

CAPITAL MARKET FINANCING AND RISK MANAGEMENT



Capital market financing refers to the financing of long-term fund especially from the capital market. Capital market refers to the long-term market composed of equity and bond markets. Risk management means the identification of risks and selection thereof and ways and means as to reduce risks. The major approaches to manage risk are: risk avoidance, loss prevention and control, risk retention and risk transfer. Against this background, the present **UNIT#SIX** includes the following aspects :

- 1) Capital Market and Its Role (Lesson: 1)
- 2) Long-term Financing – Internal and External (Lesson: 2)
- 3) Equity Financing and Preferred Stock Financing (Lesson: 3)
- 4) Debt Financing (Lesson: 4)
- 5) Lease Financing (Lesson: 5)
- 6) Hybrid and Derivative Types of Financing (Lesson: 6)
- 7) Valuation of Bonds, Common Stock and Preferred Stock (Lesson:7)
- 8) Financial Risk Management (Lesson: 8)
- 9) Hedging and Insurance. (Lesson: 9)

Blank

Lesson–1: Capital Market and Its Role

After attentively reading the lesson 1, you should be able-

- To understand the definition & characteristics of capital market.
- To know the various components of capital market
- To discuss the functions of capital market: Stock market and Bond Market.
- To compare the capital market with financial and money markets.
- To understand the nature of perfect capital market. And
- To realize the role of capital market in the industrial and hence the economic development of a developing country.

Definition and Characteristics of Capital Market

Capital market refers to a place where long-term supply of funds is available as well as procurement of those funds is made. That is, capital market is the origin of long-term funds of all types, whether, equity stock, preferred stock and bonds securities. That is, capital market deals with capital market securities like treasury notes or bonds, municipal bonds, corporate bonds, mortgage & equity securities namely common stock and preferred stock. It is through capital market that the personal as well as institutional savings are converted into investment. That is why the capital market is formed in coordination with the savers and investors.

Capital market refers to a place where long-term supply of funds are available as well as procurement of those funds are made.

A capital market may be called an ideal capital market when the supplies of capital according to the needs of industrial enterprises are guaranteed. It should also be organized, transparent and efficient in order become an ideal one. An ideal capital market should have the following characteristics:

A capital market may be called an ideal capital market when the supplies of capital according to the needs of industrial enterprises are guaranteed.

- i) Adequate number of individual and institutional investors;
- ii) Existence of various competitors and auxiliary organizations namely stock exchanges, investment banks, broker firms etc.
- iii) Liquidity benefits through sufficient transactions in the indirect market.
- iv) Expected transparency and reasonableness in dealings and contracts
- v) Proper supervisory organization like stock exchange commission in order to control the functioning of capital market
- vi) Transactions of various types of securities like stock, equity and preferred, bond and other securities.
- vii) To have a clear cut conception of the investors and savers about the functioning and administration of capital market with presence of skilled entrepreneurs and professionals.

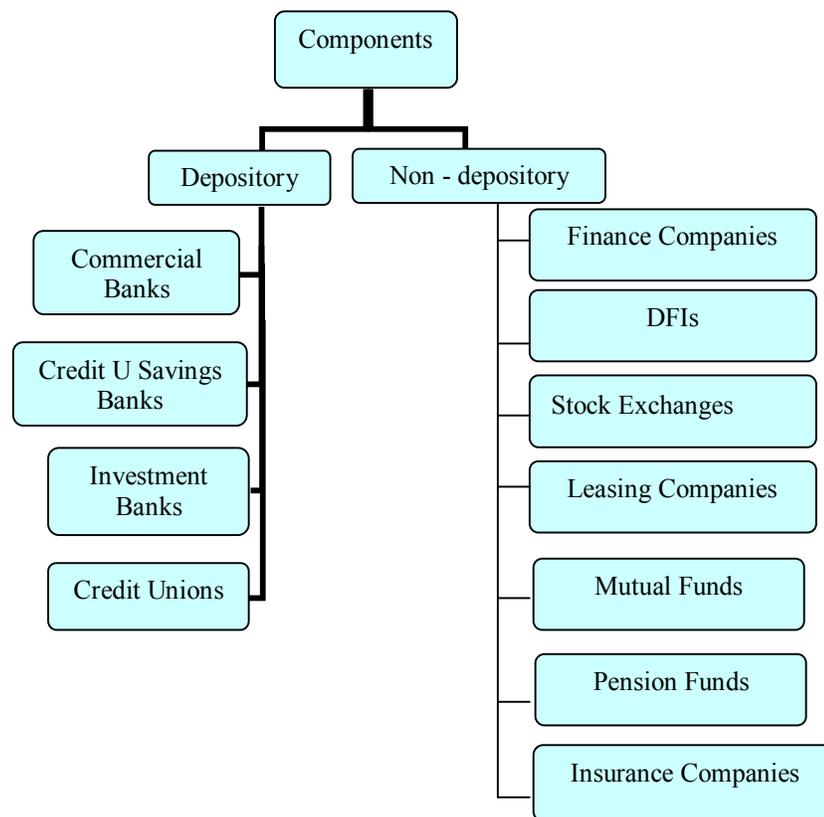
Components of Capital Market

The various components of capital market may be grouped into depositors and non depository financial institutions.

Since capital market is formed in coordination with the investors and savers, hence the main elements of capital market are -

- i) Saving banks; ii) Investment banks; iii) Finance companies
iv) Development Financial Institutions (DFI) v) Commercial banks, vi) Stock exchanges; vii) Leasing companies; viii) Credit units, ix) Mutual funds; x) Insurance companies and xi) Pension funds. The various components of capital market may be grouped into depositors and non depository financial institutions which are shown in the following chart :

Chart - 1 : Showing Various Components of Capital Market



A brief discussion of each of the above components of capital market is given below:

i) Commercial Banks

Commercial banks are those, which accept deposits from the individuals, organizations and governments in one hand and lend funds to the parties, on the other. In aggregate, they are the most dominant depository institutions in any country. They collect the scattered savings of the country; then create investible funds and lastly, mobilize the same into productive investments.

ii) Saving Banks

Like commercial banks, savings banks also accumulate the scattered savings of the country and then create investible funds and lastly channelise these funds into productive investments. Most savings banks are mutual in nature.

iii) Investment Banks

Investment banks are those, which under write shares and debentures of corporate firms and deal in capital market through trading various transactions. They also create securities & provide institutional financing.

iv) Credit Unions

Credit union differs from commercial savings banks in that they (a) are not profit oriented and (b) restrict their business to the main members only. They use most of their funds to provide loans to their members.

v) Finance Companies

Most finance companies obtain funds by issuing securities and then lend the funds to individuals and small businesses.

vi) DFIS

DFIS play the significant role as the source of long-term funds mainly for the corporate firms. They supply fixed capital to the investors for investment in fixed capital expenditures. They also perform the underwriting functions relating to shares and debentures of the corporate firms.

vii) Stock Exchange

Stock exchange means any body comprising of individuals organizations whether incorporated or not, constituted for the purpose of assisting and controlling of buying, selling or dealing in securities. In its primary market, funds are obtained by issuing shares, stocks and securities of the firms, individuals and government.

viii) Leasing Companies

Leasing companies are the easiest sources of financing fixed assets requirements of the corporate firms, individuals and other organizations.

ix) Mutual Funds

Some of the mutual funds concentrate their investments in capital market securities such as stocks or bonds. In this way, they provide funds for long-term investments by the investors.

x) Insurance Companies

Insurance companies receive premium in exchange for insurance policies and use these funds to purchase a variety of securities. Thus, they invest the proceeds received from insurance in stocks and bonds.

xi) Pension funds

Many companies, corporations and government organizations and agencies offer pension plans to their employers their employers or both periodically contribute funds to such plans. The funds contributed are invested in securities until they are withdrawn by the employees upon their retirement.

Functions of Capital Market : Stock Market & Bond Market

Generally speaking, the capital markets may be broadly classified into two types namely stock market and bond market.

Before discussing the functions of capital market, it is essential to classify the capital market, since the functions differ in terms of the types of the market. Generally speaking, the capital markets may be broadly classified into two types namely stock market and bond market. Stock market may be again of two types namely common stock market and preferred stock market. Bond market may also be of three types namely corporation bond market, Treasury bond markets and municipal bond market. Therefore, the broad type functions of capital market are discussed in the following sub-sections.

Functions of Stock Market

- i. Providing adequate permanent floor for performing transactions in common stock or preferred stock. As a result, rate of selling and buying stocks and liquidity and transferability of invested stocks increases along with increasing in the stability in stock prices.
- ii. Ensuring adequate volume of trade leading to liquidity.
- iii. Providing reasonable level of fairness in deal making of trading.
- iv. Allowing the determination of actual transfer prices of stock on the basis of corporate firms' present and future profitability; since the market helps creating competitive stock market.
- v. Helps increasing the transparency, accuracy and safety of transactions by following certain norms and disciplines while allowing trading.
- vi. Ensuring arrangement of investment in productive sectors of the economy after accumulating surplus money of the individuals and organizations.
- vii. Helps equitable distribution of capital in any specific industry, factory etc.
- viii. Protecting the interests of the investors.

- ix. Helps government in framing policy in the interests of the investors and industrial growth
- x. Registering and monitoring stock prices and
- xi. Providing adequate instruments and technical aids for prompt and smooth trading.

Functions of Bond Market

- i. They allow the individuals as well as the organizations to raise the requisite long-term funds by selling their bonds.
- ii. They help investors having surplus funds to make investments in the purchase of bonds and thereby earning returns.
- iii. They play the vital role in proper functioning of the capitalistic economy where they serve to channel funds from savers to borrowers.
- iv. They can provide an important allocative function by channeling the funds to productive investors.
- v. They can render corporate advisory services.

Money Market, Capital Market Vs Financial Market

i) Financial Market

The term financial market is used to describe the place where investors with surplus capital provide their surplus capital to those who are in need of capital. This may be done directly, such as a person borrowing from a friend/ relative, or financial intermediaries such as banks, mutual funds, insurance companies may facilitate this process. Similar to financial institutions, financial markets allow for the suppliers and demanders of funds to deal with each other. Therefore, financial market facilitates the needs of investors having surplus capital and borrowers who are need of capital.

The term financial market is used to describe the place where investors with surplus capital provide their surplus capital to those who are in need of capital.

ii) Money Market

A money market is one which deals in short term securities of a maximum period of one year. It is a market where dealers purchase and sell securities. The examples of short term securities are commercial paper, treasury bills and bankers acceptances. Money market is one of the components of financial market.

A money market is one which deals in short term securities of a maximum period of one year.

iii) Capital Market

A capital market is one that deals in long-term securities. The examples of long-term securities are shares and bonds of corporations, long term government bonds and debentures of companies and corporations. The capital market is one of the important components of financial market. A capital market may be either equity market or bond market.

A capital market is one that deals in long-term securities.

Nature of Perfect Capital Market

A perfect capital market imposes more stringent conditions.

A perfect capital market imposes more stringent conditions. The following are the attributes of a perfect capital market:

- * **No entry barriers** Any one can participate in the market. Thus the suppliers or users of funds can enter the market and deal with each other.
- * **Large number of buyers and sellers** Perfect competition in the market is ensured by the presence of large number of buyers and sellers of securities.
- * **Divisibility of financial assets** Financial assets are divisible and therefore, affordable investments are made by all participants.
- * **Absence of transaction costs** There are no transaction costs. Participants can buy and sell securities with ease and without many costs.
- * **No tax differences** Ideally, there are no taxes. There should not be any tax distortions. One set of investors should not be favored over others.
- * **Free trading** Any one is free to trade in securities in the capital market. There should not be government restrictions on trading.

An efficient capital market is perfect if the above mentioned conditions are fully satisfied. A capital market which is otherwise reasonably efficient will have imperfections to the extent it does not satisfy the conditions of the perfect capital market. There are three significant imperfections that may be found in most capital markets in different degrees. These are discussed as follows:

- * **Tax asymmetries** Most economies have varieties of taxes and tax incentives which cause tax asymmetries. These make security transactions more beneficial to some ones. A number of financial transactions may create additional wealth because of tax differences.
- * **Information asymmetries** Most financial information are published and therefore, are publicly available. But sometimes, certain persons may have superior information than others. These persons may earn abnormal return for sometimes.
- * **Transaction costs** These costs do not affect the prices. But, they can cause one transaction to be more profitable than the other. Transaction costs of two similar financial transactions may be different. Similarly transaction costs of two persons to a particular transaction may be different.

In practice, capital market have imperfections. Efficient markets may not be perfect.

In practice, capital markets have imperfections. Efficient markets may not be perfect. For developing frameworks for analyzing financial decisions, a good starting point is to assume that capital markets are perfect. Once a framework is developed, the practical implications of market imperfections can be analyzed.

Role of Capital Market

Capital market is an integral part of developed and industrialized economy. One can hardly escape the impact of activities of the capital markets or lack thereof on the economy. In fact, capital markets augment the process of economic development, efficiency and welfare through a number of ways viz., i) encouraging savings, ii) drawing more savers and users into the investment process, iii) helping mobilization of non-financial resources, iv) attracting external resources, v) offering financial innovations to match the diverse and changing needs of savers and users, etc. There are strong correlation among the level of economic development, industrial development and the level of capital markets development. In the capital market, stock exchange is an important segment which plays a vital role in the industrial development specially in a free market economy. In practice, Stock Exchange (SE) can broadly be classified into security market and non-security market. Security market can further be classified into primary market and secondary market. Primary market deals with new issues and secondary market deals with existing issues. The transactions in secondary market, in practice, may be done either in organized stock exchange or in over the counter market (OTC). In the SE, only the listed securities are traded by the members either by themselves or on behalf of their customers. OTC markets handle the securities of companies that do not meet exchange listing requirements. Some times secondary transactions take place off the trading floor giving rise to a third market known as “Kerb market”, not often officially recognized.

In fact, capital markets augment the process of economic development, efficiency and welfare.

Primary market deals with new issues and secondary market deals with existing issues.

Review Questions

A. Short Questions

1. Define capital market and discuss its characteristics.
2. What are the various types of capital market ? Discuss.
3. Compare and contrast financial market, money market and capital market.
4. What are the attributes of a perfect capital market ? Explain.
5. Are all efficient capital markets are perfect ? Why not ?

B. Broad Questions

1. What are the components of capital market? Discuss each of them.
2. Describe the functions of capital market.
3. Examine the role of capital market in the economic development of a country.

Lesson–2: Long Term Financing–Internal and External

After carefully reading this lesson 2, you should be able -

- To realize the necessity of long-term financing.
- To identify the features, merits and demerits of long term Financing.
- To discuss the sources of long-term internal financing.
- To describe the sources of long term external financing and
- To compare and contrast the internal and external sources of long term financing.

Necessity of Long-Term Financing

By long term financing, we mean the financing of fixed or permanent aspects of a firm. That is, fixed or permanent capital can be procured by using long term sources of financing. By long term, we mean the period exceeding 3/5 years. Therefore, financing the fixed or permanent types of aspects namely land, building, factories, plant, machining equipment, furniture and fixtures, patents and copyright etc. for a period exceeding 3/5 years is known as long-term financing.

Every company whether manufacturing, trading or service rendering have to invest their funds in fixed or permanent assets as mentioned above. These assets are used for production purposes in cases of the manufacturing and service rendering firms and for trading purposes in cases of the trading concerns. The expected life span of these assets is longer exceeding 3/5 years. Therefore, the long term investment decision of a firm involves the acquisition of long-term/ fixed, permanent assets of the firm. The long-term investment decisions are the most significant in determining long term existence, profitability and growth of a firm. The success or failure of a firm depends mainly on the correct long term investment decision, of the firm. In order to implement such long-term investment decisions successfully, the long-term funds are essential. Here lies the necessity of long term financing by a firm.

There are a number of sources from which long-term funds or fixed/ permanent capital may be raised. These are: issuing shares/stocks, common or preferred, issuing debentures, bonds, taking term loans and or project loans from development financial institutions and internal sources like depreciation, retained earnings, general reserves etc. Hence, the selection of proper source(s) of long-term financing is crucial to the financial management. While selecting sources of long term finance, the financial management should consider (i) availability of source; (ii) Terms and condition involved in the source and (iii) cost of capital. If these considerations are favorable in case of the source (s); the firm select that source(s) and raise funds from that sources(s). On the other hand, if the considerations are not favorable in case of the source(s), the

The selection of proper source(s) of long-term financing is crucial to the financial management.

firm does not select that source(s) for raising the fund. Here lies the significance of the selection of long term financing source by a firm.

Features, Merits and Demerits of Long-term Financing

Long-term financing is the most important method of financing. The main features of such financing are described below:

- i. **Period:** Generally, long-term financing relates to the long period exceeding 3/5 years.
- ii. **Origin of source:** Long-term financing mainly consists of internal and external sources.
- iii. **Fixed rate of interest:** Long-term debt financing carries a fixed rate of interest which must be paid to the financiers.
- iv. **Fixed dividend:** Long-term preferred stock financing also carries a fixed dividend which must be paid to the preferred stock holders.
- v. **Risk:** Long term procedure involved in long-term financing increases risk of the firm.
- vi. **Security:** In case of debt financing, the debt holders need to be given security by the firm in the form of any of its assets.
- vii. **Formalities:** A number of formalities is to be undertaken by the firm raising long-term fund.

Merits : Long-term financing has the following merits :

- i. **Taking more fund:** More long-term fund may be raised by the use of long-term sources.
- ii. **For more period :** Long-term funds are usually taken for more periods.
- iii. **Less costly :** Debt financing generally involves less cost than equity, preferred and internal sources of financing.
- iv. **Tax benefits :** Debt financing brings tax benefits in the sense that interest on debt is exempted for tax purposes.
- v. **Easy way of raising fund :** If the capital market is organized, long-term funds may be raised easily.
- vi. **Effective investment :** Long-term financing may ensure effective investment on the part of the firm.
- vii. **Control :** Dilution of control of the firm does not arise if the firm use debt financing instead of equity financing.
- viii. **Expansion and development :** It is through long-term financing that the firms can invest their funds for their expansion and development.

Demerits :

- i. **Security problem :** Long-term financing creates security problems on the part of the borrowing firms.
- ii. **Control problem :** Long-term equity financing creates control problem for the existing equity shareholders of the firm.
- iii. **Increase risk :** Debt financing increases risk of the borrowing firms.
- iv. **High rate of interest :** Debt financing which is the most important method of long-term financing for the corporate firms involves high rate of interest.

- v. **Difficulty in re-payment** : Since long-term debt financing is of larger amount, hence in most of the cases difficulty arises on the part of the borrowing firms at the time of repayment of the loans.

Sources of Long-term Internal Financing

Internal financing refers to the funding from within the organization and not from any outside sources. Hence, internal financing is confined to the organization itself. The sources of internal financing are (i) provision of retained earnings; (ii) depreciation and (iii) general reserves. Each of the sources is discussed in the sub section that follows :

Internal financing refers to the funding from within the organization and not from any outside sources.

Retained Earnings

The retained earnings enable a firm to withstand seasonal reactions and business fluctuations. They create greater resistance power for the industry to face depression. Secondly, the large retained earnings facilitate a stable dividend policy and enhance the credit-standing of a company. Thirdly, they act as an important internal source of capital for expansion purpose and without creating a charge against the assets a company meets its requirements of finance internally for expansion and other development schemes. Fourthly, the deficiencies of depreciation, depletion and obsolescence can be made up by utilizing the retained earnings. The operating efficiency is thus maintained easily by the corporate savings. Lastly, the retained earnings can also be used for retiring the bonds, debentures etc. for creating sinking funds and for redeeming the debts. A firm can thus be relieved of the fixed burden of the interest charges.

The retained earnings enable a firm to withstand seasonal reactions and business fluctuations.

Depreciation Provision

Depreciation is the expiry of service potential or consumption of operating capacity and unless it is provided for, capital would not be taken to be maintained intact. In fact, the concept of depreciation derives from the desire to maintain capital intact. The main emphasis here is on the maintenance of assets or operating capacity therein. Charging depreciation against profits helps to retain a firm equal to profits, if profits are sufficient to cover all costs including losses related to the assets. The funds thus accumulated during the life time of an asset finally assist in maintenance of service potential through purchase of an identical asset or an asset having the same operating period.

Depreciation is a non-cash expense; although it is a charge against profit. Charging depreciation against profit is nothing but an underestimation of profit by the amount of depreciation. But, the real profit is more than the accounting profit by the amount of that depreciation. So, depreciation provision acts as a creation of fund from the operating profits of the firm. That is why; depreciation is added back with the operating profit in order to find out the fund or cash inflows of an enterprise. That is, for finding out fund from operations depreciation is added with the operating profits. As a source of fund, internal resource is preferred by the corporate firms because of its easy availability within the firm as well as non-involvement of any floatation costs.

Depreciation provision acts as a creation of fund from the operating profits of the firm.

General Reserves/ Dividend Reserve

General reserves/ dividend reserves refer to a portion of profit transferred to those reserves.

General reserves/ dividend reserves refer to a portion of profit transferred to those reserves. Such reserves are created out of net profits of a firm. The owners are the claimants of such reserves. These reserves when reinvested in business for balancing, modernizing, replacement, expansion of the same act as the internal source of long term financing. As a source of finance, they are easily available within the firm if they have been already created by the firm. Floatation/issue costs are not involved in case of these reserves. There is also no dilution of the control of the firm by the use of these reserves.

Sources of Long term External Financing

External financing refers to the long term funding by using sources outside the organization.

External financing refers to the long term funding by using sources outside the organization. That is, wherever the firms use the sources outside themselves for raising long terms funds; it is known as long term financing. The major sources of long term financing are discussed in the following sub sections.

Equity Share/ Common Stock

Equity capital represents ownership capital and its owners-ordinary shareholders/equity holders share the reward and risk associated with ownership of corporate enterprises. It is also called ordinary share capital in contrast with preference share capital which carries certain preferences/prior rights in regard to income and redemption.

The equity shares have some especial features in terms of (i) residual claim to income; (ii) residual claim on assets; (iii) right to control; (iv) voting system; (v) pre-entire right and (vi) limited liability.

Preferred Stock/ Preference Share

Preference capital is a unique type of long-term financing in that it combines some of the features of equity as well as debentures. As a hybrid security/form of financing, it is similar to debenture insofar as : (i) it carries a fixed/stated rate of dividend, (ii) it ranks higher than equity as a claimant to the income/assets, (iii) it normally does not have voting rights and (iv) it does not have a share in residual earnings/assets. It also possesses some of the attributes of equity capital, namely, (i) dividend on preference capital is paid out of divisible/after tax profit that is, it is not tax-deductible, (ii) payment of preference dividend depends on the discretion of management, that is, it is not an obligatory payment and non-payment does not force insolvency/liquidation and (iii) irredeemable type of preference shares have no fixed maturity date.

Debentures/ Bonds/ Notes

Akin to a promissory note, debentures/bonds represent creditorship securities and debenture holders are long-term creditors of the company. As a secured instrument, it is a promise to pay interest and repay principal at stipulated times. In contrast to equity capital which is a

variable income (dividend) security, the debentures/notes are fixed income (interest) security.

Term Loans

Term loans are also known as term/project finance. The primary sources of such loans are financial institutions. Commercial banks also provide term finance in a limited way. The financial institutions provide project finance for new projects and also for expansion/diversification and modernization whereas the bulk of term loans extended by banks is in the form of working capital term loan to finance the working capital gap. Though they are permitted to finance infrastructure projects on a long-term basis, the quantum of such financing is marginal.

Internal Vs External Sources of Long term Financing

Differences between Internal Vs External Sources of Financing

The following table presents the main differences between the internal and external sources of financing :

SL. No.	Points of Differences	Internal Sources	External Sources
1	Organization	Comprise the sources within the organization	Comprise the sources outside the organization
2	Sources	Retained earnings depreciation provision, general reserves and dividend reserves etc. are the main sources.	Share issues, bond and debenture issues, long term loans are the main sources.
3	Dependence	Internal financing generally depends on profit volume & its stability.	External financing depends on financial conditions of the country, the organization and the capital markets.
4	Impact	It is influenced by dividend policy	It is influenced by future profitability.
5	Floatation & Issue costs	Does not arise in case of internal financing.	Always arises in case equity and debt financing.
6	Amount of fund	In this case, amount of fund is limited by amount of retained earnings, depreciation and other general reserves.	In case of profitable investment, no limit of amount of fund.
7	Interest/ Dividend	No interest or dividend is involved.	Interest and dividend are involved in case of debt financing and equity and performance respectively.
8	Time limit of repayment	No fixed time limit of repayment.	There is fixed time limit of repayment which is based on terms in case of debt financing.

Merits and Demerits of Internal Financing and External Financing

Merits of Internal Financing

The following are the main merits of long term internal financing

1. Requires less formality, complexity and cumbersome.

2. No changes occur in ownership and voting rights.
3. No difficulty arises as to repayment of loan.
4. Favorable financial leverage leads to payment of dividend at a higher rate.
5. No involvement of interest and external dividend
6. May successfully face the fluctuation in market rate
7. May increase profitability if it is used judiciously

Demerits of Internal Financing

The following are the demerits of long-term of external financing :

1. It is not possible to use internal sources of finance in cases of inadequate or no profit.
2. May give rise to misuse of funds by the management.
3. In case of emergency, these sources may not be used because of shortage of profits.
4. In case of inflation, the use of these sources are not desirable.

Merits of External Financing

The following are the merits of external financing :

1. In case of lower interest rate, owners can be paid dividend at a higher rate.
2. Less income tax payment due to exemption of interests from tax.
3. In case of debt financing, there is no dilution of control of business.
4. It acts as the lender of last resort for the firms having less or no internal sources.
5. At the time of inflation the use of external finance is profitable since real burden of debt remains lower at that time.

Demerits of External Financing

1. Debt financing increases financial risk of the firm
2. Interest is a compulsory payment whether the firms earns profit or not
3. In case of lower rate of profit than the rate of interest, it may impose adverse impact on the owners' dividend
4. Anxiety may arise amongst the financial managers just before repayment of loan.

Review Questions

A. Short Questions:

1. What do you mean by long term financing?
2. Discuss the necessity of using long-term financing.
3. Why selection of proper source(s) of long-term financing is important ? Explain.
4. Discuss the features of long-term financing
5. What are the merits of long-term financing? Discuss.
6. What are the demerits of long-term financing? Explain.
7. Distinguish between internal financing and external financing.
8. What are merits and demerits of internal financing ?
9. What are the merits and demerits of external financing ?

B. Broad Questions

10. Discuss the various sources of long-term internal financing.
11. Discuss the various sources of long-term external financing.
12. “The main crux of the financial manger of a corporate firm is the proper mix of internal and external financing”. Explain the statement. Give arguments for and against internal and external financing.

Lesson–3: Equity Financing and Preferred Stock Financing

On successful completion of the lesson 3, you should be able -

- To identify the features of equity financing.
- To make evaluation of equity financing.
- To identify the features of preferred stock financing and.
- To make evaluation of preferred stock financing.

Features of Equity Financing

Equity financing has the following main features:

Equity financiers are known as ordinary shareholders.

Claim on income: Equity financiers are known as ordinary shareholders. They have a residual ownership claim. They have a claim to the residual income, which is, earnings available for ordinary shareholders, after paying expenses, interest charges, taxes and preference dividend, if any. This income may be split into two parts: dividends and retained earnings. Thus, residual income is either directly distributed to shareholders in the form of dividend or indirectly in the form of capital gains on the ordinary shares held by them.

Ordinary shareholders also have a residual claim on the company's assets in the case of liquidation.

Claim on assets : Ordinary shareholders also have a residual claim on the company's assets in the case of liquidation. Liquidation can occur on account of business failure or sale of business. Out of the realized value of assets, first the claims of debt-holders and then preference shareholders are satisfied, and the remaining balance, if any, is paid to ordinary shareholders. In case of liquidation, the claims of ordinary shareholders may generally remain unpaid.

Ordinary shareholders have the legal power to elect directors on the board.

Right to control Control in the context of a company means the power to determine its policies. The company's major policies and decisions are approved by the board of directors while day-to-day operations are carried out by managers appointed by the board. Thus control may be defined as the power to appoint directors. Ordinary shareholders have the legal power to elect directors on the board. If the board fails to protect their interests, they can replace directors. Ordinary shareholders are able to control management of the company through their voting rights and right to maintain proportionate ownership.

Ordinary shareholders are required to vote on a number of important matters.

Voting Rights : Ordinary shareholders are required to vote on a number of important matters. The most significant proposals include: election of directors and change in the memorandum of association. For example, if the company wants to change its authorized share capital or objectives of business, it requires ordinary shareholders' approval. Directors are elected at the annual general meeting (AGM) by the majority votes. Each ordinary share carries one vote. Thus, an ordinary shareholder has votes equal to the number of shares held by him.

Pre-emptive rights : The pre-emptive right entitles a shareholder to maintain his proportionate share of ownership in the company. The law grants shareholders the right to purchase new shares in the same proportion as their current ownership. Thus, if a shareholder owns one per cent of the company's ordinary shares, he has pre-emptive right to buy one per cent of new shares issued. A shareholder may decline to exercise this right. The shareholders' option to purchase a stated number of new shares at a specified price during a given period are called rights. These rights can be exercised at a subscription price which is generally much below the share's current market price, or they can be allowed to expire, or they can be sold in the stock market.

The pre-emptive right entitles a shareholder to maintain his proportionate share of ownership in the company.

Limited liability : Ordinary shareholders are the true owners of the company, but their liability is limited to the amount of their investment in shares. If a shareholder has already fully paid the issue price of shares purchased, he has nothing more to contribute in the event of a financial distress or liquidation. This position of shareholders is different from the owners in the case of sole proprietary businesses or partnership firms where they have unlimited liability. In the event of the insolvency of these firms, owners are required to bring in additional capital from their personal savings to pay claims of creditor. The limited liability feature of ordinary share encourage otherwise unwilling investors to invest their funds in the company. Thus, it helps companies to raise funds.

Ordinary shareholders are the true owners of the company, but their liability is limited to the amount of their investment in shares.

Evaluation of Equity Financing: Advantages & Disadvantages.

Advantages of Equity Financing

Equity capital is the most important long-term source of financing. It offers the following advantages to the company:

- **Permanent capital:** Since ordinary shares are not redeemable, the company has no liability for cash outflow associated with its redemption. It is a permanent capital, and is available for use as long as the company goes.
- **Borrowing base:** The equity capital increases the company's financial base, and thus its borrowing limit. Lenders generally lend in proportion to the company's equity capital. By issuing ordinary shares, the company increases its financial capability. It can borrow when it needs additional funds.
- **Dividend payment discretion:** A company is not legally obliged to pay dividend. In times of financial difficulties, it can reduce or suspend payment of dividend. Thus, it can avoid cash, outflow associated with ordinary shares. In practice, dividend cuts are not very frequent. A company tries to pay dividend regularly. It cuts dividend only when it cannot manage cash to pay dividends. For example, in 1986 the Reliance Industries Limited experienced a sharp drop in its profits and had a severe liquidity problem; as a consequence, it had to cut its dividend rate from 50 percent to 25

Equity Financing offers some advantages to the company

percent. The company, however, increased the dividend rate next year when its performance improved.

Disadvantages of Equity Financing

Equity capital has some disadvantages to the firm

Equity capital has some disadvantages to the firm compared to other sources of finance. They are as follows :

- **Cost :** Shares have a higher cost at least two reasons: Dividends are not tax deductible as are interest payments, and flotation costs on ordinary shares are higher than those on debt.
- **Risk:** Ordinary shares are riskier from investor's point of view as there is uncertainty regarding dividend and capital gains. Therefore, they require a relatively higher rate of return. This makes equity capital as the highest cost source of finance.
- **Earnings dilution :** The issue of new ordinary shares dilutes the existing shareholders' earnings per share if the profits do not increase immediately in proportion to the increase in the number of ordinary shares.
- **Ownership dilution :** The issuance of new ordinary shares may dilute the ownership and control of the existing shareholders. While the shareholders have a pre-emptive right to written their proportionate ownership, they may not have funds to invest in additional shares. Dilution of ownership assumes great significance in the case of closely - held companies. The issuance of ordinary shares can change the ownership.

Features of Preferred Stock Financing

Preference share is a senior security as compared to ordinary share.

Preference stock financing has several features. Some of them are common to all types of preference share while others are specific to some.

Claims on income and assets : Preference share is a senior security as compared to ordinary share. It has a prior claim on the company's income in the sense that the company must first pay preference dividend before paying ordinary dividend. It also has a prior claim on the company's assets in the event of liquidation. Preference shareholders generally do not have voting rights and they cannot participate in extraordinary profits earned by the company. However, a company can issue preference share with voting rights (called participative preference shares)

Preference share have some limitations.

Fixed dividend : The dividend rate is fixed in the case of preference share and preference dividends are not tax deductible. The preference dividend rate is expressed as a percentage of the par value. The amount of preference dividend will thus be equal to the dividend rate multiplied by the par value. Preference share is called fixed-income security because it provides a constant income to investors. The payment of

preference dividend is not a legal obligation. Usually, a profitable company commitment of paying preference dividend.

Cumulative dividends : Most preference shares in India and a few in Bangladesh carry a cumulative dividend feature, requiring that all past unpaid preference dividend be paid before any ordinary dividends are paid. This feature is a protective device for preference shareholders. The preference dividends could be omitted or passed without the cumulative feature. Preference shareholders do not have power to force company to pay dividends; non-payment of preference dividend also does not result into insolvency. Since preference share does not have the dividend enforcement power, the cumulative feature. It is necessary to protect the rights of preference shareholders.

Redemption : Both redeemable and perpetual (irredeemable) preference shares can be issued. Perpetual or irredeemable preference share does not have a maturity date. Redeemable preference share has a specified maturity. In practice, redeemable preference share is not often retired in accordance with the stipulation since there are not serious penalties for violation of redemption feature.

Perpetual or irredeemable preference share does not have a maturity date.

Sinking fund : Like in the case of debenture, a sinking fund provision may be created to redeem preference share. The money set aside for this purpose may be used either to purchase preference share in the open market or to buy back (call) the preference share. Sinking fund for preference shares are not common.

A sinking fund provision may be created to redeem preference share.

Call feature : The call feature permits the company to buy back preference shares at a stipulated buy – back or (call) price. Call price may be higher than the par value. Usually, it decreases with the passage of time. The difference between call price and par value of the preference share is called call premium.

The call feature permits the company to buy back preference shares at a stipulated buy – back or (call) price.

Participation feature : This means that a preference shareholder may get dividend amount in excess of the fixed dividend. The formula for determining extra dividend would differ. A company may provide for extra dividend to preference shareholders equal to the amount of ordinary dividend that is in excess of the regular preference dividend. Preference shareholders may also be entitled to participate in the residual assets in the event of liquidation.

Voting rights : Preference shareholders ordinarily do not have any voting rights. They may be entitled to contingent (conditional) voting rights.

Convertibility : Preference shares may be convertible or non-convertible. A convertible preference share allows preference shareholders to convert their preference shares, fully or partly, into ordinary shares at a specified price during a given period of time. Preference shares, particularly when the preference dividend rate is low, may sometimes be converted into debentures

A preference shareholder may get dividend amount in excess of the fixed dividend.

Evaluation of Preferred Stock Financing: Advantages & Disadvantages

Advantages of Preferred Stock Financing

Preference share has a number of advantages.

Preference share has a number of advantages to the company, which ultimately occur to ordinary shareholders.

- **Riskless leverage advantage** : Preference share provides financial leverage advantages since preference dividend is a fixed obligation. This advantage occurs without a serious risk of default. The non-payment of preference dividends does not force the company into insolvency.

- **Dividend postponability** : Preference share provides some financial flexibility to the company since it can postpone payment of dividend.

- **Fixed dividend** The preference dividend payments are restricted to the stated amount. Thus

preference shareholders do not participate in excess profits as do the ordinary shareholders.

- **Limited voting rights**: Preference shareholders do not have voting rights except in case dividend arrears exist. Thus the control of ordinary shareholders is preserved.

Disadvantages of Preferred Stock Financing

The following are the limitations of preference shares :

- **Non-deductibility of dividends** : The primary disadvantage of preference share is that preference dividend is not tax deductible. Thus it is costlier than debenture.

- **Commitment to pay dividend** : Although preference dividend can be omitted, they may have to be paid because of their cumulative nature. Non-payment of preference dividends can adversely affect the image of a company, since equity holders cannot be paid any dividends unless preference shareholders are paid dividends.

The following are the limitations of preference shares.

Preference shares provide more flexibility and less burden to a company. The dividend rate is less than on equity and it is fixed. Also, the company can redeem it when it does not require the capital. In practice, when a company reorganizes its capital.

Review Questions

Short Questions

- a. What is the significance of voting rights attached to the owners of equity finance ?
- b. What is meant by limited liability of equity holders ?
- c. Why and when cumulative dividends are paid to preferred stock holders ?
- d. What is redeemable preferred stock? Explain.
- e. Why and when fixed dividends are paid to the shareholders ?

Broad Questions

- f. What is equity financing? Explain the features of equity financing?
- g. Discuss the advantages and disadvantages of equity financing.
- h. What are the features of preferred stock financing? Explain.
- i. Evaluate the preferred stock financing from the view points of its advantages and disadvantages.
- j. Distinguish between equity financing and preferred stock financing. Give an example of each type of financing.

Lesson-4 : Debt Financing

On successful completion of the lesson 4, you should be able -

- To identify the features of the various types of debt financing.
- To discuss the various types of debt financing.
- To make evaluation of the various types of debt financing.

Types of Debt Financing

Broadly speaking debt financing is composed of debenture/bond/note and term loans from banks and financial institutions. Each of the types of debt financing is examined below:

Debenture

A debenture is a long-term promissory note for raising loan capital.

A debenture is a long-term promissory note for raising loan capital. The firm promises to pay interest and principal as stipulated. The purchasers of debentures are called debenture holders. An alternative form of debenture in India is bond. Bonds are issued mostly by public sector companies in India. In USA, the term debenture is generally understood to mean unsecured bond.

Debentures may be straight debentures or convertible debentures. A convertible debenture (CD) is one which can be converted, fully or partly, into shares after a specified period of time. Thus on the basis of convertibility debentures may be classified into three categories.

- Non – convertible (NCDs)
- Fully convertible debenture (FCDs)
- Partly convertible debenture (PCDs)

NCDs are pure debentures without a feature of conversion.

Non-convertible (NCDs) : NCDs are pure debentures without a feature of conversion. They are payable on maturity. The investor is entitled for interest and repayment of principal. Recently, the Industrial Credit and Investment Corporation of India (ICICI) had issued debentures for Rs 200 crores fully non-convertible bonds of Rs 1,000 each at 16 per cent rate of interest, payable half-yearly. The maturity period is five years. However, the investors have the option to be repaid fully or partly the principal after three years after giving due notice to ICICI.

FCDs are converted into shares as per the terms of the issue with regard to price and time of conversion.

Fully convertible debenture (FCDs): FCDs are converted into shares as per the terms of the issue with regard to price and time of conversion. The pure FCDs carry interest rates, generally less than the interest rates on NCDs since they have the attraction feature of being converted into equity shares. Recently, companies in India are issuing FCDs with zero rate of interest.

Partly-convertible debentures (PCDs): A number of debentures issued by companies in India have two parts : a convertible part and a non-convertible part. Such debentures are known as partly-convertible debentures (PCDs). The investor has the advantages of both convertible and non-convertible debentures blended into one debenture. For example, Proctor and Gamble Limited (P & G) issued 4,00,960 PCDs of Rs 200 each to its existing shareholders in July 1991. Each PCD has two parts: convertible portion of Rs 65 each to be converted into one equity share of Rs 10 each at a premium of Rs 55 per share at the end of 18 months from the date of allotment and non-convertible portion of Rs 135 payable in three equal installments on the expiry of 6th, 7th and 8th years from the date of allotment.

The investor has the advantages of both convertible and non-convertible debentures blended into one debenture.

Long-term Loan

Debt capital of a company may consist of debentures and bonds which are issued to public for subscription or term loans which are obtain directly from the banks and financial institutions. Term loans are the sources of long term debt. Term loan represents long term debt with a maturity of more than one year. The purpose of term loan is mostly to finance the firm's capital expenditures.

Term loan represents long term debt with a maturity of more than one year.

Features of Various Types of Debt Financing: Debenture & Long-Term

Features of Debenture Type of Financing

Debentures are a long-term, fixed-income, financial security. Debenture holders are the creditors of the firm. The par value of a debenture is the face value appearing on the debenture certificate. Corporate debentures in India are issued in different denominations. The large public sector companies issue bonds in the denominations of Tk. 1,000. Some of the important features of debentures are discussed below.

Debenture holders are the creditors of the firm.

Interest rate : The interest rate on a debenture is fixed and known. It is called the contractual rate of interest. It indicates the percentage of the debenture that will be paid out annually (or semi – annually or quarterly) in the form of interest.

The interest rate on a debenture is fixed and known.

Maturity : Debentures are issued for a specific period of time. The maturity of a debenture indicates the length of time until the company redeems (returns) the par value to debenture holders and terminates the debentures. In India, debenture is typically redeemed after 7 to 10 years in installments.

Debentures are issued for a specific period of time.

Redemption : Debentures are mostly redeemable, they are generally redeemed on maturity. A redemption of debentures can be accomplished either through a sinking fund or buy back (call) provision.

Debentures are mostly redeemable.

Sinking fund : A sinking fund is cash set aside periodically for retiring debentures. The fund is under the control of the trustee who redeems the

A sinking fund is cash set aside periodically for retiring debentures.

debentures either by purchasing them in the market or calling them in an acceptable manner. In some cases the company itself may handle the retirement of debentures using the sinking funds. The advantage is that the Periodic retirement debt through the sinking funds reduces the amount required to redeem the remaining debt at maturity. Particularly when the firm faces temporary financial difficulty at the time of debt maturity, the repayment of huge amount of principal could endanger the firm's financial viability. The use of the sinking fund eliminates this potential danger.

Debenture issues include buy-back provision.

Buy-back (call) provision : Debenture issues include buy-back provision. Buy-back provisions enable the company to redeem debentures at a specified price before the maturity date. The buy – back call price may be more than the par value of the debenture. This difference is called call buy-back premium. In India, it is generally 5 per cent of the par value.

Indenture : An indenture or debenture trust deed is a legal agreement between the company issuing debentures and the debenture trustee who represents the debenture holders. It is the responsibility of the trustee to protect the interests of debenture holders by ensuring that the company fulfils the contractual obligations. Generally, a financial institution, or a bank, or an insurance company or a firm of attorneys is appointed as a trustee. The debenture trust deed (indenture) provides the specific terms of the agreement, including a description of debentures, rights of debenture holders, rights of the issuing company and responsibilities of trustee.

A secured debenture is secured by a lien on the company's specific assets.

Security : Debentures are either secured or unsecured. A secured debenture is secured by a lien on the company's specific assets. If the company defaults, the trustee can seize the security on behalf of the debenture holders. In India, debentures are usually secured by a charge on the present and future immovable assets of the company. This is called equitable mortgage. When debentures are not protected by any security, they are known as unsecured or naked debentures.

Debenture holders have a claim on the company's earnings prior to that of the shareholders.

Claims on assets and income : Debenture holders have a claim on the company's earnings prior to that of the shareholders. Debentures interest has to be paid before paying any dividends to preference and ordinary shareholders. A company can be forced into bankruptcy if it fails to pay interest to debenture holders. Therefore, in practice, the debenture holders' claim on income is generally honored except in the case of extreme financial difficulties faced by the company.

In liquidation, the debenture holders have a claim on assets prior to that of shareholders. However, secured debenture holders will have priority over the unsecured debenture holders. Thus, different types of debt may have a hierarchy among themselves as their order of claim on the company's assets.

Features of Long-term Financing

Long-term financing have a number of basic features which are discussed below :

Long-term financing has a number of basic features.

Maturity : Banks and DFIs are the main sources of term loans. These loans are provided for a period exceeding 5 years. So, the maturity of term loan is longer.

Direct negotiation : A firm negotiates term loans for project finance directly with a bank or FI. Thus term loan is a private placement. Sometimes debentures may also be privately placed to FIs, but most debenture issues are placed for public subscription. The advantages of private placement are the ease of negotiation and low cost of raising loan. Unlike in the case of public issue, the firm need not underwrite term loans. Thus it avoids underwriting commission and other flotation costs.

Security : Term loans are always secured. They are secured specifically by the assets acquired using term loan funds. This is called primary security. Term loans are also generally secured by the company's current and future assets. This is called secondary or collateral security. Also, the lender, may create either fixed or floating charge against the firm's assets. Fixed charges means legal mortgage of specific asset.

Restrictive covenants : In addition to the asset security, lender would like to protect itself further. Therefore, FIs add a number of restrictive covenants. A financially weak firm attracts stringent terms of loan from lenders. The borrowing firm has generally to keep the lender informed by furnishing financial statements and other information periodically. The restrictive covenants may be categorized as follows:

Asset-related covenants : Lender would like the firm to maintain its minimum asset base. Therefore, restrictions may include to maintain minimum working capital position in terms of a minimum current ratio and not to sell fixed assets without the lender's approval. The firm may also be required to refrain from creating any additional charge on its assets.

Liability-related covenants : The firm may be restrained from incurring additional debt or repay existing loan. It may be allowed to do so with the concurrence of the lender. The firm may also be required to reduce its debt-equity ratio by issuing additional equity and preference capital. The freedom of promoters to dispose of their shareholding may also be limited.

Cash flow-related covenants : Lenders may restrain the firm's cash outflow by restricting cash dividends, capital expenditures, salaries and perks of managerial staff etc.

Control-related covenants : Lenders expect that the firm's management will be competent enough to manage its operations. They may therefore provide for the effective organizational set-up and appointment of suitable staff and the broad-base Board of Directors. One special feature of term loans in this regard could be the provision for the appointment of nominee director by FIs.

Convertibility : FIs in India provide huge amount of loan assistance to the companies. Because of the substantial financial stake of these institutions, in the past they had the option to convert a part of the rupee loan into equity. FIs would state the terms and conditions of the conversion. FIs in India insist on the option of converting loans into equity.

Repayment Schedule : The repayment schedule or loan acquisition specifies the time schedule for paying interest and principal. Payment of loan is legal obligation. Interest charges are tax deductible in the hands of the borrowing firm . The general rate of interest on term loans in India is above 14 or 15 per cent. For companies undertaking their projects in specified backward areas, loans at concessional interest rate (usually 1 ½ percent lower) are available.

Evaluation of Various Types of Debt Financing: Advantage & Disadvantages

Evaluation of Debenture Financing

Debenture financing has a number of advantages, which are discussed below:

Debenture financing has a number of advantages.

Less costly : It involves to the firm than the equity financing, because: a) investors consider debenture as a relatively less risky investment alternative and b) interest payments are tax deductible.

No ownership dilution : Debenture holders do not have any voting rights; therefore, debenture issue does not cause dilution of ownership.

Fixed payment of interest : Debenture holders are entitled a fixed payment of interest irrespective of earnings of the firm. That is why, their interests are certain.

Reduced real obligations : During periods of high inflation, debenture issue benefits the company. Its obligations to pay interests and principal which are fixed decline in real terms.

Debentures have some disadvantages.

On the other hand debentures have some disadvantages which are as follows :

Obligatory payments : Interests as well as principal amount of debenture are obligatory payments for the firm the failure of which may force the company into liquidation.

Financial risks : Debenture increase, the firm's financial leverage which is a sign off financial risks for the firm.

Cash out flows : Debentures must be paid on maturity. As a result, at some points it involves substantial cash out flows.

Restricted Covenants : Debenture indenture may contain restrictive covenants which may limit the firm's operating flexibility in future.

Evaluation of Long-term Financing

Term loans have merits as well as demerits both for the borrowers and lenders.

From the perspective of borrowers, term loan offer all the advantages and disadvantages associated with debenture financing. An additional demerit is that term loan contracts contain restrictive covenants restricting managerial freedom. The right of lenders to nominate directors on the board of the borrowing company may further restrict managerial discretion.

The term loans carry low cost and involve high risk.

Similarly, the term loans provide all the advantages and disadvantages of debenture financing to the lending institutions together with the additional benefit of restrictive covenants to protect their interests. However, term loans are not represented by negotiable securities. Debt securitization would go a long way in removing this limitation of term loans *vis-à-vis* debentures.

To conclude, the term loans carry low cost and involve high risk. There is no adverse effect on control but there is moderate restraint on managerial freedom.

Review Questions

Short Questions:

1. What is debenture financing ?
2. What is a non-convertible debenture ?
3. What is a partly-convertible debenture ?
4. What are the term loans? Explain.
5. How would you evaluate the term loan ?
6. How does a term loan differ from a non-convertible debenture ?

Broad Questions

7. Discuss the features of debenture financing.
8. What are the various types of debentures ? Discuss each of them.
9. Narrate the features of term loan financing.
10. How would you evaluate the debenture financing ? Explain.

Lesson–5: Lease Financing

After attentively studying the lesson 5, you should be able -

- To understand the meaning of lease and lease financing and also to identify the features of a lease.
- To identify the various types of leases.
- To make evaluation of the various types of lease financing.
- To take lease or buy / borrow decision.
- To know the accounting and tax treatments of leases and.
- To acquire knowledge on the technique of determining return to the lessor and the lease payment.

Meaning and Features of Lease and lease Financing

Conceptually, a lease may be defined as a contractual arrangement/transaction in which a party owning an asset/equipment (lessor) provides the assets for use to another/transfers the right to use the equipment to the user (lessee) over a certain/for an agreed period of time for consideration in the form of/in return for periodic payment (rentals) with or without a further payment (premium). At the end of the period of contract (lease period), the asset/equipment reverts back to the lessor unless there is a provision for the renewal of the contract. Leasing essentially involves the **divorce of ownership from the economic use of an asset/ equipment**. Leasing is, thus, a device of financing/money lending.

Leasing essentially involves the divorce of ownership from the economic use of an asset/ equipment.

The essential features of leasing are the following :

Parties to the Contract : There are essentially two parties to a contract of lease financing, viz., the owner and the user, respectively called the lessor and the lessee. Lessors as well as lessees may be individuals, partnerships, joint stock companies, corporations or financial institutions. Sometimes, there may be joint lessors or joint lessees, particularly where the properties or the amount of finance involved is enormous. Besides, there may be a lease-broker who acts as an intermediary in arranging lease deals.

Asset : The asset, property or equipment to be leased is the subject-matter of a contract of lease financing. The asset may be an automobile, plant and machinery, equipment, land and building, factory, a running business, aircraft, and so on. The asset must, however, be of the lessee's choice suitable for his business needs.

Ownership Separated from User : The essence of a lease financing contract is that during the lease-tenure, ownership of the asset vests with the lessor and its use is allowed to the lessee. On the expiry of the lease-tenure, the asset reverts to the lessor.

Term of Lease : The term of lease is the period for which the agreement of lease remains in operation. Every lease should have a definite period, otherwise it will be legally inoperative. The lease period may sometimes stretch over the entire economic life of the asset (i.e. finance lease) or a period shorter than the useful life of the asset (i.e. operating lease). The lease may be perpetual, that is, with an option at the end of lease period to renew the lease for a further specific period.

Lease Rentals : The consideration which the lessee pays to the lessor for the lease transaction is the lease rental. The lease rentals are so constructed as to compensate the lessor for the investment made in the asset (in the form of depreciation), the interest on the investment, repairs/insurance if any borne by the lessor, and servicing charges over the lease period.

Modes of Termination of Lease : At the end of the lease period, the lease is terminated and various courses are possible, such as :

- (a) The lease is renewed on a perpetual basis or for a definite period, or
- (b) The asset reverts to the lessor, or
- (c) The asset reverts to the lessor and the lessor sells it to a third party, or
- (d) The lessor sells the asset to the lessee.

The parties may mutually agree to and choose any of the aforesaid alternatives at the beginning of the lease contract.

Various Types of Leases

Two types of leases can be namely (a) operating lease and (b) financial lease. Sale-and-lease - back is a special financial lease arrangement.

Operating Lease

Short-term, cancelable lease agreements are called operating leases.

Short-term, cancelable lease agreements are called operating leases. Convenience and instant services are the hall-marks of operating leases. Examples are: a tourist renting a car, lease contracts for computers, office equipment, car, trucks and hotel rooms etc. For assets such as computers or office equipment, an operating lease may run for 3 to 5 years. The lessor is generally responsible for maintenance and insurance. He may also provide other services. A single operating lease contract may not fully amortize the original cost of the asset; it covers a period considerably shorter than the useful life of the asset. Because of the short duration and the lessee's option to cancel the lease, the risk of obsolescence remains with the lessor. Naturally, the shorter the lease period and/or higher the risk of obsolescence, the higher will be the lease rentals.

Long-term, non-cancelable lease contracts are known as financial leases. Examples are plant, machinery, land, building, ships, and aircrafts.

Financial Lease

Long-term, non-cancelable lease contracts are known as financial leases. Examples are plant, machinery, land, building, ships, and aircrafts. In

Bangladesh, financial leases are very popular with high-cost and high-technology equipment. Financial leases amortize the cost of the asset over the term of lease; they are, therefore, also called capital or full-payout leases. Most financial leases are direct leases. The lessor buys the asset identified by the lessee from the manufacturer and signs a contract to lease it out to the lessee.

Sale and lease-back : Sometimes, a user may sell an (existing) asset owned by him to the lessor (leasing company) and lease it back from him. Such sale-and-lease-back arrangements may provide substantial tax benefit. In financial lease, the maintenance and insurance are normally the responsibilities of the lessee. The lessee also bears the risk of obsolescence. A financial lease agreement may provide for renewal of contract or purchase of the asset by the lessee after the contract expires. The option of purchasing the leased asset by the lessee is not incorporated in the lease contract in Bangladesh, because if such an option is provided the lease is legally construed to be a hire purchase agreement.

Sometimes, a user may sell an (existing) asset owned by him to the lessor (leasing company) and lease it back from him.

Evaluation of Lease Financing: Advantages & Disadvantages

Advantages of Lease Financing

1. Obsolescence risk is averted : Obsolescence is a significant issue for many types of equipments. Leasing of computers is such a big business that many large companies such as IBM and Dell operate leasing subsidiaries. Therefore, companies will often lease this type of equipment to avoid the cost of repurchasing new equipment. Under a lease arrangement it is sometimes much easier to return your leased product for a new and improved model, especially if you have been a 'good' lessee and you have paid all rents on time.

2. Avoids conditionality: Many loan arrangements have included restrictive covenants that have requirements for an organization to meet or maintain certain liquidity levels or restrict dividend payouts. In other words, covenants attached to either bank loans or bond issues can significantly reduce financial flexibility by restricting capital expenditures and dividend payments; when leases, in general, obligations are restricted to making payments on time and ensuring the underlying asset is insured; with certain types of assets, e.g., aircraft, additional payments may be required to ensure that the asset is being appropriately maintained but on balance there are likely fewer restrictions on the lease option.

3. Acts as a short – term financing: There are many instances where a company may require an asset for only a relatively short period, e.g., acquisition of an aircraft to meet a temporary increase in passenger traffic. Leases are ideal for these situations as they are easier to arrange than purchasing an asset and reselling it at a later date.

4. Acts as a sales lease back arrangements: If companies are in need of working capital they will sometimes use 'sale/leaseback' arrangements. This is an arrangement where an organization owns an asset and sells it

to a leasing company and then leases that asset from the leasing company. These arrangements are popular with land/buildings – tax deductions are improved significantly since land cannot be amortized under the tax law but the full lease payment can be expensed.

5. Increases leverage ratios and profitability ratios : Operating leases have the effect of improving financial ratios for an organization as there is no visible increase in liabilities on the balance sheet and the total assets do not include leased assets. Therefore, leverage ratios and profitability ratios will be higher than if debt was incurred to purchase an asset. It is important to note that analysts and bankers do take into account the impact of both operating and capital leases when completing an analysis of an organization, hence it is unlikely the enterprise would get any real value from the fact the operating lease is not disclosed in the same manner as capital leases. From the analysts' point of view both leases involved financial commitments and risks.

6. Scope for cent percent financing an assets : Leasing allows you to finance an asset 100 where traditional borrowing often limits the percentage of the asset's value you can borrow. Therefore, often you can only borrow up to 90% of the value of asset you purchase.

7. Less costly financing : Often major lease companies are able to acquire equipment and vehicles at lower prices due to bulk purchases than most organizations can negotiate. The effect of this better pricing can allow an organization to pay less for an asset under a lease due to the fact that part of the lower price may be passed through to the lessee as a better lease rate.

8. Financing of capital assets : It is the lease which acts as the financing of capital assets of a lessee. The lessee instead of buying capital assets may lease the same. In this way lease acts as financing of capital assets.

9. Additional source of finance : Lease acts as an additional source of finance in the sense that by using leased assets the lessee takes the benefit of additional source of finance.

10. Preservation of ownership : In case of lease the ownership of the leased assets is legally preserved in the hands of the lessor. The lessee is not entitled to the ownership of the leased property.

11. Simplicity : The lease is a simple contract between the lessor and the lessee. It is free from cumbersome procedures with faster and simple documentation.

12. Tax benefits : In case of lease, the lessee gets the tax benefits in the sense that lease payments are fully deductible from tax treatment in the year they are made. The lessor also gets tax benefits by way of depreciation of leased properties.

13. High growth potential : The leasing industry has a high growth potential. Lease financing enables the lessee to acquire equipment and machinery even during a period of depression.

14. Full security : The lessor's interest is fully secured since he always the owner of the leased assets and can take repossession of the assets if the lessee is in default.

Disadvantages of Lease Financing

1. Implicit rate is often stated : The rate implicit in a lease is often not stated in commercial leases. Therefore, the cost can be quite high than traditional borrowing costs, and the financial officer needs to do some careful analysis.

2. Ownership rights are limited : In the case of a lease, the ownership rights are limited to the value of the leasehold interest and this is generally less than the outright ownership value. The relative value of the leasehold interest and outright ownership will depend upon the lease payments and the value of the asset returned to the lessor at the end of the lease term. There is no ownership position in the asset. Therefore, at the end of the lease term the asset is returned to the lessor. If there is any value left the lessor reaps the rewards of this through the sale of the asset.

3. Restrictions on the change on leased property : Most lease agreements have a provision that improvements or changes to the leased property cannot be made without the permission of the lessor. If the equipment were owned by the organization, they would not need to seek approval of an outside party to make such improvements. Of course, if the improvement is seen to add value to the asset then the lessor is not likely to withhold this approval.

4. Continuation of lease payments by the lessee : If an asset leased becomes obsolete during the lease term, the lessee must continue to make lease payments to the end of the lease term regardless of whether the asset is being used. However, if the asset is purchased using debt and becomes obsolete, the owner is faced with a potentially similar problem of owing money on the debt when the asset is obsolete.

5. Loss of residual value : Since the lessee never becomes the owner of the leased assets; he is deprived of the residual value of the leased assets.

6. Consequences of default : If the lessee is in default in complying with any terms and conditions of the lease contract, the lessor may terminate the lease.

Lease or Buy / Borrow Decision and Factors to be Considered

Whether lease financing or buy/borrow is favored will depend on the patterns of cash outflows for each financing method and on the opportunities cost of funds.

Whether lease financing or buy/borrow is favored will depend on the patterns of cash outflows for each financing method and on the opportunities cost of funds. Several different methods may be used to compare the two alternatives.

More sophisticated after –tax cash-flow method can be used for evaluating lease financing in relation to debt financing. Unless an asset can be used only by leasing it, the decision to lease or buy/borrow can be made on the basis of which alternative has the lowest present value of cash out-flows or the lowest after-tax IRR. In both the cases, a key factor is the interest rate on debt capital relative to the implied discount rate embodied in the lease payments. Unless the later is relatively low, owing to the lessor enjoying the tax and residual value benefits associated with ownership, debt financing will dominate. The decision to employ lease or debt financing occurs only after a firm decides to invest in the project.

Factors affecting leasing decisions

The following two are the important factors that affect leasing decisions :

(i) Estimated Residual Value This refers to the value of leased property at the end of the leased term. The existence of a large residual value on assets is likely to bias the decision against leasing.

(ii) Increased Credit Availability Leasing sometimes is said to have an advantage for firms that are seeking the maximum degree of financial leverage. First, it is sometimes good that a firm cannot obtain more money and for a longer period under a lease arrangement than under a loan secured by the asset. Second, since some leases do not appear on the balance sheet, lease financing has been said to give the firm a stronger appearance in superficial credit analysis thus permitting it to use more leverage than it could if it did not lease. These are true in case of small sized firms but are of questionable in case of large firms requiring to capitalize major leases and to report them on their balance sheets.

In case of lease –buy/borrow decisions the following particulars need to be analyzed :

(1) Cost of owning

- (i) Net purchase price
- (ii) Maintenance cost
- (iii) Maintenance cost tax savings
- (iv) Depreciation tax savings
- (v) Net cash flow
- (vi) Present value of owning

(2) Cost of Leasing

- (vii) Lease payment
- (viii) Lease payment tax savings
- (ix) Purchase option price
- (x) Net cash flow
- (xi) Present value of leasing

(3) Cost Comparison

(xii) Net advantage to leasing

Net Present Value and Net Advantage of Leasing

The net advantage of leasing denotes the incremental advantage over the net present value of buying the asset through normal financing channels. A positive net advantage of leasing implies that leasing has an advantage over the net present value of the asset as an investment, which may itself be either positive or negative. A positive net advantage of leasing implies advantage to leasing. The following Table shows the combination of net present value of investment and net advantage of leasing.

The net advantage of leasing denotes the incremental advantage over the net present value of buying the asset.

Table: Combination of Net Present Value of Investment and Net Advantage of Leasing

Situation	Net Present Value of Investment	Net Advantage of Leasing	Decision
1	Positive	Positive	Lease
2	Positive	Negative	Buy
3	Negative	Negative	Reject
4	Negative	Positive	Lease if sum of net present value and net advantage of leasing is positive, otherwise reject.

Accounting and Tax Treatments of Leases

The accounting treatment of leases depends on the type of lease. Leases that convey most of the economic benefits and risks associated with ownership are known as capital leases. Non – controllable leases not meeting this criterion are called operating leases. For a capital lease, the capitalized value of the leased property must be shown on the balance sheet as an asset, with the obligation shown as a liability. Moreover, the reported lease expense is the amortization of the lease property plus the implied interest rate embodied in the lease payments, not the amount of the lease payment. For the operating lease, the reported lease expense is the latter. For tax purposes, the lease payment is deductible as an expense provided it meets certain guidelines established by the Internal Revenue Service.

The accounting treatment of leases depends on the type of lease.

The distinction between capital lease and operating lease is very important as the accounting treatment vary significantly between the two lease types. The key differences in the two different accounting treatments are summarized in Table below :

Lease type	Income Statement	Balance Sheet
Operating	Total lease payments are expensed.	No balance sheet obligation.
Financial	Amounts Expensed are : a) Amortization of the underlying assets based on its useful life and b) Interest component of the lease payment	A liability is set up on the balance sheet for the unpaid capital portion of the lease. This liability is displayed with other long – term debt. In other words, the financial lease is treated like long – term debt.

For both operating and financial leases, total future commitments have to be disclosed (in the notes to the financial statements) along with the payments required for each of the next years.

In general, the tax treatment in case of leases is summarized in the table below:

Lessee	Lease payments are fully deductible in the year they are made irrespective of whether the lease is operating or financial
Lessor	The lease payments are income in the hands of the lessor; the lessor is entitled to claim Capital Cost Allowance (CCA), which is the equivalent of amortization for tax purposes, on the related asset since the lessor is the legal owner.

The tax deductibility of lease payments is a significant element in the decision on whether or not to lease. This differs from the treatment of loan payments for tax purposes, where only the interest portion is tax deductible.

Techniques of Determining Return to the Lessor and Lease Payment

Calculation of Return to the Lessor

A good place to begin an analysis of a lease is with the interest return to the lessor. Obviously this is important to the lessor, but it also is useful to a potential lessee in comparing financing alternatives. The return depends on three things : (1) the length of the lease, (2) the periodic lease payment and whether it is paid at the beginning or at the end of the period, and (3) the residual value assumption. If lease payments are in advance, the formula for determining the implied interest return is

$$\text{Value of asset} = \sum_{t=0}^{mn-1} \frac{\text{Lease payment}}{\left(1 + \frac{R}{m}\right)^t} + \frac{RV}{\left(1 + \frac{R}{m}\right)^{mn}} \dots\dots\dots(1)$$

Where Value of asset = what it costs the lessor to acquire or its market value if the asset already is owned

n = length of the lease in years

m = number of times a year periodic lease payments are made

R = implicit interest rate for which we solve

RV = assumed residual value at the end of the lease term.

If, instead of in advance, lease payments are at the end of the period, the Greek summation sign would begin at t = 1 and end at mn.

Calculating Lease Payment

The lessor can use Eq. (1) to solve for the periodic lease payment necessary to provide a given return.

Problems and Solutions:

Problem – 1

Assuming that annual lease payments are in advance, solve for the unknown in each of the following situations:

- Purchase price of \$46,000, implicit interest rate of 11 percent, a 6 year lease period, \$3,000 expected residual value; solve for the annual lease payment.
- Purchase price of \$21,000, a 5 year lease period, annual lease payments of \$45,000; an expected residual value of \$25,000; solve for the implied interest rate.
- Implied interest rate of 8%, a 7 year lease period; annual lease payments of \$16,000 expected residual value of \$10,000, solve for the purchase price.
- Purchase price of \$165,000, implied interest rate of 10 percent, annual lease payments of \$24,412, no residual value; solve for the annual lease period.

Solution

- a) Using Eq. (1)

$$\begin{aligned} \$46,000 &= \sum_{t=0}^5 \frac{x}{(1.11)^t} + \frac{\$3,000}{(1.11)^6} \\ &= x + x(\text{PVAF for 5 years at 11\%}) + 3,000(\text{PVF for 6 years at 11\%}) \\ \$46,000 &= x + 3.6959x + \$1,604 \\ x &= \frac{\$44,396}{4.6959} = \$9,454.20 \end{aligned}$$

$$b) \quad \$21,000 = \sum_{t=0}^4 \frac{\$45,000}{(1+x)^t} + \frac{\$25,000}{(1+x)^5}$$

Solving for x in the equation, it is found to be 8.26 percent.

$$\begin{aligned} (c) \quad x &= \sum_{t=0}^6 \frac{\$16,000}{(1.08)^t} + \frac{\$10,000}{(1.08)^7} \\ &= 1,600(\text{PVAF for 6 years at 8\%} + 1) + 10,000(\text{PVF for 7 years at 8\%}) \\ x &= \$16,000(1 + 4.6229) + \$5,835 \\ x &= \$95,801 \end{aligned}$$

$$\begin{aligned} (d) \quad \$165,000 &= \sum_{t=0}^x \frac{\$24,412}{(1.10)^t} \\ \$165,000 / \$24,412 &= 6.759 \end{aligned}$$

Subtracting 1 from this gives 5.759. Looking at Present Value Annuity Table A - 2 down the 10 percent column, we find that 5.759 corresponds to 9 year. Therefore, the lease period is 9 + 1, or 10 years.

Problem – 2

The Lancelot Company wants to invest \$50,000 in trucks, but wishes to evaluate whether leasing is worthwhile. We make a further assumption: Lancelot drivers are very hard on their trucks such that they are worn out and have no residual value at the end of seven years. Ajax Leasing has offered to lease the vehicles over a seven-year term for \$10,000 per year. The company may also borrow the necessary funds using a seven-year term loan with an interest rate of 10%. Answer whether the company will take lease or buy the trucks.

Solution:

CCA Claim:

Year	Purchase	UCC for CCA A	CCA @30% B = 0.3 x A	Tax shield @ 40% C = 0.4 x B
1	50,000	25,000	7,500	3,000
2	-	42,500	12,750	5,100
3	-	29,750	8,925	3,570
4	-	20,825	6,248	2,499
5	-	14,578	4,373	1,749
6	-	10,204	3,061	1,224
7	-	7,143	-	2,857

Note that UCC is the un-depreciated capital cost, which is similar to net book value for accounting purposes. It represents the amount on which tax amortization - CCA may be claimed. In the first year it is 50% of the purchase price due to the fact that under Canadian tax laws a company can only take 50% of the normal CCA in the first year of purchase of an asset.

In year seven, \$7,143 remains in the asset pool but the assets are scrapped without obtaining any value. In this situation, provided Lancelot was not going to buy any more trucks, they could claim what is called a terminal loss (i.e., the value of any remaining UCC (\$7,143)). This loss would generate a tax shield of $7,143 \times 40 = \$2,857$.

Now that we have established the CCA arising from ownership, we can compare the cash flows arising from ownership to the cash flows arising if we lease. If we buy a truck, then we would have a \$50,000 cash outflow and cash inflows derived from the tax savings in the above table- If we lease, we will have outflows to the lease payments and tax savings achieved from the lease, i.e., $10,000 \times 40\% = \$4,000$. In the table below, we examine the differential cash flow of leasing versus an outright purchase.

	1	2	3	4	5	6	7
Truck Purchase	50,000						
Payment shield from CCA	(3,000)	(5,100)	(3,570)	(2,499)	(1,749)	(1,224)	(2,857)
Lease payment	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)
Payment shield from lease	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Net Cash Flow	41,000	(11,100)	(9,570)	(8,499)	(7,749)	(7,224)	(8,857)

As per the table in year 1, we would be \$41,000 to the good if we decided to lease as opposed to an outright purchase.

We can complete our analysis by calculating the so-called net advantage of leasing (NAL) by determining the NPV of the above cash flows and using the after tax cost of borrowing as the discount rate (i.e., 6). If we do this, we can determine that the NAL in the above case is minus \$2,741. In other words, there isn't a net advantage to leasing. NAL would need to be positive for the lease to be less costly than a loan. We can also use trial and error to determine what lease rate would produce an NAL of zero. This is another way of saying: what lease rate do we require to at least equate with the bank financing? If we use the NPV function to do this, the result based on Lancelot's numbers is about \$9,825. As long as the rate we can negotiate is less than \$9,825 we achieve a saving by going to a lease arrangement.

Problem – 3

Cordillera Pisco Company wishes to acquire a \$1,00,000 press, which has a useful life of 8 years. At the end of this time, its scrap value will be \$20,000. The assets fall into the 5 – year property class for cost recovery (depreciation) purposes. The company can use either lease or debt financing. Lease payments of \$14,000 at the beginning of the each of the 8 years would be required. If debt financed, the interest rate would be 10 percent and debt payments would be due at the beginning of each of the 8 years. (Interest would be amortized as a mortgage type of debt instruments). The company is in a 15 percent tax bracket. Which method of financing has the lower present value of cash outflows?

Solution:

Lease cash outflows:

The discount rate is the before – tax cost of borrowing, 10 percent, times 1 minus the tax rate.

End of Year	(1) Lease Payment	(2) Tax Shield (1) (.15)	(3) Cash Outflow After Taxes (1) – (2)	(4) Present Value of Cash Outflow (8.5%)
0	\$14,000	--	\$14,000	\$14,000
1-7	14,000	\$2,100	11,900	60,910
8	--	2,100	(2,100)	(1,093)
	Present value of cash outflow =			\$ 73,817

Debt cash outflows:

$$\text{Annual debt payment} : \$1,00,000 \sum_{t=0}^7 \frac{x}{(1.10)^t}$$

$$\$1,00,000 = x + 4.8684x$$

$$x = \$1,00,000 / 5.8684 = \$17,040$$

End of Year	(1) Debt Payment	(2) Amount owing at End of Year	(3) Annual Interest
0	17,040	82,960	0
1	17,040	74,216	8,296
2	17,040	64,598	7,422
3	17,040	54,018	6,460
4	17,040	42,380	5,402
5	17,040	29,578	4,238
6	17,040	15,496	2,958
7	17,046	0	1,550

The last payment is slightly higher due to rounding.

End of Year	(1) Debt Payment	(2) Annual Interest	(3) Depreciation	(4) Tax Shield (2+3).15	(5) A.T. Cash Flow (1) – (4)	PV of Cash Flows (8.5%)
0	17,040	0	0	0	17,040	17040
1	17,040	8,296	20,000	4,244	12796	11794
2	17,040	7,422	32,000	5913	11127	9452
3	17,040	6,460	19,200	3849	13191	10327
4	17,040	5,402	11,520	2538	14052	10464
5	17,040	4,238	11,520	2364	14676	9760
6	17,040	2,958	5,760	1308	15732	9643
7	17,046	1,550	--	238	16813	9498
8	(20,000)	Residual value	--	(3,000)	(17000)	(9851)
				Total PV of cash flows		79,127

As the lease alternative has the lower present value of cash outflows, it is preferred. The low tax rate and favorable embedded lease cost explains the dominance.

Review Questions

A. Short Questions

1. How would you define lease ?
2. What is a financial lease ? Give examples.
3. What is an operating lease ? Give examples
4. What do you mean by sale and lease back ?
5. What is a net advantage of a lease? How it is calculated ?
6. “ It makes sense for companies that pay no taxes to lease from companies that do”. Explain.

B Broad Questions

7. Discuss the various types of leases with examples.
8. How would you evaluate lease financing? Explain.
9. In order to take lease or buy / borrow decision, what are the points to be considered? Explain.
10. How would take lease or buy/ borrow decision? Explain in detail.
11. How would you treat the leases for accounting and tax purposes? Explain in detail.

Review Problems:

Problem – 1

Ajax Finance Corp has received a request from a customer to lease a fire truck. If the cost of the vehicle is \$1,000,000, determine the monthly lease payments based upon the following parameters:

- Lease terms – 5 years
- Interest rate – 10%
- Estimated salvage value at the end of the lease - \$5,00,000

Determine the monthly payment assuming that payments are made at the end of the month.

Problem – 2

Given the following information, compute the annual lease payment that a lessor will require (lease payments are in advance).

- a) Purchase price of Taka 2,60,000, interest rate of 13%, 5 year lease period, and no residual value.
- b) Purchase price of 1,38,000, interest rate of 6%, 9 year lease period and residual value of 20,000.
- c) Purchase price of 7,73,000, interest rate of 9 percent, 10 year lease period and no residual value.

Problem – 3

Lucy Locker Corporation has just lease a machine that calls for annual lease payments of Taka 30,000 payable in advance. The lease period is 6 years and the lease is classified as a capital assets. The company's incremental borrowing rate is 11% where is the lessor's implicit interest rate is 12%. Amortization of the lease in the 1st year amounts to Taka 16,332. On the basis of the information, compute:

School of Business

- a) The amounting lease liability that will be shown on the balance sheet immediately after the first lease payment.
- b) The annual lease expense (amortization plus interest) in the 1st year as it will appear on the accounting income statement. (The interest expense is based on the accounting value determined in part a).

Lesson–6: Hybrid and Derivative Types of Financing

After attentively studying the lesson 6 you should be able -

- To know the concepts of hybrids and derivatives.
- To identify the features of convertible securities and also the causes of issuing convertible securities.
- To know how to practically determine the value of convertible bonds.
- To realize the pros and cons of exchangeable debt and.
- To describe the major aspects of warrants and options.

Concepts of Hybrids and Derivatives

Due to the complex nature of the investment world, today new financial instruments are developed to allow the investing public alternative means of investing in organizations and to allow organizations a variety of products to lure investors to their organization for investment purposes. Hybrids and derivatives are such products. Hybrids are securities that combine the features of two different types of financial assets. A preferred share is a common example of a hybrid security as it combines some of the features of a debt instrument, i.e., fixed payments of dividends is similar to fixed interest payments and those of common shares, i.e., an ownership position in the organization.

Hybrids are securities that combine the features of two different types of financial assets.

Unlike hybrids, derivatives securities have value based on an underlying asset or security but they are neither a debt nor an equity instrument. Derivatives are instruments linked to other existing securities and whose value depends on the value of the linked security. Derivative securities do not provide an organization with funds, as would a primary bond issue or a primary share issue. Rather they are used by organizations to help manage their financial risk.

Derivatives are instruments linked to other existing securities and whose value depends on the value of the linked security.

Features of Convertible Securities

Convertible securities are either bonds or preferred shares that have a feature that allows the investor to exchange these instruments for a predefined number of common shares. Convertible bonds have all the characteristics of a regular bond but in addition they offer an opportunity for capital appreciation due to the fact they can be converted into common shares at a stated price and for a stated period. Due to these convertible features these bonds often carry a lower interest rate than a regular bond.

A convertible preferred share operates the same way. It has the same features and rights as a regular preferred share with the added feature that it may be converted to common shares at a stated price for a stated period. As with bonds, these generally command a lower dividend rate

from investors as they have the opportunity to participate more fully in the growth of the organization.

Characteristics of Convertible Debentures

When a company issues a convertible debenture, it clearly specifies conversion terms which indicate the number of equity shares in exchange for the convertible debenture, the price at which conversion will take place and the time when the conversion option can be exercised.

The number of ordinary shares per one convertible security is called the conversion ratio.

Conversion ratio and conversion price The conversion ratio is the number of ordinary shares that an investor can receive when he exchanges his convertible debenture. In other words, the number of ordinary shares per one convertible security is called the conversion ratio. The conversion price is the price paid for the ordinary share at the time of conversion. If you know the par value of the convertible security and its conversion price, you can easily find out the conversion ratio:

Conversion ratio == Par value of convertible debenture/Conversion price.

Reasons for Issuing Convertible Securities

At least four reasons can be cited for issuing the convertible debentures. They are: (a) 'sweetening' debentures to make them attractive, b) selling ordinary shares in future at a higher price, (c) avoiding immediate dilution of earnings, and (d) using low cost capital initially.

The primary purpose of issuing convertible debenture is to make the issue attractive enough so that it is fully subscribed.

Sweetening fixed-income securities : The primary purpose of issuing convertible debenture is to make the issue attractive enough so that it is fully subscribed. Investors generally prefer fixed interest convertible debentures over non-convertible because this enables them to earn a definite, fixed income with the chance of making capital gains. Hence, the convertibility feature 'sweetens' the issue. Also, the company may offer relatively low interest rate on convertible debenture because of the value of the conversion feature as compared to a non-convertible debenture.

By issuing a convertible debenture, the firm is in effect selling ordinary shares in future.

Deferred equity financing : By issuing a convertible debenture, the firm is in effect selling ordinary shares in future. A company would do so when it considers the current market price of its share to be low, but wants to issue shares at a higher price. This can be achieved by setting the conversion price to be higher than the ordinary share's prevailing market price.

Avoiding earnings dilution : Yet another reason for convertible debenture as a deferred equity financing could be to avoid immediate dilution of the earnings per share. The company may like to use fixed-income security and not increase the number of issued shares until its investment starts paying off.

Raising low cost capital : A company may raise funds to finance a large expansion/modernization or diversification. It may like to finance such needs through equity financing, but it may instead choose a convertible debenture. By doing so, the company is able to use the lower cost of capital (interest on debt is tax deductible) during the initial stage of investment when its effects are not fully reflected in the earnings. When the project is complete, the company's earnings will rise, increasing the share prices. The holders of the convertible debentures, who initially provided cheap funds the company, can now convert their debentures into ordinary shares and participate in the prosperity of the company.

Practical Determining Value of Convertible Bonds

There are different values that can be used to assess the value of a convertible bond. The first is what is referred to as the straight bond value. This is the value of that would be attributed to the bond if it did not carry a convertible feature. We calculate this value the same way we calculate the present value of a straight bond. We, therefore, need to know the coupon rate of the convertible bond, the market interest rate for a bond with the same risk assessment, the term of the bond, and the par value of the bond. We will use an example of a convertible bond with the following features and market assumptions

Par Value	\$1,000
Coupon Rate	8
Annual Interest	\$80
Market Rate of Return	10
Term	15 years
Conversion Ratio	20 shares
Market Price per Share	\$30

Based on these information we can calculate the straight bond value as :

Present value of \$80 annual interest, remembering that bond coupons are actually paid half yearly at \$40 in our example for 15 years discounted at 10 = \$608 (PV A Table : Factor 7.6061) Plus the present value of the principal of \$1,000 due in 15 years discounted at 10 = \$239 (PV Table : factor 0.2394).

Total straight bond value is \$847.

The conversion value is the conversion ratio times the market price per share, which in this example equals 20 shares times \$30 = \$600.

The straight bond price is the minimum value a bond would trade at. Therefore in the above example the bond would trade at the \$847 amount and not the conversion value of \$600.

The conversion value is the conversion ratio times the market price per share.

The straight bond price is the minimum value a bond would trade at.

What would the bond actually sell for in the market? As long as the conversion value is less than the straight bond value, the bond would likely sell at the straight bond value plus a market premium. The amount of the market premium depends on the value attributed to the shares and the probability the share prices will increase to the point that conversion is profitable. In other words, what is the outlook for the price of the shares? If the market believes that the share price will rise above the conversion price, investors will be willing to pay more than the straight bond value. When the conversion value is greater than the straight bond value then the convertible bond would trade at the conversion value as a minimum and there may be a market premium. Again the amount of the market premium is dependent on the outlook for the share price.

Major Aspects of Warrant

Meaning of a Warrant

Warrant :
A long term option issued by a corporation to buy a stated number of shares of common stock at a specified price.

A warrant entitles the purchaser to buy a fixed number of ordinary shares at a particular price during a specified time period. Warrants are generally issued along with debentures issue as sweeteners’.

A **warrant** is an option issued by a company that gives the holder the right to buy a stated number of shares of the company’s stock at a specified price. Generally, warrants are distributed along with debt, and they are used to induce investors to buy a firm’s long – term debt at a lower interest rate than otherwise would be required.

Characteristics of Warrants

Warrants have a number of features like:

Exercise price : The exercise price of a warrant is the price at which its holder can purchase the issuing firm's ordinary shares.

Exercise ratio : The exercise ratio states the number of ordinary shares that can be purchased at the exercise price per warrant. This is same as the conversion ratio in the case of the convertible securities.

Expiration date : The expiration date is the date when the option to buy ordinary shares in exchange for warrants expires.

Detachability: A warrant can be either detachable or non – detachable. If a warrant can be sold separately from the debenture (or preference share) to which it was originally attached, it is called a detachable warrant. A non – detachable warrant can not be sold separately from the debenture to which it was originally attached.

Right : Warrants entitle to purchase ordinary share. Therefore, the holders of warrants are not the shareholders of the company until they exercise their options. Therefore, they do not have the rights of ordinary shareholders, such as the right to vote or receive dividends. Once they exercise their warrants and buy ordinary shares, they become the company’s ordinary shareholders.

Why Issue Warrants

Why do companies issue warrants? Generally, three reasons are cited for issuing warrants. They include 'sweetening' of debt security, issuing ordinary shares in future and obtaining capital in future.

They include 'sweetening' of debt security, issuing ordinary shares in future and obtaining capital in future.

Sweetening debt Warrants help to make the issue of equity and debentures attractive. If the company is doubtful about the full subscription of the debenture issue, warrants are used to 'sweeten;' the issue by giving the investors an opportunity to participate in capital gains when the share price appreciates. A company may also offer relatively low interest rate to the investors if the warrants are attached to the debenture.

Deferred equity financing : Warrants provide a company an opportunity for deferred equity financing. What is the advantage of deferred equity financing? The company sells its ordinary shares in future at a premium by setting exercise price higher than the prevailing share price. What is important, however, is the future share price. If the market price in future does not rise higher than the exercise price, investors may not exercise the warrants.

Cash inflow in future:

Many other advantages of warrants are also claimed in practice-

- Issue of warrants keeps the share price high because it keeps equity at a lower level and thereby causes earning per share to increase.
- The investors enabled to have access to the shares without investing the full amount in the share now. The issue of non – convertible debentures (NCDs) with attached warrants allows investors to strip the warrant and sell NCD at a very small discount. Thus his investment today is almost zero. He pays for share after some time in future.
- Issue of warrants enables promoters to increase their holdings. An issue of partly – convertible debentures (PCDs) is almost same as an issue of NCDs with warrants attached. NCDs with warrant attached are not well understood by public. Therefore, they are undersubscribed. This helps the promoters to subscribe to NCDs with warrants attached by putting extra money and increase their holdings.

Valuation of Warrants

We will examine the value of a warrant assuming that it issued with a bond. We will work through the calculations for the implied value of a warrant, the theoretical value, and the warrant premium.

1. Implied Value of a Warrant

Simply stated, the implied value of all warrants is the difference between a straight bond value and the price of a bond with warrants.

Simply stated, the implied value of all warrants is the difference between a straight bond value and the price of a bond with warrants. As the value of a warrant is dependent on the value of the shares it can be converted to, we must examine the market value of each warrant compared to the implied value. As an investor what we want is a situation where the implied value of the warrant is less than the current market value of each warrant. How do we determine market value? As with convertible bonds, market value is not something that we can calculate with any degree of certainty as it will depend on market forces and views of the underlying common shares. We can, however, calculate a theoretical value.

2 Theoretical Value of a Warrant

The theoretical value of a warrant is an estimate of the market price of the warrant.

The theoretical value of a warrant is an estimate of the market price of the warrant. In order to calculate the theoretical value of a warrant we need to know the current market price of the underlying common shares, the exercise price stated in the warrant, and the number of shares the warrant holder can purchase with each warrant. The theoretical value assuming immediate conversion is equal to:

Market price of common share less the exercise price of the warrant multiplied by the number of shares that can be purchased with each warrant.

We will assume the following facts to demonstrate this calculation:

Stock price \$100

Exercise price \$75

Number of shares that can be purchased with each warrant: 5

Theoretical value = $(100 - 75)$ times 5

= \$125

If the implied value of these same warrants were below \$125, that would be positive for the investor, i.e., he/she would be paying less than the estimated value of the warrants. You would also expect the market value of the warrant to be above the \$125 theoretical value. Why? Because they are a cheap way to maintain an option to buy the stocks until the warrant expires. Investors get the benefit of capital gains on the stock but only have the value of the warrants at risk.

Premium : The difference between the warrant's market value and its theoretical value is called the premium. It can be found as follows:

$$\text{Premium} = \frac{\text{Warrant's market value} - \text{Warrant's theoretical value}}{\text{Warrant's theoretical value}}$$

Major Aspects of Options

Definition of Options

An option is a contract that gives its holder the right to buy (or sell) an asset at some pre – determined price within a specified period of time. “Pure options” are instruments that are created by outsiders (generally investment banking firms) rather than by the firm itself, they are bought and sold primarily by investors (or speculators). However, financial manager should understand the nature of options because this will help them structure warrant and convertible financings, both of which have similar characteristics.

An option is a contract that gives its holder the right to buy (or sell) an asset at some pre – determined price within a specified period of time.

Purposes of Options

One important item to note about options is that they are not used to raise capital for an organization, as the company whose stock is being contracted for does not participate in the option contract nor does it receive any funds as a result of the option contract. Options are attractive to investors as a means of protecting their investment positions. If investors purchase a call option, they are anticipating that the price of the underlying stock will increase. Through the purchase of an option they ensure that they can purchase shares at a price that will be below their forecasted market prices at the date they exercise the option. If the price of the underlying shares is below the option strike price the purchaser will let the option expire without exercising it.

Options are attractive to investors as a means of protecting their investment positions.

If investors purchase a put option, they are anticipating that the price of the underlying stock will decline. If the market price falls below the strike price, the option holder will exercise his option and sell his/her shares at the strike price. If the share price rises above the strike price, the option holder will sell his/her shares on the open market and let the option expire without exercising it.

Types of Options

There are many types of options which are as follows :

Striking (Exercise) Price: The price that must be paid (buying or selling) for a share of common stock when an option is exercised.

Call Option : An option to buy or “call” a share of stock at a certain price within a specified period.

Put Option : The option to sell a specified number of shares of stock at a pre-specified price during a particular period.

Option Values

The value of an option is closely related to the value of the underlying stock, which is the stock on which the option is written, and the striking price. For example, an investor who purchases call options hopes that the value of the underlying stocks goes above the striking price during the option period, because then the option could be exercised at a gross

IN-THE-MONEY OPTION : *When it is beneficial financially for the option holder to exercise the option.*

Out-of-the-money option is not beneficial financially for the option holder to exercise – a loss would be incurred if the option is exercised.

profit equal to the market value of the stock less the striking price. In this case, the investor is said to have an **in-the-money option** because he or she can exercise the call option by purchasing the stock at the striking price and then can immediately sell the stock for its market value, which is greater than the striking price. If the market value of the stock is below the striking price, the call is said to be an **out-of-the-money option**. This option is not beneficial financially for the option holder to exercise – a loss would be incurred if the option is exercised.

As it is seen, both the value of the underlying stock and the striking price of the option are very important in determining whether an option is in-the-money or out-of-the money. If an option is out-of-the-money on its expiry date, it is worthless. Therefore, the stock price and the striking price are important for determining the market value of an option. In fact, options are called derivative securities because their values are dependent on, or derived from, the value of the underlying asset and the striking price.

In addition to the stock price and the striking price, the value of an option also depends on (1) the option's time to maturity and (2) the variability of the underlying stock's price.

Exchangeable debt involves an option on the stock of a company other than the issuer.

Pros and Cons of Exchangeable Debt Including Advantages and Disadvantage

An exchangeable bond is like a convertible bond, but the common stock involved is that of another corporation.

Features of an Exchangeable Debt

As with convertible bonds, there typically is a call feature and most issues are subordinated.

Like the conversion price and conversion ratio for a convertible security, the exchange price and exchange ratio must be set at the time of issuance. As with convertible bonds, there typically is a call feature and most issues are subordinated.

Use in Financing

Exchangeable bond issues usually occur only when the issuer owns common stock in the company in which the bonds can be exchanged.

Exchangeable bond issues usually occur only when the issuer owns common stock in the company in which the bonds can be exchanged. A primary reason for an exchangeable offer is that the company owning the stock wishes to divest. A secondary offering of the stock involves more underwriting and other fees than does an exchangeable offer. Perhaps a tax advantage exists in that any dividends on the stock owned by the company prior to its being exchanged qualify for the 70 percent inter-corporate dividend exclusion, whereas interest on the exchangeable debt may be deducted in its entirety for tax purposes.

Like the convertible, interest costs are lower because of the option value of the instrument. So far most companies issuing exchangeable have been large and would not have experienced difficulty financing with straight debt issue. The attraction is a lower interest cost together with the possibility of disposing of a common stock investment at a premium above the present price.

Valuation of an Exchangeable Debt

The valuation of an exchangeable security is identical in most respects to that of a convertible security. Exchangeable debt can be viewed as -

Debt Value + Call option Value + Exchangeable debt Value

Where call option is on the stock of the company in which the debt is exchangeable. Therefore, the investor must analyze and track the bond of one company and the stock of another.

Advantages and Disadvantages of Exchangeable Debt

One advantage of the exchangeable bond is diversification; the bond-value floor and the stock value are not directly linked. Poor earnings and financial performance in one company will not lead to a simultaneous decline in bond-value floor and in the stock value. If the companies are in unrelated industries, the investor achieves diversification. With market imperfections, this may lead to a higher valuation for the exchangeable than for the convertible, all other things the same.

Because option values are driven by the volatility of the associated asset, differences in volatility may affect the choice between an exchangeable and a convertible bond issue. If the stock of the company in exchange is more volatile than that of the issuer, the option value will be greater with an exchangeable bond issue than it will with a convertible bond issue, all other things the same.

A relative disadvantage to the investor has to do with taxation. The difference between the market value of the stock at the time of exchange and the cost of the bond is treated as a capital gain for tax purposes. In the case of a convertible, this gain goes unrecognized until the stock is sold. The net effect of these factors is unclear.

Problems and Solutions

Problem - 1

Sun and Fun Sports Equipment must decide whether to obtain \$1,000,000 of financing by selling common stock at its current price of \$40 per share or selling convertible bonds. The firm currently has 250,000 shares of common stock outstanding. Convertible bonds can be sold for their \$1,000 par value and would be convertible at 445. The firm expects its earnings available to common stockholders to be \$700,000 each year over the next several years.

- a. Calculate the number of shares the firm would need to sell to raise the \$1,000,000.
- b. Calculating the earnings per share resulting from the sale of common stock.
- c. Calculate the number of shares outstanding once all bonds have been converted.
- d. Calculating the earnings per share associated with the bond financing after conversion.

- e. Which of the financing alternatives would you recommend the company adopt? Why?

Solution

Sun and Fun Sports Equipment

- a. $1,000,000 / 40 = 25,000$ shares
- b. $7,00,000 / (2,50,000 + 25,000) = \2.55 EPS
- c. $1,000,000 / 1,000 = 1,000$ bonds
- $1,000 / 45 = 22.222$ shares
- $1,000 \text{ bonds} \times 22.222 \text{ shares} = 22,222$ shares
- $2,50,000 + 22,222 = 2,72,222$ shares outstanding
- d. $7,00,000 / (2,50,000 + 22,222) = \2.57 EPS
- e. Since the convertible bond issue results in less dilution and higher EPS (although the EPS are very close), it is therefore recommended. The risk of an overhanging issue should be considered since the marginal increase in EPS is slight.

Problem – 2

The Charier Boat Company has current earnings of \$3 a share with 5,00,000 shares outstanding. The company plans to issue 40,000 shares of 7%, \$50 par value convertible preferred stock at par. The preferred stock is to convertible into two shares of common for each preferred share held. The common stock has a current market price of \$21 per share.

- a. What is the preferred stock's conversion value?
- b. What is its conversion premium?
- c. Assuming that total earnings stay the same, what will be the effect of the issue of an basic earning – per share (1) before conversion? and (2) on a fully diluted basis.
- d. If profits after taxes increase by \$1 million, what will be basic earnings per share (1) before conversion? (2) on a fully diluted basis?

Solution

a. Conversion ratio × market price per share = 2 × \$21 = \$42

b. $(\$50/42) - 1 = 19.05\%$

c. Earnings per share effect:

Total after tax earnings = \$3 × 5,00,000 shares =	\$1,500,000
Preferred stock dividend	<u>1,40,000</u>
Earnings available to common stock holders	\$1,360,000
Number of shares	5,00,000
Basic earnings per share	\$2.72
Total after – tax earnings	\$1,500,000
Number of shares (5,00,000 + 80,000)	5,80,000
Diluted earnings per share	\$2.59

d. Primary earnings per share effect with profit increase:

Total after - tax earnings = \$3 × 5,00,000 shares =	\$2,500,000
Preferred stock dividend	<u>1,40,000</u>
Earnings available to common stock holders	\$2,360,000
Number of shares	5,00,000
Basic earnings per share	\$4.72
Total after – tax earnings	\$2,500,000
Number of shares (5,00,000 + 80,000)	5,80,000
Earnings per share	\$4.31

Problem – 3

Sadfield Manufacturing Company plans to issue \$10 million in 6% convertible subordinated debentures. Currently, the stock price is \$36 per share and the company believes it could obtain a conversion premium (issuing price in excess of conversion value) of approximately 12%. The call price of the debenture in the first 10 years is \$1,060 per bond, after which it drops to \$1,030 in the next 10 years and to \$1,000 in the last 10 years. To allow for fluctuations in the market price of the stock, the company does not want to call the debentures until their conversion value is at least 15% in excess of the call price. Earnings per share are expected to grow at an 8% compound annual rate in the foreseeable future, and the company envisions no change in its price/earnings ratio.

- Determine the expected length of time that must elapse before the company is in a position to force conversion.
- Is the issuance of a convertible security a good idea for the company?

Solution

a. Conversion price = $\$36 \times 1.12 = \40.32

Call price per share the 10 years = $\$40.32 \times 1.06 = \42.74

Price to which the common must rise before the company will be in a position to force conversion = $\$42.74 \times 1.15 = \49.15

Increase from present price = $\$49.15 / \#36 = 1.365$

At an 8% compound growth rate, earnings per share will grow to 1.36 in 4 years (This is simply 1.08^4 .) If the price /earnings ratio stays the same, it will take approximately 4 years before the company will be in a position to force conversion.

- b. This period is somewhat longer than the 2 to 3 years that market participants have come to expect for the convertible security. Still, it is not far out of line and the company may wish to go ahead. However, if certainty as to earnings per share increases with the length of time in the future, there may be considerable risk of an overhanging issue.

Review Questions

A. Short Questions

1. What do you mean by Hybrid and Derivative types of securities? Give examples.
2. What is a convertible security? Give example.
3. Why convertible securities are issued? Explain.
4. What is a warrant? Give example.
5. Define an option. What are its purposes?
6. What are the various types of options? Discuss.
7. How would you value options? Explain.
8. How would you value an exchangeable debt? Explain.
9. Discuss the advantages and disadvantages of an exchangeable debt.
10. Discuss the advantages of issuing warrants.

B. Broad Questions

11. What are the features of convertible securities? Discuss. What are the reasons for issuing convertible securities?
12. What are the characteristics of warrants? Why are warrants issued? Explain.
13. How would you value warrants? Give an example.
14. What are the features of an exchangeable debt? Examine the uses of exchangeable debt in financing.

Review Problems:

Problem – 1

Max Murphy Inc., has warrants outstanding that allow the holder to purchase three shares of stocks for a total of \$60 for each warrant. Currently, the market price per share of Max Murphy common is \$18. Investors hold the following probabilistic believes about the stock 6 months, hence:

Market price per share	\$16	\$18	\$20	\$22	\$24
Probability	.15	.20	.30	.20	.15

- a. What is the present theoretical value of the warrant?
- b. What is the expected value of stock price 6 months hence?
- c. What the theoretical value of the warrant 6 months hence?
- d. Would you expect the present market price of the warrant to equal its theoretical value? If not, why?

Problem - 2. The common stock of the Draybar Corporation earns \$2.50 per share, has a dividend payout of two –thirds, and sells at a P/E ratio of 16. Draybar wishes to offer %10 million of 9%, 20 – year convertible securities with an initial conversion premium of 20% and a call price of 105. Draybar currently has 1 million common shares outstanding and has a 50% tax rate.

- a. What is the conversion price?

- b. What is the conversion ratio per \$1,000 debenture?
- c. What is the initial conversion value of each debenture?
- d. How many new shares of common must be issued if all debentures are converted?
- e. If Draybar can increase operating earnings by \$1 million per year with the proceeds of the debenture issues, compute the new earnings per share and earnings retained before and after conversion.

Problem – 3

Camelot Pizza has outstanding warrants, where each warrant entitles the holder to purchase two shares of stock at \$24 per shares. The market price per share of stock and market price per warrant were the following over the last years:

	Observation					
	1	2	3	4	5	6
Stock price	\$20	\$18	\$27	\$32	\$24	\$38
Warrant price	5	3	12	20	8	29

Determine the theoretical value per warrant for each of those observations. Plot the market value per warrant in relation to its theoretical value. At what price per common share is the warrant premium over theoretical value the greatest? Why?

Lesson-7: Valuation of Bonds, Common Stock and Preferred Stock

On successful completion of the lesson 7, you should be able -

- To know how to determine the present value of bonds.
- To describe bond maturity and interest rate risk involved in bonds; and
- To know how to determine the present values of common and preferred stocks.

Determination of Present Value of Bonds

A bond is redeemable after a specified period. It is relatively easy to determine the present value of a bond since its cash flows and the discount rate can be determined without much difficulty. If there is no risk of default, then there is no difficulty in estimating the cash flows associated with a bond. The expected cash flows consist of annual interest payments plus repayment of principal. The appropriate capitalization, or discount rate to apply will depend upon riskiness of the bond. The risk in holding a government bond is less than the risk associated with a debenture issued by a company. Consequently, a lower discount rate would be applied to the cash flows of the government bond and a higher rate of the cash flows of the company debenture.

The expected cash flows consist of annual interest payments plus repayment of principal.

The following formula can be used to determine the value of a bond :

$$B_0 = \frac{INT_1}{(1 + k_d)} + \frac{INT_2}{(1 + k_d)^2} + \dots + \frac{INT_n + B_n}{(1 + k_d)^n}$$

$$B_0 = \sum_{t=1}^n \frac{INT_t}{(1 + k_d)^t} + \frac{B_n}{(1 + k_d)^n} \dots \dots \dots (1)$$

Where B_0 = present value of a bond/debenture

INT_t = amount of interest in period t

K_d = required rate of return on bond (%)

B_n = terminal, or maturity, value in period n

n = number of years to maturity.

A bond or debenture may be amortized every year. In that case, the principal will decline with annual payments and interest will be calculated on the outstanding amount. Let us consider Illustration 43.1

ILLUSTRATION

The government is proposing to sell a 5-years bond of Tk. 1,000 at 8 percent rate of interest per annum. The bond amount will be amortized

equally over its life. If an investor has a minimum required rate of return of 7 percent, what is the bond's present value for him ?

The amount of interest will go on reducing because the outstanding amount of bond will be decreasing due to amortization. The amount of interest for five years will be : Tk 1,000 x 0.08 = Tk. 80 for the first year; (Tk. 1,000 – Tk. 200) x 0.08 = Tk. 64 for the second year; (Tk. 800 – Tk. 200) x 0.08 = Tk. 48 for the third year; (Tk. 600 – Tk. 200) x 0.08 = Tk. 32 for the fourth year and (Tk 400 – Tk. 200) x 0.08 = Tk. 16 for the fifth year. The outstanding amount of bond would be zero at the end of the fifth year.

Since the government will have to return Tk. 200 every year, the outflows every year will be Tk. 200 + Tk. 80 = Tk. 280; Tk. 200 + Tk 64 = Tk. 264; Tk. 200 + Tk. 48 = Tk 248; Tk. 200 + Tk 32 = Tk. 232; and Tk. 200 + Tk 16 = Tk. 216 respectively from first through five years. Referring to the present value table at the end of the book, the value of the bond is calculated as follows :

$$\begin{aligned}
 B_0 &= \frac{280}{(1.07)^1} + \frac{264}{(1.07)^2} + \frac{248}{(1.07)^3} + \frac{232}{(1.07)^4} + \frac{216}{(1.07)^5} \\
 &= 280 \times 0.935 + 264 \times 0.873 + 248 \times 0.816 + 232 \times 0.763 + 216 \times 0.713 \\
 &= \text{Tk. } 261.80 + \text{Tk. } 230.47 + \text{Tk. } 202.37 + \text{Tk. } 177.02 + \text{Tk. } 154.00 \\
 &= \text{Tk. } 1,025.66
 \end{aligned}$$

If the bond or debenture is amortized every year, then Equation (1) can be rewritten as follows :

$$\begin{aligned}
 B_0 &= \frac{INT_1 + B_1}{(1 + k_d)^1} + \frac{INT_2 + B_2}{(1 + k_d)^2} + \dots + \frac{INT_n + B_n}{(1 + k_d)^n} \\
 B_0 &= \sum_{t=1}^n \frac{INT_t + B_t}{(1 + k_d)^t} \dots \dots \dots (2)
 \end{aligned}$$

Semi-annual interest Payment

In practice, it is quite common to pay interest on bonds/debentures semi-annually. The formula for bond valuation can be modified in terms of half-yearly interest payments and compounding periods as given below :

$$B_0 = \sum_{t=1}^{2n} \frac{\frac{1}{2}(INT_t)}{(1 + kd/2)^t} + \frac{B_n}{(1 + kd/2)^{2n}} \dots \dots \dots (3)$$

Let us give an example.

ILLUSTRATION

A 10-YEAR BOND OF Tk. 1,000 has an annual rate of 12 percent. The interest is paid half-yearly. If the required rate of return is 16 percent, what is the value of the bond ?

We can use Equation (3) as follows :

$$B_0 = \sum_{t=1}^{2n} \frac{\frac{1}{2}(INT_t)}{(1 + kd/2)^t} + \frac{B_n}{(1 + kd/2)^{2n}}$$

$$B_0 = \sum_{t=1}^{2 \times 10} \frac{\frac{1}{2}(120)}{(1 + 0.16/2)^t} + \frac{1,000}{(1 + 0.16/2)^{2 \times 10}}$$

$$B_0 = \sum_{t=1}^{20} \frac{60}{(1.08)^t} + \frac{1,000}{(1.08)^{2 \times 10}}$$

= 60(PV Annuity factor for 20 years @ 8%)+1000 (PV factor for 20 years @ 8%)

= 60 x 9.818 + 1,000 x 0.215 = 589.08 + 215 = 804.08

If the interest is payable annually, then the value of the bond would be :

$$B_0 = \sum_{t=1}^{10} \frac{120}{(1.16)^t} + \frac{1,000}{(1.16)^{10}} = 120 \times 4.833 + 0.227 \times 1,000$$

(PV AF for 10 years @ 16%+PVF for 10 years @ 16%)

= 580 + 227 = Tk. 807

Bond Maturity and Interest Rate Risk

The value of a bond depends upon the interest rate. As interest rate changes, the value of a bond also varies. There is an inverse relationship between the value of a bond and the interest rate. The value will decline when the interest rate rises and vice-versa. For instance, the value of 5-year bond in the Table-1 comes down to Tk. 960.51 from Tk. 1,000 when interest rate is assumed to rise from 7 percent to 8 percent, resulting in a loss of Tk. 39.49 to the bondholder. Interest rates have the tendency of rising or falling in practice. Thus, investors investing their funds in bonds are exposed to risk from increasing or falling interest rates.

The intensity of interest rate risk would be higher on bonds with long maturities than those in short periods. This point can be verified by examining Table43.1 where values of 5-year and 10-year bonds (coupon rate 7 percent and maturity value of Tk. 1,000) and a perpetual bond are given. These values are also plotted in Figure 1 At 7 percent interest rate,

There is an inverse relationship between the value of a bond and the interest rate.

The intensity of interest rate risk would be higher on bonds with long maturities than those in short periods.

values of all three bonds are same, Tk. 1,000. When interest rate rises to, say, 8 percent 5-year bond falls to Tk. 961, 10-year bond to Tk. 933 and perpetual bond still further to Tk. 875. Similarly, the value of long-term bond will fluctuate (increase) more when rates fall below 7 percent. The differential value response to interest rates changes between short and long-term bonds will always be true. Thus, two bonds of same quality (in terms of risk of default) would have different exposure to interest rate risk – the one with longer maturity is exposed to greater degree of risk from increasing interest rates.

Table-1 : Bond Value at Different Interest Rates

Interest rate (%)	Value of 5-year bond(Tk.)	Value of 10-year bond (Tk.)	Value of perpetual bond (Tk.)
4	1,134	1,244	1,750
5	1,087	1,155	1,400
6	1,042	1,073	1,167
7	1,000	1,000	1,000
8	961	933	975
9	922	871	778
10	886	816	700

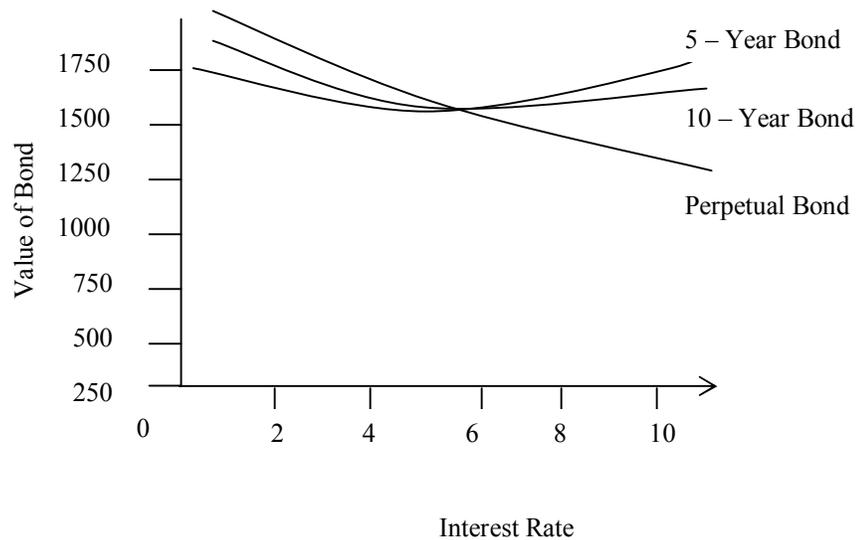


Figure-1 : Value of bonds at varying interest rates

The reason for this differential responsiveness is not difficult to understand. For example, in the 10-year bond situation, one would get just Tk. 700 even if interest rate rises to, say, 10 percent. In case of 5-year bond, one can, at least sell the bond after five years, and reinvest money to receive Tk. 100 for the next five years.

Present Values of Preferred Stock and Common Stock

Present Value of Preferred Stocks

A company's shares may be divided into two categories: (a) Ordinary (or common) shares/stocks and (b) Preference shares/stocks. Owners of shares are called shareholders, and capital contributed by them is called share capital (ordinary or preference).

Preference stocks may be issued with or without a maturity period. The holders of preference shares get dividends at a fixed rate and have a preference over ordinary shareholders. Like bonds, it is relatively easy to estimate the cash outflows associated with preference shares.

A formula similar to Equation (1) can be used to value preference shares with a maturity period:

The holders of preference shares get dividends at a fixed rate and have a preference over ordinary shareholders.

$$P_0 = \frac{PDIV_1}{(1 + k_p)^1} + \frac{PDIV_2}{(1 + k_p)^2} + \dots + \frac{PDIV_n + P_n}{(1 + k_p)^n}$$

$$P_0 = \sum_{t=1}^n \frac{PDIV_t}{(1 + k_p)^t} + \frac{P_n}{(1 + k_p)^n}$$

Where $PDIV_t$ is the preference dividend per share in period t , k_p the required rate of return on preference share and P_n the value of the preference share on maturity.

Present Value of Common Stock

The valuation of equity shares is relatively more difficult. The difficulty arises because of two factors: First, the rate of dividend on equity (ordinary) shares is not known; also, the payment of equity dividend is discretionary. Thus, the estimates of the amount and timing of the cash flows expected by equity shareholders are more uncertain. In the case of debentures and preference shares, the rate of interest and dividend respectively are known with certainty. It is, therefore, easy to make the forecasts of cash flows associated with them. Second, the earnings and dividends on equity shares are generally expected to grow, unlike interest on bonds and preference dividend. This feature of variable dividend on equity shares makes the calculation of share value difficult. However, the following Dividend Capitalization method is used to find the present value of common stocks.

Dividend Capitalization

The general principle of valuation applies to the share valuation. The value of a share today is a function of cash inflows expected by investors and risk associated with those cash inflows. Cash inflows expected from an equity share will consist of dividends expected to be received by the

The value of a share today is a function of cash inflows expected by investors and risk associated with those cash inflows.

owner while holding the share and the price which he expects to obtain when the share is sold. The price which the owner is expected to receive when the share is sold will include the original investment plus a capital gain (or minus a capital loss).

The value of a share is the present value of its future stream of dividends.

It is normally found that a shareholder does not hold the share in perpetuity. He holds the share for some time, receives the dividends and finally sells it to obtain capital gains. But when he sells the share, the buyer is also simply purchasing a stream of future dividends and a liquidating price when he sells the share. The logic can be extended further. The ultimate conclusion is that, for shareholders in general, the expected cash inflows consist only of future dividends and, therefore, the value of an ordinary share is determined by capitalizing the future dividend stream at an appropriate rate of discount. The value of a share is the present value of its future stream of dividends. How can a share be valued ?

(i) Single Period Valuation : Formula for finding present value of a common stock

$$P_0 = \frac{DIV_1 + P_1}{1 + k_e}$$

$$P_0 = \frac{DIV_1 + P_0(1 + g)}{1 + k_e}$$

(ii) Multi-period Valuation : Formula for finding present value of a common stock

$$P_0 = \sum_{t=1}^n \frac{DIV_t}{(1 + k_e)^t} + \frac{P_n}{(1 + k_e)^n}$$

Problems and Solutions

Problem - 1

- (a) A Tk. 100 perpetual bond is currently selling for Tk. 95. The coupon rate of interest is 13.5 percent and the appropriate discount rate is 15 percent. Calculate the value of the bond. Should it be bought ? What is its yield at maturity ?
- (b) A company proposes to sell ten-year debentures of Tk. 10,000 each. The company would repay Tk. 1,000 at the end of every year and will pay interest annually at 15 percent on the outstanding amount. Determine the present value of the debenture issue if the capitalization rate is 16 percent.

Solution

$$(a) \text{ Value of bond} = \frac{\text{INT}}{\text{Kd}} = \frac{13.5}{0.15} = \text{Tk. 90}$$

The bond is overvalued, it should not be bought.

$$\text{Yield to maturity} = \frac{\text{Interest}}{\text{Current value of bond}} = \frac{13.5}{95} = 0.142 \text{ or } 14.2 \text{ percent}$$

(b) The cash flow of the company every year will be Tk. 1,000 plus interest on outstanding amount. The present value is determined as follows :

Year (1)	Interest (Tk.) (2)	Repayment (Tk.) (3)	Cash Flow (Tk.) (4) = (2) + (3)	PV Factor 16% (5)	Present Value (6) = (4) x (5)
1	1,500	1,000	2,500	0.862	2,155.00
2	1,350	1,000	2,350	0.743	1,746.05
3	1,200	1,000	2,200	0.641	1,410.20
4	1,050	1,000	2,050	0.552	1,131.60
5	900	1,000	1,900	0.476	904.40
6	750	1,000	1,750	0.410	717.50
7	600	1,000	1,600	0.354	566.40
8	450	1,000	1,450	0.305	442.25
9	300	1,000	1,300	0.263	341.90
10	150	1,000	1,150	0.227	261.05
Present value of debenture					9,676.35

Problem - 2

A company is currently paying a dividend of Tk. 2.00 per share. The dividend is expected to grow at a 15 percent annual rate for three years, then at 10 percent for the next three years, after which it is expected to grow at a 5 percent rate forever. (a) What is the present value of the share if the capitalization rate is 9 percent ? (b) If the share is held for three years, what shall be its present value ?

Solution

(a) PV during super-normal growth period :

Year	Dividend Tk.	PVF at 9%	PVF Dividends Tk.
1	2.00 (1.15) ¹ = 2.30	0.917	2.11
2	2.00 (1.15) ² = 2.64	0.842	2.22
3	2.00 (1.15) ³ = 3.04	0.772	2.35
4	3.04 (1.10) ¹ = 3.35	0.708	2.37
5	3.04 (1.10) ² = 3.68	0.650	2.39
6	3.04 (1.10) ³ = 4.05	0.596	2.41
			13.85

$$\text{PV at the end of year 6} = \frac{\text{DIV1}}{\text{Ke} - \text{g}} = \frac{4.05(1.05)}{0.09 - 0.05} = \text{Tk. 106.25}$$

PV of Tk. 106.25 today at 9 percent discount rate = Tk. 106.25 (0.596) = Tk. 63.33

PV of the share today = Tk. 13.85 + 63.33 = 77.18

(b) Present value of the share at the end of year 3 will equal to the discounted value of dividends expected after three years. Thus,

$P_3 = \text{Tk. } 2.37 + \text{Tk. } 2.39 + \text{Tk. } 2.41 + \text{Tk. } 63.33 = \text{Tk. } 70.50$

Present value of dividends expected at the end of years 1, 2, and 3

= Tk. 2.11 + Tk. 2.22 + Tk. 2.35 = Tk. 6.68

The present value of share today i.e. $P_0 = \text{Tk. } 70.50 + \text{Tk. } 6.68 = 77.18$. Thus, the value for the same if the share is held for three years, instead of indefinitely.

Problem - 3

The managing director of a company decides that his company will not pay any dividends till he survives. His current life expectancy is 20 years. After that time it is expected that the company could pay dividends of Tk. 30 per share indefinitely. At present the firm could afford to pay Tk. 5 per share forever. The required rate of this company's shareholders is 10 percent. What is the current value of the share? What is the cost to each shareholder of the managing director's policy?

Solution

The value of the share at the end of 20 years is :

$$P_{20} = \frac{30}{0.10} = \text{Tk. } 300$$

The value today will be :

$$P_0 = \frac{300}{(1.1)^{20}} = 300 (0.1486) = (300 \times \text{PVF for 20 years @ 10\%}) \text{ Tk. } 44.58$$

If the company could pay dividends of Tk. 5 per share forever from the beginning, the price would be :

$$P_0 = \frac{5}{0.10} = \text{Tk. } 50$$

Thus, the cost to each shareholder is the lost of the difference of two prices :

Tk. 50 – Tk. 44.58 = Tk. 5.42 per share.

Review Questions

1. How would you determine the present value of bonds ? Explain with example.
2. What is the difference between valuation of bonds and preferred stocks ? Illustrate.
3. Explain the methods of valuing present values of :
(a) Common Stock and (b) Preferred Stock
4. Explain the relationship between bond maturity and interest rate risk. Give example.

Review problems

Problem - 1

An investor is looking for a four-year investment. The share of Skylark Company is selling for Tk. 75. They have plans to pay a dividend of Tk. 7.50 per share each at the end of first and second years and Tk. 9 and Tk. 15 respectively at the end of third and fourth years. If the investor's capitalization rate is 12 percent and the share's price at the end of fourth year is Tk. 70, what is the value of the share ? Would it be a desirable investment ?

Problem - 2

The earnings of a company have been growing at 15 percent over the past several years and are expected to increase at this rate for the next seven years and thereafter, at 9 percent in perpetuity. It is currently earning Tk. 4 per share and paying Tk. 2 per share as dividend. What shall be the present value of the share with a discount rate of 12 percent for the first seven years and 10 percent thereafter ?

Problem - 3

The total assets of Tk. 80,000 of a company are financed equity funds only. The internal rate of return on assets is 10 percent. The company has a policy of retaining 70 percent of its profits. The capitalization rate is 12 percent. The company has 10,000 shares outstanding. Calculate the present value per share.

Problem - 4

Determine the market values of the following bonds which pay interest semi-annually :

Bond	Interest Rate	Required Rate	Maturity Period
1	16%	15%	25 years
2	14%	13%	15years
3	12%	8%	20years
4	12%	8%	10years

If the par values of bonds are Tk. 100 and if they are currently selling for Tk. 95, Tk. 100, Tk 110 and 115, respectively, determine the effective annual yields of the bonds. Also calculate the semi-annual yields.

Case Study

A prospective investor is evaluating the share of Babul Automobiles Company. He is considering three scenarios. Under the first scenario the company will maintain to pay its current dividend per share without any increase or decrease in it. Another possibility is that the dividend will grow at an annual (compound) rate of 6 percent in perpetuity. Yet another scenario is that the dividend will grow at a high rate of 12 percent per year for the first three years; a medium rate of 7 percent for the next three years and then at a constant rate of 4 percent. The last year's dividend per share is Tk. 3 and the current market price of the share is Tk. 80. If the investor's required rate of return is 10 percent, calculate the value of the share under each of the assumptions. Should the share be purchased ? Give argument in favor of your decision.

Lesson–8: Financial Risk Management

After carefully reading this lesson 8, you should be able -

- To understand the concept and significance of risk and risk management.
- To identify the major steps in risk management.
- To grasp the meaning of financial risk and its management.
- To identify the main reasons for managing financial risks and.
- To know the approaches of managing financial risk.

Concept and Significance of Financial Risk Management

Risk is defined in Webster’s Dictionary as “ a hazard, a peril, exposure to loss or injury”. Thus, risk refers to the chance that some unfavorable events will occur. If you engage in skydiving, you are taking a chance with your life, because skydiving is risky. If you bet on the horses, you are risking your money. If you invest in speculative stock (or really any stock), you are taking a risk in the hope of making an appreciable return.

Risk refers to the chance that some unfavorable events will occur.

An asset’s risk can be analyzed in two ways : i) On a stand - alone basis, where the asset is held in isolation and ii) on a portfolio basis where the asset is held as one of a number of assets in portfolio. Thus, an asset’s stand – alone risk is the risk an investor would face if he or she held only this one asset. Obviously, most assets are held in portfolios, but it is necessary to understand stand – alone risk in order to understand risk in a portfolio context.

An asset’s stand – alone risk is the risk an investor would face if he or she held only this one asset.

Given that the firm’s primary objective is to maximize stock holder value, what ultimately matters is the risk that a project imposes on stock holders. Because stock holders are generally diversified, market risk is theoretically the most relevant measure of risk. Corporate risk is also important for the following three reasons:

- i. Undiversified stockholders, including the owners of small businesses are more concerned about corporate risk than about market risks.
- i. Empirical studies find that both market and corporate risks affect stock prices. This suggests that investors, even those who are well diversified, consider factors other than market risks when the established required returns.
- ii. The firm’s stability is important to its managers, workers, consumers, suppliers, and creditors as well as to the community in which it operates. Firms that are in serious danger of bankruptcy or even of suffering low profits and reduced output have difficulty, attracting and retaining good managers and workers. Also, both suppliers and customers are reluctant to depend on weak firms and such firms have difficulty in borrowing money at reasonable interest rates. These factors tend to reduce risky firm’s profitability

and hence their stock prices and this makes corporate risk significant.

For the above three reasons, corporate risk is important even if a firm's stock holders are well diversified.

The term risk management may mean many things, but in business it involves identifying events that could have adverse financial consequences and then taking actions to prevent and/ or minimize the damage caused by these events. Years ago, corporate risk managers dealt primarily with insurance – they made sure the firm was adequately insured against fire, theft, and other casualties and that it had adequate liability coverage. More recently, the scope of risk management has been broadened to include such things as controlling the costs of key inputs like petroleum by purchasing oil furnaces, or protecting against changes in interest rates or exchange rates through dealings in the interest rate or foreign exchange markets. In addition, risk managers try to ensure that actions designed to hedge against risk which do not actually increase risks.

Risk management refers to identification, measurement and control of risk with minimum cost in order to reduce the adverse impact of the risk.

Risk management refers to identification, measurement and control of risk with minimum cost in order to reduce the adverse impact of the risk. Risk management is significant in case of any business, small, medium and large scale and manufacturing and trading or service rendering. This is because of the following main reasons:

- i. In order to formulate proper planning in the various areas of business namely finance, production, marketing, human resource management and so on.
- i. In order to reduce the increasing complexities in the aforesaid areas of business.
- ii. In order to shift the risk successfully.
- iii. In order to ensure protective measures against risks.
- iv. In order to ensure internal cooperation.
- v. In order to increase profitability by reducing financial risk.
- vi. In order to help the business entrepreneurs to take proper effective decisions regarding risks in case of speculative businesses.
- vii. In order to help the financial managers taking proper investment decisions by discounting cash flows where risks and uncertainties are involved.

Major Steps in Risk Management

The following are the major steps that should be followed in risk management:

- i. **Determination of Uncertainties:** While determining uncertainties existent in a business, the nature of business, past experience, economic conditions of the business etc demand proper consideration. Moreover, analysis of business financial position and analysis of cash flows also help determining uncertainties.
- ii. **Explanation of Risk:** For proper identification of risk, it needs to be well explained. To this end, the internal as well as external relevant information need to be collected and explained.
- iii. **Measuring Risk:** After proper identification and explanation of risk, it needs to be properly measured from the viewpoints of its degree and dangers.
- iv. **Reducing Risk:** Internal arrangements may be taken by the risk managers in order to reduce risks. In some cases alternative ways are initiated to reduce risks.
- v. **Transfer of Risk:** By transferring risk to an insurance company, , risk can be measured. In this case, type of uncertainties, nature of compensation, selection of insurance, insurance premium etc. are the matters of consideration.
- vi. **Compensatory Arrangement:** In some cases, compensatory arrangements may be initiated in order to avoid or reduce risk. As for example, in order to avoid loss of a product, the manufacture of another product may be effective.
- vii. **Internal Cooperation:** Risk management may be made effective in an organization by taking the following ways:
 - a) Capital structure management,
 - b) Product service diversification,
 - c) Investment in less risky assets,
 - d) Ensuring workers' participation in profit planning,
 - e) Expansion of ownership.

Financial Risk and Its Management

Financial risk is the probability of the loss of finance arisen because of some unforeseen events related to financial leverage. That is, financial risk results from using financial leverage, which exists when a firm uses fixed income securities such as bond, debt and preferred stock in order to raise its capital.

Financial risk is the risk that an organization will be unable to satisfy its financial obligations. The financial manager needs to be aware of what situations cause the level of this risk to increase, i.e., what risks exist that would reduce the financial resources of an organization.

Financial risk is the probability of the loss of finance arisen because of some unforeseen events related to financial leverage.

By managing financial risk, we mean proper identification, measurement and control of financial risk in order to reduce the adverse impact of such risk.

By managing financial risk, we mean proper identification, measurement and control of financial risk in order to reduce the adverse impact of such risk. The major steps involved in managing financial risks are mentioned below :

- i. Identification of risks and uncertainties
- ii. Proper explanation of risks and uncertainties
- iii. Measurement of financial risks
- iv. Transfer of financial risks
- v. Reduction of financial risks
- vi. Taking compensatory measures.

Reasons for Managing Financial Risk

Although there is no proof that risk management adds value, there are several good reasons for companies to manage financial risks:

1. ***Debt capacity:*** Risk management can reduce the volatility of cash flows, and this decreases the probability of bankruptcy. As we discussed earlier, firms with lower operating risks can use more debt, and this can lead to higher stock prices due to the interest tax savings.
2. ***Maintaining the optimal capital budget over time:*** Firms are reluctant to raise external equity due to high flotation costs and market pressure. This means that the capital budget must generally be financed with debt plus internally generated funds, mainly retained earnings and depreciation. In years when internal cash flows are low, they may be too small to support the optimal capital budget, causing firms to either slow investment below the optimal rate or else incur high costs associated with external equity. By smoothing out the cash flows, risk management can alleviate this problem.
3. ***Financial distress:*** Financial distress – which range from worrying stockholders to higher interest rates on debt to customer defections to bankruptcy – is associated with having cash flows fall below expected levels. Risk management can reduce the likelihood of low cash flows, hence of financial distress.
4. ***Comparative advantages in hedging:*** Many investors cannot implement a homemade hedging program as efficiently as can a company. First, generally have lower transactions costs due to a larger volume of hedging activities. Second, there is the problem of asymmetric information – managers know more about the firm’s risk exposure than outside investors, hence managers can create more effective hedges. And third, effective risk management requires specialized skills and knowledge that firms are more likely to have.
5. ***Borrowing costs:*** Firms can sometimes reduce input costs, especially the interest rate on debt, through the use of derivative instruments called “swaps”. Any such cost reduction adds value to the firm.

6. **Tax effects:** Companies with volatile earnings pay more taxes than more stable companies due to the treatment of tax credits and the rules governing corporate loss carry-forwards and carry-backs. Moreover, if volatile earnings lead to bankruptcy, then tax loss carry-forwards are generally lost. Therefore, our tax system encourages risk management to stabilize earnings
7. **Compensation system:** Many compensation systems establish “floors” and “ceilings” on bonuses or else reward managers for meeting targets.

Methods of Managing Financial Risks

Once a risk is identified there are four methods we can take to manage this risk. These are:

1. Risk avoidance
2. Loss prevention and control
3. Risk retention
4. Risk transfer

We will demonstrate what each of these approaches would look like using illustrative examples.

1. Risk Avoidance

Phoenix Inc. has an opportunity to manufacture a product, which involves using sizable quantities of copper and silver. One element of risk they face is the financial risk of changes in the price for copper and silver. If the prices decrease, Phoenix will benefit from the lower price through lower cost to produce their product. However, if prices were to increase, Phoenix would have higher product cost and therefore less profit on the sale of each product. To avoid the risk of losses arising from fluctuation in the price of copper and silver, Phoenix declines to manufacture the product. This is risk avoidance as they are putting themselves in a position where they are not exposed to the risk of price fluctuations. Although there is no outlay of resources by avoiding this risk, there is an opportunity cost. Assuming this product would have been profitable Phoenix has lost the chance to manufacture this product and therefore has missed out on the opportunity to earn the profits it could have generated. Hence Phoenix has made a 'risk-return' decision and concluded that they did not want this level of risk for the enterprise, at least at the expected level of return.

Loss Prevention and Control

Quality Superstores Inc. has a substantial dollar value of inventory at its central warehouse in Markham, Ontario. One element of the financial risks that Quality is facing is the risk of theft or vandalism to their products at this site. Quality constructs a special security zone in its warehouse and implements new security procedures to reduce the risk of theft. These procedures are attempting to control the risk. Quality recognizes that they run a risk by having products in one location, but this is a risk that cannot be avoided, as they need to store their products

in some location. They are incurring a cost to attempt to protect their products. These prevention and control measures have a cost that in effect increases the cost of doing business for Quality. What Quality must do in implementing these measures is to determine what level of cost is acceptable to control the risk of theft.

Risk Retention

Apex Distribution Corp. has a trucking fleet consisting of over 100 vehicles. Apex is exposed to possibility of fire, theft, and collision during the operation of this fleet. Apex decides to carry this risk itself as it feels that this will be more cost effective than purchasing insurance on a large fleet operation. In this case, Apex has analyzed the risk-return characteristics of these occurrences and the impact from both an operations perspective and the cost of repair and replacement of any damaged vehicles against the cost of insurance. Presumably, they have determined that the cost of insurance is greater than the cost they are likely to incur for replacing any damaged or lost vehicles.

Risk Transfer

Fonex Corp. uses variable rate financing extensively to try to reduce its financing costs. Due to the fact that their rates are variable, they are exposed to changes in interest rates having a significant impact on their net income through increased interest expense. The company buys interest rate caps from its bank to eliminate the risk of loan rates going above 8%. The impact of these interest rate caps is that if interest rates go above 8% Galahad will pay 8% interest regardless of how much higher interest rates go. Fonex is transferring its risk to a bank, and the purchase of the caps is effectively acting as insurance against increases in interest rates.

Review Questions

A. Short Questions

1. Define risk. How can an asset's risk be analyzed?
2. What is risk management ? Discuss the significance of risk management in the arena of business.
3. What is financial risk ? What do you mean by management of financial risks ?
4. What do you mean by avoidance of financial risks ? Illustrate.
5. What is retention of financial risk ? Give example.
6. What is transfer of financial risk ? To whom such risks may be transferred ?

B. Broad Questions

7. What are the major approaches of managing financial risks ? Discuss each of them with suitable examples.
8. Discuss the main reasons as to why the companies should manage their corporate and financial risks.

Lesson-9: Hedging and Insurance

On successful completion of the lesson 9, you should be able -

- To understand the concepts of hedging and insurance as the tools of financial risk analysis
- To realize the differences between hedging and insurance
- To identify the arguments for corporate hedging
- To know the various hedging tools
- To discuss the options as an insurance in order to shift financial risk to a third party namely insurance company and
- To understand securitization as a hedging technique.

Concepts of Hedging and Insurance

Unlike times in the past, the financial officer today has a bewildering number of ways to hedge risk. If a company does not wish to bear certain types of risk, it can shift the undesirable risk to others. This risk may have to do with interest rates, exchange rates, stock prices, or commodity prices.

Hedging is taking a derivative position opposite to exposure.

To hedge risk, the financial manager must first identify the relevant risk. To the extent possible, it should be quantified. Hedging simply involves taking a position opposite to the risk exposure involved. Hedging is taking a derivative position opposite to exposure. There is no such thing as a perfect hedge; the risk that remains after a hedge is known as basis risk. A formula was presented for determining the appropriate hedge ratio. Hedge ratio is the ratio of one position relative to the other where risk is neutralized. Dynamic hedging recognizes that the hedge ratio must change over time as prices and other conditions change.

Hedge ratio is the ratio of one position relative to the other where risk is neutralized.

The idea is to determine what is likely to happen if the underlying situation changes. For example, if the source of the risk were interest rates, we would like to know what happens to the value of our security or financing position with a change in interest rates. Knowing this, the idea in hedging is to take a position opposite to the exposure. This can be with futures contracts, forward contracts, options or swaps. We would like to effect a perfect hedge, but this usually is not possible. The value of our position and the value of the instrument used to hedge do not move completely in concert. Usually there are slight to moderate deviations. These deviations create **basis risk**, a phenomenon we will illustrate shortly.

What selling forward means is that they agree to a price today for a sale that will occur at some point in the future.

If we wish to transfer a business risk to another party, we can do this by buying an insurance contract and transferring the risk to an insurer. Alternatively, we can go to the financial markets and try to hedge our exposure by being a party to a variety of contracts. For example, mining companies such as Bander sometimes sell their output, say copper,

forward at a fixed price to eliminate the risk of future declines in the value of this commodity. What selling forward means is that they agree to a price today for a sale that will occur at some point in the future. This selling forward activity by Bander is termed hedging.

Insurance is a contract whereby one party (persons or organizations or bodies) enters into agreement with another party (persons etc.) to be compensated by the other party for any loss caused to him (first party, known as insurer) due to any untoward events in exchange of any specific amount of payment made periodically viz., monthly, quarterly, semi-annually and annually. The specific amount of payment is technically known as premium; the amount for which insurance contract is completed is known as insured sum, meant to be compensated. The other party is technically known as insurance company and the company is bound to pay the compensation to the insurer. That is why, insurance is known as contract of indemnity. Insurance may be accident insurance, life insurance, marine insurance, education insurance etc. Here, the insurance is referred to as business insurance completed between the business units of any type and nature and insurance companies (other life) relating to any business affairs.

Insurance is known as contract of indemnity.

Differences between Hedging and Insurance

The essential difference between hedging and an insurance type activity is that with hedging, the opportunity to profit on the upside is removed (i.e., in Bander's case if they have sold copper forward at say US\$1.00 per pound, they will receive US\$1.00 per pound regardless of the current market price per pound of copper). If the market (spot) price suddenly jumps to US \$1.20, they do not get to benefit from the higher market price. With an insurance contract you accept a penalty up front (the insurance premium). However, you get to participate in upside potential.

The following example will make the difference more clear :

Triton Software Corp. pays a license fee to its German-based parent company on an annual basis. The fee is set at 500,000 euros per annum payable on September 30 each year. It may be possible to buy the necessary euros forward at C\$1.40 = 1 euro. If Triton purchased the euros on a forward contract, the cost of the fee would be fixed at $500,000 \times 1.40 = \$700,000$ and the foreign exchange risk would be eliminated. If the euro dipped to \$1.30, Triton would not benefit. However, Triton could try to take advantage of a potential weakening in the euro by buying a so-called call option (an option to buy) at C\$1.40. A premium would have to be paid. However, if the euro dips below 1.40 then it would be advantageous to let the option expire. Using call options in this way is equivalent to insurance even though the options are purchased on an exchange as opposed to from an insurance company. The reason they are insurance is that they protect your foreign exchange exposure by ensuring that you will not be paying more than C\$1.40, but you are not obligated to buy at that price. The option can be left to expire.

Arguments for Corporate Hedging

If financial markets are efficient and complete, why should the corporation hedge at all? With no imperfections, it would be the matter of indifference to investors whether or not the firm hedged. Whether the company did, shareholders could replicate through “homemade” hedging on their own. The following are the main arguments for corporate hedging :

(i) Bankruptcy Costs With imperfections, however, hedging may be a thing of value. One imperfection is *bankruptcy cost*, which is a deadweight loss to suppliers of capital. The possibility of insolvency depends on total cash flow variability. Hedging can reduce this variability and, in the process, the expected cost of bankruptcy. This is not to say that one would want to eliminate this risk together, but might want to reduce the chance that bankruptcy costs will be incurred. The same argument is invoked when we consider diversification of assets.

(ii) Agency Costs By hedging, the corporation may be able to *reduce agency costs*. The safer the company, the less creditors and others will need to monitor management and the less will be the monitoring costs borne by the corporation. Of course, such costs also can be reduced through employing less debt or by maintaining more liquidity. Still hedging is an appropriate vehicle for accomplishing this objective. In this vein, hedging may reduce the problem of underinvestment, where equity holders forgo positive net-present-value projects because too much of the gain from such goes to debt holders. It is true that the greater the debt of a company the greater might be the underinvestment problem. By hedging some of the adversity associated with high leverage, a company can ameliorate the problem.

(iii) Reduce Taxes Expected taxes may be reduced if the effective tax schedule, hedging might stabilize earnings in a mid-range where the tax bite is less than it is if reported earnings are more volatile. With more volatile earnings, the lesser earnings in some years do not offset the higher tax bite associated with greater earnings in other years. For this effect to be meaningful, the tax schedule must be reasonably progressive.

(iv) Regulations Another reason to hedge may be regulatory constraints. Regulations and/ or traditions pertaining to minimum accounting capital requirements for a financial institution or for a public utility may make the negative “penalties” associated with failing below because of poor accounting earnings greater than the positive “rewards” associated with good earnings. Hedging may serve to stabilize accounting earnings and reduce the probability of failing below some regulatory requirement. Similarly, credit and bond rating agencies pay attention to certain financial ratios being maintained. When a credit rating is in jeopardy, hedging may serve to reduce the probability of a downward rating. As with the other things mentioned, there are ways other than hedging to realize these objectives.

Operating Management Focus Finally, hedging may *insulate operating managers* from the vagaries of interest-rate changes and currency movements. If their performance is judged on “all inclusive” results, such vagaries may distract them from operations. To the extent managers spend significant time looking over their shoulders at interest-rate changes and currency movements, operating efficiency may suffer. Under these circumstances, hedging may serve to align objective to what is really important to creating value. If this is the case, stockholders may be better served.

Various Tools of Hedging

In this section we will describe different tools available for hedging purposes. Organizations may use any combination of these tools in managing their various financial risks. Each tool has both costs and benefits associated with it that must be considered before you use the tool. It is important to remember that as a financial manager the goal is to increase shareholder wealth. This involves balancing the cost of these tools with an acceptable risk level. The following are the important hedging tools :

Hedging Using Forward and Futures Contracts

As explained in our Bander example earlier, forward and future contracts are commonly used as hedges to eliminate the risk of changes in both commodity prices and exchange rates. These contracts are an agreement to buy or sell a commodity at the current market price for delivery at a date in the future. Below we provide some terminology that you might come across with respect to forward and futures contracts.

Terminology of Forward Contracts

- **Forward price** is the future specified price at some future date agreed by two parties for an exchange in the future.
- **Spot price** is the price for immediate delivery of an item (e.g., copper silver or euros.)
- **Face Value** of the contract is the quantity of the item times the forward price (e.g., a forward contract to purchase 500,000 pounds of copper at US\$1 00 would have a face value of US\$500,000).
- **Long Position** : the party who agrees to buy is taking a long position.
- **Short Position** : the party who agrees to sell is taking a short position.

It is possible to enter into a forward contract with any other party. While this can work well with institutions like banks, there can be contractual enforcement issues. We can get around this issue by entering into a futures contract, a standard form contract issued through an exchange.

Swap Contracts for Currency and Interest Rates

Interest Rate Swaps

A **swap**, as the name implies, represents an exchange of obligations.

When a company can borrow to advantage with one type of financing but really prefers another, it sometimes will engage in a swap. A **swap**, as the name implies, represents an exchange of obligations. There are two principal types : *currency swaps* and *interest-rate swaps*. With the former, two parties exchange interest obligations on debt denominated in different currencies. At maturity the principal amounts are exchanged, usually at a rate of exchange agreed upon in advance. With an interest – rate swap, interest-payment obligations are exchanged between two parties, but they are denominated in the same currency.

Currency Swaps

To see how swap contracts work for foreign exchange, let us return to the example of Triton we introduced earlier. Triton requires 500,000 euros per annum to pay a license fee to its parent Company. If the fee is required over a long period and the amounts payable are fixed, then it is possible for Triton to enter into a currency swap arrangement, which is effectively a whole series of forward contracts designed to provide Triton with the necessary 500,000 euro each year as required. Assuming it was possible to make such an arrangement at a fixed rate of \$1.50= 1 euro for a ten-year period, then Triton would pay exactly \$750,000 for each of the next ten years (and acquire the necessary 500000 euros x 1.50). No premium or foe is required up front. It is just a question of what the market is asking for swaps for this period.

Each Year Triton would purchase the euros in the market and it would be up to the other party in the swap (the company's bank) to deal with differences between the spot rate paid by Triton and the fixed rate of the swap arrangement. In the first year of the agreement if the spot exchange rate on the day the funds were required was \$1.55, then Triton would buy 500,000 euros for a cost of $500,000 \times 1.55 = \$775,000$ However, Triton's bank, as the counter-party to the arrangement, would be required to pay \$25,000 to Triton ($775\ 000 - 750.000$) to fix their overall cost at \$750,000. In the second year, maybe the rate is \$ 1.43, so when Triton purchases the 500,000 euros in the market, its cost would be \$715,000 ($500,000 \times 1.43$). However, it would have to pay the bank \$35,000 ($750,000 - 715,000$) to comply with the swap agreement.

Interest rate swaps are also very common in the market place. They are used as a way to remove the risk arising from a loan with a variable interest rate and create effectively a fixed rate contract. In these types of arrangements, the bank provides a loan with interest linked to the prime rate. A swap contract is added to eliminate the interest rate risk. Let's say Triton negotiated a three-year interest rate swap with an 8% fixed rate. Prime rate at the date the contract was set up was 7.5%. Assuming a \$1 million loan, annual interest payments, and no repayments of principal for three years, the details would be as shown in the table below

Table : Triton Interest Rate Swap

Year	Interest @variable rate	Interest paid	Interest @ Fixed rate	Payment (to /from) from bank
1	7.5%	75,000	80,000	(5,000)
2	8.5%	85,000	80,000	5,000
3	9.0%	90,000	80,000	10,000
Total		2,50,000	2,40,000	10,000

Typically the arrangement is set up so that the borrower is charged interest at the prime rate (the variable rate). The swap partner is then responsible for refunding any excess over the agreed fixed rate of 8%. If the prime falls below the 8% rat, then the borrower must make up the difference. Therefore, in year one, the borrower has to pay an additional \$5,000 to the bank. In years two and three, the bank is required to make adjusting payments to the borrower. The overall cost of the loan at \$240,000 is exactly what we would have paid on a traditional fixed interest product (offering a fixed rate of 8%). 'The example makes this look very tidy, but in practice it may well become more involved as the interest charge will probably be rendered monthly and the adjustments may be on a less frequent basis, say quarterly.

Hedging by Matching Assets to Liabilities

A tool that does not involve contracts with outside parties is the matching of assets and liabilities. What you are trying to achieve using this tool is a zero cost and effective hedge, 'the way this tool works is to attempt to match a liability that has risk associated with it with an asset that is subject to the same risk over the same period and for the same dollar amount. We will see some more complex examples of this in the coming paragraphs but here is a simple example of what this means. If a company has a loan with variable interest for a 3 year period, it will be exposed to changes in interest rates during that period. That same company may have an investment to be made. If it were to invest the same amount of money as the loan balance for a 3 year period as a variable interest rate, this would be a matching of liabilities and assets. Both the loan and the investment would be impacted by changes in the interest rates. An increase in interest rates will cause your interest expense to increase and at the same time it will cause your investment interest income to increase. Assuming these items are perfectly matched, the difference between the interest received and the interest paid would be the same; therefore, the company is in the same net interest position regardless of the rates being charged and received. The loan is in effect 'immunized' against changes in the interest rate.

A tool that does not involve contracts with outside parties is the matching of assets and liabilities.

Matching Example

Controlex Instrumentation Corp. (Controlex), a supplier to the oil industry, exports 40% of its annual output to the US. Billings are in US dollars to accommodate customer requirements. In the course of a year, accounts receivable from US customers range from US\$800,000 to US\$1,350,000. Consequently, Controlex has a major foreign exchange risk. It could attempt to deal with this by setting up a series of futures

contracts. One of the downsides in this method is the increased administration of setting up the contracts and accounting for them.

An alternative is to match the receivable assets with liability. This can be achieved by borrowing in US dollars, securing the loan on the US receivables. A line of credit facility (LOC) is usually convenient as this can be made to match the receivables level quite closely. When receivables increase, a draw is made against the LOC. These US dollars can then be sold for spot to pay off other borrowings denominated in Canadian dollars. A perfect hedge would be achieved by having the LOC track the receivables (i.e., go from \$800,000 to \$1,350,000 during the course of the year). Smaller businesses can run into issues with their banks insisting that the US receivables be covered with credit insurance in order to qualify for financing. This problem can be avoided by dealing with a US institution.

Interest Rate Caps

A cap sets a maximum that has to be paid on a variable rate loan.

We saw in the previous section how we could use an interest rate swap to achieve a fixed rate of interest on a loan. However, a financial manager may wish to benefit from falling interest rates. On the other hand, it is more than his job is worth to have all the company's financing in variable rate debt'. A product known as an interest rate cap can be purchased from a financial institution. A cap sets a maximum that has to be paid on a variable rate loan. A loan for say \$5,000,000 could be taken out with interest at prime for a term of three years. A cap could then be purchased, say at a cost of \$50,000 that would fix the maximum interest rate at say 9. Let's assume that there are no repayments of principal during the term and that interest payments are made annually, 'the interest charges on this loan might look something like the figures outlined in following table :

Table showing Interest Rate Cap

Year	Interest @ Variable rate	Interest Paid	Interest Cap	Payment From Cap Issuer
1	8.0%	400,000	450,000	
2	10.5%	525,000	450,000	75,000
3	8.5%	425,000	450,000	
Total		1,350,000	1,350,000	75,000

Notice that annual interest expense is capped at \$450,000 ($5,000,000 \times 9\%$). Therefore the maximum interest over the term of the loan is \$1,350,000 ($3 \times 450,000$). Interest rates in year 1 are up over the level when the deal was signed (7.5%). No payment is due from the cap issuer because the cap isn't reached. However, in year two, prime averages 10.5. Therefore, the cap issuer must pay over \$75,000 ($525,000 - 450,000$) as the interest rate exceeds the cap. Did we win on the deal? Yes, since the savings (\$75,000) exceeded the premium paid up front of

\$50,000. Moreover you have achieved the level of risk you wanted on this loan.

If you have it in mind to buy a cap, remember that the premium is payable up front but may be amortized over the period of the loan. Thus, there will be an annual amortization charge of \$16,667 ($50,000/3$). This is added to the interest expense on the loan. The financial statements in year one would show total financing expenses of \$416,667 in respect of this particular loan ($400,000 + 16,667$).

While interest rate caps are not inexpensive, they can be used to either achieve lower interest cost than by setting up a fixed rate loan or swap or manage the risk on the loan. The popularity of this product has been low over the past couple of years given the prevailing very low interest rate climate.

Futures Markets

A futures contract is a standardized agreement that calls for delivery of a commodity at some specified future date. In the case of financial futures, the commodity is a security. Transactions occur either on an exchange or through an investment bank in what is known as the over-the-counter market. With an exchange transaction, the clearinghouse of the exchange interposes itself between the buyer and the seller. Its creditworthiness is substituted for that of the broker on the other side of the transaction, and each exchange has a number of rules governing transactions. While the clearing house affords the market participant a degree of safety, if the broker should default the participant may be hurt.

A futures contract is a standardized agreement that calls for delivery of a commodity at some specified future date.

As in commodities, very few financial futures contracts involve actual delivery at maturity. Rather, buyers and sellers of a contract independently take off-setting positions to close out the contract. The seller cancels a contract by buying another contract; the buyer, by selling another contract. As a result, only a small percentage of contracts come to actual delivery. The **open interest** is the number of futures contracts outstanding that have not been closed.

*The **open interest** is the number of futures contracts outstanding that have not been closed.*

Hedging and Speculation

Hedging represents taking a futures contract position opposite to a position taken in the spot market. The purpose is to reduce risk exposure by protecting oneself from unexpected price changes. In contrast, a speculator takes position in futures markets in the pursuit of profits and assumes price risk in this endeavor. In other words, a long or short position is undertaken without an offsetting position in the spot market. The speculator buys or sells futures contracts based on his or her interest-rate expectations. Why not use the spot market? Because it often is more expensive with respect to transaction costs and slower in execution than the future market.

Hedging represents taking a futures contract position opposite to a position taken in the spot market.

Long Hedges : A long hedge involves buying (going long in) a futures contract. It is generally employed to lock in an interest rate that is believed to be high.

Short Hedges A short hedge involves the opposite sort of transactions from a long hedge. Here the idea is to sell a futures contract now because of a belief that interest rates will rise. The sale of a futures contract is used as a substitute for the sale of an actual security held.

Forward Contracts

The forward contract serves the same economic function as futures contract but is different in the detail.

The forward contract serves the same economic function as futures contract but is different in the detail. With respect to interest-rate forward contracts, the forward rate is that rate at which two parties agree to lend and borrow money for a specified period of time in the future. For example, a forward contract might be for a 2-year loan beginning 3 years hence. Such a contract might be arranged explicitly with an investment bank in what is known as the over-the counter market. This is merely to say that it is arranged privately and not acquired on an exchange as is a future contract.

Difference from a Futures Contract

Unlike a futures contract, a forward contract is non-standardized.

Unlike a futures contract, a forward contract is non-standardized. There is no clearing house and the secondary market, to the extent it exists at all is over-the counter as opposed to an exchange market. As a result, the forward contract is less liquid. The two contracts also differ in that there are daily settlements of a futures position, while settlement of a future contract comes at maturity. As discussed previously, the futures position is market-to-market with daily settlements throughout the life of the contract. Also, the forward contract is not constrained as to contract size, such as multiples of \$1million, nor as to the starting and ending dates. Rather it can be customized to most any amount and any maturity.

Finally, futures and forward contracts may differ in default risk. The futures contract is backed by the clearinghouse involved in the transaction. Though not entirely of risk, it tends to be safer than a forward contract arranged with an investment bank. The credit worthiness of the provider of a forward contract must be carefully monitored. Usually, this is done simply by restricting transactions to an intermediary having some minimum credit rating, such as single A or better.

Having made the case for differences between forward and futures contracts, we return to the proposition that generally the two serve the same economic function. To be sure, the details may cause you to prefer one over the other. However, both represent “two-sided” hedges and are used in the ways described in the previous section.

An option is yet another security that derives its value from that of an underlying security.

Option Contracts

An option is yet another security that derives its value from that of an underlying security. The option may be to acquire a debt instrument or an interest-rate futures position, which is somewhat like a double derivative security. Option valuation is fundamental to understanding debt options.

Debt Options

Exchange markets for debt options began in 1982 with options on individual Treasury securities and options on interest-rate futures contracts. The former type of contract has withered on the exchange market, though option contracts can be arranged on individual Treasury securities through an investment bank. In contrast, exchange options on futures have grown dramatically, and there now are futures options on Eurodollars, Treasury notes, Treasury bonds, and on British and German long-term debt. As is the case for futures markets, volume is heaviest for options on Eurodollar futures and on Treasury bond futures.

As is the case for futures markets, volume is heaviest for options on Eurodollar futures and on Treasury bond futures.

Caps, Floors, and Collars

On occasion, borrowers want to cap their short-term, floating-rate borrowing costs. If interest rates should rise beyond some specified ceiling, the borrower pays no more. One vehicle for “manufacturing” your own cap is to purchase a put option. Should interest rate rise, you pay more on your borrowings but gain on your put position. Caps also can be arranged directly with a lender or an investment bank, for a price. Usually the price takes the form of a fee. The presence of a cap protects the borrower, relative to what occurs under a straight floating-rate arrangement. The index frequently used in the cap market is the 3-month LIBOR rate.

A cap is a put option on a fixed-income security's value, whereas a floor is a call option.

If a borrower is willing to accept a floor in addition to receiving a cap, a collar is created. If interest rates fall below the floor, the borrower pays the floor rate. If they rise above the ceiling the borrower pays the cap rate. Only the intermediate range do borrowing costs vary with underlying short-term interest rates. The advantage of a collar is that the cost is much less than it is for a cap, because the lender is protected against significant declines in the interest rates. The lower the present interest rate in relation to the floor, the lower the cost of the collar. If close enough, the collar will have no cost. The cap and collar markets have developed as customized derivative products, and they are available through commercial and investment banks. In turn, these institutions use debt options to insulate their interest-rate risk exposure.

A collar is a combination of a cap and a floor, with a variation only in the mid-range.

Options as an Insurance

Where management has an interest in options it can use options as insurance - thereby transferring risk to another party. These can sometimes be used to cover risks arising from commodity prices, exchange rates, and interest rates. In particular, exchange rate options are an alternative to forward and futures contracts. Similarly interest rate options are alternatives to interest rate caps and swaps. Interest rate and exchange rate options work within the same basic premise as share options. The purchaser pays an agreed upon amount for the purchase of the option which gives them the right to buy or sell currency at a specified price for a specified period. If you can achieve a better rate in the market during the option period then you will buy/sell your required

Option contracts are “one sided” hedges.

funds on the option market and let your option expire without exercising it. Option contracts are “one sided” hedges.

Securitization

*Securitization
converts loans into
marketable
securities.*

We will touch briefly on securitization, which is a hedging technique used most commonly by financial institutions. Securitization converts loans into marketable securities. What financial institutions will do is to 'bundle' loans with similar terms and risks into what are called pools. These pools are sold to an investor as an investment that is secured by the bundled loans, i.e., by the underlying security of the loans being bundled. Securitization is used for both liquidity and hedging purposes. An institution that has higher loan balances than deposit balances may 'self' its loans to provide cash needed for operations. The process of selling these loans may also allow for better matching of assets and liabilities on the company's balance sheet thereby reducing interest rate risk.

Securitization agreements will vary as to the how payments are made and what occurs if the underlying loan is paid in full earlier than expected. Also there are terms in the contract that deal with the default risk and what rights each party has in the event of a loan default. Typically the original borrowers are not aware that the loans have been bundled and sold to a third party as they continue to deal with their financial institution as if nothing has occurred.

Review Questions

A. Short Questions

1. Define hedging and insurance.
2. Distinguish between hedging and insurance
3. What are the arguments for corporate hedging.
4. Examine the role of options as an insurance device.
5. How does securitization act as a hedging technique ? Explain.
6. What are forward and future contracts ?
7. What is a swap contract ? Explain with examples.
8. What is interest rate cap ? Explain with examples.
9. How hedging is done by matching assets and liabilities ? Explain with examples.
10. Differentiate between hedging and speculation.
11. Differentiate between future contract and forward contract.
12. What do you mean by : (a) Caps; (b) Floors and (c) Collars

B. Broad Questions

13. Briefly discuss the various hedging tools. Give suitable example in each case.
14. Distinguish between internal hedging and external hedging tools. Discuss the various external and internal hedging tools.