
UNIT 6 CAPITAL AND EQUITY MARKETS

Structure

- 6.0 Objectives
- 6.1 Introduction
- 6.2 Purpose and Users of Capital Markets
- 6.3 Debt and Equity as Means of Raising Finance
- 6.4 Debt Market Instruments and their Pricing
- 6.5 Equity: Markets and Volatility
- 6.6 Indices of Share Prices
- 6.7 Let Us Sum Up
- 6.8 Key Words
- 6.9 Some Useful Books
- 6.10 Answers/Hints to Check Your Progress Exercises

6.0 OBJECTIVES

This unit discusses capital markets, and markets for equities. After going through this unit, you should be able to:

- describe the purposes for which capital markets exist and the role they play in a modern economy;
- list the various participants and the types of exchanges taking place in these markets;
- compare between debt and equity as means of raising finance for business firms;
- analyse the working of debt markets, the instruments in these markets and the pricing in these markets;
- discuss the principles of the working of equity markets; and
- explain the concept of share price indices and the methods of their construction.

6.1 INTRODUCTION

In Unit 3 of the previous block, you were introduced to asset pricing. In that unit, you were familiarized with the concepts of assets, and how their prices are determined. You learnt about the concepts of risk-free and risky assets, and how investors choose an optimal portfolio of assets. This unit gives a more descriptive, but sufficiently analytical, discussion of how capital markets and debt markets function, who the participants in these markets are, and how trading and exchanges take place in these markets.

In the present block, the previous unit acquainted you with markets for short-term funds, and we learnt these markets are called money markets. The present unit deals in detail with various markets for long-term funds. These are called capital markets. We will see there are primarily two types of capital markets: debt markets, and equity markets. In the next section, we consider the purpose of capital markets

in general, and the various participants in these markets. In the section after that, we will look at debt and equity as alternative means of raising finance. Section 6.4 limits itself to the debt market but provides a detailed discussion about the workings of these markets. The subsequent section turns to equity markets and explains why there is volatility, or risk, in these markets. Finally section 6.6 discusses the indices of share prices and how these are constructed. Let us begin our study of these markets.

6.2 PURPOSE AND USERS OF CAPITAL MARKETS

We have seen that investment is nothing but postponed consumption. So there are investors who are willing to lock in their funds in the expectation of earning higher returns, making capital gains. On the other side, there are business firms, organisations, and individuals who need funds and finance for making physical investments in the hope of making profits or gains, or even for consumption. Capital markets constitute a mechanism for bringing together buyers and sellers of various types of financial assets. Exchanges of these financial assets determine their prices.

The financial system of a nation consists of financial institutions, financial markets, and financial instruments and services. A financial market is an arrangement that facilitates the exchange of financial assets, including deposits and loans, corporate stocks and bonds, government bonds, and derivatives like futures and options. You will read about derivatives in the next unit. Financial markets can be classified in several ways: as primary and secondary markets, that is markets in new issues and markets in existing issues; as organised or formal markets, and unorganised or informal markets; and financial markets can also be classified as money markets, or markets for short-term funds, and capital markets, or markets for long run funds.

Capital markets can be markets where long-term debt contracts are traded, like bond markets or debentures, or these can be equity markets where financial claims are sold which allows the holder a share in the profits of the firms issuing these shares. The markets where shares are issued initially are called primary markets, and the markets where the holders of these shares further trade these in the expectations of making capital gains are called secondary markets.

Let us look now at the basis for the need and provision of finance, as this will enable us to know about debt as the foundation of finance, and see who the participants in the markets are. Capital markets are all about the raising of capital and matching those who want capital (borrowers) with those who have capital (lenders). One way of matching these are financial institutions like banks and other depository institutions. For more complex transactions, markets are needed in which borrowers (and their agents) can meet lenders (and their agents). Commitments to borrow and lend are created. There are also markets where these commitments to borrow and lend are themselves sold off to other people. For example, companies can raise money by selling shares to investors and existing shares can be freely bought and sold.

Who are the borrowers? Individuals can borrow for domestic purchases or for longer term such as financing and mortgages of houses, or consumer durables, or education... companies need short-term funds to finance their cash flow. They need longer term funds for growth and expansion. Governments are huge borrowers.

They often borrow by issuing securities like bonds. Their total borrowing is called National Debt. Public sector companies may also borrow for expansion and growth. Borrowing may also be done from foreign agencies, institutions etc. Similarly, lenders may be individuals, or financial institutions, or even companies. A company can use some of its idle funds to lend for short periods in order to make gains, in the money market.

When money is lent, in many cases the borrower issues a receipt for the money, a promise to pay back. These receipts are called securities, and the lender has claims on these securities. Thus securities are financial claims. The holders of financial securities are the lenders, and the issuers of financial securities are the borrowers. There are many types of securities like Treasury Bills, Certificates of Deposits, Commercial Paper, bonds, debentures, equity shares, and so on. All securities show key information about how much is owed, when it will be paid back, and how much is the rate of interest.

So we have seen that markets exist for finance and the main participants are borrowers, lenders, their agents and other individuals and agencies that facilitate exchanges. Borrowers issue securities. Lenders purchase these securities. For example when the government issues a bond, we say that the government is selling the bonds. When you purchase the bond, you are actually lending money to the government, and the government is borrowing money from you. The market for long-term securities is called capital market.

Capital markets perform several important functions in a market economy. The capital markets makes information processing and dissemination easier, which allows better decisions can be taken regarding investment, selling of assets, and so on. Capital markets allow quick valuation of financial instruments – both debt and equity. Capital markets also enable operational efficiency by simplifying transactions procedure and lowering search costs and transactions costs. Capital markets help to develop integration among several sectors of the economy such as between real and financial sector, between debt and equity instruments, between short-term and long-term funds, and between domestic and external funds. Finally, capital markets facilitate the flow of funds into efficient channels through proper investment.

6.3 DEBT AND EQUITY AS MEANS OF RAISING FINANCE

In this section we will take a look at one particular borrower: the business firm. We shall see how firms take decisions about raising finance for their short-term and long-term requirements. Firms can raise finance either by borrowing (debt) or by issuing shares. So when we are talking of shares, we have only the primary market in mind. We are looking from a firm's point of view and asking how much of the finance should be raised by incurring debt, and how much should be raised through issue of shares. Is there some theory or some principles that will help the firm to make a decision? This is what we discuss now.

A firm has several assets that it invests in, and these investments generate a stream of cash flows. If the firm is entirely equity financed, these cash flows belong only to the shareholders. On the other hand, the firm can offer shares but also go in for borrowings. This will offer the lenders some risk-free investment opportunity. How much of the capital the firm should raise through debt and how much through equity is a decision that is important for the firm. This is called the capital structure of the

firm. To understand the decision regarding capital structure of the firm, we will first look at some indicators of the firm's financial position, particularly some financial ratios. One can look at the balance sheet and the income statements. Balance sheets look at the situation with assets and liabilities at a particular point of time while the income statement is a view of the earnings and expenditure that takes place over a specified period of time, usually a year. We can also look at a firm's generation of cash. But what we propose to do now is to look at some important financial ratios regarding a firm's financial activity and performances. Ratio analysis forms a powerful tool in assessing the financial condition of the firm and enables us to relate disparate financial data with each other. Ratio analysis of this sort will enable us to understand the capital structure of the business firm.

Different people and groups have varying stakes in the firm and they will have different concerns over a firm's performance. Stockholders and bondholders will be concerned about the long-term profitability of the firm, while creditors will look to see whether the firm is able to meet its payments on time. The management of the firm is concerned with both the long run and short run as well as day-to-day performance. There are several types of ratios that we shall be considering now. All of these can be grouped into four types: **liquidity ratios**, which measure the ability and adequacy of the current assets to meet current liabilities as they come due; **activity ratios**, which give an indication of the efficiency with which the firm uses its resources; **financial leverage ratios**, which measure how effective the firm is in managing its debt; and finally, **profitability ratios**, which measure how effective the firm is in generating net revenues and income in relation to sales, costs, assets and shareholder equity.

Let us begin with liquidity ratios. Liquidity ratios refer to a firm's ability to meet its short-term obligations and are concerned with the size and composition of the firm's working capital position. A higher working capital position implies more liquidity. An important ratio is the **current ratio**, which equals current assets divided by current liabilities. This ratio indicates the amount of current assets available to meet all its obligations under current liabilities. The current ratio includes inventories, but since inventories are among the least liquid of a company's assets, it is sometimes useful to exclude them. Deducting inventories from the current ratio gives us the **quick** or **acid-test ratio**:

$$\text{Quick ratio} = (\text{Current assets} - \text{Inventories}) / \text{Current Liabilities}$$

Next we turn to some activity ratios. These by and large have to do with sales generated, often in relation to the amount invested in them. One such measure is the **accounts receivable turnover**, which equals net credit sales divided by turnover. A related measure is the average collection period, which is given by $(365)(\text{receivables}) / (\text{net credit sales})$. We can look at the total asset turnover which is an overarching activity ratio and is defined as:

$$\text{Total asset turnover} = \text{Net sales} / \text{total assets}$$

Now let us focus on some financial leverage ratios, which will enable us to talk about the capital structure of firms. Sometimes, as in Britain, leverage is called 'gearing'. Leverage ratios reflect a firm's risk position by analysing its financing mix.. the idea is that more the operations of the firm is financed through debt, the greater the risk. Information on this can be obtained from the firm's balance sheet. The other way is to use income statement data to derive the coverage ratios, which measure the company's ability to service that debt. Two widely used ratios derived from the information in balance sheets are the debt ratio and the debt-equity ratio.

By debt, here we mean the firm's current liabilities as well as long run debt. The **debt ratio** is defined as:

Debt ratio = Total Liabilities divided by Total Assets

The **debt-equity ratio** is defined as:

Debt-equity ratio = Total Liabilities divided by Equities

Now since total assets equal total liabilities plus equity, it can be shown (it is left to you as an exercise) that:

Debt-equity ratio = Debt ratio divided by (1 – Debt Ratio)

From the income statements we can derive the firm's cash flow coverage, which is given as: **Cash Flow Coverage**

$$= \frac{[\text{EBIT} + \text{Lease/rental Payments} + \text{Depreciation}]}{\text{Interest} + \text{Lease/Rental Payment} + \text{Principal Repayment} / (1-T)}$$

Where EBIT stands for annual earnings before interest and taxes, and T stands for taxes on a firm.

Finally we discuss profitability ratios. These ratios allow the shareholders to evaluate management's performance. There are two types of profitability ratios used: profit margin on sales, and returns on assets employed. Profit margins- type of profitability ratios look at a firm's expenditure in relation to sales. There are two important such ratios: gross profit margin and net profit margin. They are defined as follows:

Gross Profit Margin = gross Profits/Net Sales

Net Profit Margin = Net Income/Net Sales

In addition, we can work out the **operating profit margin which is defined as:**

Operating profit margin = EBIT/Net Sales.

In addition to looking at ratios related to the profit margin, we can relate returns to assets and shareholders equity. Two ratios frequently used are **(ROA)**, also known as **return on investment (ROI)**, and **return on equity (ROE)**. They are defined as:

Return on Assets = Net Income/Total Assets

Return on Equity = Net Income/Shareholders' Equity

Equipped with these ratios, we now discuss, somewhat briefly, some elements of capital structure of a firm. The central question is: can the firm create value by carefully selecting its debt-equity mix? There are two lines of thought on this: the first one says that capital structure is irrelevant, because the value of the firm is determined by the yield on the company's real assets and working on the *claims* on these assets does not change their total value. The other line of thinking says that in the real world, there are taxes and other distortions, and hence an optimal degree of debt-equity ratio, that is, leverage, and hence firms can raise their debt to equity ratio up to a point.

What happens when the leverage of a firm goes up? We have seen that financial leverage refers to the substitution of fixed-charge financing-mainly debt (interest and principal) but also preferred stock for common stock. If the firm finances entirely

through equity, fluctuations in earnings per share arise entirely through the firm's business risk. If some of this equity is substituted by debt, a smaller group of people is holding the remaining shares. So the risk to them increases because a smaller group of people is holding on to the existing business risk. This added risk is called financial risk. Financial leverage also affects the expected level of earnings per share (EPS) and return on equity (ROE). We state some of the basic results regarding the consequences of leverage:

- 1) When the return on assets exceeds the interest cost of debt, financial leverage raises both EPS and ROE and reduces them when the return on assets is less than the cost of debt.
- 2) Financial leverage raises the variability or volatility of both EPS and ROE. This is because the creditor claims are of a fixed nature. A fixed amount must be paid to creditors regardless of the financial situation of the firm.
- 3) Financial leverage generally raises the *expected* value of EPS as well as that of ROE. Therefore, leverage is likely to raise both EPS and ROE, but increases their variability. So the firm cannot focus on the expected EPS and ROE alone; it has to take variability into consideration as well.

We now turn to alternative theories of the capital structure of a firm. We just saw that leverage can have both positive and negative effects. Is there then an optimal level of leverage? The traditional thinking on this was that since leverage substitutes debt for equity, what happens is that as the proportion of debt increases, the proportion of cheaper credit increases while that of more expensive equity decreases, and hence, the firm's weighted average cost of capital (average of debt and equity) declines. This means that the total value of the firm goes up.

This traditional view was challenged in a remarkable article by Franco Modigliani and Merton Miller in 1958 published in the *American Economic Review*. They demonstrated that if we assume that there are no taxes, transactions cost and other market distortions, then *the capital structure does not matter*. This paper set the stage for financial discipline to acquire a rigorous theoretical edge and no longer be informed by accountancy practices and anecdotal evidence, but be based on mathematical economics and empirical studies. Modigliani-Miller's first proposition is that the value of the firm is independent of its capital structure. Their second proposition is that the cost of equity capital for a leveraged firm is equal to the constant overall cost of capital plus a risk premium. This risk premium itself is equal to the difference between the overall cost of capital and cost of debt multiplied by the debt-equity ratio. Symbolically, it can be shown as:

$$K_e = K_o + (K_o - K_d) \frac{D}{E}$$

where K_e is cost of equity capital

K_d is cost of debt capital

K_o is the overall cost of capital, that is, the weighted average cost of capital.

Their first proposition is based on an arbitrage kind of argument. It suggests that in equilibrium identical assets must sell for identical prices, regardless of how they are financed. This arbitrage type of assumption, together with the assumption that

the firm’s operating cash flow is independent of its capital structure, gives rise to the first proposition.

Check Your Progress 1

1) What are the main functions performed by capital markets in the economy?

.....

.....

.....

.....

.....

2) Name and define two liquidity ratios and two financial leverage ratios.

.....

.....

.....

.....

.....

3) State the Modigliani-Miller theorem.

.....

.....

.....

.....

.....

6.4 DEBT MARKET INSTRUMENTS AND THEIR PRICING

The main debt instruments are bonds, which are fixed-income securities. The investor (who is the lender) gets periodic interest payments over the life of the bond and the principal payment at the time of redemption of the bond. The issuer of the bond (who is the lender, that is who undertakes to bear the debt) promises to pay the holder (buyer) of the bond this periodic stream of payments and the principal at the end. Debentures are like bonds, except that there is a clause that enables the investor to convert the debenture into equity shares on certain pre-specified terms and conditions.

There are short-term debt instruments, about which you studied in detail in the previous unit on money markets, like treasury bills, certificates of deposits, commercial paper etc. In this unit we limit ourselves to a study of bonds. Bonds are issued by governments and these are government-guaranteed. For example, in India, the Government of India is the largest borrower. The government sells short-term to medium-term bonds issued by the Reserve Bank of India. State governments also sell bonds. Apart from the central and state governments, a number of government agencies issue bonds that are guaranteed by the government. Other than government

bonds, there are bonds issued by public sector companies, financial institutions, and private sector companies.

Over the last couple of decades, there have been several innovations in the types of bonds that have been issued. Traditionally simple bonds have been issued (these are known as ‘plain vanilla bonds’ or straight bonds). These bonds usually pay a fixed periodic coupon over its life and return the principal on the maturity date. The new types of bonds are of several types: zero coupon bonds; floating rate bonds; bonds with embedded options; and commodity-linked bonds. These are explained below.

Zero coupon bonds do not give regular interest payments. It is issued at a large discount and redeemed at face value on maturity. Sometimes, these bonds carry call and put options. You will know about put and call options in the next unit. Floating rate bonds, unlike straight bonds that pay a fixed rate of interest, pay an interest rate that is linked to a benchmark rate such as the interest rate on Treasury bills. Bonds with embedded options include bonds like debentures that give the bond holder the right to convert them into equity shares; as well as callable bonds, which are bonds that give the issuer the right to redeem them prematurely on certain terms; and bonds with put options, which are bonds that give the investor the right to prematurely sell them back to the issuer on certain terms. Finally there are commodity-linked bonds that are bonds the return from which depend on the price of certain specified commodities.

We will be looking at the risks associated with bonds in detail in Unit 15 of Block 4. For the present, we proceed from the assumption that bonds are risk free. With that assumption, let us now discuss the value of a bond and see how the value of a bond is determined. The value of a bond is equal to the present value of the expected cash flows arising from it. Here you will do well to go over Unit 4 in Block 1. Hence we need to look at the expected stream of cash flows and an estimate of the returns. We assume further that the bond pays a fixed coupon interest rate, that coupon payments are made annually and that the bonds will be redeemed at par when it matures.

With these assumptions, the cash flow for such a bond is:

$$A = \sum_{t=1}^T \frac{X}{(1+r)^t} + \frac{M}{(1+r)^T}$$

where A = value (in rupees)

T = number of years

X = annual coupon payment (in rupees)

The required return is denoted by r

M = maturity value

The time period when the payment is received is denoted by t.

A basic property of a bond is that there is an inverse relationship between the price of the bond and yield. This is because as the yield increases, the present value of the cash flow decreases; therefore the price falls. What is the relationship between the bond price and time? Since the bond price must equal its par value at maturity (we assume there is no risk of default) bond prices change with time. If the current price prevailing when the redeemed is higher than the par value of the bond, the bond is said to be a premium bond; if the current price at the time of redemption is lower, the bond is said to be a discount bond.

The trading of bonds is usually based on their prices. But since there are significant differences in cash flow patterns, and also other features, of different bonds, different bonds are not usually compared in terms of their prices. Instead, the point of comparison is bond yields. We now turn to some measures of bond yields. A common measure of yield is the **current yield**, which relates the annual coupon interest to the market price. It is expressed as:

Current Yield = Annual Interest / Price.

The current yield does not consider the capital gain (or loss) that the investor will face if she holds the bond till maturity and sell at a premium (or discount). This measure also neglects the time value of money. The next measure of yield that we consider is the **yield to maturity**. This is that value of the rate of interest that makes the present value of the cash stream received from owning the bond equal to the price of the bond. It can be expressed as

$$P = \sum_{t=1}^T \frac{X}{(1+r)^t} + \frac{M}{(1+r)^T}$$

Where P is the price of the bond, and the other letters denote the same variable as in the previous equation. Sometimes the calculation of r in the above is difficult and a trial-and-error procedure is resorted to. The final measure of yield that we consider is the **yield to call**. It is calculated in the same way as yield to maturity, except that in yield to call, instead of maturity value at the end, there is call price and the duration, instead of going from say, 1 to T, goes from 1 to the number of years until the assumed call date.

Check Your Progress 2

- 1) Distinguish among straight bonds, zero-coupon bonds, and floating rate bonds.

.....

.....

.....

.....

- 2) Depict and explain the cash flow of a bond that has a fixed coupon rate and gives an annual stream of returns.

.....

.....

.....

.....

- 3) What is the relation between the yield of a bond and its return? Explain the concept of current yield and yield to maturity.

.....

.....

.....

.....

6.5 EQUITY: MARKETS AND VOLATILITY

We will discuss markets and trading mechanisms and exchanges obtaining in India in much richer detail in Unit 12. For now, we give a largely general theoretical analysis of the stock market and its functioning, as also its role in the economy.

Before we go on to discuss equity markets, let us discuss the role that equity markets play in the economy. We shall use the term stock market and stock exchange interchangeably. What does a stock exchange do? It provides the regulation of company listings, a price formation mechanism, the supervision of trading, authorisation of members, settlement of transactions and publication of trade data and prices.

Equity markets consist of primary markets and secondary markets. The primary market is the market for new issues of shares, where shares are initially offered to the public. The secondary market, on the other hand, is the market for already-issued financial assets. The main difference between the two markets is that in the secondary market the issuer of the share does not receive funds from the buyer. Rather, the existing issue changes hands in the secondary market, and funds flow from the new buyer of the share to the original buyer.

Equity capital is ownership capital. It is the shareholders who collectively own the company. They undertake the risks, but also earn the rewards of ownership. The amount of capital that a company *can* issue is the **authorised capital**. The amount of capital that a company actually offers to investors is the **issued capital**. The part of capital subscribed by investors is called the **paid-up capital**. The par value is the face value of the share. When the issue price is greater than the par value, the difference is called the **equity premium**. The **book value** of an equity share is equal to:

$(\text{paid-up capital} + \text{reserves and surplus}) / (\text{number of equity shares outstanding})$.
The **market value** of an equity share is the price at which it is traded in the market.

We now turn to some valuation ratios. Valuation ratios indicate how investors assess the stock in the equity markets. These are thus indicators the performance of the issuing firm. The important valuation ratios are: the price-earnings ratio, the yield, and the ratio of market value to book value.

Price-earnings ratio: it is defined as the market price per share divided by earnings per share. The earnings per share ratio is just the after-tax profit less preference dividend divided by the number of outstanding equity shares.

The price-earnings ratio reflects risk characteristics, investor sentiments, the degree of liquidity, and growth prospects.

Yield: this measures the rate of return earned by shareholders. It is defined as:

$\text{Yield} = (\text{Dividend} + \text{price change}) / \text{Initial price}$. We can break this into two parts:
 $\{\text{Dividend} / \text{Initial price}\} + \{\text{price change} / \text{Initial price}\}$

The first term denotes the dividend yield, while the second term is the capital gains or losses yield. Usually companies with low growth prospects offer a high dividend yield while the capital gains yield is low. It is the converse with regard to companies with high growth prospects.

Market Value to Book Value ratio: this is defined as the ratio of market value per share to the book value per share. It is a measure of the firm's generation of wealth. If it is more than 1, that is, if the market value exceeds the book value, it

means wealth has been generated. We can see that if the ratio of market value to book value is equal to one, all the three ratios, namely, earnings price ratio (reciprocal of price-earning ratio), yield and return to equity will be equal to each other.

Nobel laureate James Tobin has proposed a valuation ratio, called Tobin's q, after the letter he used to denote it. The q ratio is defined as:

$$(\text{Market value of equities and liabilities})/(\text{estimated replacement cost of assets})$$

The q ratio looks a little like the market value to book value ratio. But there are two important differences: the numerator of the q ratio includes liabilities of the issuer of debt instruments along with market value of equities, that is, it includes all wealth. Also, in the denominator of the q ratio, the assets are valued at their replacement cost, not book value.

The main functions of the secondary markets are that it provides useful information both to the issuer as well as investors the function it serves for the issuer is as follows. The secondary market provides regular information, by the latest prices of shares, to the original issuer of the shares about the value of its shares. The periodic trading of the asset reveals to the issuer the price the share commands in the market at a certain time. Such information helps the issuer to evaluate how well they are using the funds from earlier primary market activities, and it also provides some idea about how receptive investors will be to new issues.

To the original buyer of shares in the initial public offering in the primary market, the secondary market acts like an escape clause. If the shares do not seem to be doing as well as the original buyer thought, he or she can always sell it for cash. Of course, the investor can also sell it for cash with a view to making capital gains. The secondary market provides the original buyer of the shares an opportunity to sell these for cash. In fact, if the investors are not confident that they can move from one financial asset to another, they might be reluctant to invest in any security. This will make it difficult for the issuers to issue new shares, and moreover, they will have to offer higher returns or dividends to attract investors.

The secondary markets also perform a useful function in that they provide information about the assets' fair price, as well as liquidity from their assets should they want to sell the assets. Another very important function performed by secondary stock markets is that they reduce search costs, by making it easier for buyers and sellers of assets to find each other. The secondary markets also lower transactions cost.

Let us now discuss some basic parameters that enables one to gauge the functioning of the stock market as a whole, which makes it easier to know if the stock market is developed and mature or not. The parameters that we should look at in order to judge the functioning of equity markets are: volatility, liquidity, size of the market, and transactions cost. **Volatility** of a stock is a measure of the frequency with which its price changes over a period of time. If the price changes frequently, it means that the stock is volatile. Investors tend to avoid shares with high volatility because of the risks involved. Volatility of stocks also influences the outside flow of funds, and hence has a macroeconomic dimension. Proximate factors like speculation and trading and settlement systems, as well as other factors like government policies, interest rates, inflation, and the regulatory framework for equity markets all affect volatility in the stock market.

Liquidity is a very important indicator of the proper functioning of stock markets. The situation with regard to liquidity greatly influences stock market efficiency and

development. A market is considered liquid when large volumes of trade can take place without significant effect on stock prices. If an investor is able to transact at a price close to the current market price, the market is considered very liquid. There are two methods for measuring liquidity: the turnover ratio and the value traded ratio. The **turnover ratio** equals the ratio of the total value of domestic shares traded to total market capitalisation. This ratio seeks to measure the trading of domestic equities in domestic markets relative to the size of the market. The more the volume of sale, the higher is the turnover. High turnover is often an indicator of low transactions costs. Even if a market is large, turnover may be low in spite of huge market capitalisation if the volume of trading is low, which can occur if the market is not very active. The other measure of liquidity is the **value-traded ratio**. This equals the ratio of the total value of domestic shares traded on the major stock exchanges to the GDP. It is a reflection of organised trading of shares as a proportion of GDP and is thus a macro-level indicator of liquidity in the capital markets.

The third parameter regarding the functioning of equity markets is the size of the stock market, and a useful measure of this size is the **market capitalisation ratio**, which is the ratio of market capitalisation (the value of listed shares) to the GDP. It is economically very significant as it is based on the assumption that the size of the stock market is positively correlated with the ability to mobilise capital and diversify risk. Hence it is expected that in an economy with well-developed stock markets, the market capitalisation ratio will be large. This ratio complements the value-traded ratio. The final indicator of the development, maturity and vibrancy of stock markets is the level of transactions costs. In the context of stock markets transactions cost would include explicit costs like brokerage costs, stamp duty, commission etc, as well as implicit costs like clearing and settlement costs, bad delivery, paperwork and so on. If transactions costs are low, investors will be induced to trade in greater volume, which in turn will raise the value traded ratio.

6.6 INDICES OF SHARE PRICES

The stock market index is a very important indicator of the performances of share prices. It takes a set of stocks as representative of the prices of shares in the market, and by tracking the changes in this index, we can get an idea of the overall market sentiment. The stock market index is a pointer to market behaviour. The stock market index reflects market direction and indicates day-to-day fluctuations in stock prices.

What are the characteristics of a good index of share prices? A good index should have two characteristics. First, it should consider a set or group of scrips that have high market capitalisation, secondly, these scrips should also be highly liquid. Market capitalisation, as we have seen, refers to the sum of the market value of all the stocks included in the index. The market value is obtained by multiplying the price of the shares with the number of shares outstanding. Liquidity refers to the ease with which a share can be bought or sold at a price close to the current market price.

Basically, the share price index is calculated for a particular day as a percentage of the aggregate market value on that day of the set of stocks included in the index to the average market value of the same shares during the base period. For example, the BSE Sensex (sensitive Index) is a weighted average of the prices of 30 select stocks. Suppose the index is the set of prices of the largest 25 companies, it means that these companies are largest in terms of market capitalisation. Sometimes the index is weighted. If the index is based on the price of, say 35 companies, a weighted

index implies that a 1% change in the price of the largest companies in the group constituting the index will have more impact on the index than a 1% change in the price of the smallest. Since share prices are changing frequently, the companies with the top shares do not remain the same and hence the constituents of the index can change.

We must be careful to make a distinction between price averages and price indices. In 1884, for example, Charles Dow, publisher of the *World Street Journal* started publishing share price *averages*. The Dow Jones average started with the average of twelve shares. Since 1928, the number of shares whose price average is calculated has been thirty. The main index in Japan, the Nikkei Dow 225, an index of 225 shares is based on average prices, not market capitalisation. Usually the average is arithmetic mean, but sometimes geometric mean is calculated. For example, the *Financial Times* Ordinary Share Index that began in 1935, calculated the geometric mean of the prices of 30 shares. Modern indices are based on taking the number of shares and multiplying by the price. This gives accurate weight to the companies with the largest market capitalisation.

The majority of the stock market indices used in practice falls in two categories:

(i) equal weighted index and (ii) value-weighted index. The former is an index that reflects the simple arithmetic average of the sample shares at a certain time (year or month or day) with reference to the base period. The latter reflects the aggregate market capitalisation of the sample shares in a certain time with reference to the base time period. Thus what we had earlier referred to as price average can also be viewed as equal weighted index and what we had referred simply to price index can be called value-weighted index.

Some analysts make a fine distinction even within the market capitalisation weighted method and the non-capitalisation weighted method. In this classification, market capitalisation weighted method can be sub-classified into three types: full market capitalisation method; free float market capitalisation method and modified capitalisation method. In the first, the number of shares outstanding multiplied by the market price of a company's share determines the scrip's weight in the index. The shares with higher market capitalisation would have greater weightage in this kind of index, and will exercise greater influence on the overall index. In India, as has been mentioned earlier, the BSE Sensex follows this method. So does the Nifty. The free-float method does not consider a set constructed from among all shares in the market but from a smaller sub-set of shares. It considers only those shares that are freely available for buying in the market and excludes strategic investments in a company and shares locked-in under employee stock-ownership plans. The free-float method recognises that investible market capitalisation may be lower than the total capitalisation. In this method, closely held companies would have a much lower weightage. The free-floating methodology is quite popular across the world. The third method under the market capitalisation method is the modified capitalisation method. This method recognises that if a simple market capitalisation method is followed, the largest stocks with huge market capitalisation would have a disproportionate weightage and would dominate the entire index. Hence, the modified capitalisation method seeks to limit the influence of the largest stocks in the index.

The two other methods for calculating stock price indices are the price weighted index and equal weighting method. In the former, the price of each stock in the index is summed up which is then related to a base value. In the equal weighting method, each stock's percentage weight in the index is equal.

Let us now mention about some of the major indices of share prices in India and abroad. In India there are two main indices: the Bombay Stock Exchange (BSE) Sensitive index (Senssex) and the National Stock Exchange (NSE) Nifty. The BSE Senssex was launched in 1986. it comprises 30 shares and uses 1978-79 as the base year. It uses large market capitalisation. Today only about 11 of the original 30 remain in the basket. In 1997, it was revised and 15 of the original shares were removed. In their place, the shares of banks and institutions having a weight of 14.6 per cent were included. Now scrips of IT companies have a huge weightage. Infosys has the largest market capitalisation among such companies, at 16.85 per cent. Companies, which may be otherwise large and very valuable, but the trading volume of whose shares are low, are not included in the index. Wipro is a prime example of such a company.

The other major share price index in India is the Nifty of the National Stock Exchange. The National Stock Exchange was started in 1994 and in a very quick time its volume exceeded that of BSE. With collaboration with the Credit Rating Information Services of India Limited (CRISIL) and Standard & Poor, the S&P CNX Nifty was launched on July 8, 1996, comprising 50 scrips, which are selected on the basis of low impact cost, high liquidity and market capitalisation. Both BSE and NSE use a weighted average method of weighting, where the weights are in proportion to its market capitalisation.

Other than these two major indices, some other indices are the Economic Times Ordinary Share Price Index, Financial Express Ordinary Price Index, and the RBI Index of Security Prices. Regional stock exchanges such as those in Ahmedabad, Chennai, Delhi and Kolkata have their own indices.

We now state some major indices abroad. A very prominent index is the Dow Jones Industrial Average, which is for the New York Stock Exchange, the National Association of Securities Dealers Automatic Quotation (NASDAQ), the Nikkei in Japan, the Standard & Poor etc.

Check Your Progress 3

- 1) What is the difference between issue capital and paid-up capital? What do you understand by equity premium?

.....

.....

.....

.....

.....

- 2) What are the functions performed by the secondary stock markets?

.....

.....

.....

.....

.....

- 3) What is a stock market index? Distinguish between an equal weighted index and value- weighted index.

.....

.....

.....

.....

.....

6.7 LET US SUM UP

This unit dealt with financial markets for long-term funds. It discussed both debt and equity markets. We started by learning about the various participants in the capital market. We also came to know the important functions that capital markets perform. They perform important roles in providing information, enabling matching of sellers and buyers, and lowering search costs and transactions costs. The unit then went on to look at the comparative methods of raising finance through debt and through equity. We studied this choice in the context of a representative business firm. This choice, which in general term is called a firm's capital structure, is part of the firm's financial management. We studied the famous Modigliani-Miller theorem in this regard.

We next turned to a discussion of debt markets and equity markets and took up their discussion one at a time, separately. We started with the debt markets and looked at the instruments traded in that market, and discussed some theories regarding their pricing. We next studied equity markets, distinguishing between primary and secondary markets. We learnt about the way the issues are offered in the primary markets and we also looked at the functioning of secondary markets and learnt about their functions and uses. We studied in some detail the way to know if stock markets are advanced and mature in an economic system, or are they merely fledgling and poorly developed. We then learnt a bit about the volatility that characterises equity markets and how these are tackled. Finally the unit discussed indices of share prices. We looked at the requirements of a good stock price index, and came to know the various types of indices in use. The unit finally mentioned some of the important indices in India and abroad.

6.8 KEY WORDS

Coupon	: The periodic interest paid on a bond. It equals the face value of the bond multiplied by the coupon rate of interest
Coupon Rate	: Annual coupon amount divided by the face value of the bond
Equity Premium	
Leverage Market Capitalisation	: The ability of a firm to service its debt
Working Capital	: Current assets minus current liabilities
Par Value	: Specified principal sum a bondholder is scheduled to receive when the bond matures

6.9 SOME USEFUL BOOKS

Bhole, L.M. (2004), *Financial Institutions and Markets*, 4th edition, Tata McGraw-Hill, New Delhi.

Dothan, U. (1990), *Prices in Financial Markets*, Oxford University Press, New York

Fabozzi, F., Modigliani, F., and Jones, F. (2002) *Capital Markets, Institutions and Instruments 3rd edition*, Prentice-Hall, New Jersey.

6.10 ANSWERS/ HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Read section 6.2 and answer.
- 2) Read section 6.3 and answer
- 3) Read section 6.3 and answer.

Check Your Progress 2

- 1) Read section 6.4 and answer.
- 2) Read section 6.4 and answer.
- 3) Read section 6.4 and answer.

Check Your Progress 3

- 1) Read section 6.5 and answer.
- 2) Read section 6.5 and answer.
- 3) Read section 6.6 and answer.