Course Title

Project Engineering

Chapter 6

PROJECT FINANCE

Lecture 11 (Week 11)

Introduction to Project Financing, Conventional and Project Financing, Capital Budgeting decisions and Capital Structure Planning.

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Learning Objective

The main objective of this lecture is to understand about:

- Introduction of Project Finance.
- Difference between Project Financing and Conventional Financing.
- Capital Budgeting Decisions.
- Capital Structure Planning

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6.1 INTRODUCTION TO PROJECT FINANCE

In simple terms, money borrowed to finance a project can be called as project finance. Project finance is a method of raising long term debt financing for major projects through "financial engineering", based on lending against the cash flow generated by the project alone. [1]In other words, raising of funds required to finance an economically separable capital investment proposal in which the lenders mainly rely on the estimated cash flow from the project to service their loan. [2]

The structure of project financing relies on future cash flows for repayment of the project finances. It is very much essential for all the stakeholders of a project to understand about project finance to manage the cash flow for ensuring profits so that it can be distributed among multiple parties. As the project proposal progresses through the stages of planning, analysis and selection, the contours of project financing become clearer. [3] In practice, however, project financing is considered right from the time of the project conception. Project finance is especially attractive to the private sectors because they can fund major projects off balance sheet. It includes finance for natural resources projects (mining, oil, gas), independent power project, public infrastructure (road, transport, buildings etc.) and mobile telephone networks etc.

Project finance is usually raised for new project rather than an established business. There is a high ratio of debt to equity, roughly project finance debt may cover 70-90% of the cost of a project. [1]Lenders rely on the future cash flow projected to be generated by the project for interest and debt repayment rather than value of its assets. The main security for lenders is the project company's contracts, ownership rights to natural resources. There are no guarantees from the investors in the project company (recourse finance) or only limited guarantees for the project finance debt.

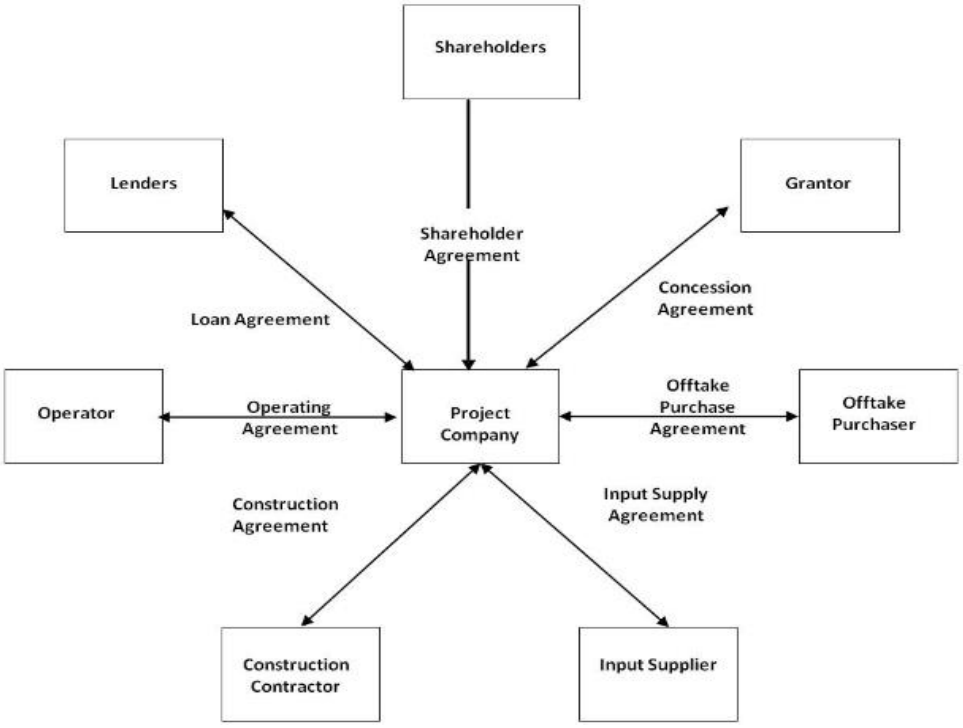


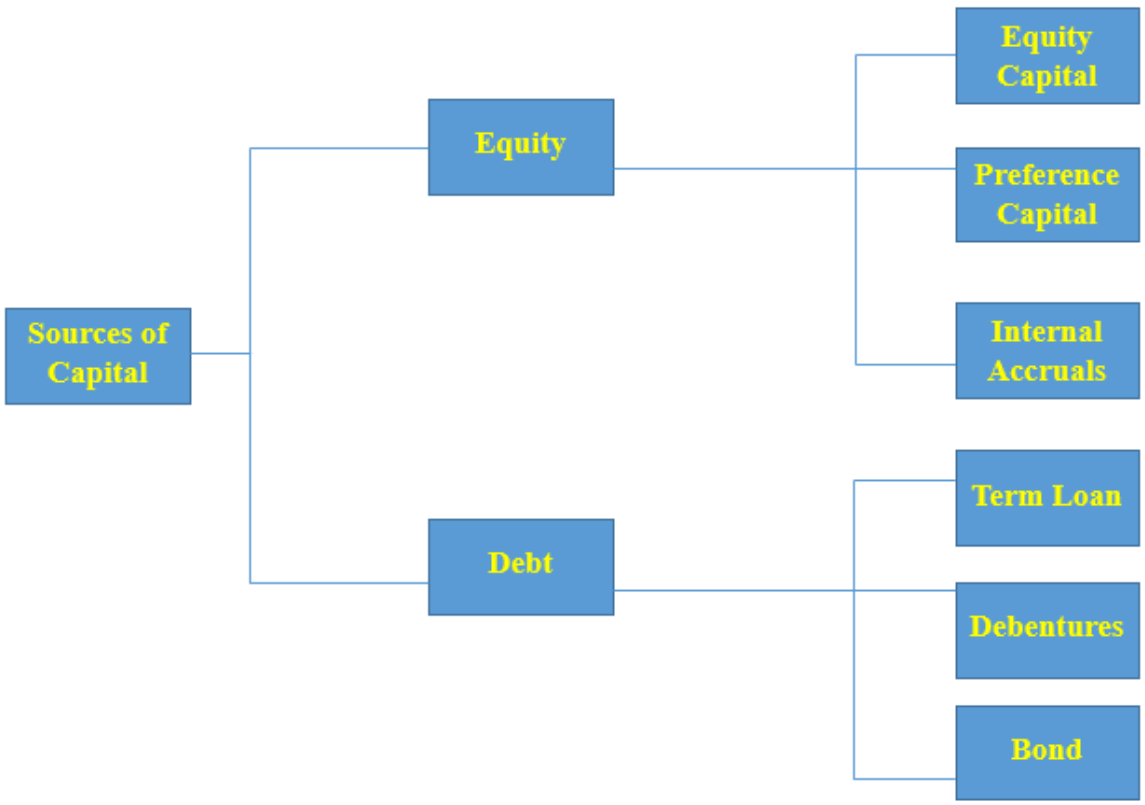
Fig: Model of Project Finance [4]

6.2 DIFFERENCE BETWEEN CONVENTIONAL AND PROJECT FINANCING

CONVENTIONAL FINANCING	PROJECT FINANCING
➢ A creditor makes an assessment of repayment of his loan by looking all the cash flows and resources of the borrower.	➢ Cash flow from the project related assets alone are considered for assessing the repaying capacity.
➢ End use of the borrowed funds is not strictly monitored by the lenders	➢ The creditors ensure proper utilization of funds and creation of assets as envisaged in the project proposal.
➢ The creditors are not interested in monitoring the performance of the enterprise and they are interested only in their money getting repaid in one way or the other	➢ Project financiers are keen to watch the performance of the enterprise and suggest/take remedial measures as and when required to ensure that project repays the debt out of its cash generations.

Project finance is different from traditional finance because the credit risk associated with the borrower is non-recourse. [5] Unlike the traditional borrowing method, where the borrower bears the entire risk of repayment, in project finance, the borrower's liability to repay is limited. This is because the debt funding is non-recourse or limited recourse in nature. That being said, the lenders cannot claim the personal assets of the project owner in case the latter defaults on repayment or the project fails.

6.3 SOURCES OF PROJECT FINANCE



1. Equity

Equity is simply the value of an investor's stake in a company. It is represented by the value of shares an investor owns. Stock ownership gives shareholders access to potential capital gains and dividends.

(a) Equity capital

It represents ownership capital as equity shareholders collectively own the company. They enjoy the rewards and bear the risks of ownership.

(b) Preference capital

It represents hybrid form of financing: some characteristics of equity and some attributes of debentures. [3]It resembles equity as preference dividend is payable only out of distributable profits. It represents debentures as the dividend rate of preference capital is usually fixed.

(c) Internal accruals

It consist of depreciation charges and retained earnings. It is non - cash charge and considered an internal source of finance.

2. Debt

When a company borrows money to be paid back at a future date with interest it is known as debt financing. Debt financing is essentially the act of raising capital by borrowing money from a lender or a bank, to be repaid at a future date.

(a) Term Loan

A term loan provides borrowers with a lump sum of cash upfront in exchange for specific borrowing terms. Borrowers agree to pay their lenders a fixed amount over a certain repayment schedule with either a fixed or floating interest rate. [6]

(b) Debentures

A debenture is a bond issued without any collateral. It is also known as unsecured bond. Thus, debenture holders are the general creditor of the company. A company having strong credit position and highly profitable investment, and high amount of assets issue debenture.

(c) Bond

A bond is essentially a long-term note given to the lender by the borrower, stipulating the terms of re-payment and other conditions.

6.4 CAPITAL BUDGETING

Capital budgeting is a process that businesses use to evaluate potential major projects or investments. It may be defined as the firms' decision to invest its current funds most efficiently in long term activities in anticipation of an expected flow of future benefit over a series of years. The long term activities are those activities which affects firms' operations beyond the one year period. Capital Budgeting consists in planning development of available capital for the purpose of maximizing the long term profitability of the concern. [7].

FEATURES OF CAPITAL BUDGETING

1. The exchange of current funds for future benefit (i.e. funds are invested only for future benefit)
2. Potentially large anticipated benefits.
3. A relatively high degree of risk.
4. The future benefits will occur to the firms over a series of years (i.e. funds are invested only if future benefits occur over a series of years)
5. Relatively long time period between the initial outlay and the anticipated return.
6. They are irreversible decisions.
7. They are among the most difficult decision to make.

PROCESS OF CAPITAL BUDGETING

1. Project Generation

Any project needs a written material - proposal – to initiate dialogue on funding. So, project generation is development of proposal for investment decision. The proposal may focus in adding new equipment for increasing the rate of production, or it may focus to reduce the cost of production. The healthy firm is one in which there is a continuous flow of profitable investment proposals.

2. Project Evaluation

While evaluating a project, following point should be considered:

(a) Estimate on cash flow, which is difficult, as future is uncertain,
(b) Selection criteria to judge the project viability
(c) Estimated benefit over cost

Project evaluations is done by expert groups. It involves two steps:
(a) Estimation of benefit and costs, the benefits and costs must be measure in terms of cash flow, and
(b) Selection of appropriate criterion to judge the viability of the project

3. Project Selection

The screening and selection procedure may vary from firm to firm. Since the capital budgeting decisions are of considerable significance for several reasons, the final approval of the project may generally rest on top management. However, projects are screened at multiple levels. Sometimes the top management may delegate authority to approve certain type of investment proposals.

4. Project Execution

After the final selection of the investment proposal, the funds are appropriated for capital expenditure. The formal plan for appropriation of funds is called capital budget. Such plans are prepared or approved by the project execution committee or the top management.

INVESTMENT DECISION CRITERIA

A set of evaluation criteria should be used having following characteristics:

- It should provide a ranking of projects in order of their desirability (viability).
- It should also solve the problem of choosing among alternative projects.
- It should be a criterion which is acceptable to any conceivable investment project.
- It should recognize the fact that bigger benefit are preferable to smaller ones, and early benefits are preferable to later benefits.
- It should provide a means of distinguishing between acceptable and unacceptable projects

A. Traditional criteria

a. Payback period

i. Simple Payback period and

ii. Discounted payback period

b. Accounting rate of return (ARR)

B. Discounted Cash Flow (DCF) criteria

a. Net present value/Net future value /Net annual value

b. Internal Rate of Return (IRR)

c. Profitability index or B/C ratio

Payback Period Method

It is defined as the number of years required to recover the original cash outlay invested in a project. If the project generates constant annual cash inflows, the pack back period can be computed dividing cash outlay by the annual cash inflow. That is:

Payback period = Cash outlay (investment) / Annual cash inflow.

Simple payback does not considers time value of money where as discounted payback considers time value of money.

Accounting Rate of Return (ARR) Method

This method is based on conventional accounting concept. The rate of return is expressed as the percentage of the earnings of the investment in a particular project. [8] ARR is obtained by dividing the average income after taxes by the average investment

ARR = Average Income/Average Investment

Average income = (income – expenses – taxes)/ number of years

Average investment = (Original investment + salvage or scrap value)/2

Net Present Value (NPV) Method

It is one of the discounted cash flow techniques. It recognizes the time value of the money. In this method, first, the present value of the cash inflow and the present value of cash out flow are computed separately. NPV is the difference between these two present values.

NPV = PV of cash inflow – PV of cash out flow

If the result is positive, the project is accepted and if the result is negative, the project is rejected.

Internal Rate of Return (IRR)

The Internal Rate of Return can be defined as that rate which equates the present value of cash inflow with the present value of cash outflow of an investment. In other words, it is that rate at which the Net Present Value (NPV) is zero. Accept, if IRR is more than normal bank rate or investors' rate (IRR≥MARR) and reject, if IRR is less than normal bank rate or investors' rate. (IRR≤MARR)

Profitability Index or Benefit Cost (B/C) ratio

Profitability index (or B/C ratio) is the ratio of the present value of the future cash inflow at the required rate of return to the present value of cash outflow.

Profitability index (or B/C ratio) = (PV of future cash inflow) / (PV of investment).

Accept, if PI or B/C ratio is more than one (BCR ≥1) and reject, if PI or B/C ratio is less than one (BCR ≤1)

EXAMPLE OF ARR

A project costs $ 50,000 and has a scrap value of $ 10,000. Its stream of income before depreciation and taxes during first year through five years is $ 10,000, $ 12,000, $ 14000, $16000 and $ 20,000. Assume 50% tax rate depreciation on straight line basis. Calculate ARR of the project.

Initial investment = $ 50,000, Scrap value = $ 10000

Total depreciation = $ 50,000 - $ 10000 = $ 40,000

Number of Year = 5 years.

Depreciation per year = 40000/5 = $ 8000

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
(a)Income ($)	10,000	12,000	14,000	16,000	20,000
(b)Depreciation ($)	8,000	8,000	8,000	8,000	10,000
(c)Gross income (a-b) ($)	2,000	4,000	6,000	8,000	5,000
(d)Tax (50%) ($)	1,000	2,000	3,000	4,000	5,000
(e)Net income ($)	1,000	2,000	3,000	4,000	5,000

Average income = (1000+2000+3000+4000+5000) / 5 = $ 3200

Average Investment = (50000+10000)/2 = 30000

ARR = Avg. Income /Avg. Investment = 3200/30000 = 10.67%

6.5 CAPITAL STRUCTURE PLANNING

Capital structure, sometime known as financial plan (Capital plan or financial plan) refers to the composition (makeup) of long-term sources of funds, such as debentures, long-term debt, preference share capital, and equity share capital including reserve and surplus. [9]It helps the company in increasing its profits in the form of higher returns to stakeholders. A proper capital structure helps in maximising shareholder's capital while minimising the overall cost of the capital. With unplanned capital structure, organization may also fail to economies the use of their funds.

FEATURES OF CAPITAL STRUCTURE

1. **Profitability**

The capital structure of the company should be most advantageous. Within the constraints, maximum use of leverage (influence on ESP caused by debt or preference share capital, and equity share) at a minimum cost should be made.

2. **Solvency**

The use of excessive debt threatens the solvency of the company. Debt should be added only point up to a level which does not added substantial risk to the company.

3. **Flexibility**

Flexibility means the firm's ability to decide on its capital structure to meet its dynamic need. The company's capital structure should be flexible enough to meet the dynamic need of the company.

4. **Conservation**

Conservatism deals with cash flow ability of the company. The capital structure of a firm should also be conservative in the sense that the debt capacity of the company should not be exceeded.

5. **Control:**

The capital structure should involve minimum risk of loss of control of the company. In other word, capital structure should be planned in such a way that the company should always be able to keep control on it.

IMPORTANCE OF CAPITAL STRUCTURE

1. **Value Maximization**

In a firm having a properly designed capital structure the aggregate value of the claims and ownership interests of the shareholders are maximized.

2. **Cost Minimization**

Capital structure minimizes the firm's cost of capital or cost of financing. By determining a proper mix of fund sources, a firm can keep the overall cost of capital to the lowest.

3. **Increase in Share Price**

Capital structure maximizes the company's market price of share by increasing earnings per share of the ordinary shareholders. It also increases dividend receipt of the shareholders.

4. **Investment Opportunity**

Capital structure increases the ability of the company to find new wealth- creating investment opportunities.

5. **Growth of the Country**

Capital structure increases the country's rate of investment and growth by increasing the firm's opportunity to engage in future wealth-creating investments.

NUMERICAL

A firm has total capital of $ 10, 00,000 which consists of 3000 ordinary share @ $ 100 per share, $ 200,000 preference share at 10% interest per year and $ 5, 00,000 debts at 12% interest per year. If firm's earnings before interest and tax are $ 2, 50,000 and tax rate applicable is 30%, determine earning per share.

- Ordinary share = 3000@ $ 100
- Preference share = 2, 00,000 @10% per year
- Debt Capital = 5, 00,000 @ 12% per year
- Firm's earnings before interest and tax (EBIT) = 2,50,000
- Interest on loan = 12% of $ 5,00,000 = 60,000
- Earnings after interest before tax (EAIBT) = (a-b) = 1,90,000
- Tax @ 30% of EAIBT = 57,000
- Earning after interest and tax (EAIT) = 133,000
- Interest (dividend) to preference shareholders = 10% of 2,00,000 = 20,000
- Dividends to ordinary shareholders = (e-f) = 1,13,000
- Earnings per share (EPS) = 1,13,000 / 3,000 = 37.67

Book Value = Original value + EPS = 100+37.67 =137.67

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