indiatimes.com/markets/expert-view/demand-intact-its-up-to-us-to-capture-the-market-says-indusind-bank-ceo/articleshow/92386259.cms?utm_source= contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 22th June, 2022, accessed on 22nd June, 2022.

Ingredients of Mortgage

From the above definition of mortgage, the following are the requirements of a mortgage:

- There should be transfer of interest in the property by the mortgagor (the owner or lessor).
- The transfer should be to secure the money paid or to be paid by way of loan or a pecuniary obligation.

Three outstanding characteristics of mortgage

After understanding the ingredients of mortgage, now we will discuss its characteristics:

- The mortgagee's interest in the assets mortgaged terminates upon the performance of the obligation tenable by the mortgage.

- Upon the mortgagor's failure to perform, the mortgagee has a right of foreclosure.
- The mortgagor has a right to redeem or regain the property on repayment of the debt or performance of the obligation.

6.4 Types of Mortgages

Various types of mortgages are defined by law. Based on the requirement of the mortgagor and mortgagee, market resorts to use of the particular mortgage. Familiarization with different types of mortgages is required for a market player.

Example: Kensington Mortgage Company's Types of Mortgages

Economic Times, dated 24th June, 2022, reported that Barclays Plc. acquired Kensington Mortgage Company Ltd., in a bid to expand their market reach in the housing market in Britain. Barclays Bank said that approximately £2.3 billion ($2.8 billion) was paid to acquire the specialist mortgage lender. Kensington Mortgage Company offered specialized mortgages especially to the self-employed, those with multiple sources of income and for customers above 55 years of age. For instance, the company had a "Flexi fixed for Term" mortgage scheme that offered all the features of a simple mortgage with the additional benefit to the mortgagor to select the term of mortgage. The company allowed the mortgagor to choose from 11 years, 16 years or 26 years payment options. Another mortgage scheme was exclusively meant for "Self-Employed" where the mortgagor simplified rules such as only one year's financial statements to be produced, flexibility to set the borrowable amount on weekly estimated contractor income etc.

Source: https://economictimes.indiatimes.com/news/international/us/barclays-strike-2-8-billion-deal-to-buy-kensington-specialist-mortgage-lender/articleshow/92434367.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 24th June, 2022, accessed on 24th June, 2022.

The Transfer of Property Act contemplates seven different kinds of mortgages. They are:

1. Simple mortgage-popularly known as registered mortgage
2. Mortgage by Conditional Sale
3. Usufructuary Mortgage
4. English Mortgage
5. Mortgage by deposit of title of deeds
6. Anomalous Mortgage
7. Reverse Mortgage

Simple mortgage: Under this form of mortgage, the mortgagor does not deliver possession of the mortgaged property and binds himself to pay the amounts secured by the mortgage, failing which the mortgagee will have the power to sell

the mortgaged property and use the proceeds for payment of the debt owed. This is also called registered mortgage.

Mortgage by conditional sale: The mortgagor apparently sells the mortgaged property to the mortgagee with a clause that the mortgaged property shall be returned to the mortgagor and the sale will cease to have effect on payment by the mortgagor of the amounts protected by the mortgage. In case the mortgagor defaults in paying the loan amounts, the sale of the property mortgaged will become complete.

Usufructuary mortgage: The mortgagor transfers ownership of the mortgaged property to the mortgagee authorizing the mortgagee to retain such possession till payment of all amounts secured by the mortgage. The mortgagee is authorized to receive the rents and any other income from the property mortgaged or any part of such rents and/or profits in lieu of interest and/or in payment of the amounts secured by the mortgage.

English mortgage: The mortgagor agrees to repay the amounts secured by mortgage with in an agreed time limit, and relocates the property mortgaged absolutely to the mortgagee subject to the condition that the property will be returned back upon payment of the amounts protected by the mortgage. This mortgage is not common in India as legal recourse is necessary for sale.

Mortgage by deposit of title-deeds (also known as equitable mortgage**):** Under this type of mortgage, a mortgagor deposits documents of title to immovable property, with an intention to create mortgage, with the mortgagee as security. Creation of mortgage by deposit of title deeds is possible only in the areas notified by the government.

Anomalous mortgage: This type of mortgage does not fall within any of the five classes described above. Anomalous mortgages take numerous forms either by custom or practice.

Reverse Mortgage: Reverse mortgage loan is a loan where the lender/mortgagee pays the monthly installments to mortgagor for a fixed period or lifetime. The payment stream in this type of mortgagee is reversed, hence the name reverse mortgage. This type of mortgage enables only senior citizens to convert their home equity into tax-free income.

Check Your Progress - 1

1. What is the term used for a charge on immovable property?
    a. Pledge
    b. Mortgage
    c. Hypothecation
    d. Charger
    e. Right

2. What is the term used for the transferor of the property in a mortgage transaction?
   a. Banker
   b. Transferee
   c. Mortgagee
   d. Mortgagor
   e. Transferor
3. Which one of the following is not a characteristic of mortgage?
   a. The mortgagee's interest in the property mortgaged terminates upon the performance of the obligation secured by the mortgage.
   b. The mortgagor has right to pool off assets, create securities against them, get them rated and sell them to investors.
   c. The mortgagee has a right of foreclosure upon the mortgagor's failure to perform.
   d. The mortgagor has a right to redeem or regain the property on repayment of the debt or performance of the obligation.
   e. The mortgagor has got a legal obligation on the secured asset
4. Under which form of mortgage, the mortgagor binds himself to repay the amounts secured by the mortgage on a certain date and transfers the mortgaged property absolutely to the mortgagee?
   a. English Mortgage
   b. Simple Mortgage
   c. Mortgage by Conditional Sale
   d. Usufructuary Mortgage
   e. Reverse Mortgage
5. Under which form of mortgage, the mortgagee pays the monthly installments to mortgagor?
   a. Mortgage by deposit of title of deeds
   b. Anomalous Mortgage
   c. Reverse Mortgage
   d. English Mortgage
   e. Usufructuary Mortgage

6.5 Essentials of a Mortgage

On the mortgagor and mortgagee executing the mortgage deed, the agreement becomes legally binding on the both the parties. Enabling this will require an understanding of the essentials of a mortgage.

Example: EXIM Bank and Guyana to Operationalize USD 500-mn Loan

Economic Times, dated 10th March, 2022, reported that RBI, in association with EXIM Bank, gave $7.29 million line of credit to Guyana, a South American Country, for its solar home lighting construction project, on 29th September, 2021. This credit facility was to be used for buying and installing 30,000 solar home lighting systems, in a hinterland city in Guyana. This agreement between India and Guyana, under the line of credit, was with effect from February 14, 2022. The repayment should be made as per the schedule and the terminal utilization period is sixty months, from the scheduled completion of the project. In this line of credit facility, assets should be created and the sovereign guarantee should be made available.

Source: https://economictimes.indiatimes.com/news/economy/finance/rbi-issues-notification-to-operationalise-usd-500-mn-loan-provided-to-sri-lanka-for-petro-items/articleshow/90127514.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 10th March, 2022, accessed on 22nd June, 2022.

After knowing different types of mortgage, we will discuss about the essentials of mortgages as below:

Transfer of Interest

Mortgage is a transfer of interest in the precise immovable property. The mortgagor as an owner possesses all the interests of the property, and when he mortgages the property for loan, he only parts with a fraction of the interests in that property in favor of the mortgagee. After mortgage, the interest of the mortgagor is reduced by amount of the interest transferred to the mortgagee. His ownership becomes encumbered temporarily.

Specific Immovable Property

It is important that the property must be specifically mentioned in the mortgage document. For instance, in one case the mortgagor stated “all of my property” in the legal document. It was declared by the court as unacceptable or invalid mortgage. Immovable property must be specifically declared in the deed so that, in case the mortgagor fails to repay the loan amount, the court is in a position to grant a judgment regarding the sale of the particular property on a suit by the mortgagee.

To Secure the Payment of a Loan

Another feature of a mortgage is that the intention of the mortgage transaction is securing the payment of a loan or the performance of an obligation resulting in a liability. It may be for the purpose of getting a loan, or if a loan has already been given, to secure the repayment of such loan.

Activity 6.1

You are working in credit department in CCB bank. A customer approaches you for loan by mortgaging his house in Hyderabad for his daughter's marriage. As a banker what salient features of mortgage you explain to this customer?

Answer:

6.6 General Mortgage Lending Process followed by Banks

Banks have to follow the guidelines stipulated by the Reserve Bank of India (RBI) in all lending related to mortgages. Banks assess the repaying capacity of the prospective borrower and purpose of the loan. Banks follow a structured procedure for mortgage loans. Mortgage Loan may be divided into four phases: origination, processing, underwriting, and closing. Before the application process begins, a bank should consider whether a consumer needs pre-purchase counseling.

Example: Banks Hike Lending Rates to Restrain Inflation

Economic Times, dated 10th June, 2022, mentioned that some of the banks, on 9th June, 2022, raised their external reference benchmark that was applicable for pricing the retail loans in India. The major players like ICICI Bank, Bank of Baroda, Punjab National Bank, and Bank of India raised the interest rates, as Reserve Bank of India increased its key rate, for the second time, within a month, to restrict inflation. The external rates were linked with more than half of the major banks outstanding credit amount. Hence, the banks increased their respective external benchmark lending rates (EBLR), upto 50 basis points matching the latest increase in the repo rate, at which RBI provided short-term funds to the commercial banks.

Source: https://economictimes.indiatimes.com/industry/banking/finance/banking/banks-take-a-cue-from-rbi-hike-lending-rates/articleshow/92115470.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 10th June, 2022, accessed on 22nd June, 2022.

Origination

Origination consists of lending officers taking applications from prospective borrowers at the bank, or at any location convenient to the borrower and bank. Some banks reach out to customers on reservations by using mobile branches,

mini-branches in supermarkets, or temporary booths at community events or festivals. Usually, lending officers meet prospective borrowers and take applications from them directly. Alternative origination methods may prove useful to banks extending mortgage loans in remote areas. In addition to originating loans through face-to-face customer contacts in the bank, some banks originate loans by accepting applications submitted through home personal computers or through loan officers who take applications from borrowers in non-bank locations.

Processing

Processors verify information supplied by an applicant, order an appraisal, and determine title status and check whether title insurance/mortgage guarantee is required.

Loan-to-Value ratio

Mortgage loan for the purchase of a property, generally requires the borrower to make a down payment; that is, contribute a part of the cost of the property. The Loan to Value ratio (or LTV) shows the size of the loan against the value of the property. A mortgage loan where the purchaser has made a down payment of 20% has a Loan to Value ratio of 80.

The LTV ratio is considered an important indicator of the riskiness of a mortgage loan; the higher the LTV, the higher the risk.

Underwriting

Underwriting involves evaluating whether the prospective borrower qualifies for the requested mortgage. Underwriters employ the bank's guidelines (Underwriters generally analyze loan applications by reviewing the "four Cs of credit". They are: the borrower's credit history, character (job stability and reliability), capacity to repay a loan, and collateral (condition and value of property).

Closing

After a loan is approved, the final phase is to close the process of mortgage loan, i.e., to disburse loan proceeds and to receive executed loan documents evidencing the borrower's debt and the bank's security interest in collateral.

6.7 Mortgage vs. Pledge vs. Hypothecation

The creation of charge on movable /immovable assets can be made in three different modes. Each follows a different set of rules and liquidation of the 'charge' also has a different set of rules. Hence there is a need to understand the basics of different types of 'charges' for securing a loan. Let us understand what the 'charges' are and the basic differences between various types of charges.

Example: Increase in Retail Loans in India

Economic Times, dated 20th June, 2022, reported that credit off take increased from 9.6% to 10.5%, during 2021-22. This increase, in this FY, was due to increase in the retail loan segment. The retail loans were given @12.4% to individuals, while this was only 10.7%, in the previous year. This tremendous growth, in the retail loan sector, was due to increased availability and use of technology. The retail loans were sold to public, through telephones, WhatsApp, email, and social marketing apps. The key promotion strategy was to tempt the borrows, by saying it was easy to get loans and repay them, without hindrance charges, etc. According to Sanjay Agarwal, Head, Retail Assets Business of Edelweiss ARC, when both the lending and borrowing go reckless, it encourages the individuals to borrow more than their earnings. They get these retail loans, by even mortgaging or pledging, using some collateral.

Source: https://economictimes.indiatimes.com/wealth/borrow/follow-these-6-thumb-rules-to-minimise-the-cost-of-your-loans-become-debt-free-asap/articleshow/91989617.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 20th June, 2022, accessed on 22nd June, 2022.

Mortgage is the most common type of security offered against fixed property. A mortgage is a transfer of an interest in definite fixed property as security against money taken by way of a loan, present or a future debt, or the performance of an activity giving rise to a financial liability.

Pledge

A pledge, in the Indian context, is a kind of possessory security. It is a unique type of bailment, where goods are delivered to the pledgee. Pledge is for the purpose of providing security for payment of a loan taken or fulfillment of a promise and is based on the premise that upon payment of the loan and fulfillment of the promise, the goods will be returned to the pledger, or disposed of as per the directions of the pledger. The delivery of goods between the pledger and the pledgee is indispensable for the pledge to be effective. The delivery can be actual, notional or constructive. Although the goods, are in custody of the pledgee the legal title to the goods remains with the pledger. A pledge can be created on goods only, and as per Indian law 'goods' has been defined to mean movable property other than money and includes documents of title such as share certificates, fixed deposit receipts etc. As delivery is a pre-condition, a pledge can be created only on goods in existence and not on future property.

Hypothecation

Though 'Hypothecation is regularly used as a type of security in India, the term has not been defined in any law and is accepted in business law by tradition and practice. While a pledge requires actual delivery of the goods, there is no real transfer of property or interest in the goods by the hypothecator to the hypothecatee. It only creates a notional charge in favor of the hypothecatee and

the right of the hypothecatee is to take legal action on debt and proceed in execution against the hypothecated goods, in case they are available. From the following Table 6.1, the difference between mortgage, pledge and hypothecation is easily understood.

Table 6.1: Mortgage vs. Pledge vs. Hypothecation

	Mortgage	Pledge	Hypothecation
Type of Security	Immovable	Movable	Movable
Possession of the security	Usually Remains with Borrower	Remains with lender (pledgee)	Remains with Borrower
Examples of Loan where used	Housing Loans	Gold Loan, Advance against NSCs, Advance against goods (also given under hypothecation)	Car / Vehicle Loans, Advance against stock and debtors

Source: ICFAI Research Center

6.8 Mortgage Financing in India

Banks and financial institutions will prefer to secure their lending to individuals / companies / any other legal entity. The security banks take from the borrower will be of two types - primary security and collateral security. Primary security is the asset (movable or immovable) purchased from the loan amount given by bank or financial institution. If a bank gives loan to a rice mill to purchase machinery and stock, the machinery and stock will be the primary security. If the rice mill gives building of one of the promoters as additional security, it is collateral security.

Example: Decrease in Mortgage Business Due to Increasing Interest Rates

Economic Times, dated 6th April, 2022, reported that increased interest rates were disturbing the mortgage market in India. Some, who can afford higher rate of interest, were alone getting the finances. Prospective home buyers may not go for a loan, owing to higher interest rates. According to the report published by Mortgage Bankers Association, the total number of mortgage applications recently reduced by 6%, as compared to numbers in the previous year. The volume too was less by 41%.

Source: https://economictimes.indiatimes.com/news/international/us/mortgage-business-fall-by-more-than-40-owing-to-surge-in-interest-rates/articleshow/90691037.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 6th April, 2022, accessed on 22nd June, 2022.

If the bank wants to create a mortgage on the building property offered by one of the promoters of the rice mill, can it be called mortgage finance? '- No. 'Mortgage Loan' or mortgage financing is different from creation of mortgage. Let us understand what mortgage financing is.

The services offered by the mortgage industry in India are - Debt consolidation service, New home loans, Home equity loans, Mortgage refinancing and Real estate lending.

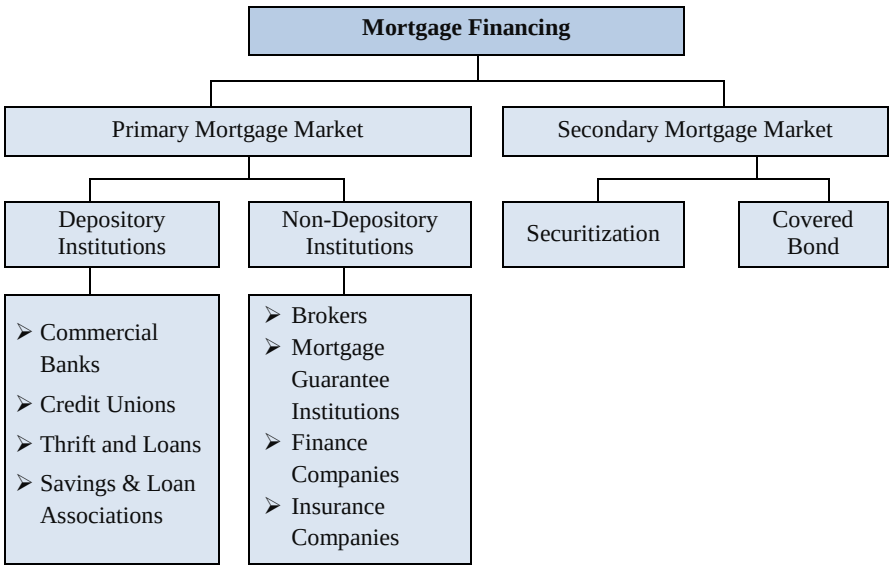
Affordable Home Loans with ticket size less than ₹ 35L is a key component of Home Loans market contributing 85% by volume and 58% by value in March 2021. Public Sector Banks and Housing Finance Companies (HFCs) dominate overall Home Loans and Affordable Home Loans. Overall Home Loans witnessed 15% growth in originations by volume and 32% growth in originations by value from FY2017 (financial year 2017) to FY21 (financial year 2021). The Affordable Home Loans is 6% growth in origination by volume and 17% growth in originations by value. 16% increase in Average Ticket Size for Home Loans from ₹ 24.6 Lakhs in FY2017 to ₹ 28.5 Lakhs in FY2021. There was 40% growth in originations by value in home loan segment in the first quarter, from ₹ 1,38,544 crore in FY2019 to ₹ 1,93,227 crore in FY2022. There was 21% growth in the loan volume from 6,70,000 accounts in FY2019 to 8,10,000 accounts in FY2022.

According to the report there was a hike in originations share, both in terms of value and volume, of private banks during the December quarter from FY2019 to FY22. However, during the same period, the share of public sector banks and HFCs saw a downfall.

Primary Mortgage Market

The Primary Mortgage Market comprises of depository and non-depository institutions which includes banks savings and loan associations, other institutions and mortgage bankers that create mortgage loans by lending funds directly to borrowers. These sources are also known as traditional sources of funds. Figure 6.1 illustrates the various segments of the primary and the secondary mortgage market.

Figure 6.1: Types of Mortgage Financing



Source: ICFAI Research Center

In traditional sources of loan, principals are depository institutions, savings banks, savings and loan associations, commercial banks, thrift and loans, and credit unions. Other sources include companies in the insurance business and non-institutional sources such as finance lenders, mortgage bankers, pension funds, private individuals, mortgage trusts and investment trusts.

The traditional model based on portfolio lending allows one institution to perform all the major functions: originating a mortgage to a home-buyer, servicing it and managing all the risk and portfolio organization functions, as well as funding. Portfolio lenders can either be depository institutions such as commercial banks, savings and loan associations, building societies, savings banks, and contract savings institutions, or European-style mortgage banks. Participants in the primary mortgage market sell their loans in the secondary mortgage market to replenish their finances. Participants in the secondary mortgage market buy loans created in the primary mortgage market and also sell and buy among themselves.

Depository Institutions

In the traditional mortgage model the depository institution creates a mortgage to a home buyer and performs all functions including funding. This is called 'bundling system' as all the roles and functions are performed by a single mortgage intermediary. Alternatively there is an 'unbundling system' wherein functions associated with mortgages are performed by two or more specialists.

Non-Depository Institutions

Non-depository institutions comprise of finance companies, insurance companies, pension funds, securities firms and government-sponsored enterprises. There are smaller non-depository institutions also, such as venture capital firms and the pawn shops, but they account for only small portion of sources of funds. These non-depository institutions buy mortgages, issue mortgage backed securities and guarantee timely payments. The process of mortgages might involve direct originations by the mortgage originators, or include a set of brokers /direct selling agents.

Secondary Mortgage Market

Secondary mortgage market involves purchase and sale of mortgage property and exists for whole loans as well as mortgage backed securities. While traditionally, all the functions from loan origination to servicing are performed by single mortgage intermediary, in secondary mortgage markets there is unbundling of functions and activities. The origination, refinancing, servicing, are carried out by two or more specialists. Secondary mortgage market consists of securitization of covered bonds and mortgage loans.

Two types of purchases generally take place in the secondary mortgage market:

- Purchase of individual mortgages
- Purchase of (securitized) pools of loans or blocks; deposit institutions or Banks sell their portfolios and buy back in the structure of Residential Mortgage Backed Securities (RMBS).

While the conventional sources of funding are available, one needs to understand the need for development of the secondary mortgage market as well. Development of secondary mortgage market is important for the following reasons:

- Capturing long term funds in the capital market
- Fixed income securities for the insurance and pension investors
- Intensifying competition in the market
- Off balance sheet financing as source of financing

Activity 6.2
What are the major differences between mortgage, pledge and hypothecation?
Answer:

Future of Mortgage Industry in India

In India, India Mortgage Guarantee Corporation (IMGC)[23] is a mortgage insurance corporation registered with the Reserve Bank of India (RBI). The RBI had come out with a separate regulatory framework for mortgage guarantee companies called "Mortgage Guarantee Company (Reserve Bank) Guidelines, 2008", spelling out the minimum capital requirement and specifying that they cannot accept public deposits or raise funds abroad. To help it grow, IMGC[24] requires indirect government contribution, as a facilitator and regulator.

Overhauling of land and rental laws, speedy mutation and registration process along with development of more credit rating organizations and mortgage insurance companies will help in organized growth of the market. Indian economy is having lower mortgage penetration compared to advanced and

[23] IMCG is the first mortgage guarantee company in India. NHB is the majority shareholder with 38 per cent stake in IMGC, followed by US-based Gen worth Financial (technical partner) with 36 per cent stake. Asian Development Bank and International Finance Corporation have 13 per cent stake each in this commercial venture, which is now capitalized at ₹ 120 crore.

[24] IMGC provides mortgage default guarantee to lenders. This helps lenders save capital on the risk-insured loan component, thereby enabling them to reach out to a larger consumer base, particularly in the affordable housing segment. For a buyer, it offers higher loan-to-value. (https://www.thehindubusinessline.com/money-and-banking/with-tight-liquidity-conditions-imgc-sees-demand-for-mortgage-guarantee-products/article26082166.ece)

emerging economies which implies huge opportunity for growth. National Housing Bank had projected head room for growth in mortgage industry in India.(Refer Exhibit 6.1).

Exhibit 6.1: Headroom for Growth - Low Mortgage Penetration

[25]The home loan market in India is estimated at slightly over US$ 300 billion, which represents a mortgage to GDP ratio of just 11%. Favourable conditions like rising income levels, improved affordability and fiscal support augur well for the demand for homes. Real estate in India is on an upcycle. India should be able to double its home loans to around US$ 600 billion within the next five years. This would coincide with the period when India attains its much-aspired goal of being a US$ 5 trillion economy. Despite the doubling of housing loans, India's mortgage penetration would still remain low at an estimated 13% of GDP. Asian economies, the average mortgage to GDP ratios range between 20 to 30%. This implies that housing loans in India will have an exponential growth trajectory for decades to come.

- [26]Real estate sector in India is expected to reach US$ 1 trillion by 2030. By 2025, it will contribute 13% to the country's GDP. Entire real estate is potential market for mortgages industry.
- Indian mortgage industry is at an inflection point and is anticipated to grow five-fold in next 10 years.

The market is forecast to reach US$ 650 billion, representing 13% of India's GDP by 2025.

The following are the growth drivers for mortgage market in India

The residential sector is expected to grow significantly, with the central government aiming to build 20 million affordable houses in urban areas across the country by 2022, under the ambitious Pradhan Mantri Awas Yojana (PMAY) scheme of the Union Ministry of Housing and Urban Affairs. Expected growth in the number of housing units in urban areas will increase the demand for commercial and retail office space.

- Under the 'Housing for All' scheme, 20 million houses are to be built by 2022, GST rate is brought down to 5%.
- Under Union Budget 2021-22, tax deduction up to ₹ 1.5 lakh (US$ 2069.89) on interest on housing loan and tax holiday for affordable housing projects have been extended until the end of fiscal 2021-22.

Contd…

[25] Source: HDFC Ltd Annual Report 2021-22
[26] Source: IBEF Industry Presentation Feb 2022 Real Estate

- Rapid urbanisation.
- Growth in population.
- Rise in the number of nuclear families.
- Easy availability of finance.
- Repatriation of NRIs and HNIs.
- Rise in disposable income.
- The residential real estate market continued to see strong growth in housing sales and new launches. Overall inventory levels have decreased. Factors such as low interest rates, rising income levels, stable property prices, improved affordability and continued support of fiscal incentives for home loans are some of the reasons for strong demand for home loans. The housing market continued to witness a trend of increased number of first-time homebuyers and those moving up the property ladder by opting for larger homes or acquiring homes in another location. The need for housing was also triggered by a larger number of people working from home. Given the low mortgage to GDP penetration at 11% in India and the continued shortage of housing, the scope to grow the mortgage market in India remains immense. There was increased demand in the commercial real estate sector as well. There was strong demand for office space across the major metro cities, with demand largely stemming from IT, e-commerce and the professional services sectors. Demand for commercial real estate increased from data centres, which play a key role in supporting the digital economy. Data centres were accorded infrastructure status in the Union Budget 2022. The demand for warehousing and fulfilment centres too increased, led by the continued boom in e-commerce and logistics.
- Development of housing and mortgage markets has an important role in growth and employment. Given that the central government's commitment to Housing for All by 2022 Mission, the housing sector has immense potential to grow; so do the mortgage markets.
- India's real estate market is expected to touch $1 trillion by 2030 as demand for housing recovers from the "setback" caused by the first and second waves of the COVID-19 pandemic. Rising demand for housing and reforms of the past seven years such as the Real Estate (Regulation and Development) Act, the Model Tenancy Act and steps taken to facilitate doing business in India will drive the market. RERA has transformed real estate and changed the perception of the sector. The disbursements across the financial institutions improved from Q2FY21 onwards as the economy rebound to the normalcy.

Contd….

As on March 2021, the total disbursements were ₹ 1,72,416 crore from ₹ 1,41,664 crore with a sequential growth of 21.71 per cent.

- The potential for housing loan segment is on the higher side due to demographic dividends, changes in the business models on the post pandemic etc. To leverage the same, Securitisation platform for Residential Mortgage-Backed Securities (RMBS) through Special Vehicle Purpose is a welcome move as suggested by the RBI Panel Committee. This will enhance the home loan growth of Banks and HFCs and our Mortgage to GDP Ratio will be in line with emerging markets.
- The GDP growth estimate for FY22 stood at 10.5 per cent (RBI), as the economic recovery has gained momentum after the lifting of the localised lockdowns imposed in the aftermath of the second wave. Hence the revival in housing loan growth is anticipated in FY22 from the present level of 12.32 per cent by Schedule Commercial Banks and 8.13 per cent from Housing Finance Companies.

Source: National Housing Bank Annual Report 2020-21

Check Your Progress - 2

6. Secondary mortgages market in India will benefit the issuer in the mortgage chain. Which one of following is not the benefit to the issuer in mortgage chain?
   a. Increase in cost of funding
   b. Capping of credit risk – the risk in case of securitization transactions is covered to the extent of credit enhancements provided by the originator
   c. Elimination of asset liability mismatches, both in terms of maturities and interest risks
   d. Increase in liquidity and funding appetite by creating an additional avenue
   e. With more efficient use of owned capital, the issuer is enabled to create higher effective leverage – which promotes Return on Equity (RoE), hence market capitalization
7. Which one of the following is not true with regard to development of secondary mortgage market?
   a. Capturing long term funds in the capital market
   b. Fixed income securities for the insurance and pension investors
   c. Intensifying competition in the market
   d. Off balance sheet financing as source of financing
   e. Controls volatility in the stock market to some extent

8. Secondary mortgages market in India will benefit the investor in the mortgage chain. Which of the following is not a benefit to the investor in mortgage chain?
   a. Attractive rate of return on investment in a highly-rated instrument, with excellent track record of rating resilience and recovery rates
   b. Portfolio diversification is a difficult process
   c. Socially responsible investing
   d. Ability to buy tranches that matches their appetite
   e. Alternative to investment in government bonds and corporate bonds
9. Which of the following is not a Depository Institution?
   a. Commercial Banks
   b. Credit unions
   c. Thrift and loans
   d. Savings & Loan Associations
   e. Mutual funds
10. Secondary mortgages market in India will benefit the borrower in the mortgage chain. Which of following does not come as a benefit to the borrower in mortgage chain?
   a. Decrease in cost of mortgage finance
   b. Greater availability of funds
   c. Availability of funding for higher income groups
   d. Creation of formalized credit scoring systems which eventually yield into a decentralized, formula-driven approach to mortgage origination and makes the process extremely fast
   e. On a higher level of development, integrating the origination process with the securitization process, whereby the mortgage originator develops into a mere originator-cum-servicer, for a much smaller agency cost, and therefore, much lower lending costs

6.9 Summary

- A mortgage is a transfer of an interest in specific immovable property as security for the repayment of money advanced or to be advanced by way of a loan, an existing or a future debt, or the performance of an engagement which may give rise to a pecuniary liability.
- The transferor of the property is called a mortgagor, the transferee a mortgagee; the principal money and interest of which payment is secured for the time being are called the mortgage-money, and the instrument (if any) by which the transfer is effected is called a mortgage-deed.

- The Transfer of Property Act contemplates six different kinds of mortgages. They are: Simple Mortgage, Mortgage by Conditional Sale, Usufructuary Mortgage, English Mortgage, Mortgage by deposit of title of deeds, and Anomalous mortgage.
- A reverse mortgage loan is a loan where the lender/mortgagee pays the monthly instalments to mortgagor.
- Mortgage lending usually proceeds in four phases: Origination, processing, underwriting, and closing. Before the application process begins, a bank should consider whether a consumer needs pre-purchase counselling.
- Mortgage is different from pledge and hypothecation in terms of type of security and possession of property.
- Mortgage market in India can be divided into primary mortgage market and secondary mortgage market.
- The primary mortgage market consists of depository and non-depository institutions which consist of savings and loan associations, banks, other institutions and mortgage bankers that originate mortgage loans by lending funds directly to borrowers.
- Secondary mortgage market involves sale and purchase of mortgage assets and can exist for whole loans and mortgage backed securities. It consists of securitization of mortgage loans and covered bonds.
- The US secondary mortgages market is considered to be the world's most developed mortgage securitization market which can be studied to replicate in the Indian context.

6.10 Glossary

Credit Report: A report from a credit bureau containing detailed information bearing on credit-worthiness, including the individual's credit history.

Default: Failure of the borrower to honour the terms of the loan agreement. Lenders (and the law) usually view borrowers delinquent 90 days or more as in default.

Foreclosure: It is a legal process in which a lender attempts to recover the balance of a loan from a borrower who has stopped making payments to the lender by forcing the sale of the asset used as the collateral for the loan.

Immovable Property: It is an immovable object, an item of property that cannot be moved without destroying or altering it - property that is fixed to the earth, such as land or a house. In the United States it is also commercially and legally known as real estate and in Britain as property.

Mortgage Deed: It is a document in which the mortgagor transfers an interest in real estate to a mortgagee for the purpose of providing a mortgage loan. The mortgage deed is the evidence of the interest transferred to the mortgage holder.

Possessory Security: Property that is in the hands of, or is possessed by, the individual who grants the lien. A lien is the claim that one person has over the property of another as security for the payment of a debt.

Residential Mortgage Backed Securities (RMBS): A type of mortgage-backed debt obligation whose cash flows come from residential debt, such as mortgages, home-equity loans and sub-prime mortgages.

Transfer of Interest: A transfer of interest is a transfer of ownership of any object, real property, or business entity from one party to another. Generally the transfer will be executed through a transfer of interest agreement.

6.11 Self-Assessment Test

1. Explain different types of mortgages.
2. Distinguish between Depository and Non-depository institutions.
3. What are the four phases of mortgage lending?
4. What are the essentials of mortgage?
5. What is the difference between Mortgage and Pledge?
6. Write a short notes on Depository Institutions.

6.12 Suggested Readings/Reference Material

1. Anthony Saunders, Marcia Cornett, Anshul Jain (2021). Financial Markets and Institutions. McGraw-Hill. 7th edition
2. I.M. Pandey, Financial Management (2021). 12th edition, Vikas Publishing House.
3. Jeff Madura (2020). Financial Markets and Institutions – Asia Edition, 13th edition; Cengage Learning
4. P. G. Apte (2020). International Financial Management; Tata McGraw-Hill Education Private Limited; 8th edition
5. Prasanna Chandra (2019). Financial Management – Theory and Practice, 10th edition, New Delhi: Tata McGraw-Hill
6. Frank J. Fabozzi, Frank J. Jones (2019). Foundations of Global Financial Markets and Institutions. Mit Press. 5th edition
7. Brealey Myers (2018). Principles of Corporate Finance, 12th edition, USA: McGraw-Hill Companies Inc.

6.13 Answers to Check Your Progress Questions

1. (b) Mortgage

Mortgage is a pledge of property to secure a debt payment.

2. (d) Mortgagor

In the mortgage transaction the transferor of the property is called Mortgagor.

3. (b) The mortgagor has right to pool off assets, create securities against them, get them rated and sell them to investors

The characteristic feature of mortgagor is interest in the property mortgaged terminates upon the performance of the obligation secured by the mortgage, right of foreclosure upon the mortgagor's failure to perform and right to redeem or regain the property on repayment of the debt or performance of the obligation.

4. (a) English Mortgage

Under English Mortgage, the mortgagor binds himself to repay the amounts secured by the mortgage on a certain date and transfers the mortgaged property absolutely to the mortgagee.

5. (c) Reverse Mortgage

A reverse mortgage loan is a loan where the mortgagee pays the monthly installments to mortgagor instead of mortgagor making any payments to the mortgagee.

6. (a) Increase in cost of funding

Secondary mortgages market in India will benefit the issuer by decreasing the cost of funding.

7. (e) Controls volatility in the stock market to some extent

Secondary mortgage market will not control the volatility in the stock market. In fact it will capture long term funds, provides fixed income to insurance and pensioners, etc.

8. (b) Portfolio diversification is a difficult process

The investor can make portfolio diversification both geographically and economically.

9. (e) Mutual funds

'Mutual funds' is a non-depository institution because it will not receive one time deposits from the investors.

10. (c) Availability of funding for higher income groups

Secondary mortgages market in India will benefit the borrower in the mortgage chain by making the availability of funding for lower income groups.

Unit 7

Global Stock Markets

Structure

"Don't look for the needle in the haystack. Just buy the haystack!"

- John Bogle, American investor, business magnate, and philanthropist

7.1 Introduction

Let us discuss about global stock markets, advantages of global stock markets, growing importance of global stock markets, international investment performance, ways of investment in foreign securities, and risk of investing in international stock markets, in detail.

In the previous unit you have studied the concept of mortgage, types of mortgages, essentials of mortgage, general mortgage process followed by the banks, mortgage vs pledge vs hypothecation and mortgage financing in India.

In this unit you will study an overview of global stock markets, advantages of global stock markets, growing importance of global stock markets, international investment performance, and ways of investment in foreign securities and risk of investing in international stock market.

New market realities are that increased globalization and interconnectivity, increased volatility, lower bond yields, volatility in exchange rates, varying inflation in different economies and lower expected stock returns than in the past all suggest that it’s prudent for investors to branch out globally.

Global diversification by investing in companies in both developed and developing economies is one of the most effective strategies for balancing the two sides of investing: risk and reward.

An asset class that performs well one year might be a poor performer in the next. For example emerging market and international stocks were the top performing asset class in 2017 (37.8% and 25.6% respectively[27])—but emerging market is at the bottom so far in 2018 and international stocks is near the bottom. [28]MSCI's All-Country World Index has tumbled by 20% since the start of 2022 till 30th June 2022, as shares. The stocks have been hammered by recession worries. In half year ending June 2022 investors lost $13tn as share values have come down.

Hence, global diversification of portfolios is becoming imperative. The global diversification increases the challenges in measuring the performance of companies. It is necessary to monitor the performance of the various securities in order to evaluate how these securities work together towards the desired objectives. Progress means constant increase in the value of the portfolios. There are different ways to measure the performance of portfolios. With stocks invested in different countries, the investors are exposed directly to the currency risk, interest risk and political risk of the given country.

7.2 Objectives

After reading this unit you will be able to

- Explain the concept of global stock markets and provide information about the different stock exchanges to the investors
- Appreciate the advantages of global stock markets to facilitate risk divergence and provide alternative avenues for investment
- Assess the growing importance of global stock markets in order to make appropriate decisions for investment in global financial markets
- Evaluate the risks to which the investors of international stock markets are exposed

7.3 Global Stock Markets: An Overview

Global stock markets include various stock markets located across the world. These stock markets provide scope to the global investor for investment in various financial instruments with regard to stocks, bonds and other instruments in international financial markets. The investor can invest in global markets for risk divergence and meet the objective of wealth maximization.

[27] https://www.schwab.com/resource-center/insights/content/why-global-diversification-matters

[28] Source: US stocks suffer sharpest first-half drop in more than 50 years news item July 1st 2022, The Guardian

Overview of World Stock Market 2020

[29]In its overview on world stock exchanges, the Federation of World Stock Exchanges provided the following information.

The year 2020 was an abnormal year in the history because of several instances like Brexit, Covid-19 pandemic, the resignation of Japan's Prime Minister Shinzo Abe, USA (United States of America) presidential election and increased tension between the USA and China developing pessimism and uncertainty in economy and forecasting. In March 2020, the volatile market reminded the Great Financial Crisis of 2008.

Example: Volatility in Global Markets

Economic Times, dated 13th June, 2022, reported that the Indian equity market struggled, with the Nifty closing at 16,200 and the value of the rupee also closed at very less, as the investors were worried about the US inflation rise and increased oil price. The consumer prices in the US also increased by 8.6% in May 2022, which was the highest rate since 1981. This increased the fear among the investors, regarding inflation and all the investors expected that Federal Reserve Bank might increase rates. That would surely slow down the economic growth and lead to recession, even in the largest economic power. On 15th June 2022, the US Fed was to announce its all-time inflation data that might drove up the dollar and the bond yields. The values of popular index, such as DJIA fell to 2.7%, S&P around 2.9% and NASDAQ sank to 3.5%, leading to most of the index across the globe to fall down.

Source: https://economictimes.indiatimes.com/markets/stocks/news/volatility-in-global-markets-feds-hawkish-tone-to-weigh-on-dalal-st/articleshow/92168671.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 13th June, 2022, accessed on 24thJune, 2022.

At the end of the year 2020, the availability of several Covid-19 vaccines, the outcome of the USA elections and the final agreement between UK (United Kingdom) and EU (European Union), boosted the confidence of the issuers and investors, thus driving the markets to the peak.

After a steep fall of 20.7% in the first quarter (January to March) of 2020, domestic market capitalization quickly recovered and reached pre-pandemic levels at the end of second quarter (April to June) of 2020. In November 2020, for the first time global market capitalization crossed the US$ 100 trillion mark reaching US$ 109.21 trillion at the end of the year 2020. This was up by 19.7% when compared to that of the year end 2019.

In the year 2020, equity markets witnessed a record-high levels of volumes (56.0%) and value traded (53.7%) when compared to that of its previous year

[29] https://www.world-exchanges.org/tag/market%20data

2019. After reaching a peak in March 2020, higher value in terms of volumes and trading became the new normal that continued throughout the year 2020. In the fourth quarter (October to December) of 2020, the value of trades stood at US$ 34.81 trillion and the number of trades stood at US$ 9.54 billion. Domestic market capitalization in the first half year (January to June) of 2021 increased to 6.5% when compared to that of December 2020, crossing the US$ 116 trillion mark for the first time.

The USA is the world's top country by market capitalization. As of 2020, its market capitalization was USD 40,719,661 million, equivalent to 44.29% of the world's market capitalization. The top five countries (USA, China, Japan, Hong Kong, and Canada) account for 74.43% of it. The world's total market capitalization was estimated at US$ 91,931,860 million in the year 2020. The value of global domestic equity market raised to USD 121.94 trillion in the year 2021 from USD 65.04 trillion in year 2013.

According to market capitalization the top 10 stock exchanges of the world as of March 2020:

1. New York Stock Exchange (NYSE)
2. NASDAQ OMX
3. Tokyo Stock Exchange
4. Shanghai Stock Exchange
5. Hong Kong Stock Exchange
6. Euro next
7. Shenzhen Stock Exchange
8. London Stock Exchange
9. Toronto Stock Exchange
10. NSE/BSE

New York Stock Exchange (NYSE)

The beginning of the New York Stock Exchange goes back to 1792, when 24 prominent brokers and merchants gathered in Wall Street to sign Bretton Woods Agreement for trading of securities on common commission basis. The Exchange grew in leaps and bounds over the centuries.

NYSE trading process is a unique system. On the trading floor, an auction takes place each day. Open bids and offers are provided by exchange members who act on behalf of their institution and investors buy and sell orders for each listed security by meeting directly on the trading floor. Prices are calculated on the basis of supply and demand. Stocks buy and sell orders funnel through a single location, ensures that any common investor is exposed to a wide range of buyers and sellers. This process provides any common investor the best available price.

The New York Stock Exchange's market capitalization was $23.12 trillion in March 2018 – this is nearly 40% of the total world stock market value. There are over 2,400 companies listed on the New York Stock Exchange, which span sectors such as finance, healthcare, consumer goods and energy[30].

Figure 7.1 shows the movement of the S&P 500 in 3-year period.

Figure 7.1: S&P 500 from 7th July 2019 to July 2022

Source: https://money.cnn.com/quote/quote.html?symb=SPX&source=story_quote_link compiled on 8th July, 2022

London Stock Exchange (LSE)/ Financial Times Stock Exchange (FTSE)

The origin of the London Stock Exchange can be traced back to the coffee houses of the 17th century London, where people willing to raise or invest money, purchased and sold shares in Joint Stock Companies.

There are over 2,750 companies listed on the Exchange, including more than 500 from outside the UK. These companies are divided between the 'main market', the exchange's long-established market for the UK and international companies, and the Alternative Investment Market (AIM) set up in 1995 for young and fast-growing business. The listing requirements for AIM are slightly different to reflect the special characteristics of new and developing business. On 16 September 1999, the London Stock Exchange launched two depository receipts - Euro Convertible Bonds and Euro-denominated Euro Bonds. Companies from over 60 countries are listed on the London Stock Exchange. These companies can reach various investors and have the advantage of raising money in world's most heavily traded exchange. The London Stock Exchange provides companies access to a well-developed trading location with various services, including a highly developed electronic order book for the most liquid assets. The London Stock Exchange provides speedy real time trade information to over 85,000

[30] http://siblisresearch.com/data/dow-jones-market-cap/ taken on November 28th, 2018

installed terminals worldwide. FTSE 100 Index from July 2018 to July 2022 is illustrated in the Figure 7.2 below:

Figure 7.2: FTSE 100 Index from July 2018 to July 2022

Source: https://tradingeconomics.com/united-kingdom/stock-market compiled on 11th July, 2022

[31]United Kingdom Market Capitalization accounted for $ 2,729.153 billions in Jun 2022, compared with a percentage of $3,011.785 billions in May 2022. The data reached an all-time high of $4,211.587 billions in Oct 2007 and a record low of $ 1,402.869 bn in Sep 2002.

The Exchange was founded in 1801 and its current premises are situated in Paternoster Square close to St Paul's Cathedral. It is the most international of all the world's stock exchanges, with around 3,000 companies from over 70 countries admitted to trading on its markets. The London Stock Exchange runs several markets for listing, giving an opportunity for different sized companies to list. For the biggest companies, the Premium Listed Main Market exists, while in terms of smaller SME's the Stock Exchange operates the Alternative Investment Market. For international companies that fall outside the EU, it operates the Depository Receipt scheme as a way of listing and raising capital. Traders can track the performance of the LSE, and its market capitalization, with the Financial Times Stock Exchange Index 100 Share Index, or FTSE 100. The index contains the top 100 companies listed on the London Stock Exchange.

Tokyo Stock Exchange

In the 1870s, a securities system was introduced in Japan along with public bond negotiation; it resulted in the demand for public trading institution and Stock Exchange Ordinance was enacted in May.

[31] https://www.ceicdata.com/en/indicator/united-kingdom/market-capitalization

The Tokyo Stock Exchange functions as a self-regulated and a non-profit organization under the supervision of the Securities and Exchange Law. The management of TSE is run by a self-regulated body of members involved with market. The major function of Tokyo Stock Exchange is to provide markets for secondary market operations. Real time trading is offered on the Exchange floor. The listing process and securities are scrutinized by the Stock Exchange officials. TSE always maintains a higher standard for safety of investors and it can delist a security or even suspend trading to meet this objective. The Nikkei Index for 4 year period July 2018 to July 2022 is illustrated in Figure 7.3.

Figure 7.3: Nikkei Index 5 years July 2018 to July 2022

Source: https://tradingeconomics.com/japan/stock-market

Source: https://money.cnn.com/data/world_markets/nikkei225

Three year Nikkei chart for the period 2019 to 2022 indicates that the growth in the year 2019 over 2018 was at 9.09% and in 2022 till July it showed a negative growth. It was trading around 26,866 on 11th July 2022.

The main indices tracking Tokyo Stock Exchange are the Nikkei 225 index (Refer Figure 7.3 above) of companies selected by the Nihon Keizai Shimbun, the TOPIX index based on the share prices of First Section companies, and the J30 index of large industrial companies. 94 domestic and 10 foreign securities companies participate in TSE trading.

Today, there are over 3,575 companies listed on the Tokyo Stock Exchange, which has taken the TSE's market capitalization to $6.22 trillion as of March 2018. [32]Number of listed companies as on June 30th 2022 was at 3,832 Japan Exchange Group. Japan Market Capitalization accounted for $ 5,161.628 billion in Jun 2022, compared with $ 5,552.718 billion in May 2022.

The data reached an all-time high of $ 6,919.601 bn in Sep 2021 and a record low of $ 4.473 bn in Aug 1957.

Hong Kong Stock Exchange

Securities trading in Hong Kong started in 1866. However, formal stock market, the Association of Stockbrokers in Hong Kong, was established in 1891. In 1914, it was renamed as Hong Kong Stock Exchange. In 1921, a second exchange - the Hong Kong Stockbrokers' Association - was incorporated. The two exchanges combined to form the Hong Kong Stock Exchange in 1997. During the past two decades, the exchange has developed rapidly and is now one of the major international stock exchanges.

The Stock Exchange of Hong Kong is one of the world's largest stock exchanges. A wide range of products are dealt in the stock exchange of Hong Kong including equities, ETFs, REITs, bonds, structured equity products, equity index and single stock derivatives, currency futures and commodity derivatives.

The Hong Kong stock index was trading at 21,130 on 11th July, 2022.

Hong Kong SAR (China) Hang Seng closed at 21,859.8 points in June 2022, compared with 21,415.2 points at the previous month end May 2022

7.4 Advantages of Global Stock Market

It is well known that investing in stock market is risky. Practitioners and theoreticians recommend holding a well-diversified portfolio to reduce risk. Even though mutual funds offer a rapid and fairly inexpensive way to diversify, international portfolio is another way to diversify. On the other hand, the investors can also benefit from growth in economies and geographies other than theirs. The following few lines deal with the advantages the global stock markets provide to the investor.

[32] https://www.jpx.co.jp/english/listing/co/index.html

Example: Global Stock Market Performance

Economic Times, dated 29th June, 2022, reported that, when Wall Street saw a sharp selloff, the entire Asian stocks trade declined, by more than a percent, immediately when the market opened on 28th June 2022. MSCT's index, a popular index of Asia Pacific shares, outside Japan, also declined by 1.07%, on the same day. Looking at the pessimistic global scenario, the domestic market had a gap down opening but later during the day the market picked up. US stocks prices dropped sharply, during the overnight trade, whereas Asian Peers were trading well, with big cuts.

Source: https://economictimes.indiatimes.com/markets/stocks/news/sgx-nifty-down-165-points-heres-what-changed-while-you-were-sleeping/articleshow/92532178.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 29th June, 2022, accessed on 29th June, 2022.

For example, an American investor might get higher returns by investing in India, Brazil and China as these economies are growing much faster than American economy. There could also be further benefits such as tax benefits while investing through particular economies. *However,* global stock markets have following advantages.

Diversification

International diversification helps reduce the level of risk in the system as all the economies do not move in the same direction. Some economies are said to be riskier than the others as far as exposure to different types of risk is concerned. For example, the impact of the Chinese crisis would not be the same on all economies. The same can be said about the Greece crisis. Hence, exposures to different economies help investors reduce risk.

Higher Growth Returns

Developing countries, especially China and Brazil, are growing much faster than the United States. This higher growth rate envisages higher return in the stock markets. For instance, emerging markets stocks grew by 72 percent and 36 percent in 2009 and 2007 respectively, according to IFA.com. This is much higher than the US stocks' returns of 27 percent and 5 percent in the same period.

7.5 Growing Importance of Global Stock Markets

The global financial market is very dynamic and vibrant. The growing incomes and savings patterns across the geographies and globalization of the economies and the liberal outlook of all the economies for investments by the residents in international markets have triggered huge cash flows into securities markets across the world. Securities markets operate in more than 100 countries. These countries include large countries such as China and small markets such as Fiji.

Example: Sensex Rallies Over 400 Points: Key Factors Driving the Market Higher

Economic Times, dated 27th June, 2022, reported that for three consecutive days, the domestic stock market was doing very well. The Sensex was high, with 600 points and Nifty crossed 15,900 points. Market experts analyzed the global factors, as they were more important than the domestic factors, in the stock market performance. The US Stock futures were very high, on 20th June 2022. The same trend reflected in the Asian markets too. The index of Japan – Nikkei increased by 1.51% and Australia's benchmark was high by 2.03%. London's FTSE futures and EUROSTOXX 50 futures were also trading very high. The Dow Jones movement became very important to the Indian market, at that moment.

Source:https://economictimes.indiatimes.com/markets/stocks/news/sensex-rallies-over-600-points-key-factors-driving-the-market-higher/articleshow/92487118.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 27th June, 2022, accessed on 29th June, 2022.

The four largest markets in terms of dollar transactions are New York, NASDAQ, London and Tokyo. The economic integration of the European Union has led to the formation of EURONEXT and NOREX. The Paris, Brussels, Amsterdam, and Lisbon Exchange with a derivatives-exchange in London formed NOREX. In 2006, NYSE and EURONEXT decided to merge their operations. This could be termed as the merger of equals. Stock exchanges of Tokyo and Australia have entered into cooperative agreements. These kinds of mergers aim at longer trading hours and give more choices to the investors. NASDAQ has entered Japan, Canada, Hong Kong, and Australia with the help of joint ventures.

NASDAQ and SGX (Singapore Exchange) have established collaborative listings agreement in October 2017. The National Stock Exchange (NSE), in a move to upgrade its existing clearing and settlement systems, has struck a partnership with US technology bourse Nasdaq in July 2018 whereby the latter will provide a customized real-time clearing, risk management and settlement technology to the local exchange. The process is expected to be completed within 2-3 years time from the date of agreement.

7.6 International Investment Performance

The performance of a stock is measured through the indices which captures the movement of the stock prices in the given market. The last 10 years_ 2008 onwards) has seen both bullish and bearish phase due to the housing sector boom followed by the subsequent housing sector crisis in the United States. This not only impacted the United States market, but also impacted the other major indices. The following paras deal with the performance of major markets across the world.

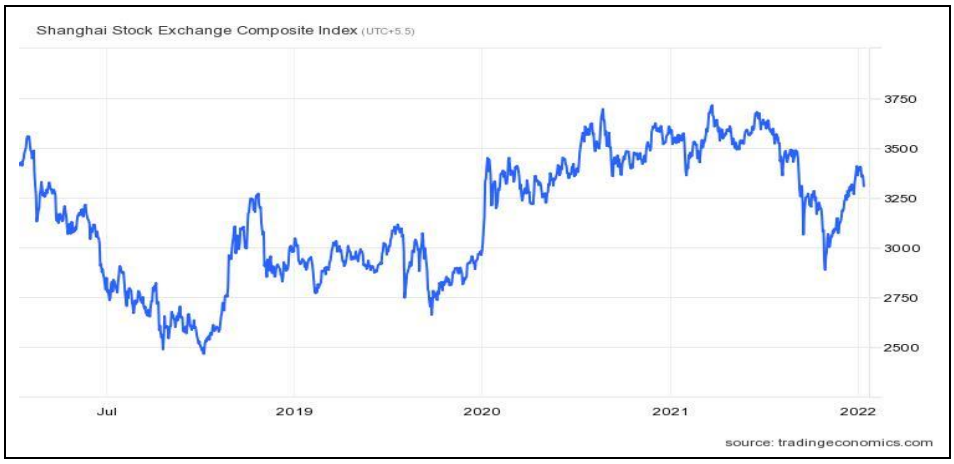
Example: Performance of Wall Street During First Half of 2022

Economic Times, dated 25th June, 202, reported that the stock market investors had a very tough time, in the beginning of the year 2022. The challenge increased, as S&P 500 was down around 18% year-to-date, for the first time in past 50 years. This was considered to be the lowest, after 1970. Even though Fed fights to maintain its monetary policy and hold the inflation, the inflation was high, when compared what it was during the previous 50 years. The investors were trying to find out the factors that impact the market, so that they can predict the stock market movement, for the rest of the year. Bond market was better, when compared to the equity market, during this period.

Source: https://economictimes.indiatimes.com/markets/stocks/news/wall-st-week-ahead-bruised-u-s-stock-investors-brace-for-more-pain-in-second-half-of-2022/articleshow/92448079.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 25th June, 2022, accessed on 26th June, 2022.

Shanghai Composite Index (Refer Figure 7.4): SSE Indices are derived using a Paasche weighted composite price index formula. This means that the index is dependent on a base period on a precise base day for its calculation. The base day for SSE Composite Index is 19 December 1990. The total market capitalization of all stocks of that day is the base period. The Base Value is 100. The index was launched on 15 July 1991.

Figure 7.4: Movement of Shanghai Composite Index July 2019 to July 2022



Source: https://tradingeconomics.com/china/stock-market#: compiled on July 11, 2022

[33]China Market Capitalization accounted for $ 12,664.278 bn in Jun 2022, compared with a percentage of $11,704.385 bn in the previous month

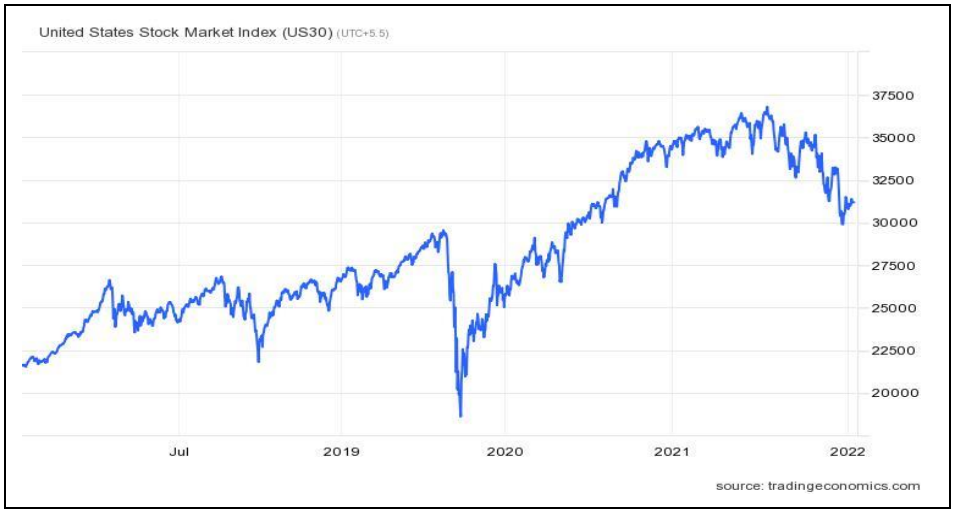
The data reached an all-time high of $ 14,375.423 bn in Dec 2021 and a record low of $ 40.601 bn in Jan 1996

[33] https://www.ceicdata.com/en/indicator/china/market-capitalization

Dow Jones Industrial Average

DJIA is one of numerous indices formed by the editor of Wall Street Journal along with Dow Jones & Company co-founder Charles Dow (Refer Figure 7.5). The industrial average was first calculated on 26 May 1896. Presently owned by S&P Dow Jones Indices, greater part of which is possessed in by McGraw Hill Financial, it is the most prominent of the Dow Jones Averages.

Figure 7.5: Movement of DJIA (July 2017 to July 2022)



Source: https://tradingeconomics.com/united-states/stock-market

Dow Jones recorded 20,500 on 26th July 2017 and hovering around 31,100 in July 2022.

United States Market Capitalization accounted for 194.9 % of its Nominal GDP in Dec 2020, compared with a percentage of 158.6 % in the previous year.

US Market Capitalization: % Nominal GDP is updated yearly, available from Dec 1975 to Dec 2020.

The data reached an all-time high of 194.9 % in Dec 2020 and a record low of 36.7 % in Dec 1978.

7.7 Ways to Invest in Foreign Securities: ADR, GDR

Investments in international markets by individuals/ corporates in any country are regulated by the law of the land and also the law of the destination country. This investment class can be real estate, corporate bonds or listed stock on a stock exchange or in any other commodity as permitted in the destination country. In India also, there are sets of rules and regulations given by SEBI or RBI or by a designated regulatory agency wherein individuals/legal entities are permitted to make investments in financial markets. Following are the steps an Indian investor needs to follow to invest in foreign stocks.

Open a Trading Account

The client needs to open a trading account with an Indian broker who has contract with foreign brokers. The foreign broker should be licensed to act as an intermediary and execute the trades in the foreign markets on your behalf. The Indian stock broker will operate as an introducing mediator, connecting the client and the overseas broking house. The Indian stock broker will, on the other hand, help the client open an account and completing the official procedure of Know Your Customer (KYC) relevant for that country.

Funds Transfer: Pay-In/Pay-Out Process

The RBI mandates that an Indian citizen can remit up to USD 2,50,000 in a year, from any of the authorized Indian banks. This amount includes investments in international capital markets. The foreign brokers accept funds originating from the client's account only and any third-party fund transfer will be rejected. In addition, they do not accept banker's drafts, cheques or cash deposits either.

To get his money back, the client needs to fill online, the Bank Transfer Request (BTR) form and send it to the overseas broker. Once the payout request is accepted, the sum will be credited to the client's bank account. It takes around 24 to 48 hours to dispatch money from the customer's bank account to his trading account with the foreign broker, while the time taken to transfer funds from the trading account to the bank account is around 48 to 72 hours.

The client can remit funds in one of the many global currencies from his bank account to his trading account, but he needs to decide the base currency in which he wants to settle the dealings. If the base currency in the account is USD, subsequently, all stock exchanges will settle all transactions automatically in USD. For trades on other exchanges, which do not accept payments in USD, the overseas broker will exchange the base currency to the currency of that exchange at the market rate. Once the client's account is opened and funds are transferred, he will be provided with an immediate access through a client Login ID and password and can buy/sell shares of the listed foreign companies. Dealings like trading, delivery of shares/funds, etc., will be directly done with the foreign broker without involving the Indian stock broker.

Demat Account

In India it takes T+2 days to get a stock transferred to one's account. However, in the foreign market, unlike here in the domestic markets, the shares are transferred immediately to one's account. Unlike with most of the Indian brokers, margin trading and short selling will not be permitted with an overseas broker. The client will be able to sell shares only when he already holds them and buy shares only when there is sufficient cash in the account. He can have access to all transactions, ledger balance and account history on the trading platform. The investor will also get the contract notes for executed trades in his mailbox.

Example: Invest in Foreign Securities: ADR, GDR from India

Financial Express, dated 3rd Jan., 2022, covered an article on ADR and GDR. Some of the important points were- when investors trade in ADRs, they get capital appreciation, from the US market. This will help investors, from the appreciating Dollar value against the rupee value. For companies in the developing countries, when they use ADR, the process of issuance is clearer and more precise, as they follow regulations. They have to abide by US GAAP and SEC, NYSE and NASDAQ guidelines. Due to transparency, a lot of foreign investors, and potential future and existing investors, would be benefited.

When the companies are listed, it increases their acceptance level, in the global financial markets. Indian investors can invest in both ADRs and GDRs, from India. All the investors will be eligible, for two types of returns – capital returns and dividend payout. The returns, when converted to Indian rupees, will be very high.

Source: https://www.financialexpress.com/money/your-money-you-can-invest-in-adrs-and-gdrs-sitting-in-india/2395874/ Dated 3rd January, 2022, accessed on 29thJune, 2022.

Indian Companies Which Offer Foreign Trading

Only a few Indian broking companies like ICICI Direct, India Infoline, Kotak Securities, and Reliance Money offer foreign trading services to Indian investors. In 2007, ICICI Securities was the first company to tie-up with the US-based broking firm, Pension Financial Services, for its overseas dealings with access to NYSE EURONEXT and NASDAQ.

While Kotak Securities has a strategic agreement with Singapore Saxo Capital Markets, India Infoline has tied up with the US-based Interactive Brokers, LLC. Similar arrangement has been made by Reliance Money with the US-based options Xpress. Kotak Securities provides access to twenty-four stock exchanges worldwide through its trading platform. These exchanges include all the large markets and approximately all the big stock exchanges, including New York Stock Exchange (NYSE), NASDAQ, London Stock Exchange (LSE), Australian Stock Exchange (ASX), Hong Kong Stock Exchange (HKEX) and Singapore Exchange (SGX), among others.

American Depository Receipts

American Depository Receipt (ADR) is a negotiable security representing securities of a non-US company that trades in the US financial markets. Shares of many foreign companies trade through ADRs on US stock exchanges. ADRs are denominated and pay dividends in US dollars and can be traded similar to regular share. ADRs are also traded during US trading hours, through US broker-dealers. They make investing in foreign securities easy by having the depositary bank handle all - currency and local taxes affairs. ADR was first introduced by J.P. Morgan in 1927 for the British trader Selfridges on the New York Curb

Exchange, the forerunner of American Stock Exchange. American Depositary Shares (ADSs) are securities of a foreign company represented by an ADR.

Global Depository Receipts

A Global Depository Receipt (GDR) is a certificate given by a depository bank, which purchases shares of foreign companies and deposits it on the account. It is also known as International Depository Receipt (IDR). GDRs are the global equivalent of the original American Depository Receipts (ADR) on which they are based.

Check Your Progress - 1

1. What is the limit fixed by the RBI that an Indian citizen can remit a maximum of USD in a financial year, from any of the authorized banks in India, including for investments in international capital markets?
   a. USD 1 lakh
   b. USD 2.25 lakh
   c. USD 1.50 lakh
   d. USD 1.75 lakh
   e. USD 2.5 lakh
2. In the foreign markets, which of the following is trade settlement period to transfer the shares to the investors account?
   a. T+2
   b. T
   c. T +1
   d. T+3
   e. T+4
3. To which of stock markets does the index The Nikkei 225 belong to?
   a. Tokyo
   b. Singapore
   c. Shanghai
   d. Hong Kong
   e. NYSE
4. How do you measure the performance of a stock market?
   a. GDP
   b. GNP
   c. Stock price
   d. Index
   e. Interest rates

5. How the Indian stock broker will help the client open an account and completing the official procedure in the relevant country?
   a. Know Your Company
   b. Know Your Country
   c. Know Your Name
   d. Know Your Customer
   e. Know Your Claim

Activity 7.1

You are working as portfolio manager in Star Financial Services. One of your clients is interested in investing in global stock market. What are the steps you explain him for investment in global stock market?

Answer:

7.8 Risks of Investing in International Stock Market

Investing internationally has often been the advice given to investors looking to diversify their portfolio and increase total returns. The benefits of diversification are achieved through the addition of low correlation assets of global markets which reduce the overall risk of the portfolio. Although the benefits of investing globally are widely accepted, many investors are still hesitant to invest abroad due to various risks associated with the return.

Example: How Investors can Overcome Investment Risk?- A View from Warren Buffet

Economic Times, dated 6th June, 2022, quoted that Warren Buffett follows his principles and is very diligent, in following his own words. According to him, the investing in stock market is a simple game. He feels that the financial advisors had made stock market investments appear to be a complicated and riskier affair. He believed in simple investing techniques such as investing in large cap or Exchange traded funds, as the risk involved was less.

Source: https://economictimes.indiatimes.com/markets/stocks/news/keep-it-simple-decoding-warren-buffetts-thumb-rule-for-wealth-creation/articleshow/91832059.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst Dated 6th June, 2022, accessed on 29th June, 2022.

Following are the major risks that investors face.

1. Currency Risk

Investors need to understand that investment in foreign currency leads to exposure to foreign currency risk. There are a lot of developing economies whose currency derives strength from being a stock market hub. However, when the stock market plunges, individuals want to withdraw money from the economy and invest in different economies. This makes the currency of these countries highly volatile and the risk faced by the investors increases.

The investor not only needs to predict the stock prices, but also has to predict the currency movements. A lot of foreign market investors prefer to hedge currency exchange risk by investing in the stock market.

2. Liquidity Risk

Another risk inherent in foreign markets, especially in budding markets, is risk of liquidity. Liquidity risk is the risk of not being able to sell your stock quickly or in time. Currency risk can be reduced; however, there is usually no way for the common investor to protect himself from liquidity risk. Therefore, investors should give specific thought to foreign investments that have a greater probability of turning illiquid by the time they want to wind up their foreign investments.

Activity 7.2
What are the various risks involved in Global Stock Markets?
Answer:

Check Your Progress - 2

6. A Global Depository Receipt (GDR) is a certificate given by a depository bank, which purchases shares of _____and deposits it on the account.
   a. Public company
   b. Private company
   c. Closely held company
   d. Foreign company
   e. Government company

7. Which of the following statements is not true with regard to American Depository Receipt?
   a. American Depository Receipts (ADR) (American depositary) is a negotiable security representing securities of a non-US company that trades in the US financial markets
   b. Shares of many foreign companies trade through ADRs on all stock exchanges across the globe
   c. ADRs are denominated and pay dividends in US dollars and can be traded similar to regular shares.
   d. US trading hours, through US broker-dealers. They make investing in foreign securities easy by having the depositary bank handle all - currency and local taxes affairs
   e. The brokers make investing in foreign securities easy by having the depositary bank handle all - currency and local taxes affairs.
8. Which of the following is the risk of not being able to sell your stock quickly or in time?
   a. Currency Risk
   b. Interest Rate Risk
   c. Liquidity Risk
   d. Political Risk
   e. Brokers Risk
9. Which one of the following is known as International Depository Receipt?
   a. Chinese Depository Receipt
   b. Global Depository Receipt
   c. Indian Depository Receipt
   d. American Depository Receipt
   e. Japanese Depository Receipt
10. Which of the following concepts was used to derive SSE Indices.
   a. Carl Pearson
   b. Paaschee
   c. Ronald Fisher
   d. Spear man
   e. Mahalanobis

7.9 Summary

- NYSE trading process is a unique system. On the trading floor, an auction takes place each day.

- Open bids and offers are provided by exchange members who act on behalf of their institution and investors buy and sell orders for each listed security by meeting directly on the trading floor.
- There are over 2,750 companies quoted on the London Stock Exchange, including over 500 from outside the UK.
- These companies are divided between the 'main market', the exchange's long-established market for the UK and international companies, and the Alternative Investment Market (AIM) set up in 1995 for young and fast growing business.
- The Tokyo Stock Exchange functions as a self-regulated and a non-profit organization under the provisions of the Securities and Exchange Law.
- The management of TSE was run by a self-regulated body of members involved with market.
- The two major advantages of international stock markets are diversification and higher returns from emerging markets.
- Securities markets operate in more than 100 countries. These countries include large countries such as Tokyo and small markets such as Fiji.
- The performance of a stock is measured through the indices which captures the movement of the stock prices in the given market.
- To trade in foreign markets, the client needs to open a trading account with an Indian broker who has contract with foreign brokers.
- In the foreign market, unlike here in the domestic markets, the shares are transferred immediately to one's account.
- Only a few Indian broking companies like Kotak Securities, ICICI Direct, India Infoline, Reliance Money and Religare, are offering foreign trading services to Indian investors.
- Investors need to understand that investment in foreign currency leads to exposure to foreign currency risk and liquidity risk.

7.10 Glossary

American Depositary Receipt: ADR (sometimes spelled depository) is a negotiable security that represents securities of a non-US company that trades in the US financial markets.

Currency Risk: Uncertainty caused in the value of an asset due to currency fluctuation is known as currency risk.

Global Depository Receipts: A Global Depository Receipt (GDR), also known as International Depository Receipt (IDR), is a certificate issued by a depository bank, which purchases shares of foreign companies and deposits it on the account.

They are the global equivalent of the original American Depository Receipts (ADR) on which they are based.

International Diversification: It refers to spreading one's portfolio in more than one country. It helps reduce risk as all countries have different political and economic risks.

Nikkei 225: The Nikkei 225 is a stock market index for the Tokyo Stock Exchange (TSE). It is calculated daily by the Nihon Keizai Shimbun (Nikkei) newspaper.

Shanghai Composite Index: It captures the performance of Shanghai Stock market and has been constructed using Paasche's index.

SSE Indices: They are all calculated using a Paaschee weighted composite price index formula.

7.11 Self-Assessment Test

1. Write short notes on Japan Stock Market.
2. What are the advantages of Global Stock Market?
3. Write short notes on American Depository Receipt (ADR).
4. What do you understand by Global Depository Receipt (GDR)?
5. Write a short note on Funds Transfer: Pay-In/Pay-Out Process
6. What you understand by Demat Account and how does it operate?

7.12 Suggested Readings/Reference Material

1. Anthony Saunders, Marcia Cornett, Anshul Jain (2021). Financial Markets and Institutions. McGraw-Hill. 7th edition
2. I.M. Pandey, Financial Management (2021). 12th edition, Vikas Publishing House.
3. Jeff Madura (2020). Financial Markets and Institutions – Asia Edition, 13th edition; Cengage Learning
4. P. G. Apte (2020). International Financial Management; Tata McGraw-Hill Education Private Limited; 8th edition
5. Prasanna Chandra (2019). Financial Management – Theory and Practice, 10th edition, New Delhi: Tata McGraw-Hill
6. Frank J. Fabozzi, Frank J. Jones (2019). Foundations of Global Financial Markets and Institutions. Mit Press. 5th edition
7. Brealey Myers (2018). Principles of Corporate Finance, 12th edition, USA: McGraw-Hill Companies Inc.

7.13 Answers to Check Your Progress Questions

1. (e) USD 2.5 lakh

The RBI mandates that an Indian citizen can remit a maximum of USD 2,50,000 in a financial year, from any of the authorized banks in India, including for investments in international capital markets.

2. (b) T days

T days. As the stocks are transferred immediately.

3. (a) Tokyo

The Nikkei 225 is a stock market index for the Tokyo stock market.

4. (d) Index

The performance of a stock market is measured through index of the market.

5. (d) Know Your Customer

Official procedure to open an account by completing Know Your Customer details.

6. (d) Foreign Company

A Global Depository Receipt (GDR) is a certificate given by a depository bank, which purchases shares of foreign companies and deposits it on the account. It is also known as International Depository Receipt (IDR).

7. (b) Shares of many foreign companies trade through ADRs on all stock exchanges across the globe

Shares of foreign companies are traded through ADRs only in US stock exchange.

8. (c) Liquidity Risk

Liquidity risk is the risk of not being able to sell your stock quickly or in time Currency risk can be reduced; however, there is usually no way for the common investor to protect himself from liquidity risk.

9. (b) Global Depository Receipt

A Global Depository Receipt (GDR) is a certificate given by a depository bank, which purchases shares of foreign companies and deposits it on the account. It is also known as International Depository Receipt (IDR).

10. (b) Paaschee

SSE Indices are derived using a Paasche weighted composite price index formula. This means that the index is dependent on a base period on a precise base day for its calculation.

Unit 8

Global Perspective of Money Markets and Commodities Markets

Structure

"Investing is most intelligent, when it is most businesslike."

- Benjamin Graham, British-born American economist, professor and investor

8.1 Introduction

The quote says that an investor should have a motive to gain, while investing and this unit showcases the same.

In the previous unit you have studied an overview of global stock markets, advantages of global stock markets, growing importance of global stock markets, international investment performance, instruments for investment in foreign securities and risk of investing in international stock market.

In this unit you will study money markets, commodity market, certain major perspectives in global commodities market, the causes and consequences of volatilities in gold prices, global outlook of commodity market and nature and origin of subprime crisis.

Financial securities like fixed deposits, commercial papers, treasury bills are leading contributors for money market. Investors will invest in these instruments

in order to make short term gains. Usually the short-term maturity ranges from 30 days to a year. However, the interest rates are low when compared to capital markets. Investors invest in these instruments for a fixed rate of interest.

8.2 Objectives

After reading this unit, you will be able to

- Explain the basics of money market operations and its impact on global investors
- Discuss the important features of commodity markets that create a base for investment opportunities to the global investor
- Evaluate the purpose of investments in gold to determine the price changes in global financial markets
- Analyze the nature and origin of subprime crisis and its impact on global financial markets

8.3 Money Market – An Introduction

The money market is an integral part of the financial market. It consists of financial instruments with high liquidity and short maturities in the short-term markets. The instruments in this market enable trading in short-term transactions from overnight maturity to one year maturity.

Across all global markets the definitions for these money market instruments hold good.

There are many instruments in this market like treasury bills, Commercial Paper (CP), Certificate of Deposits (CDs), Repurchase agreements (repos), Reverse repos, Call money and others. Understanding this segment of market is very essential to know the dynamics of liquidity in the global markets. Money market segment has the following features:

- Instruments are very liquid and are considered very safe
- Short-term duration instruments with low-interest rates
- High denomination instruments and high-volume game
- Essentially a dealer market; normally brokers do not play in this market, and it does not have a central trading exchange. Trade is through electronic systems and phones

Treasury Bills (T-bills): These are the most popular instruments in the money market. The Central government borrows funds from public and financial institutions through these bills. They are issued at a discount to the face value with maturities 91/182/364 days. These are auctioned by RBI for a price i.e. less than their face value. Whosoever offers higher price, will be the successful bidder;

this means the difference between the face value and the price will be less for the successful bidder; thus he/she ends up in realizing lower yield. This is termed as Winner's Curse because when the treasury bills mature, the government pays the investor the full face value. Hence, the difference between face value and the purchase price is the interest earned. The T-bill yield calculations are given below:

$$k = (F - P)/P * 365/d$$

Where

k = yield or return on the T bill

F = face value

P = price

D = maturity period

These bills are issued through a competitive bidding process at auctions. As these are government issued instruments, they are considered risk-free.

Commercial Paper (CP): This is a short-term instrument against the issue of which corporates can borrow funds from the market. This is unsecured, and the underlined funds are deployed in working capital management. It is issued at a discount reflecting current market interest rates. It is for periods ranging from one month to nine months but in some economies, this range could be different. Only corporate bodies that enjoy high credit rating are permitted to issue commercial papers. Commercial paper is a substitute for a bank's working capital loan. Corporates prefer them to bank loans. Issue of commercial papers is hassle free, simple and generally at a lower interest rate than banks' interest rates.

Certificate of Deposit (CDs): This is a time deposit with the bank[34] with an additional feature of negotiability as there is a secondary market for it. Its maturity period varies from three months to five years at specified interest rates. Certificate of deposit carries higher interest rates than fixed deposit of same maturity period. Banks borrow against the issue of certificate of deposit when the money market is soaring with higher interest rates as they generate higher volumes; even though the rate of interest is high.

Repurchase Agreements (Repos): Banks usually borrow from the central bank for a short duration ranging from 2-14 days against this instrument. A dealer or authorized holder of government securities sells the securities to a lender (central banker) and agrees to repurchase them at a prefixed price. The Reverse repos on

[34] Please recall that bank deposits are not transferable, which the maturity amount is paid to either the depositor or a person authorized by the depositor on a written request. Negotiability here refers to transfer of ownership through endorsement and delivery.

the other hand are investing by the bank its short-term fund with the central banker with the same mechanism as that of repos. The distinction here is that while Repos are secured borrowings by the banks, reverse repos are unsecured liabilities of RBI. Repos and reverse repos are the instruments through which bankers manage their day to day liquidity issues and the central bank acting as counterparty ensures that interest rates are not volatile.

Example: CDs, Low Risk Investment Platform

Shanghai's Covid-19 lockdown and Ukraine-Russia crisis brought down the investors' risk appetite in China. The money floated into bank deposits and money market funds. This led China Merchants Fund Management Co. to launch a fund on 26th April, 2022. The fund raising target was 10 billion Yuan from the money market. The fund was a block buster as the set target was reached on the first day of its launch itself.

Here, the timing of fund launch gained significance. Because the risk aversion brought the investors to invest into money market instruments like certificate of deposits of the pandemic-hit economy.

Source: https://economictimes.indiatimes.com/markets/stocks/news/in-virus-hit-china-investors-rush-headlong-into-bonds-and-deposits/articleshow/91463991.cms. Dated 26.04.2022, accessed on 23.06.22.

Banker's Acceptance (BA): It is a short-term credit investment created by a non-financial firm and guaranteed by a bank. Acceptance is traded at discounts from face value in the secondary market. This is particularly useful when creditworthiness of a foreign trade partner is unknown. The presence of a secondary market is an added advantage.

Eurodollars: These are US dollar denominated deposits at banks outside of the United States. This market evolved in Europe, with London as the main market. In fact, Eurodollars can be held anywhere outside the United States.

Eurodollar market is relatively free from US regulations, mainly reserve requirements. Hence, banks can operate on narrower margins than their counterparts in the United States. These are high-value instruments with a maturity period less than six months. A variation of Eurodollar is the Eurodollar certificate of deposit which is the same as a domestic CD; except that, it is a liability of a non-US bank. These are less liquid and so offer little higher yield.

Money Market Mutual Funds: It is a mutual fund whose portfolio consists of short-term money market instruments, representing high quality and high liquidity. These are not popular in India but in the US they have significant presence.

8.4 Indian Money Market

Indian money market has a call-money market as well, dealing with short-term finance repayable on demand with maturity period varying from 1-14 days. Bankers and other financial institutions are the players in this market who settle their day to day liquidity before they enter the repos market.

Interest rates are market determined. There is a cap on these interest rates fixed by Indian Bankers Association to arrest volatility. The interest rates in call-money market cannot be too high from that of the repos market. The RBI plays a very important role in Indian money market which is illustrated in Exhibit 8.1 below:

Exhibit 8.1: Changing Tides in the Indian Money Market

Money market is an integral part of the financial system and plays a key role in the implementation and transmission of monetary policy. In India, money markets have broadly evolved with changing monetary policy stance and banking system liquidity conditions. The different segments of the money markets were analyzed in terms of volume, rates, microstructure and dispersion during the period from January 2016 to March 2021, with a special focus on the period after the onset of Covid-19 pandemic.

The article "Changing Tides in the Indian Money Market" published in RBI Bulletin November 2021 observed the following:

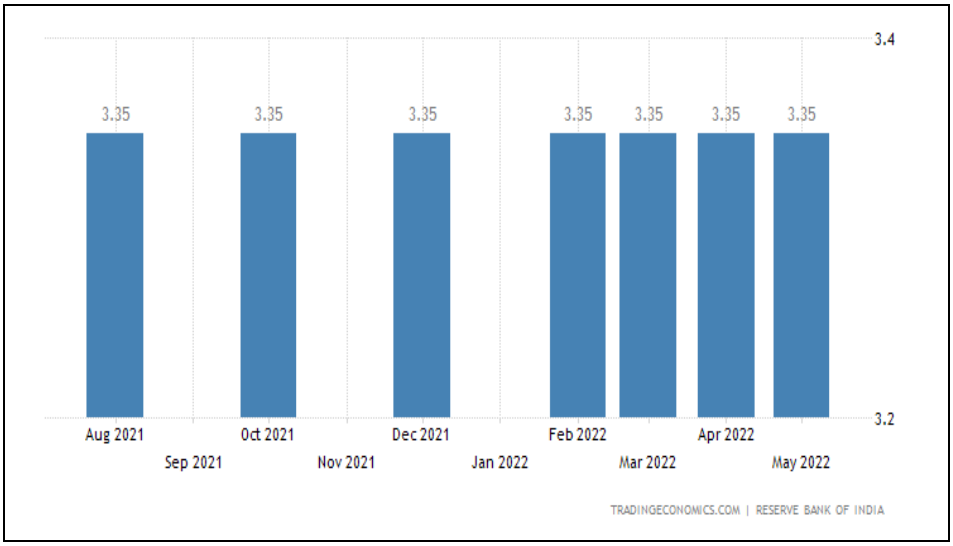
An increase in overnight money market volatility after the declaration of the Covid-19 pandemic that peaked in March 2020 and a shift away from unsecured markets and towards the secured markets. Further, the intraday market activity and network structure have undergone changes after the onset of the pandemic with the changes being more prominent in the call money market.

The constructed dispersion index that reveals the behaviour of cross-sectional rate dispersion in the money markets indicated a frictionless market with efficient pass-through during the period before the declaration of the pandemic in January 2020-February 2020. Market uncertainty was found to be associated with increasing money market dispersion. The impact of decreasing repo rate on increasing dispersion needs to be further explored for a longer period as the policy rate has undergone more rate cuts in the period under consideration and has fallen from 6.75 per cent in January 2016 to 4 per cent in March 2021. Although the impact of surplus liquidity on money market dispersion was found to be positive, the sector specific, institution-specific and instrument-specific liquidity measures undertaken by the Reserve Bank have resulted in a decreasing trend in the dispersion index in the recent times. This suggests stabilization of the money market with the market adapting to the new normal.

Source: Changing Tides in the Indian Money Market- RBI Bulletin November 2021

The trend of reverse repo rate from April 2021 to May 2022 was given below:

Figure 8.1: Trend of Reverse Repo Rate from April 2021 to May 2022



Source: https://tradingeconomics.com/india/reverse-repo-rate

Reverse Repo Rate in India averaged 5.56 percent from 2000 until 2022, reaching an all-time high of 13.50 percent in August of 2000 and a record low of 3.25 percent in April of 2009.

Liquidity Adjustment Facility (LAF): It consists of repos and reverse repos operations. It has emerged as the principal operating instrument for modulating short-term liquidity in the economy. The repo rate has become the key policy rate that signals the monetary policy stance of the economy.

Example: Standing Deposit Facility

On 8th April, 2022, the RBI (Reserve Bank of India) introduced Standing Deposit Facility (SDF). It was said to be the floor rate for Liquidity Adjustment Facility (LAF). Under LAF, the banks deposit their surplus money with Reserve Bank at a higher rate of interest (i.e., 3.75%). This helps RBI to take out the excess liquidity in the financial market without providing any collateral security to the banks.

Source: https://www.livemint.com/industry/banking/rbi-starts-sdf-to-raise-effective-policy-rate-11649435949340.html. Dated 8th April, 2022, accessed on 23.06.22.

Marginal Standing Facility (MSF): It is a window for banks to borrow from RBI in emergency situations when interbank liquidity dries up completely. The MSF rate is pegged at 1% point above the repo rate. Under MSF, banks can borrow funds up to 1% of their net demand and time liabilities.

In India, treasury bills are issued for a maturity period of 182 days and 364 days besides very short-term treasury bills of 14 days duration.

Discount and Finance House of India Limited (DFHI): This was set up in March 1988 by RBI jointly with the public sector banks and all India financial institutions, intending to develop money market, and providing liquidity to market instruments. This was accredited as a prime dealer by RBI. It has branches at Ahmadabad, Bangalore, Kolkata, Mumbai, Chennai, New Delhi and Hyderabad.

It caters to the requirements of the small and medium-sized institutions operating at these centers besides integrating the markets at these regional centers with main money market at Mumbai.

Reserve Bank of India conducts open market operations by way of sale and purchase of government securities to/from the market to (or "intending to") adjusting the rupee liquidity conditions in the markets on a reliable basis. When the RBI feels 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 buys securities from the market thereby providing funds to the market.

8.5 Commodity Market

Commodity market is a major market in global markets. Prices for all commodities like industrial commodities, natural gas, energy, crude oil, metals, or agricultural commodities or beverages play a very crucial role in the economy of global markets. The commodity market is a market that trades in the primary economic sector rather than manufactured products. Soft commodities like agricultural products, hard commodities like iron, gold and oil are the constituents of this market. There are 50 major commodity markets worldwide with purely financial transactions increasingly outnumbering physical trade in which goods are delivered.

Futures contracts are the most popular way of investing in commodities. Commodity markets can include physical trading and derivatives trading using spot prices, forwards, futures, and options.

The derivative is a financial instrument whose value is derived from that of a commodity termed as under liner. These are either exchange traded or Over the Counter (OTC) traded. While futures are traded on regulated commodity exchanges, Over the Counter (OTC) contracts are privately negotiated bilateral contracts entered into between the contracting parties directly.

Commodity trading in cash refers to trading in physical goods like wheat, pulses, crude oil, gold, silver, etc. The following are different trade agreements with respect to commodity market

Call Options: In a call option, counterparties enter into a financial contract option where the buyer purchases the right to buy but not the obligation to buy an agreed quantity of a particular commodity (the underlying) from the seller of the option

at a certain time (the expiration date) for a certain price (strike price). The seller (writer) is obliged to sell the commodity should the buyer so decide.

The buyer pays the fee called the premium for this right. All these transactions happen in electronic mode.

Forward Contracts in Commodity: A forward contract is an agreement between two parties to exchange at some fixed future date, a given quantity of a commodity at a prefixed price. The fixed price is known as forward price. These are employed as a strategy to reduce price risk in commodities.

Futures Contract: These are standardized forward contracts transacted through an exchange. In futures contracts, the buyer and the seller stipulate the product, grade, quantity, location and leaving the price as the only variable.

The following are the important exchanges for trading commodities.

Exchange Traded Commodities (ETCs): It is a term used for commodity exchange traded funds or commodity exchange traded notes. These track the performance of an underlying commodity index including the total return indices based on a single commodity. These are similar to exchange-traded funds. ETCs have market maker support with guaranteed liquidity, enabling investors to invest easily in commodities.

Over The Counter (OTC) Commodity Derivatives: OTC Commodity Derivatives trading involves two parties without an exchange. However, exchange trading offers greater transparency and regulatory protections. In an OTC trade, the price is not made public. These are higher risk contracts and could lead to higher profits.

Example: OTC Derivatives Global Statistics at End-December 2021

Key takeaways

- The notional amount of OTC derivatives declined to $600 trillion during the second half of 2021. Its gross credit exposure and gross market value also fell during the period.
- The gross market value of commodity derivatives rose by 30% during the second half of 2021. This was amid rising prices for commodities.
- The notional amount of FRAs (forward rate agreements) contracted significantly in the second half of 2021. This was the period where the investors prepared for Libor benchmarks to be phased out at the end of 2021.
- The central clearing rates were stable for both IRDs (interest rate derivatives) and credit default swaps. They both stood at 78% and 62% of notional amounts respectively.

Source: https://www.bis.org/publ/otc_hy2205.htm, year 2021. Accessed on 23.06.22

Commodities Exchange: A commodities exchange is an exchange where various commodities and derivatives are traded. In this exchange, trades can happen by spot price, forwards, futures, and options.

Number of contracts traded and/or cleared at 86 exchanges worldwide during calendar year 2021

Table 8.1: Based on the Number of Contracts Traded and/or Cleared at 86 Exchanges Worldwide

Category	Jan-Dec 2021 Vol	Jan-Dec 2020 Vol	2021 December OI	2020 December OI
Currencies	55420,70,172	45126,02,976	356,16,555	327,26,530
Agriculture	28201,09,552	25706,57,307	236,22,214	229,88,649
Metals	27655,34,503	23985,31,605	152,27,172	142,68,665
Energy	27107,51,767	31511,07,672	614,00,612	614,63,956
Other	25256,65,045	16875,84,826	179,84,453	164,10,463

Source: https://www.fia.org/resources/global-futures-and-options-trading-hits-another-record-2021

[35]In the commodity sector, trading of agricultural and metal futures and options rose 9.7% and 15.3%, respectively, but the trading of energy futures and options fell 14%. Trading in "other" commodities such as chemicals and plastics jumped nearly 50%, mainly due to increased trading on Chinese exchanges.

Top-traded Commodity Classes: The top ten most traded commodities in the world are: Brent crude (oil), Steel, WTI crude (oil), Soybeans, Iron, Corn, Gold, Copper, Aluminum, Silver. This is based on an analysis of the top 40 most exchanged agricultural, energy and metal futures contracts of 2017, using figures from the Futures Industry Association (FIA). The following table presents the top 10 traded commodities in agriculture, energy and metals categories. This data is taken from Futures Industry Association, the trade body of global trading exchanges.

Table 8.2: Number of Contracts Traded and/or Cleared Worldwide 2020-21

Rank	Contract	Group	Jan-Dec 2021 Vol	Jan-Dec 2020 Vol	2021 December OI	2020 December OI
9	Steel Rebar Futures, Shanghai Futures Exchange	Metals	655986710	366043408	2553290	1575426
13	Brent Oil Futures, Moscow Exchange	Energy	579590791	742813393	929796	1060910
14	PTA (TA) Futures, Zhengzhou Commodity Exchange	Other	553117130	322078663	1953815	3105291
18	Methanol (MA) Futures, Zhengzhou Commodity Exchange	Other	415304813	344876192	1349179	1043366
20	Soybean Meal Futures, Dalian Commodity Exchange	Agriculture	360388172	359464679	2214455	2304861
25	Fuel Oil Futures, Shanghai Futures Exchange	Energy	276993809	477193406	493517	441258

Contd….

[35] https://www.fia.org/resources/global-futures-and-options-trading-hits-another-record-2021

26	Rapeseed Meal (RM) Futures, Zhengzhou Commodity Exchange	Agriculture	268927210	159893801	596926	478995
27	WTI Light Sweet Crude Oil (CL) Futures, New York Mercantile Exchange	Energy	248314481	274180352	1866914	2154706
28	Brent Crude Oil Futures, ICE Futures Europe	Energy	243666353	231879831	2113433	2455791
30	Silver Futures, Shanghai Futures Exchange	Metals	231457606	357232087	666393	722744
31	Soybean Oil Futures, Dalian Commodity Exchange	Agriculture	229383502	173116523	802216	587469
33	RBD Palm Olein Futures, Dalian Commodity Exchange	Agriculture	226614036	315167096	608154	416392
36	Hot Rolled Coil Futures, Shanghai Futures Exchange	Metals	220715917	82346338	1015803	665561
44	Corn Futures, Dalian Commodity Exchange	Agriculture	189287113	177715573	1464172	1556234
48	Iron Ore Futures, Dalian Commodity Exchange	Metals	174412025	284630172	1074078	606889
50	Nickel Futures, Shanghai Futures Exchange	Metals	172165580	179764100	296290	311876
55	Bitumen Futures, Shanghai Futures Exchange	Energy	140463222	204756838	678755	661666
59	North American Natural Gas Futures, ICE Futures U.S.	Energy	132086711	154553687	15078173	15804294
61	Aluminium Futures, Shanghai Futures Exchange	Metals	131457870	52864722	498116	321761
64	Natural Rubber Futures, Shanghai Futures Exchange	Agriculture	121600877	100942773	312825	280142
65	Wood pulp Futures, Shanghai Futures Exchange	Agriculture	119222581	34362850	383529	288927
66	White Sugar (SR) Futures, Zhengzhou Commodity Exchange	Agriculture	116457963	124551207	538771	559029
68	Cotton No. 1 (CF) Futures, Zhengzhou Commodity Exchange	Agriculture	113523632	108338363	573599	635692
70	Rapeseed Oil (OI) Futures, Zhengzhou Commodity Exchange	Agriculture	112755176	105447334	258119	161387
72	Apple (AP) Futures, Zhengzhou Commodity Exchange	Agriculture	105492739	63009295	232728	329205
76	Ferrosilicon (SF) Futures, Zhengzhou Commodity Exchange	Metals	95241196	31344180	128426	100657
79	Gold Futures, Borsa Istanbul	Metals	93557193	137639246	656618	1732818
80	Corn Futures, Chicago Board of Trade	Agriculture	86901950	89753068	1512771	1750518
87	Gas Oil Futures, ICE Futures Europe	Energy	82713016	84524207	634545	915323
88	Silicon Manganese (SM) Futures, Zhengzhou Commodity Exchange	Metals	80496126	45290175	161937	150401
89	iShares Silver Trust ETF Options *	Metals	74609920	95306641	5287110	8162330
93	Zinc Futures, Shanghai Futures Exchange	Metals	69341255	60330404	210293	184762
96	Refined Silver Futures, Moscow Exchange	Metals	67378342	67041637	390936	394320
98	Copper Futures, Shanghai Futures Exchange	Metals	64107155	57164215	332180	314841

Source: https://www.fia.org/resources/etd-volume-2021

The above data reflects the volume of the commodities contracts in various exchanges for the years 2020 and 2021. The outstanding open position at the end of December for the years 2020 and 2021 was also given. The figures indicate the volume of business that take place across the world in various exchanges.

Activity 8.1 What are the major features of commodity market? **Answer:**

8.6 Global Commodities Market – Major Perspectives

"The World Bank Energy Price Index rose 6 percent in the first quarter of 2017 from the December 2016 quarter. Oil prices increased 8 percent on lower production by several OPEC and non-OPEC producers. Crude oil prices rose 8 percent in the first quarter of 2017. Natural gas prices rose 6 percent on stronger demand and some supply constraints, and coal prices dropped 12 percent as China relaxed production curbs".[36]

This type of information creates a base to the regulators/ governments to take policy decisions on various developmental issues.

Let us now discuss certain major perspectives like fall in oil prices, the fall in gold prices and impact of issues related to economic down turn in China that will have some impact in the commodity markets in general.

Let us take couple of examples. India is an oil importing country. If the international price of oil increases our import price of oil increases and accordingly retail diesel and petrol and cooking gas prices increase. Correspondingly transportation cost in India will increase which will have bearing on common man's monthly expenditure. If there is shortage of sugar in the international markets, the price of sugar in India will also increase since there will be strong demand for sugar. Hence understanding global commodities market is also equally important to student of global markets.

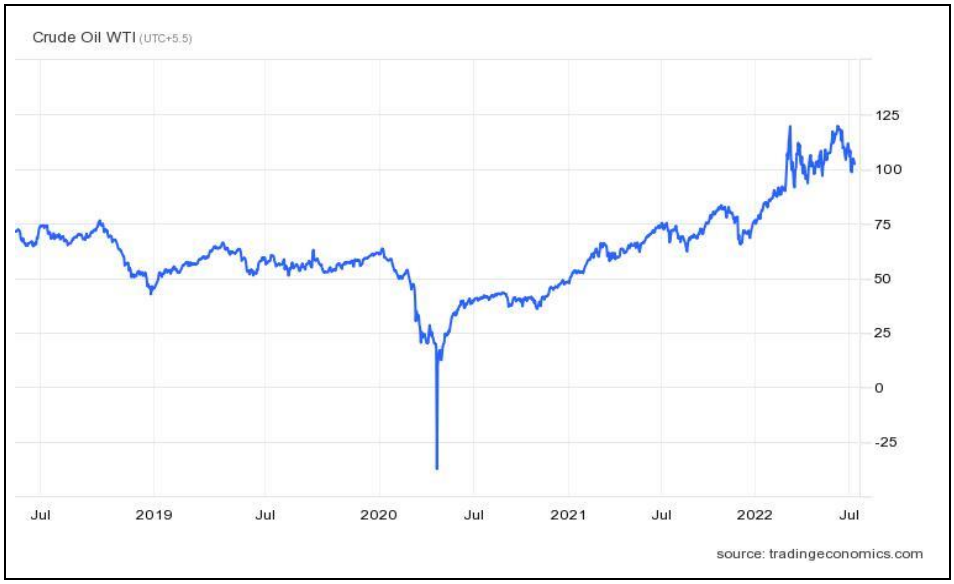
The Steep Fall in Oil Prices: Causes and Consequences

Crude oil prices have been falling for the last 18 months to November 2015. In the month of September 2017, the price was hovering little above US$ 50 (8th Sept USD 54). While nations importing crude oil are naturally happy with this

[36] World Bank - Commodity Markets Outlook | April 2017

fall, Oil exporting nations have been experiencing huge revenue losses. Consumers are obviously pleased with this fall, but one needs to factor for the rise in oil consumption following fall in price (as seen in many economies like India) while analyzing the consequences. Oil remains the crucial commodity whose prices have caused in the past radical distribution of wealth and income among nations. Refer Figure 8.2 for crude oil prices from 2012-2017 below:

Figure 8.2: Crude Oil Price since 2019 till 2022



Source: https://tradingeconomics.com/commodity/crude-oil compiled on 12th July 2022

Oil was trading around $103 per barrel during the July 2022. During July 2017 it has fallen to below $50 (Brent crude) and below $45 (US crude). So the prices have halved. Data for the period 2010 to 2021 was given below.

	Average Closing Price	Year Open	Year High	Year Low	Year Close
2021	$68.17	$47.62	$84.65	$47.62	$75.21
2020	$39.68	$61.17	$63.27	$11.26	$48.52
2019	$56.99	$46.31	$66.24	$46.31	$61.14
2018	$65.23	$60.37	$77.41	$44.48	$45.15
2017	$50.80	$52.36	$60.46	$42.48	$60.46
2016	$43.29	$36.81	$54.01	$26.19	$53.75
2015	$48.66	$52.72	$61.36	$34.55	$37.13
2014	$93.17	$95.14	$107.95	$53.45	$53.45
2013	$97.98	$93.14	$110.62	$86.65	$98.17
2012	$94.05	$102.96	$109.39	$77.72	$91.83
2011	$94.88	$91.59	$113.39	$75.40	$98.83
2010	$79.48	$81.52	$91.48	$64.78	$91.38

Analysts attribute the following reasons for the fall:

- Both crude oil and petroleum product prices can be affected by events that have the potential to disrupt the flow of oil and products to market, including geopolitical and weather-related developments. These types of events may lead to actual disruptions or create uncertainty about future supply or demand, which can lead to higher volatility in prices.
- The volatility of oil prices is inherently tied to the low responsiveness or "inelasticity" of both supply and demand to price changes in the short run. Both oil production capacity and the equipment that use petroleum products as their main source of energy are relatively fixed in the near-term. It takes years to develop new supply sources or vary production and it is very hard for consumers to switch to other fuels or increase fuel efficiency in the near-term when prices rise. Under such conditions, a large price change can be necessary to re-balance physical supply and demand following a shock to the system.
- Much of the world's crude oil is located in regions that have been prone historically to political upheaval, or have had their oil production disrupted due to political events. Several major oil price shocks have occurred at the same time as supply disruptions triggered by political events, most notably the Arab Oil Embargo in 1973-74, the Iranian revolution and Iran-Iraq war in the late 1970s and early 1980s and Persian Gulf War in 1990. More recently, disruptions to supply (or curbs on potential development of resources) from political events have been seen in Nigeria, Venezuela, Iraq, Iran and Libya.

Let’s now examine how fall in prices have been affecting various major nations/ regions.

USA – The US extracts oil from shale formation, a process that results in higher cost of production. As seen in the above figure on the oil price during 2012 to 2017, there was a continuous fall till mid of 2015. Due to this fall in crude oil prices, US oil extraction was proving to be profitable. The resultant incremental production further added to the global supply of oil. This is because US increased its production of oil and reduced its import from OPEC and other countries. The OPEC and other countries in order to sell their oil stock to other countries reduced their prices.

Russia – Russia is a principal exporter of oil outside the OPEC region. Nearly 70% of the export income is generated through oil and gas exports. A fall in oil price, therefore, is not good news for Russia. A fall of $1 in oil price results in a revenue fall of $2bn. Any further fall in oil prices will only worsen the situation for Russia’s economy. However, Russia has not chosen to cut production, fearing loss of market share in future.

[37]Russia accounts for about 10 percent of global petroleum production. Its crude production exceeds 10 million barrels per day. In the immediate aftermath of Russia's invasion of Ukraine in late February 2022, early estimates suggested that perhaps 3 million barrels a day (million barrels per day) of petroleum production—almost 3 percent of world production—had been effectively removed from the global oil market, constituting one of the largest supply shortfalls since the 1970s. This geographical conflict created shortage of supply of oil and price escalation in oil prices.

Venezuela – Venezuela has a very high rate of inflation at about 60%. It is the major exporter of oil. Its citizens get oil at subsidized prices. Any move to cut subsidies has not met with success in the past. Obviously, this nation has to look critically into its worsening economic situation, following the fall in oil prices and rework its strategies to shore up its economy. Fall in oil prices, while resulting in lower exporting incomes also results in an automatic reduction in subsidy in percentage terms, though not in absolute terms.

China – China has been experiencing fall in growth rate. The fall in oil price could help this nation, which is one of the largest importers of oil.

Japan – This Asian country, till recently second wealthiest nation, almost entirely depends on imports for its oil consumption. However, Japan is under deflation spiral, the fall in oil prices need not necessarily help in its endeavor to come out of deflation.

Europe – Europe faces tardy economic growth and low inflation. Any fall in oil prices could help this region, which is a net importer of oil.

OPEC Nations – The formidable oil cartel, that brought windfall profits to these nations in the past, seems to be cracking. Peter Drucker, a well-known management guru, has in fact predicted the eventual collapse of the oil cartel.

As OPEC nations have built up huge dollar reserves in the past from oil revenues, there is no immediate danger of economic collapse for them. They could sustain the fall in oil prices for some more years to come.

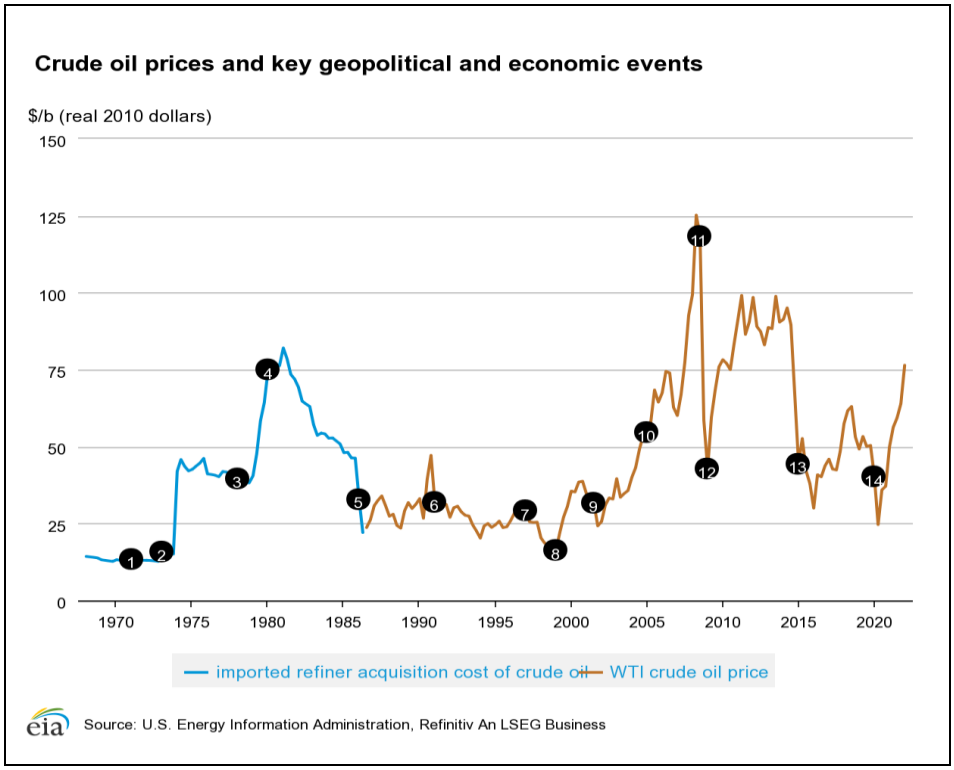
Saudi Arabia, for example, has a reserve fund of about $700bn. UAE and Kuwait are also sitting pretty, for the time being, on substantial dollar reserves. The situation in Nigeria, Iran and Iraq is less comfortable because of greater domestic budgetary demands.

India – India imports 70% of its oil requirements and hence any fall in oil prices helps its economy. Its Current Account Deficit (CAD) could be under control as crude oil imports contribute substantially for higher CAD. However, with rupee depreciation and higher consumption of oil, a significant part of advantage could be lost.

[37] Source: https://www.dallasfed.org/research/economics/2022/0322

Rise in oil prices since 1970s

The following chart provides details of the oil shocks since 1970. The data is compiled from US Energy Information Administration site.



The various events are provided here under. The data is updated till 31-3-2022.

1. US spare capacity exhausted
2. Arab Oil Embargo
3. Iranian Revolution
4. Iran-Iraq War
5. Saudis abandon swing producer role
6. Iraq invades Kuwait
7. Asian financial crisis
8. OPEC cuts production targets 1.7 mmbpd
9. 9-11 attacks
10. Low spare capacity
11. Global financial collapse
12. OPEC cuts production targets 4.2 mmbpd
13. OPEC production quota unchanged
14. Global pandemic reduces oil demand

[38]Oil pricing in India

Retail Selling Price (RSP) of Petrol is determined based on the average price of Crude Oil of the Indian Basket which is calculated every fortnight. This price is calculated in dollars per Barrel. The price in Indian rupees is also dependent on the average exchange price for that fortnight. The prices are announced on daily basis.

The Crude Oil is transported and refined to extract Petrol. The cost & freight charges, refinery charges are added to the price of Crude oil. This is called the Refinery Transfer Price (RTP) of OMCs (Oil Marketing Companies) like IOCL, BPCL & HPCL to the refineries. OMCs retain some margin and sell it to the Dealer (the owner of the Petrol Pump).

There are broadly two different taxes, the Central Excise Duty (imposed by the Central Government) and the State VAT (Value Added Tax). These two taxes are added to the Price that is charged to dealers. All these prices add up to the final Retail Selling Price (RSP) of Petrol that reaches the consumer.

8.7 The Volatility in Price of Gold: Causes and Consequences

Gold has its fascination as a valuable metal. It is stored in value, and perceived as a hedge against inflation. It has commodity character as well, as it is used in electronics, dentistry, certain traditional medicines, and jewelry. Gold as a precious metal is an unproductive asset as it generates no income and its storage and security could be costly. At the same time it is seen as a safe investment bet against inflation. Gold prices go up in situations of financial crisis as investors switch to this asset class, fearing fall in value in other assets. Once global economy regains near normal economic conditions, its price obviously falls as investors move into other asset classes of investment from gold.

Example: Gold prices are volatile, not fixed

On 28th April, 2022, the World Gold Council stated that gold demand in India was likely to remain stable in the second quarter of 2022, after eighteen percent fall in the first quarter. The reasons being volatility in gold prices, fewer weddings due to Covid pandemic, higher oil / gold prices due to Russia-Ukraine war, lower disposable incomes due to inflation, etc.

Source: https://timesofindia.indiatimes.com/business/india-business/volatile-gold-prices-could-dampen-demand-in-q2-report/articleshow/91160587.cms. Dated 28th April, 2022, accessed on 23.06.22.

As gold price is denominated in US dollars, any rise in the price of dollar naturally brings down its price.

[38] Source: https://factly.in/understanding-petrol-pricing-in-india/

Indian Scenario:

[39]According to the World Gold Council's estimates for the FY2019, the households in India may have piled up around 24,000-25,000 tonnes of gold valuing around $1,135 billion, or equivalent of more than 40% of India's nominal gross domestic product (GDP) in FY2019.

[40]According to the WGC (World Gold Council), India's gold consumption increased to 797.3 tonnes in the year 2021, on the back of recovery in consumer sentiments retreating the post Covid-19-related disruptions, and the bullish trend is set to continue this year as well. In its Gold Demand Trends 2021 Report, WGC said that India registered a massive 78.6% in 2021 (i.e., 797.3 tonnes) from 446.4 tonnes during 2020. Despite the Covid pandemic disruptions and the overall slowdown in the economy, gold demand in India increased to 797.3 tonnes valued at ₹ 340,860 crore during the calendar year 2021.

In the past, Union government has introduced the gold bond scheme, to or ("intending to") encourage investors to buy gold bonds instead of physical gold. As India still imports gold in substantial quantity, this scheme, if successful could have favorably impacted on its current account deficit.

However, the scheme was not a success.

Government of India launched three gold related schemes viz. Gold Monetization Scheme, Sovereign Gold Bond Scheme and India Gold Coins in November 2015.

'Sovereign Gold Bond Scheme 2015'. Government bonds denominated in grams of gold were sold. These were considered as substitutes for holding gold in its physical form. Investors had to pay the issue price in cash. Bonds were redeemable in cash on maturity. RBI issued these bonds on behalf of Union government. The redemption value is the ongoing market price of the gold. This way, investors save on the cost of storage and security of this precious metal. Designated banks and certain post office branches serve as selling points. Individual investors could invest in the range of 2-500gms per financial year. Bonds carry an interest rate of 2.75% per annum and interest attracts income tax. The tenure of the bond is eight years with foreclosure option. These bonds can be used as security for raising loans from banks/NBFCs. These bonds are issued in demat form and are tradable in stock exchanges.

[41]**Gold Monetization Scheme:** Under this scheme, a minimum of 30gms can be offered by the owner to designated banks for monetization. A gold monetization

[39] https://www.financialexpress.com/market/commodities/shining-bright-indias-household-gold-reserves-touches-25k-tonne-over-40-of-gdp/1583058/

[40] https://www.business-standard.com/article/pti-stories/india-s-gold-demand-skyrockets-to-797-3-tons-in-2021-wgc-122012800580_1.html

[41] Source: http://pib.nic.in/newsite/mbErel.aspx?relid=145040 (Source: http://pib.nic.in/newsite/PrintRelease.aspx?relid=130260)

account will be opened in the bank in the name of the owner with tenure of 15 years. This account carries interest at rates of 2.25 to 2.5% per annum. Redemption is either in cash (equal to the market value of gold originally tendered) or in gold coins of equal value.

Gold Coins: The third scheme is the sale of gold coins with Ashoka Chakra emblem in small denominations from bank counters.

Indians hold gold in jewelry form, and its monetization is, therefore, difficult though the Gold Monetization scheme provides for it.

If gold monetization scheme could bring in at least 5% of the current gold stock of 22.000 tons into the banking system for productive use, the scheme may be considered as a success.

Global Commodities Market and the China Factor

For nearly one decade, China was instrumental for 'Commodities super cycle', thanks to its massive buying spree for its huge infrastructure needs. The "farm to city" migration in China has also resulted in huge commodities buying.

Coal from Indonesia, copper from Peru, iron ore from Australia and Brazil are the major imports of commodities into China.

China ranked as second largest economy in the world is the biggest consumer of many commodities. It is, therefore, unsurprising that the steep slowdown in China is very adversely affecting global commodity prices and even its production.

China consumes nearly 69% of world iron ore, 50% of nickel and copper, about 13% of crude oil. The world faces a commodities glut following China's slowdown. Some of the worst hit economies are Latin American nations, Venezuela, Russia and sub-Saharan Africa. 50% of the steel produced within China presently remains unsold due to the fall in domestic demand. Consequently, China has been exporting steel to the US and other countries at vastly reduced prices.

China also holds 60% of world's cotton reserves. Still supply of cotton presently outstrips the demand. China now intends to unload its massive reserves of cotton into the global marketplace that would cause further fall in price.

China's economy needs macro-level corrections. The growing urbanization of middle-class people with higher per capita income could create demand for consumer items like refrigerators, pork, and coffee in the years to come apart from better social infrastructure in hospitals and schools.

[42]Increasing Demand from China

Long-term investments in manufacturing capacity and infrastructure, particularly since China's accession to the World Trade Organization (WTO) in 2001 and

[42] Source: https://static.treasury.gov.au/uploads/sites/1/2017/06/01-China-Commodity-demand.pdf China's emergence in global commodity markets Brendan Coates and Nghi Luu1

subsequent manufacturing boom, have also contributed to growing Chinese metals demand. A direct consequence of China's rapid economic rise has been its rising demand for energy, which has had a significant impact on global markets for energy commodities.

The construction of urban housing and the provision of urban infrastructure such as roads, railways, sewerage systems and electricity generation and distribution systems have generated sharply higher demand for metals such as copper, aluminum and steel over the past two decades. With rising agricultural demand and slowing agricultural productivity growth, China's emergence is having an increasingly significant impact on global agricultural markets. China's rapid economic rise has had a significant impact on global commodity markets in recent years, and will be a key influence on future market developments. China has emerged as the leading consumer of a broad range of commodities especially energy and industrial metals and is a significant player in most major commodities markets, including agricultural commodities. Although there will be short-term fluctuations around China's growth, and China faces significant medium-term reform challenges, the long-term outlook for Chinese commodity demand remains strong as the process of urbanization and industrialization, and a growing middle-income class is set to continue for some time.

[43]Outlook 2022 of World Gold Council on China's gold market

China's gold consumption witnessed a strong 2021 compared to 2020. Gold jewelry demand reached 675 tonnes, a 63% rise y-o-y and 6% higher than 2019, driven by the economic recovery and a pullback in the gold price from its 2020 record high.

Despite the strong performance of H1 2021, China's GDP growth slowed in the second half of 2021. By the third quarter July to September 2021, the y-o-y growth in China's GDP had fallen to 4.9% from 7.9% in Q2 March to June 2021. And it decelerated further in Q4 with a 4% y-o-y GDP growth – the lowest on record.

Challenges facing China's real estate sector – which had accounted for over 13% of the country's GDP in 2019–weighed heavily on the economy. The real estate sector could remain a downside risk factor to China's economic growth in 2022.

The uncertainties of the pandemic of Covid remain a risk factor for the local economy in 2022. World Gold Council in its China's gold market outlook 2022 published in February 2022 assumed slower GDP growth in 2022, coupled with the possible downward trend in Chinese marriage registrations, could limit China's gold jewellery consumption.

[43] https://www.gold.org/goldhub/research/chinas-gold-market-outlook-2022#:~:text=Chinese%20gold%20demand%20rebounded%20strongly,from%20its%202020%20record%20high.

The uncertainties of the pandemic of Covid remain a risk factor for the local economy in 2022. World Gold Council in its China's gold market outlook 2022 published in February 2022 assumed slower GDP growth in 2022, coupled with the possible downward trend in Chinese marriage registrations, could limit China's gold jewellery consumption.

Commodities and Paradox of Low Prices

A global fall in commodity prices is not always good news. Let us look at the fall of crude oil prices and the Indian case:

Lower oil prices have reduced price pressures and current account deficit has significantly improved. However, consumption of crude oil has been rising obviously due to lower prices. Rupee depreciation is nullifying the advantage of lower oil prices partly. Macroeconomic fundamentals, especially inflation and interest rates have started improving; so is the fiscal deficit. However, India is experiencing weak export prices for other commodities.

In oil exporting nations, lower oil prices result in lower revenues and cut in public spending. The moral of the story is the need for the structural reforms that aim at higher productivity in many economies.

Check Your Progress - 1

1. Which of the following is not a feature of money market segment?
   a. Its instruments are very liquid
   b. Short term duration instruments with low interest rates
   c. A dealers' market
   d. Its instrument is very safe
   e. The interest rates are very high when compared to capital markets
2. Which of the following is not a feature of Commercial Paper?
   a. It is a long-term finance instrument
   b. Corporates borrow working capital funds against the issue of CP
   c It is an unsecured instrument
   d Only highly rated corporates are eligible to issue CPs
   e. It is issued at a discount reflecting current market interest rates
3. Which of the following is a feature of Certificate of Deposit?
   a. This is a time deposit with a bank and is not negotiable
   b. There is no secondary market for CDs
   c. Banks generally borrow against issue of CDs when the money market is tight

d. Usually it carries low rate of interest

e. CDs are not regulated by RBI

4. Which of the following is not a feature of Euro Dollar deposits?

   a. These are US Dollar denominated deposits

   b. These are present only in the US markets

   c. These deposits can be held anywhere outside US

   d. Europe is the biggest market for these deposits

   e. These are high-value instruments with a maturity period less than six months

5. Which of the following is not true with regard to fall in crude oil price in India?

   a. There is no fiscal deficit

   b. Lower oil prices have reduced price pressures, and current account deficit has significantly improved

   c. Consumption of crude oil has been rising obviously due to lower prices

   d. Rupee depreciation is nullifying the advantage of lower oil prices partly

   e. Macroeconomic fundamentals, especially inflation and interest rates have started improving

8.8 Commodity Market-Global Outlook

In 2017, global crude oil production amounted to around 4.4 billion [44]metric tons. According to the source, oil production includes crude oil, shale oil, oil sands and NGL (the liquid content of natural gas, where this is recovered separately). Excludes liquid fuels from other sources such as biomass and coal derivatives.

[45]The Outlook for Commodities for 2022

According to World bank Group April 2022 report on Commodity Markets Outlook the following points were presented.

There was a significant hike in commodity prices since mid-2020 with a rise in demand driven. This indicates the country is recovered from COVID-19 pandemic problems.

The war broke between Russia and Ukraine in February 2022 resulted into supply blockages that led to historically steep rise in several commodity prices. The prediction is that most of the commodity prices will witness a steep hike in 2022 than in the year 2021 and will remain high in the medium term.

[44] Metric ton = 1160.09 liters; 1 barrel = 158.99 liters

[45] Source: Commodity Markets Outlook April 2022 World Bank Group

As a result, energy prices (in U.S. dollar terms) were more than four times higher in March 2022 than their April 2020 lows—the largest 23-month increase in energy prices since the 1973 oil price hike. Fertilizer prices rose by 220 percent between April 2020 and March 2022, their largest 23-month increase since 2008. Similarly, food prices rose by 84 percent, their largest increase in a comparable period since 2008. These increases in prices are having major humanitarian and economic impacts and exacerbating food insecurity and inflation in many countries.

The Brent crude oil price was expected to witness an average $100/bbl in the year 2022, a 42% increase from the year 2021, a highest hike since 2013.

Non-energy prices are predicted to hike by about 20% in the year 2022, with the steep price hike in the commodities where Ukraine or Russia are key exporters. The prices of the wheat, in specific, were predicted to raise by above 40% in the year 2022, an all-time high in nominal terms. As the prices generally expected to raise in 2022, they are expected to witness a much higher level than that previously expected.

Most *non-energy prices* have increased since the beginning of the year 2022, especially the prices of wheat, oilseeds, nickel and fertilizers. Among *agricultural commodities*, wheat prices witnessed a steep rise, almost 30% rise in March 2022 when compared to that of December 2021. Most edible oil prices had raised sharply in the year 2022. This is due to hurdles to Ukraine's sunflower seed oil exports and low production in South America. Contrary to this, rice prices saw only a modest rise, indicating abundant supplies in India and China. Fertilizer prices raised sharply in the first quarter (Q1) of 2022, partially indicating the increase in coal prices and natural gas, as both are key inputs for the fertilizer production.

The commodity markets outlook depended heavily on Russia Ukraine war duration and the extent of sanctions imposed. Thus, it is assumed this will have a persistent impact on the commodity markets. The volatility in the commodity trade patterns were expected to persist even after the war ends. The possibility of further outbreaks of COVID-19 in China and a broader slowdown in global growth showcases the risk involved in the commodity prices.

Impact of Ukraine War 2022: The Russia Ukraine war had been a major drawback to the commodity markets globally. There was a supply disruption of several commodities that led to steep price rise, particularly for fertilizers, energy and for few grain varieties. The long-term impact of Russia Ukraine war on commodity markets were depended on how extensively commodity trade gets diverted, the extent of fall in demand and on the emergence of new supplies.

Policymakers can take action to accelerate the structural changes, alleviating the upward pressure on energy prices, promoting energy efficiency and incentivizing the new low-carbon sources of energy production.

The Role of Financial Markets in Commodity Markets: During 2005-2011, the value of commodity-related assets increased nearly nine times to $ 450 bn. Agricultural commodities account for $100bn. Commodity-related activity and future markets have also grown rapidly. The number of outstanding contracts (futures and options) on commodity exchanges increased six times and the value of OTC contract rose 16 times.

Activity 8.2

You are working as manager of Gemini Financial Services. A client who is new to the derivate market wants to know about derivate market. Please explain him about basics of derivate markets and risk associated with it.

8.9 The Nature and Origin of Subprime Crisis: Role of Financial Derivatives

During 2007-08 the world financial markets went berserk due the series of failures of mortgage banks, investment banks in American Markets. The contagion effect resulted in turmoil in the global financial markets. The origin of the financial crisis of 2007-08 was in subprime lending in the American mortgage markets. Let us have brief overview of subprime lending and its consequences in the global financial markets.

The U.S. subprime mortgage crisis had created a series critical events and conditions that led to the late-2000s financial crisis, characterized by a rise in subprime mortgage delinquencies and foreclosures, and the resulting decline of securities backed by said mortgages. There was a contagion effect on global financial markets irrespective of the strength of the individual economy.

American home loan market is one of the biggest markets in the world. Mortgage banks grant home loans under what is called ‘originate and distribute model’. Mortgage banks sanction tranches of home loans to eligible borrowers and sell them after packaging them uniformly to major banks in the secondary market. This is a form of securitization. This way these banks do not carry default risks and recycle the funds to grant further home loans to be sold on the secondary market. The service fee they charge works out to be very attractive due to the multiplier effect.

Major banks who are traders in the secondary market for buying the tranches of mortgage loans get funds against the issue of bonds (like CDs, MBs, etc.) which carry collateral of home mortgages issued at a lower coupon than the interest rate

charged by mortgage bank on home loans. The interest rate differential is their trading profit, a part of which they pay as fee for mortgage banks while buying tranches of home loans. There is what is called a phenomenon of' global imbalances,' under which institution investors, corporate investors, and the central bank of various nations invest their surplus funds either in the treasury of the US or the corporate bonds of US, as they perceive such investments as safe. This has become a necessity because America, the wealthiest nation, is the largest importer in the world. Exporting nations in this way are forced to generate net export surpluses against the US in the form of dollar funds. The various central bankers who manage their forex reserves display risk aversion and choose American treasury for investing these reserves even with low return. American economy, this way secures huge funds into its treasury or the corporate world at a very low rate of interest. A major portion of these funds has found its way into the bonds in the form of collateralized debt obligations, mortgage bank security, and those issued with complex structures. All these bonds have been rated AAA by rating agency for which they were severely criticized following the subprime crisis. It is through these bonds that loanable funds have been generated which have flown into home loan market because it is a vast market with huge credit absorption capacity. Further, there is a liquid secondary market for these bonds. The American home mortgage banks and Special Purpose Vehicles (SPVs), on finding the huge inflow of funds into the collateralized bond market, have erred in their discretion while granting home loans, as they were too eager to multiply the turnover vastly under the 'Originate and Distribute' model. They have gone to the extent of drastically diluting the lending norms under the mistaken impression that home loans in the US cannot become bad debts as interest rates are very low, and home prices are rising.

With interest rate cycle turning upwards and because of laxity on the part of banks in following the cardinal principles of lending, over a period, loan defaults raised rapidly much to the dismay of bankers. The home loans granted by them have been derisively called NINJA loans (No income, no job or assets but to still get a home loan). With a large number of home loans turning bad, the SPV's cash inflows have dried up, and bond servicing has run into default situations. The housing bubble has burst with disastrous consequences. This is the cause of the subprime crises.

The word subprime signifies the fact that home loans have been extended to subprime borrowers. The major central banks the world over have aggressively intervened to provide liquidity and to contain contagion and disruptions in the financial markets. The US Fed has adopted an easy money policy and reduced interest rates to near zero level. There were fiscal stimulus packages to revive the economy in major nations of the world.

The exotic derivatives (non-standard derivatives with an unusual payoff structures) have become the cause of the crisis. They have been labeled as weapons of mass destruction.

Option Basics

An Option is a derivative contract that gives the buyer the right but not the obligation to buy or sell any underlying asset at a pre-fixed price on or before a certain date.

Example: Option Trading

On 17.06.2022, the closing price of M/s HCL Tech Share was ₹ 948.65. Mr. Suresh predicted that the share price got the potential to reach ₹ 1000 in the near future. He wanted to monetize his prediction through options trading. So, he entered into a call options contract with the seller specifying his strike price at ₹ 950 per share, and the expiry date (say 30.6.22 last Thursday of June 2022). He paid a premium of ₹ 20. On 30.06.2022, the share price reached ₹ 1026 and Suresh exercised the option contract and bought HCL Tech shares @ ₹ 950 per share from the exchange and then sold in the open market making a profit of ₹ 76 per share.

Source: https://timesofindia.indiatimes.com/business/india-business/volatile-gold-prices-could-dampen-demand-in-q2-report/articleshow/91160587.cms. Dated 17th June, 2022, accessed on 23.06.22.

Calls and Puts

The two types of options are Calls and Puts:

A Call gives the holder the right to buy an asset at a certain price within a specific period of time. Calls are similar to having a long position on a stock. Buyers of calls hope that the stock will increase substantially before the option expires.

A Put gives the holder the right to sell an asset at a certain price within a specific period of time. Puts are very similar to having a short position on a stock. Buyers of Puts hope that the price of the stock will fall before the option expires.

Participants in the Options Market

There are four types of participants in the options markets depending on the position they take:

1. Buyers of Calls
2. Sellers of Calls
3. Buyers of Puts
4. Sellers of Puts

People who buy options are called holders, and those who sell options are called writers; furthermore, buyers are said to have long positions, and sellers are said to have short positions.

Here is the important distinction between buyers and sellers:

- Call holders and Put holders (buyers) are not obligated to buy or sell. They have the choice to exercise their rights if they choose.
- Call writers and Put writers (sellers), however, are obligated to buy or sell. This means that a seller may be required to make good on a promise to buy or sell.

Intrinsic value and Time value

An option premium is the intrinsic value plus time value. Intrinsic value is the amount in the money, which for a Call option means that the price of the stock is equal to the strike price.

Time value represents the possibility of option increasing in value. The strike price is the threshold that the stock price should rise to before the call option is worth anything.

There are two main types of options:

- **American options** can be exercised at any time between the date of purchase and the expiration date. The example about Cory's Tequila Co. is an example of the use of an American option. Most exchange-traded options are of this type.
- **European options** are different from American options in that they can only be exercised at the end of their lives.

The distinction between American and European options has nothing to do with geographic location.

Option contracts are employed by speculators and hedgers.

Premium: The Total Cost of the Option.

An option holder pays a premium to the option writer in exchange for the right, but not the obligation, to exercise the option. In general, the options premium is the intrinsic value combined with its time value.

Exercise Price: The agreed upon price at which an option can be exercised

The exercise price for a call option is the price at which the security can be bought prior to the expiration date. The exercise price for a put option is the price at which the security can be sold before the expiration date. Exercise price is also called the strike price.

The Operational Part of Options

Suppose on Nov 1st-2015, the stock price of Tata motors was ₹ 350 and the premium was ₹ 18 for Nov 26 (The last Thursday of the month) Call. The strike price was ₹ 370. The total price of the contract was ₹ 18*100 = ₹ 1,800

(Assuming the lot size as 100). The breakeven price was ₹ 368 (₹ 18 plus ₹ 350). If the stock price was ₹ 365, it was less than the strike price and so the option was worthless.

Suppose the stock price rises to ₹ 390 on Nov 23, consequently premium also rises to ₹ 39. The net profit therefore (₹ 39 - ₹ 18)*100 = 2,100, a fabulous profit in less than a month. The position is squared by selling the option.

Suppose, by the expiration date, the stock price drops to ₹ 340, this is less than the strike price of ₹ 370 and the option contract becomes worthless. The net loss is the premium paid, that is ₹ 100*18 = ₹ 1,800.

The following Table 8.3 is self-explanatory with regard to profit or loss at various stages.

Table 8.3: Profit/Loss with Regard to Stock Price, Option Price and Contract Value

Date	Nov 1	Nov 23	Nov 26 (Expiry date)
Stock price	₹ 350	₹ 390	₹ 340
Option price	₹ 18	₹ 39	worthless
Contract value	₹ 1,800	₹ 3,900	worthless
Gain/loss	₹ 0	₹ 2,100	- ₹ 1,800

Check Your Progress - 2

6. Which of the following is not a feature of futures contract in commodities?
   a. These are standardized forward contracts
   b. These are transacted through an exchange
   c. In these contracts, the buyer and seller stipulate the product, rate, quantity, and location leaving the price as the only variable
   d. This contracts are executed at a future agree date
   e. Futures contracts are the not popular way of investing in commodities
7. Which of the following is not a subject matter of commodities markets?
   a. Mineral fuels, oils and distillation products
   b. Electrical and electronic equipment
   c. Nuclear reactors and boilers
   d. Railways and Tramways
   e. Iron and steel
8. Which of the following is not classified as commodity in the global commodities markets?
   a. Pharma products
   b. Iron and steel

c. Organic chemicals
d. Coal mining
e. Computer parts

9. Which one of the following is false with regards to increase in global food prices?
   a. Yields have plateaued and started declining
   b. Higher demand due to increase in population
   c. Fall in supplies due to shocks like variable temperatures, floods, and droughts
   d. Increase in global buffer stocks
   e. Export bans imposed by various nations

10. Which one of the following is false in case of participants in the options markets depending on the position they take?
   a. Buyers of Calls
   b. Sellers of Calls
   c. Buyers of Puts
   d. Calls of Puts
   e. Sellers of Puts

8.10 Summary

- The money market is an integral part of the financial market. It consists of financial instruments with high liquidity and short maturities.
- Indian money market has a call money market as well, dealing with short-term finance repayable on demand with maturity period varying from 1-14 days.
- The commodity market is a market that trades in the primary economic sector rather than manufactured products. Soft commodities like agricultural products, hard commodities like iron, gold and oil are the constituents of this market.
- Crude oil prices have been falling for the last 18 months to November 2015. While nations importing crude oil are naturally happy with this fall, Oil exporting nations have been experiencing huge revenue losses.
- Gold prices go up in such situations as investors switch to this asset class, fearing fall in value in other assets.
- Climate and ecosystem risks could challenge the agricultural product.
- Derivatives are theoretical class of financial instruments that have a primary place in trade and financial markets.

- A Call gives the holder the right to buy an asset at a certain price within a specific period of time.
- A Put gives the holder the right to sell an asset at a certain price within a specific period of time.

8.11 Glossary

Asset-backed Security: A security whose payments are linked to a portfolio of assets such as receivables.

Clearing Margin: Margin posted by a member of a clearing house.

Central Counterparty (CCP): Legal entity that acts as an intermediary between the parties to a securities or derivatives trade, and is the seller to every buyer and the buyer to every seller, minimizing the default risk and facilitating netting, without revealing the buyer's or seller's identity.

Counterparty Risk: The risk that a counterparty to a (derivatives) contract defaults and cannot (completely) fulfill its contractual obligations.

Credit Default Swap (CDS): A derivatives contract to transfer the credit risk of underlying debt instruments (mostly bonds or loans). A CDS buyer receives credit protection. In the case of default, he or she will be compensated by the CDS seller (the seller either has to buy the debt instrument at its face value or has to pay the difference between value in the case of default and face value). In return for the credit protection, the seller receives periodic payments from the CDS buyer.

Collateralized Debt Obligation (CDO): A security whose payments are linked to a portfolio of debt. Usually several classes (or tranches) of securities with different returns are created from a debt portfolio. Repayment for these classes differs in the case of borrowers in the portfolio defaulting on their debt. As securities, CDOs have to be differentiated from derivatives (contracts).

Collateralized Loan Obligation (CLO): A CDO whose payments are linked to a portfolio of loans. As securities, CLOs have to be differentiated from derivatives (contracts).

El Nino: El Nino is a warming of the waters in the equatorial Pacific Ocean, which in turn creates a cascading effect on trade winds and other tropical weather that impacts global weather patterns. Its part of a 3-7 year cycle that alternates with the La Nina event where the Pacific waters cool instead.

Exchange-Traded Fund (ETF): Mutual fund whose indefinitely dated shares can be bought or sold in continuous trading on the stock exchange, and which tracks the performance of the index on which it is based.

Legal Risk: The risk that claims resulting from a derivatives contract are legally disputed and cannot be enforced.

Liquidity Risk: The risk that a derivatives contract cannot be unwound at its fair value due to a lack of sufficient supply/demand in the market.

8.12 Self-Assessment Test

1. What are the features of money market?
2. Write short notes on T-Bills.
3. What are the causes and consequence of fall in oil price?
4. What are the causes and consequences of fall in gold price?
5. Write a short note on global commodity market outlook.
6. What are derivatives and explain basics of derivatives?

8.13 Suggested Readings/Reference Material

1. Anthony Saunders, Marcia Cornett, Anshul Jain (2021). Financial Markets and Institutions. McGraw-Hill. 7th edition
2. I.M. Pandey, Financial Management (2021). 12th edition, Vikas Publishing House.
3. Jeff Madura (2020). Financial Markets and Institutions – Asia Edition, 13th edition; Cengage Learning
4. P. G. Apte (2020). International Financial Management; Tata McGraw-Hill Education Private Limited; 8th edition
5. Prasanna Chandra (2019). Financial Management – Theory and Practice, 10th edition, New Delhi: Tata McGraw-Hill
6. Frank J. Fabozzi, Frank J. Jones (2019). Foundations of Global Financial Markets and Institutions. Mit Press. 5th edition
7. Brealey Myers (2018). Principles of Corporate Finance, 12th edition, USA: McGraw-Hill Companies Inc.

8.14 Answers to Check Your Progress Questions

1. (e) The interest rates are very high when compared to capital markets

Money market segments are liquid, low interest, dealers market and safe. The interest rates are low when compared to capital markets.

2. (a) It is a long term finance instrument

A long term financial instrument is not a commercial paper.

3. (c) Banks generally borrow against issue of CDs when the money market is tight

Features of CD market are it is negotiable, available in secondary market, usually it has higher rate of interest and bank will borrower against CDs.

4. (b) These are present only in the US Markets

Euro dollar is present is also present in Europe only.

5. (a) There is no fiscal deficit

Fall in crude oil will not create fiscal deficit.

6. (c) In these contracts, the buyer and seller stipulate the product, rate, quantity, and location leaving the price as the only variable

Features of future contract commodity are they are standardized contracts, transacted in stock exchange, buyer and seller determine product, sale price, etc.

7. (d) Railways and Tramways

Railway and Tramways are not the subject market of commodities.

8. (e) Computer parts

All commodities mentioned are global market commodities except computer parts.

9. (d) Increase in global buffer stocks

Increase in price of global food prices is because of low yields and decreasing area under production, higher demand, increase in population, variability in temperature, and export ban of food stock by some of the nations.

10. (d) Calls of puts

Calls of Puts is not a participant in the options markets.

Unit 9

Global Derivatives Markets and Instruments

Structure

"The world of derivatives is full of holes that very few people are really aware of. It's like hydrogen and oxygen sitting on the corner, waiting for a little flame."

- Charlie Munger, Vice chairman, Berkshire Hathaway,
The conglomerate controlled by Warren Buffett

9.1 Introduction

Let us now discuss the features of derivatives market, types of derivative instruments, purpose of derivatives, futures contract, structure of global futures markets, mechanics of future trading, types of futures, interest rate futures,

elementary strategies, interest rate derivatives, interest swap with intermediary, international derivative market, and elementary pricing principle in detail.

In the previous unit you have studied money market, Indian money market, commodity market, and certain major perspectives in global commodities markets, the causes and consequences of fall in gold price, global outlook of commodity markets and nature and origin of subprime crisis

In this unit you will study important features of derivatives market, types of derivative instruments, purpose of derivatives, futures contract, structure of global futures markets, mechanics of future trading, types of futures, interest rate futures, elementary strategies, interest rate derivatives, interest swap with intermediary, international derivative market and elementary pricing principle.

Markets exposed to 'Globalization' – financial markets and commodities markets, are subject to various risks – geo political, price risk interest rate risks and currency risk to name a few. One of the risk management techniques to mitigate the risk is to write or buy suitable derivative instruments. Derived from underlying assets / securities /indices, these derivative instruments are innovative instruments in the financial markets.

These innovations have provided de-risking instruments to various risks being exposed to investing community / markets and speculators. The growth of derivatives in the last 30 years has been one of the most extraordinary and important features of the financial markets.

9.2 Objectives

After reading this unit, you will be able to:

- Discuss important features of derivatives market that are prominent in the global markets
- Explain the features of derivative instruments available in the markets Describe different types of derivative instruments to be deployed by investors as hedging instruments in global derivative markets
- Assess the mechanics of future trading for determining profit/loss on sale of underlying asset in the global financial markets
- Analyse the elementary strategies of swap market in order to enhance its growth in international financial markets

9.3 Important Features of Derivative Markets

Derivatives became very popular and because of their unique nature. They offer a combination of characteristics which are not found in other assets. It requires a detailed understanding on the derivatives market. Let us get into insights on some of the aspects of derivatives market.

Example: Market Fluctuations during June 2022

Economic Times, dated 10th June, 2022, reported that Yesha Shah, Head of Equity Research, Samco Securities, said during the week that the trading patterns at National Stock Exchange were downside, Nifty showed bearish signs. Nifty, being a benchmark index, reported to be in the support zone of 15,900 to 16,100. Nifty started falling down and decreasing continuously for 4 trading days out of 5 trading days in that week. Not only Nifty, even the equity markets across the globe slumped and the value of the dollar increased on 10th June, 2022. After May 2022, the world was looking at the US inflation data to be published and to see how the Federal Reserve Bank tightens the policies. This resulted in sharp decline in the market performance. On June 10, 2022, the DJIA decreased by 2.73%, S&P lost 2.91%, and NASDAQ composite dropped by 3.52%.

Source: https://economictimes.indiatimes.com/markets/stocks/news/ahead-of-market-12-things-that-will-decide-stock-action-on-monday/articleshow/92161187.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 10th June, 2022, accessed on 15th June, 2022.

Definitions

It is easier to understand a derivative than to describe it and it is easier to describe a derivative than to define it. However, attempts were made to define a derivative. Given below are some of the definitions.

"Derivatives contracts' that gamble on the future prices of assets are secondary assets, such as options and futures, which derive their value from primary assets, such as currency, commodities, stocks and bonds".

"A derivative contract is a financial contract, the value of which is derived from the value of underlying assets, indices, interest rates or currency rates".

There are four important features that distinguish derivatives from underlying assets and make them useful for a variety of purposes:

a. Relation between the values of derivatives and their underlying assets.

b. It is easier to take short position in derivatives than in other assets.

c. Exchange traded derivatives are liquid and have low transaction costs.

d. It is possible to construct the portfolio, which is exactly needed, without having the underlying assets.

Relation between the Values of Derivatives and their Underlying Assets: When the values of underlying assets change, so do the values of derivatives based on them. For some derivative instruments, such as swaps and futures, the relation between the underlying assets and the instrument is straightforward, i.e. if the product price changes, the instrument price also changes. In a currency future contract, the price to be paid when the currency is delivered will be fixed by the future contract, the value of the currency delivered will fluctuate depending on

the movements of the currency. Thus, the value of the future contract depends on the value of the underlying currency. The relation between the values of the underlying asset and option are more complicated, but the values of the option and the underlying assets are still to be related. Due to this unique quality, the derivatives appear like real commodities for many traders.

It is Easier to take Short Position in Derivatives than in Other Assets: As all transactions in derivatives market take place in future specific date it is easy for the investor to sell the underlying assets, i.e., in an asset he is obligated to deliver it in future. The short position means taking a stand for selling the underlying asset, with or without possessing the asset. He can take view of the market or product which is not possible in any other asset.

Exchange Traded Derivatives are Liquid and have Low Transaction Costs: Exchange traded derivatives are more liquid and have lower transaction costs than other assets. They are more liquid because they have standardized terms and low credit risk. Moreover, their transaction costs are low due to high volume of trade and also due to high competition. In addition, margin requirement in the exchange traded derivatives is comparatively low, which reflects that the risk associated with this instrument is low.

It is possible to construct portfolio which is exactly needed, without having the underlying assets: Derivatives can be constructed or combined to closely match specific portfolio requirement. Let us suppose a firm with a floating rate loan needs to limit its exposure to sharp increases in the interest rate. The firm can purchase a derivative called an interest rate cap. This derivative pays the firm the difference between the floating rate of interest and a predetermined rate called the cap rate whenever the floating rate exceeds the cap rate. Similarly, the lender can protect the decrease in the interest rate by buying the floor. The derivative product seller pays the lender the difference between a predetermined rate maximum called the cap rate whenever the floating rate falls below the floor rate.

9.4 Types of Derivative Instruments

A derivative instrument is another financial instrument derived from an underlying asset which derives, i.e., it takes its origin from another asset. Investors use a derivative instrument as a risk management tool. Which instrument is to be used will be decided by the investor or his risk management team depending on the risk exposure they have.

Example: NSE is the Largest Equity Derivatives Exchange

In Economic Times, dated 26th May, 2022, Vikram Limaye, MD & CEO, NSE, said National Stock Exchange (NSE) consecutively won for the third time, as the largest derivative market in the global market.

Contd….

Being the 4th largest exchange for cash equities, this was the distinguished moment for the nation. National Stock Exchange was ranked as the largest exchange, as the number of contracts traded and the volume traded were high. In the area of currency derivatives too, they exceeded in the number of contracts traded. NSE ranked first based upon its trading, on index options, and currency options. In the index option contracts, the Nifty bank index ranked first again and Nifty 50 ranked second, globally for the same category of index options.

Source: https://economictimes.indiatimes.com/markets/stocks/news/nse-largest-derivatives-exchange-for-3rd-year-nifty-bank-most-traded-indexmoption/articleshow/88994125.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 26th May, 2022, accessed on 15th June, 2022.

The enormous and rapid growth in the variety of derivatives can be bewildering even to experienced financial market participants. Notwithstanding the growth, all derivatives can be classified based on the following features:

a. Nature of contract,

b. Underlying asset, and

c. Market mechanism.

a. **Nature of Contract:** Based on the nature of the contract, derivatives can be classified into three categories:

   i. Forward Rate Contracts and Futures,

   ii. Options

   iii. Swaps

   The nature of contract sets upon the rights and obligations of both the parties to the contract.

b. **Underlying Asset:** Most derivatives are based on one of the following four types of assets:

   i. Foreign exchange,

   ii. Interest bearing financial assets,

   iii. Commodities,

   iv. Equities.

   There can be a contract, which is similar in all aspects except for the underlying asset. Thus, an option contract can exist in currency or a stock. Similarly, a futures contract can exist on commodity or on a currency.

c. **Market Mechanism:** It is a mechanism by which the use of money exchanged by buyers and sellers with an open and understood system of value and time trade-offs in a market tends to optimize distribution of goods and

services in at least some ways. The following are the formal exchanges where goods / products / services are traded.

i. OTC products

ii. Exchange traded products.

9.5 Purpose of Derivatives

Derivative instruments serve various purposes in global, social, and economic systems. The derivative instruments facilitate the process of price discovery, hedging and speculation in the financial markets.

Example: Interest Rate Movement – A Prediction

Economic Times, dated 26th May, 2022, reported that Soumyajit Niyogi, Director at India Ratings, said that there will be an increase in the repo rates by 2% in the coming years, as the Overnight Indexed Swaps gauge was used for measuring the future rates. This will lead to an increase in the overall funding cost, affecting the growth sharply. The increase in the rates will have a weigh on India's growth trajectory. The future rate hikes will be faster than the current phase and the loans that were linked with the external benchmarks will be about 40% up, when compared to 28.5% in March 2021 and 2.4% in September 2019.

Source: https://economictimes.indiatimes.com/markets/stocks/news/sharp-rate-hikes-may-not-be-just-an-option in-future/articleshow/90901540.cms?utm_source=contentofinterest&utm_ medium=text&utm_campaign=cppst. Dated 26th May, 2022, accessed on 15th June, 2022.

9.5.1 Price Discovery

Price discovery symbolizes the process of providing equilibrium prices that reflect current and prospective demands on current and prospective supplies and making these prices visible to all. As such, derivative markets not only play a significant role in terms of actual trading, but also provide guidance to the rest of the economy to optimal production and consumption decisions. Forwards and futures markets are significant sources of information about prices. Future markets are often considered as the primary means of information for determining the spot price of the asset. High degree of correlation exists between forward/futures prices and the price which people expect to prevail for the commodity/asset on the delivery date specified in the futures contract. By using the information available in the forward/futures price today, market observers try to estimate the price of a given commodity/asset at a certain time in future. For example, let us consider the price of copper. The price of copper twelve months from today cannot be said with certainty. However, the future price can be determined by using forward/futures market. The price that is quoted on the market today for a copper forward/futures contract expiring in twelve months is very essential in estimating the future price. This price discovery provides a base for the players in the market – buyers, sellers and investors to take a financial

decision. Thus, a futures or forward price reflects a price which a market participant can lock-in today in lieu of accepting the uncertainty of future spot price. Options markets do not directly provide information about future spot prices. However, they provide information about the volatility and subsequently, the risk of the underlying spot asset.

9.5.2 Hedging

Hedging attempts to reduce price risk. It can be defined as a transaction in which an investor seeks to protect a position or anticipated position in the spot market by using an opposite position in derivatives. A person who hedges is called a hedger. These are people who are exposed to risks due to the normal business operations and would like to eliminate or minimize or reduce the risk. Let us consider an illustration to understand how futures market is used for hedging.

Suppose in August, A (a manufacturer of cotton apparels), needs 20,00,000 pounds of cotton in December, and believes the price would rise. Say, on New York Cotton Exchange (NYCE), the December cotton No.2 futures are trading at 57.00 cents per lot. A entered into a futures contract for a 20,00,000 lot, for which he needs to buy 40 contracts (as minimum contract size is a 50000 lot on NYCE) and locks his price at 57.00 cents per lot (i.e., his total outflow in December will be $2280).

Assume that in December, the cash market price of cotton is 58.55 cents per lot, A must pay the supplier $2342 to procure cotton. However, the extra cost of 1.55 cents per pound (or $62) which A must pay for procuring cotton will be offset by a profit of 1.55 cents per lot when the futures contract bought at 57.00 cents is sold at 58.55. In other words, the hedge provides insurance against an increase in the price. However, had the price of cotton declined instead of rising, A would have incurred a loss on his futures position but this would have been offset by the lower cost of acquiring cotton in the cash market.

Hedging is done mainly for the following reasons:

- To protect a purchase against price decline.
- To protect a sale against price increase.
- To protect an anticipated purchase against a price increase.
- To protect an anticipated sale against a price decline.

The result of a hedge can be judged as the ‘net effect’ of the gain or loss on the physical position plus the gain or loss on the hedging tool.

Two types of hedging are available, namely short hedging and long hedging. Short hedging is also known as selling hedge and it happens when the futures are sold in order to hedge the cash commodity against declining prices. Long hedging is also known as buying hedge and it happens when the futures are purchased to hedge against the increase in the prices of a commodity to be acquired either in the spot or futures market.

9.5.3 Speculation

Speculation involves assimilation of available information about a security and assessing the rise or fall of its price. A person engaged in speculation is called speculator. These people voluntarily accept what hedgers wish to avoid. Based on the forecast, the speculator would like to make gains by taking long and short positions on the derivatives. For example, let us see how speculators take a position to gain from the futures.

Consider B to be a speculator who, in the month of May, thinks that the price of wheat will go up in the next three to four months. Assume that he does not have enough funds. So, he borrows dollars, and buys wheat of say 1,500,000 bushels at US$9.90 per bushel which is the current spot rate. B waits till September. In September, the prices reach the level he expected and thus he sold the wheat and paid-off the borrowed funds along with interest, and realized his profit. But, in this process, he has undertaken some risks associated with the ownership of wheat – the need to store wheat, protect it from pests, transport it from the seller and to the buyer – all these involve either outflow of money or risk.

To avoid all this risk and trouble, he could choose the alternative of trading in futures contracts. Futures contracts on wheat are deliverable in future. That is, B can agree to buy his requirements of wheat at the time he wants at a price which is fixed today.

B can make the same speculation using the futures contracts. He might buy a contract today, for delivery at the end of say, six months hence and sell it when he thinks the price has reached the level of his estimate. This is easier to put through – just two transactions at the futures exchange – compared to buying the actual commodity. The first alternative that involves purchasing the asset upfront will involve more funds and costs, whereas, for the second alternative, he requires only a small amount of cash. If we consider the interest loss on the amount blocked in the purchase of wheat, the second option seems to be more attractive, although risky.

Speculators perform a valuable economic function by feeding information and analysis about a company into the derivatives markets. A market that rapidly translates company knowledge into stock price is an efficient market. Speculation makes a market efficient. The speed at which the information gets assimilated into the market depends on the speed at which the speculators act on the information. Therefore, market efficiency can be brought only through the actions of speculators. More the number of speculators, better the efficiency of the market. A successful speculator correctly buys when the stock is undervalued and sells it when it is overvalued. This transaction when done by a reasonably large number of speculators corrects the value of stock.

The derivatives market in India made history in the year 2000 when the Bombay Stock Exchange (BSE) launched its first Exchange-trade index derivatives

contract. Since then the derivatives market has contributed phenomenally to the financial market. The following Table 9.1 shows the statistics of derivative market in India from 2018-19 to 12th July 2022.

Table 9.1: Statistics of Derivative Market in India from 2018-19 to 12th July 2022

Year		2022-23 till july12th	2021-22	2020-21	2019-20	2018-19
Index Futures	No. of contracts	3,37,76,109	9,36,62,982	12,75,99,626	9,47,77,881	6,98,24,522
	Turnover in ₹ crs	28,50,895.73	84,29,378.27	90,47,645.65	67,01,072.45	55,68,914.47
Stock Futures	No. of contracts	8,13,82,006	26,56,09,687	25,28,30,922	25,73,80,338	25,55,33,869
	Turnover in ₹ crs	52,16,933.99	2,10,38,937.56	1,80,98,365.39	1,49,19,550.78	1,61,47,010.9
Index Options	No. of contracts	8,33,86,48,853	17,62,33,55,691	7,82,40,35,680	4,58,66,92,584	2,65,24,57,487
	Premium Turnover in ₹ crs	25,72,504.75	58,42,329.82	26,29,426.05	10,82,514.05	6,54,099.95
Stock Options	No. of contracts	21,62,06,863	67,75,12,461	33,03,94,648	19,83,77,569	18,69,86,542
	Premium Turnover in ₹ crs	2,50,067.85	10,38,830.27	5,79,351.62	2,29,034.28	2,00,010.31
Total	No. of contracts	8,67,00,13,831	18,66,01,40,821	8,53,48,60,876	5,13,72,28,372	3,16,71,83,212
	Turnover in ₹ crs	73,36,68,892	1,69,52,33,134	64,36,18,108.3	34,53,91,355.5	23,75,90,974

Source: https://www1.nseindia.com/products/content/derivatives/equities/historical_fo_bussiness growth.htm compiled on July 13, 2022

9.6 Futures Contract

Consider yourself as a farmer growing corn. Say, the month running is April, and your crop is likely to harvest in the month of July. There is an uncertainty about the price you will receive for the corn. In the years of low supply or scarcity of corn, you might obtain a relatively high price – especially, if you are not in a hurry. In the years of oversupply of corn, you may have to dispose at lower prices. In the latter case, you are exposed to a great deal of risk.

Example: Oil Futures Movement in June 2022

Economic Times, dated 6th June 2022, had seen the crude oil futures trading, at a three- month high price. On June 3, 2022, the US based West Texas Intermediate crude futures were selling at a higher price of $1.63 at $120.50 a barrel price, which was a price, hitting 3-month high of $120.99. In this crude oil future contract, they made a gain of 1.7%. Another crude oil future – Brent Crude price was also up by 1.80 at $121.52 a barrel, during the intraday high of $121.95 giving 1.8% gain on 3rd June, 2022.

Contd…

> In the gulf region, the official selling price was increased, because Saudi Arabia's OSP (official selling price) for Arab light crude oil supply to Asia was increased to a $6.50 premium, when the average of UAE (Dubai) and Oman benchmark was up from a premium of $4.40.

Source: https://economictimes.indiatimes.com/markets/commodities/news/oil-jumps-after-saudi-arabia-hikes-crude prices/articleshow/92026731.cms?utm_source=contentofinterest& utm_medium=text&utm_campaign=cppst. Dated 6th June, 2022, accessed on 15th June, 2022.

On the other hand, consider a merchant who has an ongoing requirement for corn. In the years of oversupply, he could fetch the corn at a competitive rate. But, in years of scarcity, he is exposed to price risk, as the prices may be highly exorbitant.

As you are uncertain about the price that you are likely to receive, you will be happy if you can know the price you are likely to receive beforehand with certainty. The futures market will enable you to enter a contract, and lock the price. 'Futures' contracts are legally binding agreements to buy or sell a commodity sometime in the future. The 'contract' specifies the quantity, price, and the date of delivery (negotiable to you and the merchant), and will enable you either to eliminate or minimize the risk, which otherwise will be faced due to uncertain price fluctuations of the future price of corn. Let us consider an example to understand the concept of futures.

Say, you are a trader in Chicago. In March, you instructed a broker to buy 10,000 bushels of corn futures for July delivery. The broker would immediately pass these instructions on to a trader on the floor of the Chicago Board of Trade (CBOT) (an exchange). Say, at about the same time, another investor, Mr. Kelly, instructs a broker to sell 10,000 bushels of corn futures for July delivery (this example is cited to make you understand the concept. The time and the quantity may not always match). The instructions of Kelly would also be passed on to a trader. The traders would meet, agree on a price to be paid for the corn in July, and the deal would be struck.

Now, you are in 'long futures position', as you agreed to buy. Kelly, who agreed to sell is in 'short futures position'. The act of buying is known as 'going long' and act of selling is known as 'going short'. The 'price agreed to' by the two traders on your behalf to buy and Kelly's behalf to sell on the floor of the exchange is known as the 'futures price'. Suppose the price agreed is 196.50 cents per bushel. The price agreed is arrived or determined just like the price of any other good, i.e., determined by the laws of demand and supply. Say, if at any point of time, there are more traders willing to sell July corn than buy July corn, the price will go down and vice versa. Table 9.2 shows exchange traded futures and options data by location

Table 9.2: Exchange-Traded Futures and Options, by Location

(in Billions of US Dollars)

Amount in US$ billions	Open interest			Daily average turnover	
	Dec-20	Dec-21	Mar-22	2020	2021
Futures					
All markets	28,995	34,129	40,737	5,415	5,863
North America	18,839	23,518	30,645	3,691	3,840
Europe	8,065	8,584	7,965	1,461	1,754
Asia and Pacific	1,252	1,200	1,266	180	170
Other Markets	839	828	861	82	99
Options					
All markets	36,955	45,961	53,925	1,414	1,523
North America	23,713	30,057	36,907	1,113	1,135
Europe	12,112	15,065	16,447	279	367
Asia and Pacific	8	7	7	6	9
Other Markets	1,122	832	564	17	12

Source: https://stats.bis.org/statx/srs/table/d1

The prime objective of using future markets is to manage price risk. You can acquire insurance against adverse price changes, by establishing a price now, for items to be delivered later.

The principle underlying hedging (discussed later in this chapter) in the futures market is that one can establish a known price level, even weeks or months before the actual outflow/inflow. A 'Futures position' protects against the unfavorable price changes before the due date.

Trading in futures market acts as a substitute for cash market transactions, as the former allows one to know about the actual outflow/inflow beforehand. On the other hand, in the latter, price fluctuations are possible.

The largest futures exchanges in the world are the Chicago Mercantile Exchange (CME) and the Chicago Board of Trade (CBOT).

Definition

A futures contract can be defined as an agreement to buy or sell a standard quantity of a specific instrument at a predetermined future date and at a price agreed between the parties through open outcry on the floor of an organized futures exchange.

Futures have the following benefits:

i. Standard volume

ii. Liquidity

iii. Counterparty guarantee by exchange

iv. Intermediate cash flows.

Difference between Futures and Forwards

There are some basic differences between the Forwards and Futures which are illustrated below in Table 9.3.

Table 9.3: Difference between Futures and Forward Markets

	Financial Futures Markets	Forward Market
Location	Futures Exchange	No fixed location
Size of contract	Fixed (Standard)	Depends on the terms of contract
Maturity/ payment date	Fixed (Standard)	Depends on the terms of contract
Counterparty	Clearing House	Known bank or client
Marketplace	Central Exchange floor with worldwide network	Over the telephone with worldwide network
Valuation	Marked-to-market everyday	No unique method of valuation
Variation Margins	Daily	None
Regulations in trading	Regulated by the exchanges concerned	Self-regulated
Credit risk	Almost non-existent	Depends on the counterparty
Settlement	Through clearing house	Depends on terms of contract
Liquidation	Mostly by offsetting the positions; very few by delivery	Mostly settled by actual delivery Some by cancelation at a cost
Transaction costs	Direct costs such as commission, clearing charges, exchange fees are high; indirect costs, bid-ask spreads are low	Direct costs are generally low, indirect costs are high in the form of high bid-ask spread

Source: ICFAI Research Centre

9.7 Structure of Global Futures Markets

Development of futures markets can be traced back to the medieval times, when trade fair merchants often entered contracts for deferred delivery of goods at a price agreed in advance. In the centuries that followed, organized spot markets for commodities developed in major European cities.

[46]In Sumer in 8000 B.C., clay tokens were baked into a spherical sort of "envelope" and used as a promise to a counterparty to deliver a quantity of goods by a certain date. Based on the timeframe imprinted into the envelope vessel and the tokens themselves, sellers promised to deliver the assets.

Mesopotamia in the late 1700s B.C., trade and commodity contracts, written agreements detailing purchasing and sales between merchants and buyers on stone or clay tablets in cuneiform. Some of these contracts functioned as futures, where delivery of future grain harvests was specified prior to planting and the seller promised to deliver a quantity of grain for an agreed upon price at the time of negotiation.

The first formalized futures exchange market is generally accepted to be Dojima Rice Exchange in Japan formed in the 1730s. Consequently, the futures markets were developed to meet the needs of the farmers and merchants. In 1848, the first modern futures markets came into existence with the formation of Chicago Board of Trade and evolved gradually to cater to the needs of investors in addition to the existing class of farmers and merchants.

9.7.1 Chicago Board of Trade

The Chicago Board of Trade (CBOT) is the oldest and the largest futures exchange in the world. It is organized as a not-for-profit membership association. Chicago's strategic location at the base of lakes close to fertile agricultural lands contributed to its rapid growth and development as a grain center. It was established to bring the producers (farmers) and buyers (merchants) together. It was initially formed to facilitate standardizing the quantities and qualities of grains. In 1865, the CBOT took steps to formalize futures contracts. Although the trading and development of financial futures resulted after World War II, trading of financial products started electronically only in 1994. Currently, CBOT offers futures contracts on many underlying assets, which include corn, wheat, soybeans, soybean oil, Treasury bonds and Treasury notes.

9.7.2 Chicago Mercantile Exchange

Chicago Mercantile Exchange (CME) is one of the leading futures exchanges in the world. Constituted in 1874, it was initially known as the Chicago Produce Exchange. It was established to provide a systematic market for butter, eggs, poultry, and other farm products. In 1919, the butter and egg board became Chicago Mercantile Exchange (CME) to accommodate public participation.

In 1981, CME introduced Eurodollar futures, which gave way to futures on stock indexes and option products. A post market Global Electronic Transaction System (GLOBEX) was finalized with Reuters in 1988 and live trading started in 1992. In 1998, it introduced GLOBEX 2R, the next generation first global electronic trading system.

[46] https://medium.com/market-protocol/the-history-of-derivatives-trading-631e9ab64fed

In 1999, CME became the first US exchange to construct a concrete plan for demutualization. Currently, CME trades for many underlying assets, including commodities like pork bellies, live cattle, live hogs, and feeder cattle; contracts on stock indices and currencies are also traded on the exchange.

9.7.3 Other Exchanges

Currently, many other exchanges throughout the world trade futures contracts. Popular among them are London International Financial Futures Exchange (LIFFE), Tokyo International Financial Futures Exchange (TIFFE), Singapore International Monetary Exchange (SIMEX), Swiss Options and Financial Futures Exchange (SOFFEX) and Sydney Futures Exchange (SFE). To fully appreciate the nature and uses of futures, it is necessary to acquire familiarity with the major features of futures contracts, organization of the markets, and the mechanics of futures trading.

Example: Futures and Options Volume Trends on Global Exchanges

Futures Industry Association (FIA) released global trends in the Futures and Options trading for the first half of 2021. As per this report, global futures and options trading reached 28.9 billion contracts, increase of 32.1% compared to the first half of 2020. Rapid growth was seen in the trading activity in the exchanges in Brazil, China and India. The National Stock Exchange of India continued to be the world's largest derivative exchange surpassing Brazil's B3 and CME Group, the American derivative exchange. NSE had the largest trading volume of 6.6 billion contracts, signifying an increase of 76.8% compared to the first half of 2020.

Source: https://m.mondovisione.com/news/fia-releases-data-on-futures-and-options-volume-trends-in-first-half-of-2021/ Dated July 27, 2021 (accessed on 27th October, 2022)

9.8 The Mechanics of Futures Trading

Futures are traded through exchanges. Exchange plays the role of guarantor to either side – buyer and seller. The following deals with how the parties involved are protected in futures trading. There are two parties involved in a futures contract. The seller of the contract, who agrees to deliver the asset at the specified time in future and the buyer of the contract, who agrees to pay a fixed price and takes delivery of the asset. The futures contract is used by a buyer and seller to hedge other positions of the underlying asset. Any price change in the underlying asset after the futures contract agreement, creates gain to one party at the expense of the other party. In other words, if the price of the underlying asset increases after the agreement is made, the buyer stands to gain and the seller incurs loss. Inversely, if the price of asset decreases, the seller gains and the buyer is at loss. Usually such transactions can be made in clearing houses.

Example: Dealers' view on Nifty Options Strategy 5th June 2022

Economic Times, dated 5th June, 2022, reported that due to short coverings, the Nifty futures' open interest had decreased from 1.1 crore shares to 1 crore shares. Foreign institutional investors started to withdraw their long positions, while their net short positions had improved. The popular Nifty 50 continued to improve and be in positive trend, as per the last 3 weeks data available. Technology sector witnessed some short coverings.

Source: https://economictimes.indiatimes.com/markets/stocks/news/nifty-options-strategy-as-consolidation-continues-go-for-short-iron-fly/articleshow/92014757.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst Dated 5th June 2022 (accessed on 15th June 2022)

9.8.1 Clearing House

A clearing house is an institution that clears all the transactions undertaken by a futures exchange. It can either be a part of the same exchange or can be a separate entity. It computes the daily settlement amount due to or from each of the members and from other clearing houses and matches the same.

Members who execute trade on the exchange floor are of two types:

a. Floor brokers

b. Floor traders

a. Floor Brokers

These brokers will execute the orders on others' account. These people are normally self-employed individual members of the exchange.

b. Floor Traders

These traders execute the trades on their own account. Some floor traders may also execute the orders for the account of others. This mechanism is known as dual trading and such traders are known as dual traders.

Some of the floor traders are classified as "scalpers". A scalper is a person who stands ready either to buy or sell. Scalpers add to the liquidity of the market as they are market makers. Some of the floor traders are classified as "position traders." These traders tend to carry the positions for longer period. They also add to the liquidity of the markets. However, these brokers shall execute a contract before executing the trade.

9.8.2 Contract Specifications for Futures

A futures contract between two parties should specify in some detail the exact nature of the asset, price, contract size, delivery arrangements, delivery months, tick size, limits on daily price fluctuation and trading unit.

The Asset

The delivery of the asset needs to be specified at the time of entering a contract. When the underlying asset is a commodity, there may be variations in the quality of what is available in the market. It, therefore, becomes important to specify the grade of the commodity that is to be delivered. For example, on CBOT, one of the specifications for corn futures contract, the standard grade is 'No.2 Soft Red' or 'Dark Northern Spring No.1', etc.

The Price

The price agreeable to the buyer and the seller at the time of delivery of the future contract is specified at the time of agreement. The futures prices quoted are convenient and easy to understand. For example, corn prices on the Chicago Mercantile Exchange (CME) are quoted per bushel. The treasury bonds and notes on futures on CBOT are quoted in dollars with two decimals.

The Contract Size

This specifies the amount of the asset that has to be delivered under one contract. If the size of the contract is too large, many investors cannot use the exchange for hedging or speculative purposes. Therefore, these speculators may not wish to take large positions due to risk. However, if the contract size is too small, trading becomes expensive due to the cost associated with trading.

Delivery Arrangements

The place for delivery needs to be specified at the time of the contract to avoid controversy. The location or place of delivery becomes a major concern when the transportation costs are significant. However, if any alternative delivery locations are specified, the price received by the seller is sometimes adjusted according to the location chosen by him. Often, alternatives are specified for the grade of the asset that will be delivered or for the delivery locations.

Delivery Months

A futures contract is referred to by its delivery month. For example, July corn, means that the contract is for delivery in the month of July. The delivery months vary from one contract to another contract depending upon the underlying asset, and also on the need of market participants. For certain contracts the delivery period runs throughout the month. Trading on contracts generally ceases to operate a few days before the last day on which the delivery can be made. Date on which the contracts cease to trade is specified by the exchange.

Tick Size

1. The contract also specifies the minimum fluctuation price or tick size. For example, in wheat contract, one tick is 1/4 cent per bushel as the minimum size of contract for wheat is 5000 bushels, which gives a tick size of $12.50 per contract.

Limits on Daily Price Movements

The exchange specifies the daily price movement limits. If the price moves up by a limit, it is referred to as limit up and it is referred to as limit down, if it moves down by a limit. The prime purpose of the daily price limits is to prevent large price fluctuations that may occur due to high speculations and to safeguard the interests of genuine traders. The exchange authorities set the limits. However, the price limits become artificial when the price of the underlying commodity is advancing or declining rapidly.

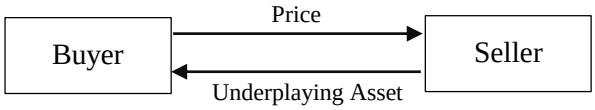
Trading Unit

This specifies the minimum number of units that are traded on the exchange. For example, the trading unit for wheat is 60,000 pounds on CBOT exchange. Apart from the above general specifications, there are certain definite specifications pertaining to each of the categories based on underlying assets. The trading unit for selected commodities is discussed in the subsequent pages.

Clearing House Mechanism

As the futures are exchange traded instruments, the contract obligation is not between the buyer and the seller of the contract, even though the contract at the time of initiation is between two parties. Each contract is substituted by two contracts in such a way that clearing house becomes the buyer to every seller and seller to every buyer (refer the following Figures 9.1 & 9.2).

Figure 9.1: Transaction without Clearing House



Source: ICFAI Research Center

Figure 9.2: Transaction with Clearing House

Source: ICFAI Research Centre

This mechanism effectively removes counterparty risk from the futures transaction. In a transaction where A sells futures to B and B is replaced by the clearing house the credit risk taken by A becomes insignificant. Same is the case for B as well. This means that the credit risk is now assumed by the clearing house instead of the individual. When this happens for all the transactions, the credit risk assumed by the clearing house becomes disproportionately high. It becomes necessary for the clearing house to minimize the credit risk. The imposition of

margins minimizes the credit risk of the clearing house. Margins are the amounts, which buyers and sellers of futures contracts must deposit as collateral for their positions. Margins levied on each contract reflect the volatility of the underlying instrument and these margins are adjusted everyday depending on the changes in the prices. If the price of a contract increases, then the buyer of the contract experiences a gain because the value of an asset increases. The gain will be credited to the buyer's account. In case of a loss, the amount will be debited to the account. This type of adjustment of gains and losses on each day is called marking-to-market.

Activity 9.1

You are working as a floor broker and one of your clients wants to know the process of making the transaction. You are required to explain to your client the process of transaction with or without clearing house.

Answer:

9.9 Types of Futures

Buying and selling takes a high level of sophistication, and that's why futures are mostly a tool for institutions, hedge funds, trading firms and wealthy investors.

Example: MCX launches 3rd base metal nickel options on futures

Economic Times, dated 31st December, 2021, reported that MCX, the largest commodity exchange, stated that the metal nickel option on future contract's value was for 1500 kg nickel future contract, with a tick size of 0.05 and a strike interval of ₹ 20. So, the single lot of base metal was very expensive as it traded for ₹ 23.24 lakhs. The nickel options on future were changed, into nickel futures underlying. The changed product nickel future underlying suited all the stakeholders such as the investors, traders, and hedger. Thus, the option contract became a cost effective tool for hedgers, though the underlying futures contract gained good traction.

Source: https://economictimes.indiatimes.com/markets/commodities/news/with-nickel-mcx-launches-3rd-base-metal-options-on-futures/articleshow/88263979.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 31th December, 2021, accessed on 15th June, 2022.

The different types of futures contracts traded, fundamentally fall into four different categories based on the underlying asset. The underlying asset may be:

i. A physical commodity (soy, wheat, corn, etc.)

ii. A foreign currency (say Euro, Yen, or Swiss Franc, etc.)

iii. An interest-earning asset (say a bond or time deposit)

iv. An index (usually a stock index)

v. Futures on individual stock

9.9.1. Commodity Futures

Commodity futures refer to the contracts made to buy or sell a commodity at a specific price and on a specific delivery date. Commodities may be agricultural commodities, metallurgical commodities, energy commodities and precious metals such as gold, silver, etc. The oldest commodity futures market is the Chicago Board of Trade (CBOT). It began trading the first futures contract, a standardized forward agreement, in the year 1865. Initially, commodity futures were available only for agricultural products. Later, other commodities were included. Agricultural commodities are further segregated into grains, soft commodities, and meat futures. Commodities such as red beans, corn, wheat, soybeans, and soybean meal, etc. form part of grains, while cocoa, coffee, dried cocoon, cotton yarn, etc. form part of soft commodities. Animal products like live hogs, live cattle, pork bellies, eggs and poultry products form part of meat futures.

The months chosen for delivery of futures contracts of seasonal crops, generally fit into the crops harvesting pattern, while the number of contracts available for each contract depends on the level of active trading.

Apart from the specifications mentioned above, in agricultural commodities, each of the commodities traded has a specific symbol while trading on the exchange. For example, on CBOT, Soybeans, Corn, Soybean Meal and Wheat are referred with symbols, ‘S’, ‘C’, ‘SM’ and ‘W’ respectively.

Crush Spread

Under agricultural futures, there is a popular type of spread known as ‘Crush Spread’. It implies the simultaneous purchase of a commodity (say, soybean) futures coupled with the sale of the same commodity’s by-products futures. Example: Soybean oil futures and soybean meal futures.

The crush spread is nothing but the expected profit margin of the commodity processors. The following formula is helpful in calculating the crush spread:

C = (Price of by-product 1 x Yield expected) + (Price of by-product 2 x Yield expected) – Price of commodity.

Obviously, the formula should be adjusted to take the same unit of measurement in all the by-products and commodities. This is required because the unit of sale

of different products may be different. For example, soybean may be sold in bushels, oil in lb. and so on.

Sometimes, the margin becomes negative. In that case, a reverse crush spread should be opted for, which means selling the commodity futures while buying the futures of the by-products.

The CBOT trades on commodities such as corn, soybeans, soybean meal, wheat, soybean oil, etc. The CME trades on live hogs, live cattle and pork bellies, etc.

Metallurgical Commodities

The metallurgical category includes genuine metals and petro products. The metals are further grouped into precious and industrial metals. In general, the precious metals are in relative short supply and they retain their value irrespective of the conditions of the economy. On the other hand, the value of the industrial metals is based on the demand and supply conditions. There is no seasonal demand or an apparent demand-supply cycle for industrial metals. London Metal Exchange (LME) is the most popular and organized exchange for trading metals. LME mostly trades in precious metals such as Gold, Silver, Platinum, Palladium, etc., and industrial metals like Aluminum, Copper, Zinc, Lead, Nickel, Tin, etc.

In addition to the London Metal Exchange (LME), the Commodity Exchange (COMEX) is the other major exchange trading in precious metals. The COMEX has a three-day delivery period. The contracts are usually for a period of one month and the delivery of metal which is stamped by a recognized dealer is accepted at the exchange's warehouses.

Under the three-day delivery period, the first day is the presentation day in which the short investor states his intention to deliver the metal. The invoice is calculated using the settlement prices of the presentation date. The second day is known as the notice day in which the exchange announces the delivery of the position on the next day. On the third day (the delivery day), the short investor delivers the precious metal and the payment is made by the long investor.

[47]Gold to Silver Ratio

In the precious metal market, the Gold to Silver ratio is a common spread ratio used. It implies the number of silver ounces required to equal the value of one gold ounce.

When the Gold to Silver Ratio rises, it means that gold has become more costly when compared to silver and the cheaper metal might offer better value. It hit a new all-time high above 125 in March 2020 when the Covid Crisis witnessed gold investing rise crushing the silver price, along with most of the other industrial commodities, as the world economies went into lockdown.

[47] Source: https://www.bullionvault.com/silver-guide/gold-silver-ratio

When the ratio falls, it means that gold has become less costly relative to that of silver. The ratio fell dramatically from that 2020 spike in the second-half of the year, despite when the gold set new all-time high in United States (US) Dollar, United Kingdom (UK) Pound and Euro terms, dropping below 70 ounces of silver per 1 ounce of gold as global industry re-opened in the first half of 2021.

Some investors, traders and analysts look to "trade the ratio" for buying silver when the Gold to Silver Ratio is high and switching to gold when the ratio falls.

Once the ratio is set which is usually 40, the trading (hedging) is done by observing the ratio on a daily basis. If the ratio declines, the traders sell gold and buy silver to maintain the ratio and vice versa.

Commodity Futures in India

Although the commodity derivatives market has been in existence for long in India, the first organized trade took place in 1875 through the establishment of the 'Cotton Trade Association' followed by oilseeds, jute, wheat and some other commodities. Since then, contracts on various other commodities have been introduced through various local exchanges throughout the country. But the commodities market was in deep slumber post-independence, when the country moved down the socialist path. The Indian Government banned the cash settlement and options trading for few commodities under the Forwards Contract (Regulation) Act in 1952 and introduced minimum support prices to many agricultural products directly to protect farmers. Commodity trading further started in 1970 when the government permitted trading forwards on few commodities, but the volume was quite low. Finally, commodity future picked up again with the government promotion of various exchanges and liberalization of the policies. With a view to improve exchange function, price discovery mechanism and price risk management the regulatory role went to the Forward Markets Commission.

In 2001, financial derivatives trading started with the index future. In 2002, the FMC also decided to encourage the modern commodity exchange, that can work electronically and at the end of November 2002, the National Multi-Commodity Exchange of Ahmedabad (NMCE) came out with the first electronic commodity exchange. After that in 2003, the Multi-Commodity Exchange (MCX) and the National Multi-Commodity Derivatives Exchange (NCDEX) started, which are promoted by ICICI, NSE and other financial institutions. Presently, futures trading is permitted in all the commodities through 25 Exchanges/Associations.

Pricing Mechanism

Commodity future can serve as a pricing mechanism for price discovery either for the present or for expected predetermined future prices. It has been a major concern for the producers as well as the consumers in an agriculture dominated

country like India. They are often referred to as efficient in price discovery process. It means the price quoted for a commodity on the futures market will be the best one for the actual price of the commodity it had. Commodity exchanges facilitate trade on spot basis and future basis at predetermined rate. However, the prices are dependent on the demand and supply conditions. Say for example, if the demand for buyers is more than suppliers then the price will rise and fall if sellers are more than buyers.

9.9.2 Foreign Currency Futures

A forex futures contract can be defined as an agreement between two parties in which one of the parties agrees to buy the currency from the other party at a later date at an exchange rate agreed upon today. Its working is similar to traditional stock and commodity futures. Chicago Mercantile Exchange established the International Monetary Market in 1972 to trade futures contracts in foreign currencies. Forex Futures were actually the first financial futures contracts. The forex futures contracts call for delivery of certain number of units of foreign currency. Prices are always quoted in dollars per unit of that currency.

[48]For example, let us consider British pound contract in Dubai Gold and Commodities Exchange (DGCX). Assume the pound contract calls for delivery of 50,000 pounds. If the contract price on July 13th 2022 was GBP=USD1.19 then the actual price was 50,000x1.19=59,500 USD. The tick size is 0.0001 and the tick value is US$5.Trading Months are four in a year - March, June, September and December. Delivery date is third Wednesday of expiry month. LTD (Last Trading Day) is two business days prior to the third Wednesday of the expiry month. Maximum lots are 200.

[49]The lot size will vary from exchange to exchange. On NSE USD/INR contract size is USD1,000, expiry is last working day of the month, last trading day is 12.30 noon prior to 2 working days of the expiry date. Tick size is 0.25 paisa.

There are many advantages in using forex futures for hedging as well as speculating. The significant feature of forex futures is that they are not traded on a centralized exchange. They can be used to hedge against currency fluctuations.

Hedging with Currency Futures

Futures are one of the derivatives where an exporter and importer can hedge their positions by selling or buying futures. Therefore, the futures market does not require upfront premium for entering into contract as in the case of options, it provides a cost-effective way for hedging the exchange risk. The main advantage of using currency futures is that it provides a means to hedge the trader's position or anybody who wishes to lock-in exchange rates on future currency transactions.

[48] Source: https://www.dgcx.ae/products/gbp-usd-futures
[49] Source: https://www1.nseindia.com/products/content/derivatives/currency/cd.htm

Purchasing (long hedge) or selling (short hedge) foreign exchange futures, a corporate or an individual can fix the incoming and outgoing cash flows in one currency with respect to another foreign currency. An investor who is dealing with a foreign currency is faced with an exchange risk since the cash flows in terms of domestic currency are known only at the time of conversion. The objective of avoiding exchange risk can be met by using different tools including futures. A person who is long or is expected to go long in a foreign currency will have to sell the same on such given day. A hedge can be obtained now by selling futures in that currency against the domestic currency. Similarly, a person who is short or is expected to go short in a foreign currency will have to go long on the same given day. A hedge can be obtained now by buying futures in that currency against the domestic currency instead of buying the currency latter in the spot market. However, the major disadvantage in foreign exchange futures is that they are limited to a few currencies only. The following illustration explains how a US exporter, using futures, hedges his Euro inflows.

Illustration 9.1

Assume that a US exporter is exporting goods to his German client. On September 15, 20xx, the exporter got the confirmation from the German importer that the payment of Euro 625,000 will be made on November 1, 20xx. Here, the US exporter is exposed to the risk due to currency fluctuations. If the Euro depreciates there will be a loss on his dollar receivables. To cover this risk the exporter can sell Euro futures contract on the CME. The following working explains how the exporter is hedged.

September 15, 20xx

Spot Market Exporter gets confirmation of receivables equal to Euro 625,000 on November 1, 20xx. Spot rate on September, 15, 20xx $/Euro is 1.1242. Expected cash inflows are $702625, i.e., Euro 625,000 x $1.1242, if he were able to convert Euro to US dollars. But he cannot do so since he did not receive the Euro. However, he can go to futures market and sell futures in Euro.

Futures Market

Sell five December Euro futures contracts, since the size of each contract is Euro 625000 at the rate which is prevailing in the market. Let the rate be $/Euro 1.12485. Hence, the equivalent notional amount in US dollars will be $703031 (i.e. $1.112485 x Euro 625,000).

November 1, 20xx

Spot Market

If dollar has appreciated and spot exchange rate is 1.06, the dollar value of Euro 625,000 now is $ 662500.

Loss on spot market position = $702,625-$703, 031=$406

Futures Market

Buy five December Euro futures contracts. The quantity of futures contracts bought should be same as that sold on September 14. Let the futures rate be $1.1232. This gives the exporter the notional right to buy Euro 625,000 by paying $702000, i.e., Euro 625,000 x $1.1232. Profit on futures contracts = $703,031 - $702,000 = $1031

The loss in the spot market, arising from the appreciation of dollar, is offset by the profit in the futures market. In the above illustration, the exporter will receive the same amount of US dollars as if he had sold Euro in the market on September 15, 20xx. This is because the change in the rate of Euro during the period and the change in the price of futures during the specified/same period are equal.

Spot Price (t_0) – Spot Price (t_1)

= 1.1242 – 1.06 = 0.182

Futures Price (t_0) – Futures Price (t_1)

= 1.12485 – 1.1232 = 0.00147. The same has been explained in a simple Table 9.4 below:

Table 9.4: Spot exchange rate of $/Euro

Date	Spot Exchange Rate $/Euro	December Futures Rate $/Euro
Sept.15, 20xx	1.1242	1.12485
Nov. 1, 20xx	1.06	1.1232
Difference	0.006	0.00165

Source: https://www.foreignexchangeresource.com/forex_tables.php

The difference between spot price and futures price is known as basis which is explained in Table 9.5 below. The basis at time t_0 in the above illustration is 0.007 and the basis at time t_1 is also 0.007.

Table 9.5: Basis of spot and future price

Date	Spot	Futures	Basis
14 September, 20xx	1.1242	1.2485	–0.1243
01 November, 20xx	1.06	1.1232	–0.0632

Source: https://www.foreignexchangeresource.com/forex_tables.php

We observe that the basis remained unchanged. When the basis remains unchanged, the gain/loss in spot market matches with the loss or gain in futures market and hence the amounts are exactly offset. Therefore, it is unlikely that the basis remains the same throughout the period.

Speculation Using Currency Futures

Speculators differ from hedgers in that their basic objective is to capitalize on the difference between their own forecasts and market expectations. When a speculator is betting on the price movement associated with a particular contract, it is called open position. When the speculator is trying to take advantage of movements in the price differential between two separate futures contracts, it is called spread trading. This type of trading can involve:

i. The same currency but contracts of different maturities.

ii. Two contracts of same maturity but different currencies.

iii. A combination of the above.

Illustration 9.2

On February 14, 20xx, the following spot and future prices were being quoted.

₹/$ Spot	=	66.6375
March Futures	=	66.0375
June Futures	=	68.20751

Mr. Aman Singh, a forex dealer, holds the view that the market is wrong and the $ will actually depreciate. Another speculator, Mr. Naveen Jaiswal, agrees with the market that the dollar will appreciate, but thinks that the market is overestimating the extent of appreciation.

What strategy should they adopt in order to make profits? Also calculate their profit, if on March 10, 20xx the following rates materialize.

Spot ₹/$: 66.60

March, 20xx future : 66.80 (We can assume that the standard size of a future contract is $1,000,000)

Solution

The suggested strategy would be to sell futures now and reverse later, as they expect the dollar to depreciate.

Sale Price = 66.60 Buyback Price = 66.80

Total loss per contract = $.1,000,000 * 66.60- $1,00,000 * 66.80

= ₹ 20,000

i.e., There will be a loss of ₹ 20,000 per contract. This loss is due to the dollar not moving as per their expectations. The dollar has actually appreciated against the rupee.

Similarly, if on September 10, 20xx the following rates materialize.

Spot : 66.40

June, 20x1 Future : 66.50. The speculator can buyback futures contract at a price of 67.03.

Profit per contract = ₹ 1,000,000 × (66.60-66.50) = ₹10,000

9.9.3 Index Futures

On 24th February, 1982 the first index futures contracts were introduced at the Kansas City Board of Trade and at present index futures are one of the most popular types of futures as far as trading is concerned in all the markets. An index futures contract is basically an obligation to deliver at settlement, an amount that is equal to 'x' times the difference between the stock index value on the expiration date of the contract and the price at which the contract was originally made. The value of 'x' which is referred to as the multiple, is predetermined for each stock market index. For example, futures contracts on S&P 500 Stock Index use a multiple which is 250, while the futures contracts on BSE Sensex use a multiple of 50. Stock index futures are based on complex cash instruments.

The multiple enables us to calculate the monetary value of an index futures contract. For example, if the settlement price of the S&P 500 futures contract is $800, the value of the contract in monetary terms is $800 x 250 = $200,000.

The salient features of the index futures contracts are as follows:

i. The index futures contracts are cash settled; there is usually no delivery of the underlying stocks or stock certificates, as matching the physical stocks as per the index may be difficult and costlier than settling the contract by cash.

ii. An investor can either buy or sell an index futures contract. When an investor goes long in the index futures contract, he will receive the cash settlement on the expiration date, if the closing price exceeds the contract price. On the other hand, if the closing price is less than the contract price, the investor will be required to pay the difference.

iii. Since index futures contracts are listed and traded on futures exchanges, the investor can offset his position on any day prior to the expiration day.

iv. The performance of all index futures contracts is guaranteed by the exchange clearinghouse. As in case of options exchanges, the clearinghouse becomes the counterparty to both the buyer as well as the seller.

v. The index future states that the margin requirements are applicable to both the buyer and the seller. The purpose of maintaining margin money is to minimize the risk of default by either party. The payment of margin ensures that the risk is limited to the previous day's price movement on each outstanding position. Margin money is stated to be a kind of security deposit or insurance against a possible future loss of value. The margin can be maintained either in the form of risk-free short dated Government securities or in the form of cash.

Additional margin is imposed only when the exchange fears that the market has become too volatile and may result in some critical situation, like payment crisis. This is a means of protective measure available to the exchange to prevent any breakdown.

Illustration 9.3

The settlement price of Sensex futures contract on a particular day was ₹ 28,600. The initial margin is set at ₹ 10,00,000, while the maintenance margin is fixed at ₹ 8,00,000. The multiple of each contract is 50. The settlement prices on the following four days are as follows:

Day	Settlement Price
1	4,70,000
2	4,50,000
3	4,65,000
4	4,75,000
5	4,70,000

Calculate the mark-to-market cash flows and the daily closing balances in the accounts of

a. an investor who has gone long, and

b. an investor who has gone short at 28,600.

Calculate net profit (loss) on each of the contracts:

a. Status of the investor who has gone long on the contract.

Day	Settlement Price (₹)	Margin Account			
		Opening Balance (₹)	Mark-to- Market (₹)	Margin Call (₹)	Closing Balance (₹)
1	4,70,000	10,00,000	+ 5,00,000	–	15,00,0000
2	4,50,000	15,00,000	(–) 10,00,000	5,00,000	10,00,000
3	4,65,000	10,00,000	7,50,000	–	17,50,000
4	4,75,000	17,50,000	+ 5,00,000	–	22,50,000
5	4,70,000	22,50,000	(–) 2,50,000	–	20,00,000

Net Profit (loss) on the contract

= + ₹ 5,00,000 – ₹ 10,00,000 + ₹ 7,50,000 + ₹ 5,00,000 – ₹ 2,50,000

= ₹ 5,00,000.

b. Status of the investor who has gone short on the contract.

Day	Settlement Price (₹)	Margin Account			
		Opening Balance (₹)	Mark-to-Market (₹)	Margin Call (₹)	Closing Balance (₹)
1	4,70,000	10,00,000	–5,00,000	5,00,000	10,00,000
2	4,50,000	10,00,000	(+)10,00,000	–	20,00,000
3	4,65,000	20,00,000	(–)7,50,000	–	12,50,000
4	4,75,000	12,50,000	(–)5,00,000	2,500,00	10,00,000
5	4,70,000	10,00,000	(+) 2,50,000	–	12,50,000

Net Profit (loss) on the contract

= - ₹ 5,00,000 + ₹ 10,00,000 – ₹ 7,50,000 – ₹ 5,00,000 + ₹ 2,50,000

= ₹ 5,00,000

Pricing of Index Futures Contracts

Unlike options, the valuation of index futures is easy to understand. To start with, let us consider an investor who wants to hold a portfolio which is identical to the composition of a stock market index for a period of one year. During the course of that year, he will also receive dividends and at the end of the year, the principal value would have changed in line with the change in the index. If we denote the current index value as I_0, the expiration day index value as I_t, and the dividends received as D_t, the rupee return earned by the investor is given by the equation:

$$(I_t - I_0) + D_t \qquad \text{...Eq.1}$$

If the investor contemplated investment in an index futures contract as an alternative to investing in the underlying portfolio, he will buy the index futures contract and invest all his money in risk-free treasury bills or short-dated government securities. If we denote the current price of the index futures contract as F_0, the expiration day price as F_t, and the interest earned as R_f, the rupee return earned by the investor is given by the equation:

$$(F_t - F_0) + R_f \qquad \text{...Eq.2}$$

If the investor has to be indifferent between the two alternatives, then

$$(I_t - I_0) + D_t = (F_t - F_0) + R_f \qquad \text{...Eq.3}$$

Since Ft = It, i.e., the final settlement price of the index futures contract is set equal to the spot index value, Equation 3 can be simplified as

$$F_0 = I_0 + (R_f - D_t)^{50} \qquad \text{... Eq.4}$$

Equation 4 states that the current index futures price must be equal to the index value plus the difference between the risk-free interest and dividends obtainable over the life of the contract. The difference between R_f and D_t is referred to as the 'cost-of-carry' and we can say that the futures contract must be priced to reflect the 'cost-of-carry'.

The 'cost of carry' or the 'basis' is typically positive because the annualized risk-free rate of interest (about 10% in the Indian context) exceeds the annualized dividend yield (which is around 1% for the BSE National Index). But then this need not always be true. The following example illustrates this point.

Illustration 9.4

The current value of the Sensex is 28500 and the annualized dividend yield on the index is 9%. The risk-free rate of interest is 15% p.a. Futures contracts are

[50] It should be noted that R_f does not mean in terms of percent, it is risk free rate of return multiplied by the index value. Similarly D_f is the divided amount received, which is calculated as the product of dividend yield (in decimal) and the index value.

trading on the Sensex at multiples of 50. Calculate the fair price for a three-month index futures contract assuming that:

a. 25% of the stocks included in the index will pay dividends during the 3-month period.
b. 50% of the stocks included in the index will pay dividends during the 3-month period.
c. All the stocks included in the index will pay dividends during the 3-month period.

Solution

a. The fair price (F_0) of the index futures contract is given by the equation:

$F_0 = I_0 + (R_f - D_t)$

$=28,500 + [(28,500* 0.15 * 0.25) – (28,500 * 0.09 * 0.25)]$

$= 28,500+ (1068.75-641.25)$

$=28,500+427.50$

$=28,927.50$

b. $F_0 = I_0 + (R_f - D_t)$

$= 28,500 + [(28,500 * 0.15 * 0.25) - (28,500 * 0.09 * 0.50)]$

$= 28,500 + (1068.75- 1,282.5)$

$=28,500 - 213.75$

$= 28286.25$

c. $F_0 = I_0 + (R_f - D_t)$

$=28,500 + [(28,500 * 0.15 * 0.25) - 28,500 * 0.09)]$

$=28,500 + (1068.75-2565)$

$= (28,500-1496.25)$

$=27,003.75$

Thus, we find that depending upon the timing of the settlement date and the initiation of the position, the impact of cost-of-carry, i.e., the difference between R_f and D_t can vary substantially. We can have a situation where the dividend yield exceeds the risk-free return and, in that case, the theoretical price of the index futures can be below that of the index.

Stock Index Arbitrage

If the price of the index futures contract is out of line with the theoretical price suggested by Equation 4, then an arbitrageur can earn abnormal riskless profits by trading simultaneously in the spot and futures markets. This process is called the stock index arbitrage or basis trading or program trading. The following example illustrates the mechanics involved.

Illustration 9.5

The current value of Sensex is 29,000 and the annualized dividend yield on the index is 10%. A three-month-futures contract on the Sensex can be purchased for a price of ₹ 30,600 the risk-free rate of interest is 15%. Can an investor earn an abnormal (risk-free) rate of return by resorting to stock index arbitrage? Assume that 25 % and 50% of the stocks included in the index will pay dividends during the next three months. Ignore margin requirements, transaction costs and taxes. Futures contracts are trading on the Sensex at multiples of 50.

The fair price of the index futures contract is given by the equation

$F_0 = I_0 + (R_f - D_t)$

$= 29,000 + (29,000 * 0.15 * 0.25) - (29,000 * 0.10 *.0.50)$

$= 29,000 + (1087.50-1450)$

$= 29,000 – 362.50$

$= 28,637.50$

The index futures are obviously overpriced compared with 30,600. The arbitrageurs can exploit this opportunity by

a. Buying a portfolio which is identical to the index.

b. Going short on the index futures contract.

The following calculations will illustrate that the arbitrageurs can earn an abnormal rate of return irrespective of the outcome on the expiration date.

If the Sensex closed at 25,000 on the expiration date, the arbitrageurs' profit will be asunder[51]:

A.	Profit from short sale of futures (29,000 – 25,000) x 50	₹ 2,80,000
B.	Cash dividend received on the Portfolio (29,000*0.10*0.50*50)	₹ 72,500
C.	Loss on sale of the Underlying portfolio (29,000-25,000*50)	₹ –2,00,000
D.	Interest foregone (29,000 x 0.10 x 0.25 x 50)	₹ –36,250
	Net arbitrage profit	₹ 98125

[51] You short sell index futures at 30600, since it is overpriced and buy index at 29000. There are two scenarios: what if the index falls to 25000 and shoots up to 32 500 on the due date. Each one is discussed separately to find out the profit if any.

Item 'A' estimates the profit; you have short sold, so you need to buy from the market and deliver, which means you buy at 25000 and sell at 30,600; the difference between these two values multiplied by the index futures multiple '50' gives the profit gained.

'B' is the amount of dividend received on the index you bought at 29000; its price multiplied by the dividend yield multiplied by multiple '50' gives the dividend received.

'C' is the loss incurred by you on the index bought at 29000 and its value has come down to 25000. Thus the price change multiplied by '50' gives the amount of loss

'D' is the interest component (may be notional if you have invested your own funds or will be the actual amount if you borrowed) calculated as the amount invested multiplied by the rate of interest for one quarter (0.25) and with '50' as multiple.

Can you recalculate the same with sensex fell to 26000 and check what will be profit? What is the amount of profit?

On the other hand, if the index closed at ₹ 32,500 on the expiration date, the arbitrageurs' profit can be calculated as follows:

A.	Profit on sale of the underlying portfolio (32,500 – 29,000) x 50	₹ 1,75,000
B.	Cash dividend received on the Portfolio (29,000 x0.10 x 0.5 x 50)	₹ 72,500
C.	Loss on short sale of futures (32,500 – 30,600) x 50	₹ –95,000
D.	Interest foregone (29,000 x 0.15 x 0.25 x 50)	₹ –54,375
	Net arbitrage profit	₹ 98,125

As more and more arbitrageurs start buying the portfolio of stocks and selling the index futures contracts, the current price of the index futures contracts will decline and the mispricing will disappear.

What will happen if the index futures contract is priced at a level below its theoretical price? The arbitrageurs will exploit this opportunity by buying the index futures contract and simultaneously (short) selling the underlying basket of stocks. The reader can verify that the arbitrage position results in riskless profit irrespective of the outcome on the expiration date. This process of index arbitrage will result in an increase in the price of the index futures contract and will continue until the mispricing disappears.

Beta Management

As already known to a student of finance, there are two types of risks while holding an investment, namely market risk or systematic risk and individual firm specific risk or unsystematic risk. While the unsystematic risk can be controlled by having a well-diversified portfolio, the systematic risk cannot be diversified and affects each and every industry to some extent. Systematic risk can, however, be measured and hedged with the help of futures contracts.

The following is the formula to calculate Beta (or measure of systematic risk):

$$\text{Beta} = \text{Cov}(Ri, R_m)/\text{Var}(R_m)$$

Where,

R_i = Return on stock I,

R_m = Return on market portfolio.

Let us now try to understand the hedging with futures contracts.

Consider the case of an investor who feels that a particular stock is undervalued. Based on this understanding he takes a long position of ₹ 12,00,000 in the stock. When doing this, he is faced with two kinds of risks:

i. Either his understanding itself may be wrong.

ii. The market as a whole moves against him, resulting in loss.

The second outcome happens most of the time. If after a few days, the index drops resulting in a general decline in stock prices, the investor makes loss in spite of

the fact that his understanding of the stock was correct. It should be noted that every long position on a stock is a long position on the index as well. This means that Long stock is actually Long stock + Long index.

In order to hedge his position, the investor simply sells the index futures contract. By doing so, he is said to have hedged away his index exposure. This strategy would result in the investor taking a position on the individual stock alone.

In order to determine the number of futures he has to sell; the beta of the stock should be known. The beta of the stock is the average impact of a 1 percent move of the index upon the stock.

Illustration 9.6

On July 1, 20xx NSE 50 is traded at 9600. Three month Nifty 50 futures are traded at 9700. If dividend yield on the index is 3% p.a. and T bill yield 7% p.a. The index multiple is 75.

Find out whether current Nifty 50 futures are correctly priced or not. In case of mispricing, find out gain/loss due to arbitrage, under the following two scenarios after 3 months.

Scenario 1: If Nifty 50 is traded at 9500

Scenario 2: If Nifty 50 is traded at 9800

Solution

Fair price of index futures = 9,600 + (9,600 × 0.07 ×3/12) - (9,600 × 0.03 ×3/12) = 9,600+168-72 = ₹ 9,696

Since 3 month futures are overpriced at 9700, sell futures and buy underlying asset.

After 3 months:

Scenario 1: If Nifty 50 is traded at 9,500

When Nifty 50 closes at 9,500

Profit on futures position (9,700-9,500)×75	= 15,000
Cash dividend received (9,600 ×3%×3/12) = ₹ 72 ×75	= 5,400
Loss on underlying position = (9,500-9600) ×75	= -7,500
Interest foregone = (9,600 × 7%×3/12)×75= -168 ×75	= -12,600
Net arbitrage profit	**= 300**

Scenario 2: If Nifty 50 is traded at 9,800

When Nifty 50 closes at 9,800

Loss on futures position (9,700-9,800)×75	= - ₹ 7,500
Cash dividend received (9,600 ×3%×3/12) = ₹ 72 ×75	= 5,400
Gain from underlying position = (9,800-9,600) ×75	= 15,000
Interest foregone = (9,600 × 7%×3/12)×75= -168 ×75	= -12,600

Net arbitrage profit = 300

Sure profit of ₹ 300 which is equal to mispricing:

(9,700-9,696) ×75 = ₹ 300

Minimum Hedge Ratio

A point which is always under debate for any investor in the futures market is the minimum hedge ratio to minimize risk. As discussed above, this can be done by the following formula:

$$HR = \frac{\Delta \text{ \% in weighted average portfolio price}}{\Delta \text{ \% in futures index}}$$

Portfolio Insurance

Portfolio insurance is one of the ways of hedging a futures contract. It is a dynamic hedging strategy which uses stock index futures and which implies buying and selling securities periodically to achieve the desired results of not incurring a loss greater than a predetermined value or to maintain a desired minimum limit of the portfolio value. The working of the portfolio insurance is akin to buying an index put option.

Portfolio insurance can also be done by selling and buying stocks directly or by using listed index options.

9.9.4 Futures on Individual Stocks

The Securities and Exchange Board of India board on November 1st, 2001 approved the scheme and risk containment measures for individual stock futures contracts and now more than 100 scripts are available on which derivatives trading is currently permitted.

Difference between Trading Securities and Trading Futures on Individual Securities

For trading in securities, a customer has to open security trading account with securities broker and a demat account with a securities depository. The customer has to put all the money upfront while making the purchase of securities. Whereas for trading futures on individual securities, the customer has to open a futures trading account with derivatives broker and simply put in the margin money to buy futures. This helps the futures trader for taking position in the underlying security without opening an account with a securities broker.

With every purchase of securities, the holder becomes the part owner of the company and gets all the rights and privileges associated with the security, such as receipt of dividends, invitation to the annual shareholders meeting and the power to vote, etc. Through the purchase of futures on a security, it creates a legal binding or obligation on the holder to buy the underlying security at some point in future. Security futures do not indicate any ownership in the company.

For selling securities it is mandatory for the customer to buy it beforehand. Even in case of short selling, it is assumed that the security is owned by securities broker and he lends it to the trader for being sold. Selling security futures without owning them simply creates an obligation for the trader to sell a certain amount of the underlying security at some point in the future. The following Table 9.6 illustrates the contract specification of stock futures in National Stock Exchange (NSE).

Table 9.6: Contract Specification: Stock Futures

Underlying	Individual securities
Exchange of trading	National Stock Exchange of India Limited
Security descriptor	N FUTSTK
Contract size	The value of the futures contracts on individual securities may not be less than ₹ 5 lakhs at the time of introduction for the first time at any exchange.
Price steps	The price step in respect of futures contracts is Re.0.05
Price bands	Not applicable
Trading cycle	Futures contracts have a maximum of 3-month trading cycle - the near month (one), the next month (two) and the far month (three). New contracts are introduced on the trading day following the expiry of the near month contracts. The new contracts are introduced for three-month duration. This way, at any point in time, there will be 3 contracts available for trading in the market (for each security), i.e., one near month, one mid-month and one far month duration respectively.
Expiry day	Futures contracts expire on the last Thursday of the expiry month. If the last Thursday is a trading holiday, the contracts expire on the previous trading day.
Base price	Base price of futures contracts on the first day of trading (i.e. on introduction) would be the theoretical futures price.
Settlement price	The base price of the contracts on subsequent trading days would be the daily settlement price of the futures contract.

Source: 2018 www.nseindia.com

Activity 9.2

You are working with ABC stock broking company and one of your clients has opened a demat account with security depository. He is confused with trading securities and trading futures. Please explain to him in detail the difference between trading securities and trading futures.

Answer:

9.9.5 Uses of Security Futures

Some of the uses of security futures are explained below:

Hedging: Stock futures can be used effectively as a risk management tool. In case the prices of investor's shares are falling, he can enter into a short futures position. If the price of his security falls any further, then the loss suffered by him on securities could be offset by the profits he makes on his short futures position.

Speculation: If an investor is of the opinion that particular security is undervalued and the price of the same will go up in next few months, he can buy security futures for the same. Security futures provide high leverage to the investors on the expiration of the contract and thus form an attractive offer for speculators.

Similarly, if the investor is of the opinion that the particular security is overvalued and the price of the same will fall in the next few months, he can sell a two-month future contract. If on the expiration of contract, the spot and future price converges, he can make a clean profit.

Arbitrage: The cost of carry ascertains that the futures price stays in line with the spot price. The opportunity for arbitrage arises whenever the future price deviates significantly from its fair value. An arbitrageur can make the best use of this opportunity and make risk- less profits by entering into futures contract if he observes that the particular security is overpriced or underpriced.

Check Your Progress - 1

1. Which of the following features is not true with regard to features of derivatives?
   a. Relation between the values of derivatives and their underlying assets
   b. It is easier to take short position in derivatives than in other assets
   c. Exchange traded derivatives are illiquid and have high transaction costs

d. Exchange traded derivatives are liquid and have low transaction costs
e. It is possible to construct the portfolio, which is exactly needed, without having the underlying assets

2. Future markets are often considered as the primary means of information for what?
   a. Spot price
   b. Forward price
   c. Future price
   d. Forward contract
   e. Future contract
3. Which of the following terms is used if someone sells the underlying asset, with or without possessing the asset?
   a. Long position
   b. Future position
   c. Forward position
   d. Short position
   e. Spot position
4. The derivative pays the firm the difference between the floating rate of interest and a predetermined maximum. What is the term used for the difference?
   a. Spot rate
   b. Cap rate
   c. Future rate
   d. Forward rate
   e. Market rate
5. Which of the following terms is used to refer the contracts that are made to buy or sell a commodity at a specific price and on a specific delivery date?
   a. Commodity transaction
   b. Commodity forwards
   c. Commodity swap
   d. Commodity exchange
   e. Commodity futures

9.10 Interest Rate Futures

An 'Interest rate futures contract' is an agreement to buy or sell a standard quantity of underlying asset, at a predetermined future date and at a price agreed upon between the parties. The underlying assets will be different interest-bearing

instruments like T-bills, T-notes, T-bonds, deposits, etc. For example, Treasury Bond Futures Contract is the most popular long-term interest rate futures contract and the underlying asset will be a bond. What happens when interest rates change? What will happen to a borrower if the interest rate increased by 50 basis points? Let us understand these issues.

It is a known fact that lenders stand to lose if the interest rates go down in future and the borrowers stand to lose if the interest rates go up in future. The dislike of these two sections of society towards uncertainty in interest rate fluctuation has led to evolving innovative techniques to hedge such risks. An interest rates future is one such method of hedging the same.

Example: NSE - Interest Rate Futures

NSE offers two instruments i.e. Futures on 6 year, 10 year, and 13 year Government of India Security (NBF II) and 91-day Government of India Treasury Bill (91DTB), in the interest rate future segment.

The NSE Bond Futures II (NBF II) contracts are available for trading, based on Government of India (GOI) with the following features: security face value is 100, with semi-annual coupon and residual maturity, between 4 and 8 years, 8 and 11 years, and 11 and 15 years, on the day of expiry of IRF contract, as decided by stock exchanges, in consultation with FIMMDA. The three serial monthly contracts followed by three quarterly contracts of the cycle are for March / June / September / December and it will be made available, along with functionality for spread contract trading, on the NSE electronic trading platforms.

Source: https://www1.nseindia.com/products/content/derivatives/irf/irf.htm. Dated 15th June, 2022, accessed on 15th June, 2022.

The main factors behind the growth of interest rate futures are as follows:

- Enormous growth of the market for fixed income securities.
- Increased fluctuation in interest rates worldwide.

Interest rate futures can be based upon both short-term (less than one year) and long-term (more than one year) debt obligations. In the case of long-term interest rate futures, the most important contracts are the Treasury bond futures contract, the 10-year Treasury note futures contract and municipal bond futures contract.

In the US, only short-term interest rate futures like futures on US 90-day treasury bills and 3 months Eurodollar time deposits are popular. The short-term contracts are traded on the International Monetary Market (IMM) of the Chicago Mercantile Exchange (CME). In foreign exchange futures market, CME group has emerged pioneers.

9.11 Option Trading

Apart from hedging, the 'Options trading' provides the investor with cost efficiency, less risk, higher potential returns and more strategic alternatives. Again, it depends on the nature of trading –is it for hedging or speculative trading?

Example: Dealers' Perspective on Nifty

Economic Times, dated 22th May, 2022, reported that on May 20, 2022 the short covering move was seen. The short trend helped Nifty close that week with almost 2.5% gains. On 26th May, 2022, the strategic position was to buy 16300 call at 165; sell on the same day at 16600. The range was 16600 to 16800. Using Bull call ladder strategy, the maximum profit would be within the above mentioned range. Sometimes it might be reversed if Nifty had moved to 17000.

Source: https://economictimes.indiatimes.com/markets/stocks/news/nifty-option-strategy-consider-bull-call-ladder-as-market-eyes-further-gains/articleshow/91725627.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 22nd May, 2022, accessed on 15th June, 2022.

Options that are traded on an exchange are called exchange-traded options. For example, stock options are traded on the Chicago Board of Options Exchange (CBOE), Philadelphia Stock Exchange, American Exchange (AMEX), Pacific Exchange and New York Stock Exchange. Different types of traders such as, market makers, floor brokers, etc. trade in an exchange. Let us discuss about market makers. A 'market maker' can be defined as a person or a firm that quotes both a buy (bid price) and sell price (ask price) in a financial instrument or commodity, intending to make a profit through bid/ask spread. A market maker creates liquidity in the market. When the investors wish to sell or buy and have no counter parties for the transaction to materialize, the market maker acts as a buyer to a seller and a seller to a buyer facilitating the immediate execution of the transaction. For example, let us look at the trading done by a market maker on an Australian Securities Exchange (ASX). On this exchange, few market makers just buy calls or sell puts when they are bullish in nature and conversely, buy puts and sell calls when they are bearish in nature. However, most of the market makers act as 'scalpers' on a short-term basis. A scalper purchases and sells at a price higher than the purchase price. He trades in a matter of a few minutes before the prices move slightly upwards.

Usually, all the market makers try to control the risks of their positions by spreading options against other options or the underlying stock or index futures. Every market maker looks forward to synthetic arbitrage trade (a trade which is combined with other trades to generate a profit with very low risk). For this purpose, he must be aware of the mispriced options. At the same time, he must be capable of hedging any unwanted risks.

9.11.1 Brokerage

In an options market, the orders are done through brokers as such and most of the strategies result in substantial brokerage commissions because brokerage has to be paid on multiple legs. For example, while executing a long straddle strategy, commissions have to be paid on buying a call and buying a put. In fact, many clients do complain that the brokerage houses have pushed these strategies on them to generate additional commissions.

9.11.2 Over-The-Counter (OTC) Dealers

Any security that is not traded on an exchange because of its inability to meet listing requirements is called Over-The-Counter security. Such securities are traded by the dealers in OTC market through direct negotiation with one another over computer networks or by telephone. OTC dealer can be an individual or a firm that is engaged in the business of underwriting, trading and selling securities.

9.11.3 Settlement and Exercise

At the time of exercise, the option can be settled by physical delivery or cash settled. A physical delivery of a call option on Infosys gives the buyer or holder of the option the right to take delivery of say, 3500 shares of Infosys at a strike price of ₹ 540 a share. However, in case of cash settled option, the difference of the exercise price and the market price on the exercise date multiplied by a multiplier as fixed by the option market is paid to the holder of the option. For example, a holder of a call option on index with a strike price of $120 exercises it when the exercise settlement value is $140. Assuming the multiplier to be 100, the holder will receive an amount of $2,000 [(140 – 120) *100].

In general, exchanges sometimes impose position and exercise limits to avoid a single individual or a group from having a significant stake in the market.

9.11.4 Position Limits

A ‘position limit’ is a maximum number of options that can be held by an investor on one side of the market. Options are on one side of the market in the case of long call and short put (or) long put and short call. These limits are published by the exchanges and vary based on the volume of trade in the underlying stock and the number of outstanding shares.

9.11.5 Exercise Limits

Exchanges may also fix an exercise limit which is the number of options that can be exercised by an investor.

Members of an exchange dealing in options could be either individuals or institutions. On the other hand, the members of an over-the-counter market are usually institutions such as banks and brokerage houses, who stand ready to buy or sell and make a market.

9.12 Basics on Swaps: International Swaps and Derivatives Association

The first interest rate swap occurred in 1981 with an agreement between IBM and the World Bank. Since then amidst lot of developments, market had witnessed many innovative financial instruments and market initiatives towards self-regulatory mechanism in swaps market. The following paras provide basics on swaps market.

Example: The Russian Default on its Debt

Economic Times, dated 10th March, 2022, reported that the credit rating agency 'Fitch' warned that a Russian defaulted debt is "imminent", as the creditors had not been paid by a country. It is called a defaulted debt because the creditors' financial obligations had not been honoured, either by some states or private investors or financial institutions, such as the International Monetary Fund or the World Bank. When the state does not repay their portion of the bond value, it is called as Partial.

On the other hand, in case of a company's default, the collateral can be used. The assets of the company can be used for recouping loan. Those assets can be sold and debt can be cleared. It is not so, in case of sovereign debt, because it is another important debt instrument. ISDA (International Swaps and Derivatives Association) got a set of roles, in checking the swaps and derivative instrument, which is an offshoot of debt instrument. Russia default would affect, when there were sanctions levied on Russia.

Source: https://economictimes.indiatimes.com/news/international/business/what-is-a-debt-default-and-what-is-the-risk-for-russia/articleshow/90115247.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 10th March, 2022, accessed on 15th June, 2022.

The evolution of global swap market can be traced back to the early 1980's, when the currency market traders brought currency swaps as a tool to exploit British controls on the movement of foreign currency.

The first interest rate swap occurred in 1981 with an agreement between IBM and the World Bank. The swap market in the early 80s was worth only a few hundred million dollars, which today stands at several trillion dollars. Most of the capital market issues are swapped today, with minor exceptions. Initially, the swap deals were on a matched basis whereby a bank would bring two counterparties together with the same matched requirements. In 1984, especially in the US dollar interest rate swap market, banks started developing warehousing transactions whereby a single counterparty would approach them and without counterparty the bank would enter into a swap arrangement with them. A temporary hedge would be taken in the bond or futures market until a suitable counterparty could be found.

Standard terms introduced by the ISDA (International Swaps and Derivatives Association) and BBA (British Bankers' Association) in 1985 also assisted growth in the swap market.

ISDA's work on developing ISDA Master Agreement and a wide range of related documentation, and in ensuring the enforceability of their netting and collateral provisions, has made a significant help to reduce credit and legal risk. ISDA is a leader in promoting stringent risk management practices and processes, and engages constructively with policymakers and legislators around the globe to advance the understanding and treatment of derivatives as a risk management tool.

[52]ISDA has over 980 member institutions from 78 countries. These members comprise of a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, intermediaries, clearing houses and repositories, as well as law firms, accounting firms and other service providers.

ISDA's work in three key related areas, viz.

1. To reduce counterparty credit risk, increasing transparency, and improving the industry's operational infrastructure
2. To show the strong commitment of the Association toward its primary goals
3. To build robust, stable financial markets and a strong financial regulatory framework.

9.12.1 Swap Facilitators

Swaps are mutual obligations between the swap parties. But it may not be necessary for the counterparties involved in a swap deal to be aware of each other because of the role assumed by a swap dealer (market maker) or swap broker. Collectively, the swap facilitators are known as 'Swap Banks' or simply 'Banks'.

Swap Broker

When a swap facilitator does not take any financial position in a swap arrangement he initiates and he dissociates himself from the deal after making an arrangement between the counterparties who have approached him, then he is called a 'swap broker'. He charges a fee (commission) for the services provided and he is not a party to the swap contract. He merely acts as an intermediary. Thus, a swap broker is an economic agent who helps in identifying the potential counterparties to a swap transaction. A swap broker is also called a market maker.

[52] https://www.isda.org/membership/

Swap Dealer

Swap dealers bear the financial risk associated with the deal he is arranging in addition to the functions of a swap broker and becomes an actual party to the transaction. He serves as a financial intermediary, earning profits by helping complete the swap transactions. The swap dealer faces two main problems:

(i) Pricing of swaps, and

(ii) Managing of default risk of the counterparty.

Swap Coupon

The fixed rate of interest on the swap.

Notional Principal

The principal amount on which the interest calculation is made.

Basis Points (BP)

Basis point is $1/100^{th}$ of 1%, i.e., 10 basis points = 0.1%.

9.12.3 Principles behind Swaps

The economic benefits of a swap transaction are numerous. There is an intensive use of swaps in the recent past. The viability of swaps rests on important economic principles. The most important among them are the principle of comparative advantage and the principle of offsetting risks.

Given the fact that swaps are off-balance sheet items, they are beneficial to both the users and the banks. Earning profits on swap deals without increasing the total assets can boost the Return on Equity (ROE) of the bank balance sheet, as the profit increases, without an increase in the underlying assets/liabilities.

9.12.4 Comparative and Absolute Advantage

Assume that two countries A and B produce two goods X and Y. Country A has more than sufficient natural resources to produce good X compared to country B. Country B has more than sufficient natural resources to produce good Y. A and B can minimize their efforts and cost in producing a good, if they can exclusively concentrate on one particular product in which they are enjoying a better position than the other. In this case, A is said to have an absolute advantage over B in producing X and B has an absolute advantage over A in producing Y. If they mutually agree to produce only X and only Y respectively, then there will be a mutual benefit to each of them and their overall cost will also be minimized. But consider a situation where A has an absolute advantage in both, but B's position is relatively better in producing Y than X. Then B is said to have a comparative advantage in producing product Y.

A similar argument can be extended to swap agreements where the counterparties involved use the principle of comparative advantage to reduce their cost of

funding. One party may enjoy a higher credit rating that enables it to raise funds cheaper than another party, which has a lower credit rating. The principle of comparative advantage can be used in such a way that both the parties are benefitted by entering into a swap arrangement among them to reduce their net cost of funding.

9.12.5 Limitations of Swap Market

The swap market has some limitations which are discussed below:

i. It is difficult to identify a counterparty to take the opposite side of the transaction once a party has approached the swap dealer with his/her requirements.

ii. The swap deal cannot be terminated without the agreement of the parties involved in the transaction.

iii. Existence of inherent default risk.

iv. Underdeveloped secondary markets for swaps, mainly as a result of very slow development of standardized documentation. This clearly shows that swaps are not easily tradable.

v. The theory of comparative advantage of one party in a market as compared to the other market is one of the benchmarks for deciding on a swap. It should be noted that the comparative advantage enjoyed by one party in the floating rate market as compared to the fixed rate markets is mostly because the floating rates are for a short-term period of about six months (usually tied to LIBOR) and can be changed in case the credit rating of the party changes, while the fixed rates are for usually longer periods of time (2 to 5 years) and as such, cannot be changed with the changes in the party's credit rating. So, in short, the comparative advantage theorem is illusionary.

vi. The swap market is not exchange controlled and it is an over-the-counter market. This calls for an extra caution on the part of the parties involved to look into the creditworthiness of the counterparties before entering into an agreement.

9.13 Interest Rates Derivatives

'Interest rate' in an economy is dependent on various macroeconomic parameters. The exchange rate between two currencies is dependent on various macroeconomic indicators of the both the countries and also global parameters.

Example: Libor and RFR Performance

Economic Times, dated 13th December, 2021, reported that LIBOR (London Interbank Offer Rate) suffered from manipulations. This was because of lack of underlying transactions that were available to determine the benchmark.

Contd….

The regulatory bodies stated that this was the time to bring in other benchmarks, replacing LIBOR. RFR (Risk Free Rate) was replaced to LIBOR, because the later was based upon a deep and liquid underlying transactions. RFR is less prone to manipulations, as it focused upon root causes.

Source: https://economictimes.indiatimes.com/markets/stocks/news/dying-libor-gives-rise-to-risk-free-rate-benchmarks/articleshow/88246586.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 13th December, 2021, accessed on 15th June, 2022.

Assume that an Indian based oil company borrowed US$ 500 million during on September 15th 2017 with an interest rate 100 basis points above 12 months LIBOR of 1.73206 % for tenure of 5 years.

What will happen if the LIBOR becomes 2.5% after two years? What will happen if the LIBOR becomes 1.25%? What will happen if the Oil Company borrows at a fixed interest rate of 2.85% for 5 years?

There are many different types of swaps that have evolved over time. The most common among them are the interest rate swaps, currency swaps and the cross-currency interest rate swaps.

An interest rate swap is defined as an agreement between two or more parties who agree to exchange interest payments over a specific time period on agreed terms. The interest rates agreed may be fixed or floating. If there is an exchange of interest rate obligations, it is termed a liability swap. If there is an exchange of interest income, it is an asset swap.

The simple interest rate swaps are popularly known as plain vanilla swaps. There are many variants on the plain vanilla swaps. These swap variants are the major innovations in the swap market and are tailored to suit to the different needs of different customers.

The basic swap techniques can be explained using plain vanilla swap concept. The plain vanilla swaps are those swaps where fixed rate obligations are exchanged for floating rate obligations over a specific period of time on a notional principal. They are also called coupon swaps or generic swaps. Some of the important features of derivatives are discussed below:

9.13.1 Parties in a Swap Transaction

There are two parties to a swap transaction, fixed rate payer/receiver and floating rate receiver/payer. A fixed rate payer is the provider of floating rate funds and hence the purchasers of the swap loses when the interest rate falls and gain when interest rate rises. A floating rate payer is the provider of fixed rate funds and hence the seller of the swap loses when interest rate rises and gains when the interest rate falls.

9.13.2 Swap Market Terminologies

The following are some of the important features of swap market terminologies:

Trade Date

It is the date on which swap is entered into. This is the date when both the parties have agreed for a swap.

Effective Date

Effective date is the date when the initial fixed and floating payments begin. Effective date is also called value date. If the effective date is after two days of the trade date, then it is called spot date. The maturity of a swap contract is computed from the effective date.

Reset Date

The applicable LIBOR / Alternative Reference Rate (from 2022) for each period is to be determined before the date of payment. It is usually determined before the commencement of the applicable period. Generally, for the first payment, the LIBOR rate applicable will be set at the trade date if the value date is two days after the trade date. The first reset date will generally be 2 days before the first payment date; the second reset date will be 2 days before the second payment date and so on.

Maturity Date

The date on which the interest accrual stops.

Assignment Broker

Market maker in swaps.

Let us take an illustrative example to understand.

Illustration 9.8

There are two parties X and Y who are interested in raising funds; firm Y can raise funds in fixed and floating markets at 10% and LIBOR + 0.25% respectively. Firm X can raise funds in fixed and floating markets at 10.75% and LIBOR + 0.50% respectively. These rates are applicable for a $100m borrowing for 2 years. While both X and Y can borrow both in fixed and floating market, firm X is interested in borrowing at fixed interest rate while firm Y is interested in borrowing at floating interest rates, is illustrated in Table 9.7 below:

Table 9.7: Fixed and floating rates of firm X and firm Y

Firm	Objective	Fixed Interest	Floating Interest Rate
X	Fixed Rate	10.75%	LIBOR + 0.50%
Y	Floating Rate	10.00%	LIBOR + 0.25%

In the table, we can see that the cost of borrowing for Y is lower than that of X in both the markets. This difference is known as quality spread, which can be quantified for both fixed and floating rate markets as shown in Table 9.8 below:

Table 9.8: Calculation of quality spread

Fixed market	10.75% – 10.00% = 0.75%
Floating market	LIBOR + 0.50% – LIBOR + 0.25% = 0.25%

The advantage enjoyed by Y is known as absolute advantage; hence we say that Y has an absolute advantage in fixed rate and floating rate markets. However, it can be observed that the cost of funds for X is higher in the fixed rate market by 75bp whereas the same is higher by 25bp in the floating rate market. It means that X has a relative advantage in the floating rate market. This advantage is known as comparative advantage. Hence, we can say that X has comparative advantage in the floating rate market. Given their objectives X should borrow in the fixed rate market and Y should borrow in the floating rate market. However, considering the comparative advantage enjoyed by X it is therefore possible to reduce the cost of funds to both X and Y if they borrow in the markets where they enjoy comparative advantage and then swap the borrowing. The reduction in the cost depends on the quality spread.

In this case the amount of benefit that can be derived by both the parties will be the difference between the quality spreads which is 50bp (i.e. 0.75% – 0.25%). Assume that both the firms want to share the benefit equally between them.

Under the swap arrangement:

Y – borrows funds in fixed market rate and lends to X

X – borrows funds in floating market rate and lends to Y.

Let us assume that X lends to Y at LIBOR and Y lends to X at 10%.

The net cost of funds to X and Y using the swap arrangement can be seen by examining their cash flows (see the Table 9.9).

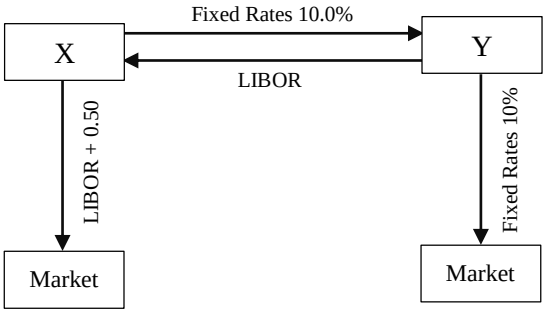
Table 9.9: Funds available to X & Y firms

	Paid To Counterparty	Received from Counterparty	Paid to Market	Net Cost	Savings
Y	LIBOR	10%	10%	LIBOR	(LIBOR + 0.25%) minus LIBOR
X	10%	LIBOR	LIBOR + 0.50	10.50%	10.75% minus 10.50%

As seen from the above Table 9.9, funds are available to Y at LIBOR as against LIBOR + 0.25 and X at 10.50 instead of 10.75%. Thus, swap enables reduction in cost of funds.

The swap arrangement between X & Y is illustrated in Figure 9.3 below:

Figure 9.3: Swap Arrangement



Source: ICFAI Research Centre

9.14 Interest Rate Swaps with Intermediary

The above is an illustration of a swap involving only two parties. These two counterparts are end users of the swap. As indicated above, swap requires those two parties with equal and opposite needs which must come in contact. This requirement of 'Double coincidence of wants' which is more an exception than a rule, has created a role for intermediaries. An intermediary is often needed to bring together the counterparties in a swap agreement. In that case, part of the total benefit has to be shared with the swap intermediary. The total benefit from the above swap is 0.5%. If the intermediary charges a fee of say 0.1% and the net benefit of the swap is shared equally, each party will be able to lower its cost of funds by 0.2%. Banks, by virtue of their special position in the financial markets and knowledge of the diverse needs of clientele, are in a good position to fulfill this role. Initially, intermediaries arranged swaps for earning brokerage, fees, etc. But these days, due to high liquidity, intermediaries themselves are taking positions. Having taken a position, they subsequently enter into swap with another party as and when a client is available, so that they do not run the interest rate risk. This results in squaring of their positions. If they are unable to balance their swap books, they can hedge interest rate risk by using other derivatives like interest rate futures, forward rate agreements, etc.

Example: Interest Rate Swap with Intermediary

Two companies, ABC Company and XYZ Company, entered into one-year interest rate swap, with a nominal value of $1 million. Assuming that the LIBOR would be around 4%, ABC offered to XYZ a fixed annual rate of 5% in exchange for a rate of LIBOR plus 1%. When the year ends, ABC will pay XYZ Company $50,000. In case the LIBOR traded at 4.75%, then XYZ will have to pay $57,500 to ABC. The value of the swap to ABC and XYZ is the difference, between what they receive and spend.

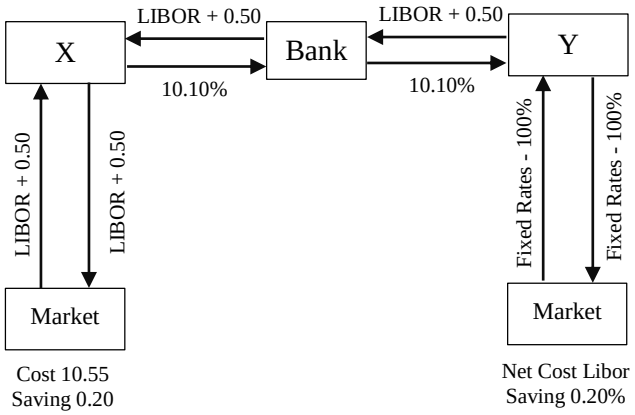
Source: https://www.moneycrashers.com/interest-rate-swaps-explained-example-definition/15th June, 2022, accessed on 15th June, 2022.

The following illustration 9.9 helps us to understand the structure of a swap when an intermediary is involved. We will use the data of the earlier illustration. Also refer Figure 9.4 for swap arrangement with intermediary.

Illustration 9.9

Firm	Objective	Fixed Interest	Floating Interest Rate
X	Fixed Rate	10.75%	LIBOR + 0.50%
Y	Floating Rate	10.00%	LIBOR + 0.25%

Figure 9.4: Swap Arrangement with Intermediary



Source: ICFAI Research Centre

The net cost of funds to X, Y and the earnings to the bank can be seen by examining their cash flows (see the Table 9.10).

Table 9.10: Net savings Available to Firms X & Y

	Swap Market		Cash Market		
	Paid	Received	Borrowing Cost	Net Cost	Net Savings
Y	LIBOR + 0.05	10%	10%	LIBOR + 0.05	(LIBOR + 0.25%) – (LIBOR + 0.05) = 0.20
X	10.10%	LIBOR + 0.05	LIBOR + 0.50	10.55%	10.75% Minus 10.55% = 0.20
Bank					
Y	10.00%	LIBOR + 0.05	–	–	(10.10 + LIBOR + 0.05)
X	LIBOR + 0.05	10.10%	–	–	–(10.00 + LIBOR +0.05)

Firm X borrows at LIBOR + 0.50% and enters into an interest rate swap transaction, making a fixed rate payment of 10.10%, in exchange for floating rate receipt of LIBOR + 0.05. This effectively leaves X with a fixed rate borrowing at a rate of 10.55%, a saving of 0.20% p.a. Firm Y borrows at 10% fixed rate enters into an interest rate swap transaction, making a floating rate payment of LIBOR + 0.05, in exchange for fixed rate receipt of 10.10. The effect leaves Y with a floating rate borrowing at a rate of LIBOR + 0.05, a saving of 0.20% p.a.

The bank, in this transaction acting as an intermediary, for the position it has taken, earns a net 10bp for assuming the credit risk on both companies (the two interest rate swap transactions can be completely independent of each other). Once a swap is entered into, there arises a need to both the parties to pay and receive the interest payments during the life of the swap. An agreement is entitled by both the parties at specific terms of swap. We will now see the specifications of various dates that are related to a swap.

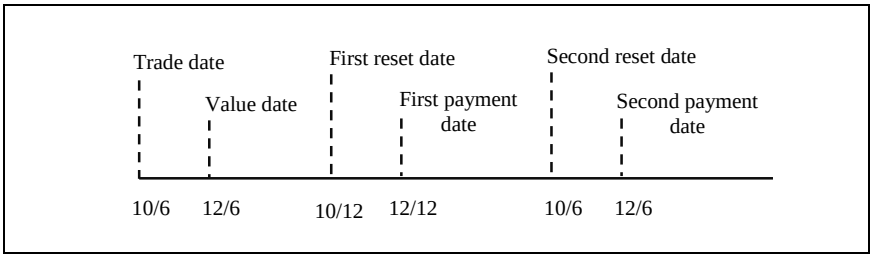
We shall extend our illustration to understand the relevance of dates in a swap contract. Let us consider the swap between X and the Bank. In terms of swap, the Bank pays LIBOR + 0.05 to X, and receives 10.10%. The payment of interest is made semi-annually and hence the applicable LIBOR for each interest period needs to be decided in six months. If we sequence the events, they can be as given below:

- Swap agreement is entered.
- Swap becomes effective from a given date.
- Application LIBOR for 1st payment is determined.
- Actual payment of interest is made or received.

Illustration 9.10

We will extend the example which we mentioned earlier, i.e., between firm X and the Bank. Firm X and the Bank enter into a 2-year swap contract on 10th June 20xx. Firm X will pay a fixed rate of 10.10% (semi-annually) to Bank and in turn, it receives the flexible rate LIBOR + 0.05% (semi-annually). The two-year swap of first reset date and second reset date is explained in Figure 9.5 below.

Figure 9.5: Two Year Swap



Source: ICFAI Research Center

The trade date is the date on which the parties agree to the swap, i.e., 10/6/20xx in our example (Refer Figure 9.3). Value date is when the initial fixed and floating payments begin to accrue, i.e., two days subsequent to the trade date. The date, two business days after the trade date is called spot date. In our example, if the value date is 12/6/20xx then both spot and value date and effective date will be the same.

The floating rate level is first set on the trade date and then reset at specified intervals. In our example, trade date is 10/6/20xx and its effective date (value date

or spot date) is 12/6/20xx. The first payment is scheduled for 12/12/20xx, that is six months from the effective date and the second payment is scheduled for 12/6/20xx. The six-month LIBOR relevant for the second payment calculation will be generally two days before the settlement of the first payment, i.e., 10/12/20xx. This sequence will be generally followed in the remaining period of the swap contract once it is entered, unless otherwise mentioned in the contract.

Above, we have seen the date of applications involved in the swap and the way they reset their floating rate which is applicable for the swap. Now, the next point, to be addressed is, how both the parties calculate the amount to be passed from one party to the other. In the swap, the fixed and floating payments are generally netted against each other.

The amount that both parties have to be paid is calculated based on the day count conventions which are fairly standard. But there are many ways for settling the day count.

The following are the generally followed conventions:

Fixed	Floating
30/360	Actual/360
Actual/Actual	Actual/Actual
Actual/360	Actual/365
Actual/365	30/360

Actual/360: In this convention, the actual number of days are counted between previous fixed day payment date and forthcoming fixed day payment date, including previous fixed date and excluding the forthcoming fixed day.

Example: If the previous fixed day payment date and forthcoming fixed day payment date are 04-09-20xx and 04-03-20xx, then fixed day count fraction will be 181/360.

Actual/Actual: In this convention, the numerator will be calculated according to the method of actual/360, but the denominator changes depending on whether the forthcoming payment date is in a leap year. If the forthcoming year is a leap year then the days will be counted on a pro rata basis.

Example: If the previous fixed day payment date and forthcoming fixed day payment date are 04-09-20x1 and 04-03-20x2, then fixed day count fraction will be calculated as (119/365) + (63/366).

Actual/365: This convention is similar to that of actual/360, except that the denominator will be taken as 365.

30/360: In this convention each month will be taken as 30 days, including previous fixed date and excluding forthcoming fixed date.

Example: If the previous fixed day payment date and forthcoming fixed day payment date are 04-09-20xx and 04-03-20xx, then fixed day count fraction will be (27 + 30 x 5 + 3) i.e. 180/360.

There are certain exceptions to this rule: If the forthcoming fixed date is 1st of any month and the previous month does not have 30 days, then actual days in that month will be taken for calculating fixed day count fraction.

Example: If the previous fixed day payment date and forthcoming fixed day payment date are 01-09-20xx and 01-03-20xx, then fixed day count fraction will be (30 x 5 + 28) i.e. 178/360.

Example: If the previous fixed day payment date and forthcoming fixed day payment date are 01-08-20xx and 01-02-20xx, then fixed day count fraction will be (30 x 5 + 31) i.e. 181/360.

Payment Day Convention: When the payment day falls on a banking holiday, then there are three methods for finding payment day:

a. Modified following business day.

b. Following business day.

c. Preceding business day.

a. Modified following business day: In this convention, when the payment day falls on a weekend or on a holiday then the payment day will be the next business day. If the next business day falls in the coming month, then the preceding day will be the payment day.

b. Following business day: In this convention, when the payment day falls on a weekend or on a holiday then the payment day will be the following business day, even if the next business day falls in the coming month.

c. Preceding business day: In this convention, when the payment day falls on a weekend or on a holiday then the payment day will be the preceding business day.

LIBOR: London Inter-Bank Offered Rate, which is a rate decided on a daily basis based on a sample of lending rates offered by leading banks in London. The 6-months LIBOR is mostly used for swaps, implying that this is the rate payable for borrowing US dollars for six months in London.

9.14.1 Warehousing

In real life situations, it takes time to match the swap offer of one company with the requirements of the other. Many financial institutions profit from this situation by entering into a swap with the offering company and hedging the interest risk till a counterparty is found. This is known as warehousing.

One way of hedging the interest risk in warehousing is by financial futures. Through financial futures, the swap bank can lock the interest rates to avoid

volatility losses as the price of the futures rise and they become profitable to the bank in case the interest rates fall.

9.14.2 Swap Quotations

A swap quote for US dollar interest rate swap fixed to LIBOR would be 2 years (T + 20 – 35). This quote can be interpreted as follows:

Two-year bullet repayment loans are quoted by the bank in which the bid rate is 20 basis points over yields on the US Treasury Bills versus LIBOR and the ask rate is 35 basis points over yields on US Treasury Bills versus LIBOR.

Assume that a financial institution has issued a fixed rate bond with a coupon of 30 basis points over Treasury bill rate, which is currently 8.1%. The proceeds of this issue are used to fund a loan at floating rate linked to LIBOR. The floating rate charged will be LIBOR + 30 basis points. This is equivalent to a fixed rate liability and a floating rate asset. This is referred to as asset-liability mismatch.

The difficulty arises when interest rates change significantly. Assume that the interest rate falls and the interest received on the loan may be less than that to be paid on the bond, the spread gets reduced. Similarly, when the rates raise the interest received may be greater than that paid thereby enhancing the spread earned. This is one instance where an interest rate swap can be used for hedging the interest rate risk involved.

Assume that you are the risk manager of a financial institution. You have fixed rate deposits ($20 million) (8%) to be serviced and you have floating rate assets in the form of loans, the interest payments on which are linked to LIBOR. You are exposed to interest rate risk. The risk arises when the interest rates fall because your payments are fixed and your receipts would be declining. So, you wish to convert your fixed rate liability to a floating rate one by exchanging the floating rate payments for fixed rate payments. If you are able to find a counterpart with opposite requirements, then you can directly enter into a swap agreement with that party. There is another alternative in which you can contact a swap dealer and ask him to arrange for a swap. The swap dealer if financially sound and ready to bear the default risk involved, would act as counterparty and take the opposite position himself. Otherwise, he will arrange for counterparty with matching requirements and he will act as an intermediary between you and the counterparty.

If swap dealer is the counterparty, to offset the risk arising from accepting floating rate payments, he may enter into another swap agreement with another party in which he does a floating to fixed swap in which he pays LIBOR and receives fixed at 8.5%. If this second swap period is less than that of the first one, then his risk is hedged only for the shorter period. Thus, the swap dealer will be able to offset the substantial portion of his/her risk by transacting with both the parties simultaneously. But if the swap periods do not match and LIBOR also changes

during the later period of the swap, the dealer is exposed to risk. The swap dealer's cash flows will be as follows shown in Table 9.11:

Table 9.11: Cash Flows for Swap Dealers in US$

Period	To you	From you	To Third Party	From Third Party
1	1,600,000	LIBOR	LIBOR	1,700,000
2	1,600,000	LIBOR	LIBOR	1,700,000
3	1,600,000	LIBOR	LIBOR	1,700,000
4	1,600,000	LIBOR	0	1,700,000
5	1,600,000	LIBOR	0	1,700,000

Source: ICFAI Research Centre

In the above case, we assume that the second swap is for 3 years only. The dealer's net cash flow will be $10,00,000 in the first three years and the cash flows in the next two years will depend on LIBOR. If LIBOR is less than 8% his loss will be the difference. If LIBOR is greater than 8%, then the dealer makes a profit.

9.15 International Derivatives Market

In the above topics we have covered the concept of a derivative and various types of derivative instruments and other basic features of derivatives. While many derivative instruments are traded in exchange, some instruments are traded over the counter. The following paragraphs deal with some of the important features of international derivatives markets.

Example: International Derivative Markets' impact on Indian Market

Economic Times, dated 13th June, 2022, reported that Madan Sabnavis, chief economist at Bank of Baroda, said that the increase in crude oil prices was because of the increase in crude oil imports. RBI (Reserve Bank of India) had to take measures to reduce the hike impact, by arresting the sudden rupee value depreciation. There was a need for Mint Road, to revisit its calculations on automotive fuels, as there was an assumption that the fuel prices may be raised to $115 a barrel, from $105.

It was important to check the imported inflation in this scenario, as the imports, amounting nearly 20% of the country's GDP in the FY22, disrupted all the major projections, possibly leading to a major threat to the economy.

Source: https://economictimes.indiatimes.com/news/economy/indicators/rbi-sells-10-billion-in-two-weeks-to-keep-its-inflation-forecast-bearable/articleshow/92266664.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 13th June, 2022, accessed on 15th June, 2022.

The following derivative instruments are available in the international markets catering to the needs of the players. International markets support the underlying assets such as commodities, currencies, indices and interest rate products. The following are the some of the features of international derivatives market.

9.15.1 Commodity Forwards

A commodity forward contract is an agreement wherein one party agrees to deliver the underlying commodity to another party at a specified price and time. The underlying commodity can be oil, a precious metal or any other commodity. Producers of commodities take production decisions based on the expected price they would receive when the actual output arrives. Similarly, purchasers of commodities as inputs or final goods take decisions based on the availability and cost of commodity at different points of time in a year. To protect against price volatility and uncertainty in production as well as availability, often buyers and sellers enter into forward contracts. However, forward contracts are not standardized contracts and are not traded on recognized stock exchanges.

9.15.2 Commodity Futures

A commodity futures contract is a tradable standardized contract, whose terms are set in advance by the commodity exchange arranging for trading on it. Commodities such as corn, soybeans sugar, cotton, coffee seeds, etc., which form a part of daily consumption, are traded on the futures exchange. Though all of them form a part of agricultural commodities, they are further segregated into grains, soft commodities and meat futures.

Red beans, corn, wheat, soybeans and soybean meal, etc., form a part of grains, whereas commodities like cocoa, coffee, dried cocoon, cotton yarn and raw sugar, etc., form a part of soft commodities. Animal products like live hogs, live cattle, pork bellies, eggs and poultry products form a part of meat futures.

9.15.3 Commodity Options

Commodity options are financial options with the underlying asset being a specific commodity. Those investing in these products buy a right to sell or buy a commodity at a certain price. There are two basic types of commodity options: a call option and a put option. The call option gives the holder the right, but not the obligation, to buy the underlying commodity from the option writer at a specified price on or before the option’s expiration date. This option helps the buyer when price escalates. The put option gives the holder the right, but not the obligation, to sell the underlying commodity to the option writer at a specified price on or before the option’s expiration date. This option helps the seller when the price declines.

9.15.4 Commodity Swaps

Of late, 'Commodity Swaps is becoming increasingly common in the energy and agricultural industries, where demand and supply are both subject to considerable uncertainty. Commodity swaps are used to hedge against the price of a commodity. In a commodity swap, one set of the exchanged cash flows is dependent on the price of an underlying commodity and the other set of payments can be either fixed or determined by some other floating price or rate.

There are two types of commodity swaps: 'fixed-floating' or 'commodity-for-interest'. Fixed-floating swaps are just like the fixed-floating swaps in the interest rate swap market with the exception that both indices are commodity-based indices. Commodity-for-interest swaps are similar to the equity swap in which a total return on the commodity in the contract is exchanged for some money market rate (plus or minus a spread).

9.15.5 Currency Forwards

A 'Currency Forward' is also termed as an outright forward currency transaction, forward outright or FX forward. It enables an investor to lock-in a foreign exchange rate now for a future payment or receipt that is denominated in a different currency. In other words, a currency forward can be defined as a contract to exchange a predetermined amount of one currency for another at an agreed date in the future using a rate of exchange determined at the trade date of the contract. Thus, currency forwards eliminate exchange risk. The parties to the contract must buy or sell the currency at a specified price, at a specified quantity and on a specified future date.

9.15.6 Currency Futures

In 1972, the Chicago Mercantile Exchange (CME) became the first exchange to introduce financial futures contracts. All developed countries started importing a plethora of foreign goods, which in turn created a demand for foreign currencies. Thus, huge volumes of international transactions led to the development of foreign currency markets, which in turn created the necessity for foreign currency futures. Currency futures can thus be defined as "a binding obligation to buy or sell a particular currency against another at a designated rate of exchange on a specified future date." Foreign currency futures contracts need to specify a trading unit (such as British Pound, Euro, a Swiss Franc, etc.), quotations (such as US $ per pound, US $ per Franc, etc.), minimum price change, contract months, US $ value of currency as on the day and the delivery date.

9.15.7 Currency Options

The interbank market is a major component of currency option market and some of the stock exchanges list currency options also. For instance, the Philadelphia Stock Exchange lists options on foreign currency. A currency call is similar to a

call on a stock that gives the holder the right to buy a fixed amount of foreign currency at a fixed exchange rate on or before the option's expiration date. A currency put gives the holder the right to sell a fixed amount of foreign currency at a fixed exchange rate on or before the option's expiration date. Currency options are identified by the five parameters viz., time to expiration, currency pair, option type, strike and face value. The exchange rates are quoted as A/B when you buy a call option on currency A. It is also the same as a put option on currency B. Consider the following example. Assume that a Euro/Dollar quote is Dollar 1.37 per Euro and you buy a call option with a face amount of Euro1 million. This option gives you the right to buy $1.37 million against Euro 1 million. This is equivalent to a put option on Dollar. Hence, in effect the above transaction can be referred to as Dollar call/Euro put. Options in the interbank market are quoted in terms of implied volatility. Implied volatility is a measure of possible fluctuations in future exchange rates. The greater the volatility, the greater will be the benefit from the underlying call or put.

9.15.8 Currency Swaps

A currency swap is a type of contract involving exchange of interest payments on a loan in one currency for fixed or floating interest payments on an equivalent loan in a different currency. Currency swaps may or may not be involved in initial exchange of principal. A plain vanilla currency swap is a fixed currency swap in which each party pays a fixed payment on the loan taken by them. The currency swaps market rose from the earlier parallel and back-to-back loan structures which were developed and designed in the United Kingdom as a means of circumventing foreign exchange controls and to prevent an outflow of British capital. In the 1970s, the British government, imposed taxes on foreign exchange transactions that involved its currency. Due to this, the parallel loan became a widely accepted transaction by which these taxes could be avoided. The back-to-back loan is similar to the parallel loan with small modifications. In 1979, these taxes on foreign exchange transactions were removed and due to this British firms need not have to take back-to-back loans. However, during the 1980s, banks modified those loans and launched currency swaps. They achieved similar economic purposes like those of parallel and back-to-back loans.

9.15.9 Index Futures

In 1982 the first index futures contract was introduced at the Kansas City Board of Trade and today, index futures are one of the most popular types of futures as far as trading is concerned. An index futures contract is basically an obligation to deliver at settlement, an amount equal to 'x' number of times the difference between the stock index value on the expiration date of the contract and the price at which the contract was originally started. The value of 'x', which is referred to as the multiple, is predetermined for each stock market index. For example, futures contracts on the S&P 500 Stock Index use a multiple of 250.

9.15.10 Index Options

Index options allow investors to gain exposure to the market as a whole or to specific segments of the market with one trading decision and frequently with one transaction. In order to obtain the same level of diversification using individual stock issues or individual equity option classes, numerous decisions and transactions would be required. Employing index options can clear both the costs and complexities involved in doing so.

9.15.11 Interest Rate Futures

An interest rate futures contract is an agreement to buy or sell a standard quantity of specific interest-bearing instruments, at a predetermined future date and at a price agreed upon between the parties. It is a known fact that moneylenders stand to lose if the interest rates go down in future and the money borrowers stand to lose if the interest rates go up in future. The dislike of these two sections of the society to uncertainty in interest rate fluctuation has led to the innovation of techniques to hedge such risks.

9.15.12 Interest Rate Options

An interest rate option holder gets the right to buy or sell the underlying cash instrument or the financial futures contract. The treasurer may use these options to protect his position from rising interest rates or falling interest rates by buying put options or call options respectively. Borrowers' options and lenders options are over-the-counter call and put options on short-term loans and deposits respectively. These are called interest rate guarantees. It is a guarantee because it helps one to fix the maximum borrowing rate or the minimum lending rate.

9.15.13 Interest Rate Swaps

An interest rate swap can be defined as a contractual agreement between two counterparties wherein each party agrees to make a periodic payment to the other party for an agreed period of time, based upon a notional or underlying amount of principal. One of the parties to the contract makes quarterly interest payments, known as floating leg of the swap, based on the 3-month LIBOR. The other party makes fixed rate payments, known as fixed leg of swap, based on the same notional amount. Interest rate swaps can be used to reduce portfolio duration by entering into a pay fixed swap.

9.16 Elementary Pricing Principles

Every asset has an economic value which is considered to be its fair value. Under efficient market conditions, the market price of an asset should equal its economic value or fair value. Normally, spot and derivative markets are very efficient. Different derivatives instruments such as forwards, futures and options are used for the purchase and sale of spot market assets such as stocks, bonds etc. The prices of derivatives are related to the underlying spot market assets through various important mechanisms.

Now let us have a look at the fundamental linkage between spot and derivatives markets using mechanisms such as arbitrage, storage& carrying cost.

Example: Arbitrage Pricing Principle

Economic Times, dated 12th April, 2022, reported that there exist occasions, where the stock prices differed in different markets. In this scenario, arbitrager makes profit. In the same day at the same time, they purchase from one market and sell in another market and book profit from the price difference.

The edutech player was listed at ₹ 157 on BSE, a premium of 15 per cent over its issue price of ₹ 137. The same stock was listed at a discount of 9 per cent, at ₹ 125, on National Stock Exchange (NSE). The difference of the prices on both the exchanges was quite significant, i.e., around 25 per cent, giving an arbitrage opportunity to the traders, who planned to buy from NSE and sell on BSE.

Source: https://economictimes.indiatimes.com/markets/stocks/news/veranda-learning-listing-a-lesson-in-arbitrage-for-d-st-investors/articleshow/90795042.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Dated 12th April, 2022, accessed on 15th June, 2022.

9.16.1 Arbitrage

Arbitrage implies obtaining risk-free profits by simultaneously buying and selling identical or similar instruments in different markets. For example, if a trader identifies a stock that trades at $85.00 a share in one market and at $90.00 a share in the other, he could buy shares in the cheaper market and sell the same shares in the more expensive market. If both sides of the trade are executed successfully, the trader makes a profit of $5.00 without risking any money of his own.

To be more specific consider an IBM stock traded on the NYSE and on the LSE. Suppose the stock price is $155 in NY and 88 pounds in London and the exchange rate is $1.75 per pound. An arbitrageur could simultaneously buy 100 shares in LSE and sell in NYSE to and make a risk-free profit of

$$100 \times [155 - \$(1.75 \times 88)] = \$100$$

Transaction costs would reduce the profit of the arbitrageur to the minimum. As the stock is bought on the London Stock Exchange, the demand will increase there. Similarly, the price at NYSE will fall as they sell the stock, reducing the arbitraging opportunities. In short, arbitrage opportunities cannot last for very long periods of time in a stock, but the very existence of arbitrageurs implies that there are opportunities in the markets for at least a short period. The principle of no arbitrage price is explained below with regard to arbitrageur making profits.

No Arbitrage Principle (Law of One Price)

It is a fundamental principle of economics that “there are no free lunches”. In financial theory, this is known as the no arbitrage principle. It is also called the

law of one price. It claims that no arbitrage opportunities should exist in an efficient market (The fundamental principle of efficient markets states that potential for abnormal returns does not really exist). All derivative instruments are valued according to this principle.

Arbitrage strategy is based on "law of one price". Law of one price states that equivalent combinations of financial instruments should have the same price. That is, two securities, A and B, having identical cash flows in the future, irrespective of future events, should have the same price. An individual engaged in arbitraging is called an arbitrageur. He consistently keeps track of different markets.

Sometimes, certain situations call for a second type of arbitrage. When a portfolio consisting of securities A and B results in certain payoffs, such portfolio should yield risk-free rate. An arbitrage opportunity exists when the certain return of securities A and B together is higher than the risk-free rate. An arbitrageur can borrow at the risk-free rate and buy the A+B portfolio. Thus, he can earn arbitrage profits when the certain pay-off occurs. The payoff will be more than the required to pay back the loan at the risk-free rate.

9.16.2 Storage and Carrying Costs

Storage is a significant linkage between spot and derivatives market. Any asset can be purchased and stored**.** Storage cost can be defined as the cost involved in storing an asset over a period of time. When the future asset price is uncertain, the current asset price would be the future price less the cost of storage and interest. In the case of risk neutral investors, current asset price is the expected future price, less the storage and interest costs. However, when the investor is risk-averse, the current spot price of the asset will be the expected future spot price, less storage cost, less interest foregone and less the risk premium (difference between the price paid by the risk-averse investor and current price of the asset). For goods such as electricity, which are non-storable in nature, there would not necessarily be a relation between the current spot price and the expected future spot price. In case of commodities (Stocks, metals, oil, etc.) that can be stored, the current spot price is determined according to current supply and demand conditions.

The extent to which the futures price exceeds the cash price at one point of time is determined by the concept called 'cost-of-carry' that refers to the carrying charges. The carrying charges can be further classified into storage, insurance, transportation and financing costs. The significance of carrying costs cannot be ignored because they play a crucial role in determining pricing relationships between the spot and futures prices. Moreover, it plays a key role in determining the prices of various futures contracts of maturities.

The following formula determines the relationship between the cash price and the futures price of any commodity:

$$F_{t,T} = \left(C_t \text{ x } S_{t,T} \text{ x } \frac{T - t}{365} + G_{t,T} \right)$$

Where,

C_t = Cash price at time t

$S_{t,T}$ = Annualized interest rate on borrowings

$G_{t,T}$ = Storage costs

T – t = Time period

$F_{t,T}$ = The futures price at time t, which is to be delivered at time period T.

In common parlance, the industry refers the cost-of-carry as 'full carry futures price' (which is nothing but estimated cost of futures price). Hence, in the market, there will be two prices, namely the actual market price and calculated full-carry price (which is obtained by using the formula).

Check Your Progress - 2

6. What is the term used for any security that is not traded on an exchange because of its inability to meet the listing requirements?
   a. Over-the-counter security
   b. Out of-the-counter sales
   c. Out of-the-country security
   d. Over-the- counter symbol
   e. Out of the counter stock
7. What is used for the fixed rate of swap on the interest?
   a. Swap bond
   b. Swap coupon
   c. Swap rate
   d. Swap interest
   e. Swap commission
8. What is the term used for the amount on which the interest is calculated?
   a. Principal
   b. Notional principal
   c. Interest
   d. Notional interest
   e. Total amount
9. Which one of the following is not a limitation of swap market?
   a. It is difficult to identify a counterparty to take the opposite side of the transaction once a party has approached the swap dealer with his/her requirements

b. The swap deal cannot be terminated without the agreement of the parties involved in the transaction

c. Existence of inherent default risk

d. Underdeveloped secondary markets for swaps, mainly because of very slow development of standardized documentation

e. The swap market is not exchange controlled and it can be exchanged in the stock market

10. What is the term used to define an agreement between two or more parties who agree to exchange interest payments over a specific period on agreed terms?

a. Interest rate swap

b. Interest rate exchange

c. Interest rate forward

d. Interest rate backward

e. Interest rate future

9.17 Summary

- Derivative markets have created an efficient system for transfer of risk throughout the global financial system. They could either be traded on the organized exchanges or over-the-counter.
- Derivatives are classified based on the nature of contract, underlying asset or market mechanism.
- Derivatives are helpful in making price discovery, hedging and speculation.
- Arbitrage is used in valuing derivatives.
- There are various sources of risk, such as equity price risk, market risk, exchange rate risk and so on.
- In the international derivatives market, various types of derivative instruments such as currency futures, currency options, commodity futures, interest rate swaps etc., are available.
- LIBOR as benchmark rate is being dispensed with effective from December 2021 and ARRS are implemented. They are: For USD, SOFR will be administered by the Federal Reserve Bank of New York; for GBP, SONIA will be administered by the Bank of England; for EURO, €STR will be administered by ECG (European Central Bank), and for Swiss franc CHF, SARON will be administered by SIX Swiss Exchange and for JPY, TONA will be administered by the Bank of Japan.

9.18 Glossary

Arbitrage: The simultaneous purchase and sale of the same financial asset in an attempt to profit by exploiting price differences on different markets or in different forms.

Commodity Risk: It refers to the uncertainties of future market values and of the size of the future income, caused by fluctuations in the prices of commodities. These commodities may include grains, metals, gas, electricity etc.

Currency Swap: The agreement between two parties to exchange a future series of cash flows – interest and principal, where one party pays in one currency and the other party in a different currency. The exchange rate is generally assumed as fixed over the tenure of the swap.

Derivative Instrument: A financial instrument, which derives its value from the underlying asset. For example, stock options, index futures, etc.

Forward Contract: Two parties sign this type of deferred contract where they agree to buy and sell an asset at some point of time in future under mutually acceptable terms and conditions. Compared to futures contract, forward contracts are neither standardized nor regulated by any authority.

Hedge: A technique by which the adverse price risk which is inherent to any cash market is managed by taking a risk management instrument such as forward or futures or options contract.

Hedging: A risk management strategy done through the following steps:

i. The amount of necessary exposure is to be estimated.

ii. Suitable derivative instrument need to be chosen in such a way that it will create another type of risk, which is equal, but opposite to that of earlier one.

Interest Rate Risk: The adverse fluctuations of interest rate, which may affect the asset value of an investor or which may impose additional burden to a borrower.

Interest Rate Swap: A contract between two entities where a series of interest payments are exchanged against the same notional principal denominated in the same currency.

9.19 Self-Assessment Test

1. What are derivatives and what are the different types of derivatives?
2. Explain different types of derivatives.
3. What are important features of derivatives?
4. Explain the purpose of derivatives.
5. Write a short note on futures market.
6. What are the mechanics of future trading?

9.20 Suggested Readings/Reference Material

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9.21 Answers to Check Your Progress Questions

1. (c) Exchange traded derivatives are illiquid and have high transaction costs

Exchange traded derivatives are illiquid and have high transaction costs. It is not true with regard to features of derivatives.

2. (a) Spot price

Future markets are often considered as primary means of information for determining the Spot price of the asset.

3. (d) Short position

Short position is a selling of the underlying asset, with or without possessing the asset.

4. (a) Spot rate

Spot rate is the rate that the derivatives pay the firm, which is mostly the difference between the floating rate of interest and predetermined cost.

5. (e) Commodity futures

Commodity futures refer to the contracts made to buy or sell a commodity at a specific price and on a specific delivery date.

6. (a) Over-the-counter security

Securities, which are not traded on the stock exchange, are known as Over The Counter security.

7. (a) Swap bond

The fixed rate of swap on the interest is known as Swap bond.

8. (b) Notional Principal

The principal amount on which the interest calculated is known as notional principal.

9. (e) The swap market is not exchange controlled and it is an over-the-counter market

The swap market is not exchange controlled and it is an over-the-counter market. It is not a limitation of swap market.

10. (a) Interest rate exchange

Interest rate is defined as an agreement between two or more parties who agree to exchange interest payments over a specific period on agreed terms.

Global Financial Markets

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