period. ... pay back may be assigned rank one, followed in that order so that the project with the longest pay back would be ranked last. Obviously, projects with shorter pay back period will be selected.

Evaluation The pay back method has certain merits. It is easy to calculate and simple to understand. Moreover, the pay back method is an improvement over the ARR approach. Its superiority arises due to the fact that it is based on cash flow analysis. The results of Example 10.6 illustrated in Table 10.10 can be cited in support of this. Thus, though the average cash flows for both the machines under the ARR method were the same, the pay back method shows that the pay back period for machine B is shorter than for machine A. The pay back period approach shows that machine B should be preferred as it refunds the capital outlay earlier than machine A.

The pay back approach, however, suffers from serious limitations. Its major shortcomings are as follows:

The first major shortcoming of the pay back method is that it completely ignores all cash inflows after the pay back period. This can be very misleading in capital budgeting evaluations. Table 10.8 reveals alternative projects with the same pay back period (3 years).

company.[5] Thus, capital budgeting decisions determine the future destiny of the company. An opportune investment decision can yield spectacular returns. On the other hand, an ill-advised and incorrect decision can endanger the very survival even of the large firms. A few wrong decisions and the firm may be forced into bankruptcy.

Secondly, a capital expenditure decision has its effect over a long time span and inevitably affects the company's future cost structure. To illustrate, if a particular plant has been purchased by a company to start a new product, the company commits itself to a sizable amount of fixed costs, in terms of labour, supervisors' salary, insurance, rent of building, and so on. If the investment turns out to be unsuccessful in future or yields less profit than anticipated, the firm will have to bear the burden of fixed costs unless it writes off the investment completely. In short, future costs, break-even point, sales and profits will all be determined by the selection of assets.

Thirdly, capital investment decisions, once made, are not easily reversible without much financial loss to the firm because there may be no market for second-hand plant and equipment and their conversion to other uses may not be financially viable.

Finally, capital investment involves costs and the majority of the firms have scarce capital resources. This underlines the need for thoughtful, wise and correct investment decisions, as an incorrect decision would not only result in losses but also prevent the firm from earning profits from other investments which could not be undertaken for want of funds.

Difficulties

NPV). But it is likely that this project may also involve a larger initial outlay. Thus, in case of projects involving different outlays, the present value method may not give dependable results.

Finally, the present value method may also not give satisfactory results in the case of two projects having different effective lives. In general, the project with a shorter economic life would be preferable, other things being equal. A project which has a higher present value may also have a larger economic life so that the funds will remain invested for a longer period, while the alternative proposal may have shorter life but smaller present value. In such situations, the present value method may not reflect the true worth of the alternative proposals.

Internal Rate of Return (IRR) Method The second discounted cash flow (DCF) or time-adjusted

its current cash outlay rather than measure its gross benefits against its total cost over the life of the project. This aspect becomes very important in situations of capital rationing.[13] In such a situation the decision rule would be to accept the project if the PI is positive and reject the project if it is negative.

Evaluation Like the other discounted cash flow techniques, the PI satisfies almost all the requirements of a sound investment criterion. It considers all the elements of capital budgeting, such as the time value of money, totality of benefits and so on. Conceptually, it is a sound method of capital budgeting. Although based on the NPV, it is a better evaluation technique than NPV in a situation of capital rationing. For instance, two projects may have the same NPV of Rs 10,000 but project A requires an initial investment of Rs 50,000 whereas B only of Rs 25,000. Project B should be preferred as will be suggested by the PI method. The NPV method, however, will give identical rankings of both the projects. Thus, the PI method is superior to the NPV method as the former evaluates the worth of projects in terms of their relative rather than absolute magnitudes. However, in some problems of a mutually exclusive nature, the NPV method would be superior to the PI method. The comparison of PI and NPV is further explored in Chapter 11.

This method is, however, more difficult to understand. Also, it involves more computation than the traditional methods but less than IRR.

Capital Budgeting Practices in India [14]

The capital budgeting practices by corporate enterprises in India are summarised below:

- The discounted cash flow (DCF) tools/techniques methodology are more popular now.
- The corporates firms use multiple criteria in their projected selection decisions. Vast majority of the sample corporates use a combination of traditional as well as DCF techniques.

Evaluation of IRR The IRR method is a theoretically correct technique to evaluate capital expenditure decisions. It has the advantages which are offered by the NPV criterion such as: (i) it considers the time value of money, and (ii) it takes into account the total cash inflows and outflows.

In addition, the IRR is easier to understand. Business executives and non-technical people understand the concept of IRR much more readily than they understand the concept of NPV. They may not be following the definition of IRR in terms of the equation but they are well aware of its usual meaning in terms of the rate of return on investment. For instance, business executives will understand the investment proposal in a better way if told that IRR of machine B is 21 per cent and k is 10 per cent instead of saying that the NPV of machine B is Rs 15,396.

Another merit of IRR is that it does not use the concept of the required rate of return/the cost of capital. It itself provides a rate of return which is indicative of the profitability of the proposal. The cost of capital, of course, enters the calculations later on.

Finally, it is consistent with the overall objective of maximising shareholders' wealth. According to IRR, as a decision-criterion, the acceptance or otherwise of a project is based on a comparison of the IRR with the required rate of return. The required rate of return is, by definition, the minimum rate which investors expect on their investment. In other words, if the actual IRR of an investment proposal is equal to the rate expected by the investors, the share prices will remain unchanged. Since, with IRR, only such projects are accepted as have IRR > required rate, the share prices will tend to rise. This will naturally lead to the maximisation of shareholders' wealth.

Its theoretical soundness notwithstanding, the IRR suffers from serious limitations.

First, it involves tedious calculations. As shown above, it generally involves complicated computational problems. *Secondly*, it produces multiple rates which can be confusing. This aspect is further developed later in this chapter. *Thirdly*, in evaluating mutually exclusive proposals, the project with the highest IRR would be picked up to the exclusion of all others. However, in practice, it may not turn out to be the one which is the most profitable and consistent with the objectives of the firm, that is, maximisation of the shareholders' wealth. This aspect also has been discussed in detail later in this chapter. *Finally*, under the IRR method, it is assumed that all intermediate cash flows are reinvested at the IRR. In our example, the IRR rates for machines A and B are 17.6 per cent and 20.9 per cent respectively. In operational terms, 17.6 per cent IRR signifies that all cash inflows of machine A can be reinvested at 17.6 per cent whereas that of B at 20.9 per cent. It is rather ridiculous to think that the same firm has the ability to reinvest the cash flows at different rates.

ordinary course of business, the claims of creditors are not met out of the sale proceeds of the permanent assets of the firm. The obligations of a firm are normally met out of the earnings or operating profits. These claims consist of (i) interest on loans, (ii) preference dividend, and (iii) amortisation of principal or repayment of the instalment of loans or redemption of preference capital on maturity. The soundness of a firm, from the view-point of long-term creditors, lies in its ability to service their claims. This ability is indicated by the coverage ratios. The coverage ratios measure the relationship between what is normally available from operations of the firms and the claims of the outsiders. The important coverage ratios are: (i) interest coverage, (ii) dividend coverage, (iii) total coverage, (iv) total cashflow coverage, and (v) debt service coverage ratio.

Interest Coverage Ratio It is also known as **'time-interest-earned ratio'**. This ratio measures the debt servicing capacity of a firm insofar as fixed interest on long-term loan is concerned. It is determined by dividing the operating profits or earnings before interest and taxes (EBIT) by the fixed interest

(7.13)

super-quick assets by the current liabilities of a firm. [illegible] current assets are cash marketable securities. This ratio is the most rigorous and conservative test of a firm's liqui position. Further, it is suggested that it would be useful, for the management, if the liqui measure also takes into account 'reserve borrowing power' as the firm's real debt paying ab depends not only on cash resources available with it but also on its capacity to borrow from market at short notice.

Turnover Ratio The liquidity ratios discussed so far relate to the liquidity of a firm as a wh Another way of examining the liquidity is to determine how quickly certain current assets converted into cash. The ratios to measure these are referred to as **turnover ratios.** These are activity ratios, covered in detail later in this chapter. In fact, liquidity ratios are not independen activity ratios. Poor debtor or inventory turnover ratios limit the usefulness of the current and a test ratios. Both obsolete/unsaleable inventory and uncollectible debtors are unlikely to be sour of cash. Therefore, the liquidity ratios should be examined in conjunction with relevant turno ratios affecting liquidity. The three relevant turnover ratios are (i) inventory turnover ratio, debtors turnover ratio; and (iii) creditors turnover ratio.

Inventory Turnover Ratio It is computed by dividing the cost of goods sold by the aver inventory. Thus,

the same line of business or for the industry ... to its competitors.

Other types of comparison may relate to comparison of items within a single year's financial statement of a firm and comparison with standards or plans.

Types of Ratios

Ratios can be classified into six broad groups: (i) Liquidity ratios, (ii) Capital structure/leverage ratios, (iii) Profitability ratios, (iv) Activity/Efficiency ratios, (v) Integrated analysis of ratios and (vi) Growth ratios.

Liquidity Ratios The importance of adequate liquidity in the sense of the ability of a firm to meet current/short-term obligations when they become due for payment can hardly be overstressed. In fact, liquidity is a prerequisite for the very survival of a firm. The short-term creditors of the firm are interested in the short-term solvency or liquidity of a firm. But liquidity implies, from the viewpoint of utilisation of the funds of the firm, that funds are idle or they earn very little. A proper balance between the two contradictory requirements, that is, liquidity and profitability, is required for efficient financial management. The **liquidity ratios** measure the ability of a firm to meet its short-term obligations and reflect the short-term financial strength/solvency of a firm. The ratios which indicate the liquidity of a firm are: (i) net working capital, (ii) current ratios, (iii) acid test/quick ratios, (iv) super quick ratios, (v) turnover ratios, (vi) defensive-interval ratios and (vii) cash flow from operations ratio.

their face value. Some of the limitations which characterise ratio analysis are (i) difficulty in comparison, (ii) impact of inflation, and (iii) conceptual diversity.

Difficulty in Comparison One serious limitation of ratio analysis arises out of the difficulty associated with their comparability. One technique that is employed is interfirm comparison. But such comparisons are vitiated by different procedures adopted by various firms. The differences may relate to:

- Differences in the basis of inventory valuation (e.g. last in first out, first in first out, average cost and cost);
- Different depreciation methods (i.e. straight line vs written down basis);
- Estimated working life of assets, particularly of plant and equipment;
- Amortisation of intangible assets like goodwill, patents and so on;
- Amortisation of deferred revenue expenditure such as preliminary expenditure and discount on issue of shares;
- Capitalisation of lease;
- Treatment of extraordinary items of income and expenditure; and so on.

Secondly, apart from different accounting procedures, companies may have different accounting periods, implying differences in the composition of the assets, particularly current assets. For some reasons, the ratios of two firms may not be strictly comparable.

Another basis of comparison is the industry average. This presupposes the availability, on a comprehensive scale, of various ratios for each industry group over a period of time. If, however, as is likely, such information is not compiled and available, the utility of ratio analysis would be limited.

Impact of Inflation The second major limitation of the ratio analysis as a tool of financial analysis is associated with price level changes. This, in fact, is a weakness of the traditional financial statements which are based on historical costs. An implication of this feature of the financial statements as regards ratio analysis is that assets acquired at different periods are, in effect, shown at different prices in the balance sheet, as they are not adjusted for changes in the price level. As a result, ratio analysis will not yield strictly comparable and, therefore, dependable results. To illustrate, there are two firms which have identical rates of returns on investments, say 15 per cent. But one of these had acquired its fixed assets when prices were relatively low, while the other one had purchased them when prices were high. As a result, the book value of the fixed assets of the former type of firm would be lower, while that of the latter higher. From the point of view of profitability, the return on the investment of the firm with a lower book value would be overstated. Obviously, identical rates of returns on investment are not indicative of equal profitability of the two firms. This is a limitation of ratios.

Conceptual Diversity Yet another factor which influences the usefulness of ratios is that there is difference of opinion regarding the various concepts used to compute the ratios. There is always room for diversity of opinion as to what constitutes shareholders' equity, debt, assets, profit and so on. Different firms may use these terms in different senses or the same firm may use them to mean different things at different times.

Reliance on a single ratio for a particular purpose may not be a conclusive indicator. For instance, the current ratio alone is not a adequate measure of short-term financial strength; it should be supplemented by the acid-test ratio, debtors turnover ratio and inventory turnover ratio to have a real insight into the liquidity aspect.

Finally, ratios are only a post-mortem analysis of what has happened between two balance sheet dates. For one thing, the position in the interim period is not revealed by ratio analysis. Moreover, they give no clue about the future.

In fact, ratio analysis suffers from some serious limitations. The analyst should not be carried away by its apparent simplicity, easy computation with a high degree of precision. The reliability and significance attached to ratios will largely depend upon the quality of data on which they are based. They are as good as the data itself. Nevertheless, they are an important tool of financial

Commitment This is gauged by the resources (financial, managerial, material, and other) applied to the project and the zeal with which the objectives of the project, short-term as well as long-term, are pursued. Managerial review also involves an assessment of the calibre of the key technical and managerial personnel working on the projects, the schedule for training them, and the remuneration structure for rewarding and motivating them.

SECTION 2 DEBENTURES/BONDS/NOTES

Akin to a promissory note, **debentures/bonds** represent creditorship securities and debentureholders 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.

CHAPTER 20

HYBRID FINANCING/ INSTRUMENTS

INTRODUCTION

As hybrid source of financing has characteristics of both straight debt and straight equity falling somewhere in between. The important hybrid instruments/sources of financing are: (i) preference shares/capital, (ii) convertible/exchangeable debentures/bonds, (iii) warrants and (iv) options. These are covered in Sections 1-4 of the Chapter. The focus is on their features and valuation. The procedural aspects of raising hybrid securities is similar to raising equity capital (discussed in Chapter 18). The main points are summarised in the last Section.

SECTION I PREFERENCE SHARE CAPITAL

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 partakes 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.

Features/Attributes

The main attributes of preference shares/capital are discussed below.

Prior Claim on Income/Assets Preference capital has a prior claim/preference over equity capital both on the income and assets of the company. In other words, preference dividend must be paid in full before payment of any dividend on the equity capital and in the event of liquidation, the whole of preference capital must be paid before anything is paid to the equity capital. Thus, preference capital stands midway between debentures and equity as regards claim on income and assets of the company. It is also referred to as a *senior security*. Stated in terms of risk perspective, preference capital is less risky than ordinary shares but more risky than debentures.

Cumulative(dividend) preference shares *are preference shares for which all unpaid dividends in arrears must be paid along with the current dividend prior to the payment of dividends to ordinary shareholders.*

Cumulative Dividends Preference capital is cumulative in the sense that all unpaid dividends are carried forward and payable before any ordinary dividend is paid.

Redeemability Preference capital has a limited life/specified/fixed maturity after which it must be retired. However, there are no serious penalties for breach of redemption stipulation.

The preference shares have a stated call price which is above the original issue price and decreases over time. Like the call feature on bonds, the call feature on preference shares provides flexibility to the issuer company. Since the market price of **straight preference shares** tends to

Straight preference shares value/price *is the price at which a preference share would sell without the redemption/call feature.*

EQUITY/ORDINARY SHARES

INTRODUCTION

Equity/ordinary share capital, as a long-term source of finance, represents ownership capital/ownership risk capital. Its owners—equity/ordinary shareholders—share the reward and risk associated with the 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 repayment of capital. When a company is formed, it first issues equity shares to the promoters. As the need for financing increases, the company may issue ordinary shares to specific and small number groups of promoters, relatives, friends, business associates, employees, financial institutions, venture capital funds and so on. As the company grows further, it raises capital from the public. The first issue of equity shares to the public by an unlisted company is called the initial public offering (IPO). Subsequent offerings are called further issues offerings. This chapter discusses the ordinary equity shares. Section I of the chapter describes their fundamentals in terms of (1) types, (2) features/attributes and (3) evaluation. The procedure involved in issuing them to the public is the focus of Section 2. The main points are summarised in the last Section.

SECTION I FUNDAMENTALS OF EQUITY SHARES

This section discusses the types, features and evaluation of equity ordinary shares.

Types

Different types of equity shares which a company can raise from

18.61			46.37		30.60	2.08
18.40	17.68	7.56	43.64	18.00	28.08	1.62
18.33	17.68	5.04	41.05	18.00	25.56	1.65
16.41	17.68	Nil	34.09	18.00	23.04	1.71
				18.00	18.00	1.78
DSCR (DSCR ÷ 8)						1.89
					1.83	

...itability Ratios Apart from the creditors, both short-term and long-term, also interested in the ...cial soundness of a firm are the owners and management or the company itself. The man...ment of the firm is naturally eager to measure its operating efficiency. Similarly, the owners ...es their funds in the expectation of reasonable returns. The operating efficiency of a firm and ...ility to ensure adequate returns to its shareholders/owners depends ultimately on the profits ...ed by it. The profitability of a firm can be measured by its profitability ratios. In other words, ...profitability ratios are designed to provide answers to questions such as (i) is the profit earned ...the firm adequate? (ii) what rate of return does it represent? (iii) what is the rate of profit for ...ous divisions and segments of the firm? (iv) what are the earnings per share? (v) what was the ...unt paid in dividends? (vi) what is the rate of return to equity-holders? and so on.

Profitability ratios can be determined on the basis of either sales or investments. The profitability ...s in relation to sales are (a) profit margin (gross and net) and (b) expenses ratio. Profitability ...elation to investments is measured by (a) return on assets, (b) return on capital employed, and ...return on shareholders' equity.

...fitability Ratios Related to Sales These ratios are based on the premise that a firm should earn ...cient profit on each rupee of sales. If adequate profits are not earned on sales, there will be ...culty in meeting the operating expenses and no returns will be available to the owners. These ...s consist of (i) profit margin, and (ii) expenses ratios.

...fit Margin The profit margin measures the relationship between profit and sales. As the ...fits may be ... profit margins: Gross profit margin and Net

firm should have neither a very high ratio nor a very low ratio.

Coverage ratios measure the firm's ability to pay certain fixed charges

Coverage Ratios The second category of leverage ratios are **coverage ratios**. These are computed from information available in the profit and loss account. For a firm

CAPITAL BUDGETING I: PRINCIPLES AND TECHNIQUES

INTRODUCTION

This Chapter is devoted to a discussion of the principles and techniques of capital budgeting. Section 1 discusses the nature of capital budgeting in terms of meaning, importance, difficulties, rationale and types. The identification of relevant data for capital budgeting decisions is explained in Section 2. Section 3 of the chapter examines the evaluation techniques. It also outlines the capital budgeting practices in India. The last Section summarises the main points.

SECTION I NATURE OF CAPITAL BUDGETING

Meaning

Capital budgeting decisions pertain to fixed/long-term assets which by definition refer to assets which are in operation, and yield a return, over a period of time, usually, exceeding one year. They, therefore, involve a current outlay or series of outlays of cash resources in return for an anticipated flow of future benefits.[1] In other words, the system of capital budgeting is employed to evaluate expenditure decisions which involve current outlays but are likely to produce benefits over a period of time longer than one year. These benefits may be either in the form of increased revenues or reduced costs. **Capital expenditure** management, therefore, includes addition, disposition, modification and replacement of fixed assets. From the preceding discussion may be deduced the following basic features of capital budgeting[2]: (i) potentially large anticipated benefits; (ii) a relatively high degree of risk; and (iii) a relatively long time period between the initial outlay and the anticipated returns. The term capital budgeting is used interchangeably with capital expenditure decision, capital expenditure management, long-term investment decision, management of fixed assets and so on.

Importance

Capital budgeting decisions are of paramount importance in financial decision making. In the first place, such decisions affect the profitability of a firm. They also have a bearing on the competitive position of the enterprise mainly because of the fact that they relate to fixed assets. The fixed assets represent, in a sense, the true earning assets of the firm. They enable the firm to generate finished goods that can ultimately be sold for profit. The current assets are not generally earning profits. Rather, they provide a buffer that allows the firms to make sales and extend credit. True, current assets are important to operations, but without fixed assets to generate finished products that can be converted into current assets, the firm would not be able to operate. Further, they are 'strategic' investment decisions as against 'tactical'—which involve a relatively small amount of funds. Therefore, such capital investment decisions may result in a major departure from what the company has been doing in the past. Acceptance of a strategic investment will involve a significant change in the company's expected profits and in the risks to which these profits will be subject. These changes are likely to lead stockholders and creditors to revise their evaluation of the

...s, inventories ... to be at higher levels. In such cases, an analysis ... peak activity, ... current financial position based solely on year-end data will tend to over-state a firm's ...rage liquidity position.[12]

Leverage/Capital Structure Ratios The second category of financial ratios is leverage or capital ...ucture ratios. The long-term lenders/creditors would judge the soundness of a firm on the basis ...the long term financial strength measured in terms of its ability to pay the interest regularly as ...ell as repay the instalment of the principal on due dates or in one lump sum at the time of ...maturity. The long-term solvency of a firm can be examined by using leverage or capital structure ...ratios. The leverage or capital structure ratios may be defined as financial ratios which throw light ...the long-term solvency of a firm as reflected in its ability to assure the long-term lenders with ...regard to (i) periodic payment of interest during the period of the loan and (ii) repayment of ...principal on maturity or in predetermined instalments at due dates.

There are, thus, two aspects of the long-term solvency of a firm: (i) ability to repay the principal ...when due, and (ii) regular payment of the interest. Accordingly, there are two different, but ...mutually dependent and interrelated, types of leverage ratios. First, ratios which are based on the ...relationship between borrowed funds and owner's capital. These ratios are computed from the ...balance sheet and have many variations such as (a) debt-equity ratio, (b) debt-assets ratio, ...(c) equity-assets ratio, and so on. The second type of capital structure ratios, popularly called ...coverage ratios, are calculated from the profit and loss account. Included in this category are (a) ...interest coverage ratio, (b) dividend coverage ratio, (c) total fixed charges coverage ratio, (d) cash ...flow coverage ratio, and (e) debt services coverage ratio.

Debt-Equity Ratios The relationship between borrowed funds and owner's capital is a popular ...measure of the long-term financial solvency of a firm. This relationship is shown by the debt-...equity ratios. This ratio reflects the relative claims of creditors and shareholders against the assets

Debt-equi...
measures ...
term or lo...
shareholde...