UNIT-4

CAPITAL BUDGETING

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Capital budgeting is a process of evaluating investments and huge expenses in order to obtain the best returns on investment.

The process of decisions to invest a sum of money when the expected results will flow after the lapse of a period of more than one year is called Capital Budgeting.

It also includes the process of decision regarding disinvestment, i.e., a decision to sell off an undertaking or a part of it.

Objectives of Capital budgeting

1. Selecting profitable projects
2. Capital expenditure control
3. Finding the right sources for funds

CAPITAL BUDGETING PROCESS:

A) Project identification and generation:

The first step towards capital budgeting is to generate a proposal for investments. There could be various reasons for taking up investments in a business.

B) Project Screening and Evaluation:

This step mainly involves selecting all correct criteria's to judge the **desirability of a proposal**. This has to match the objective of the firm to maximize its market value. The tool of time value of money comes handy in this step.

C) Project Selection:

There is no such defined method for the selection of a proposal for investments as different businesses have different requirements.

D) Implementation:

Money is spent and thus proposal is implemented. The different responsibilities like implementing the proposals, completion of the project within the requisite time period and reduction of cost are allotted.

E) Performance review:

The final stage of capital budgeting involves comparison of actual results with the standard ones. The unfavorable results are identified and removing the various difficulties of the projects helps for future selection and execution of the proposals.

SIGNIFICANCE OF CAPITAL BUDGETING

- Capital budgeting is an essential tool in financial management
- Capital budgeting provides a wide scope for financial managers to evaluate different projects in terms of their viability to be taken up for investments
- It helps in exposing the risk and uncertainty of different projects
- It helps in keeping a check on over or under investments
- The management is provided with an effective control on cost of capital expenditure projects
- Ultimately the fate of a business is decided on how optimally the available resources are used

Methods of capital budgeting

Traditional methods

- Payback period
- Accounting rate of return method

Discounted cash flow methods

- Net present value method
- Profitability index method
- Internal rate of return

Payback Period Method:

As the name suggests, this method refers to the period in **which the proposal will generate cash to recover the initial investment made.** It purely emphasizes on the cash inflows, economic life of the project and the investment made in the project, **with no consideration to time value of money.**

However, as the method is based on thumb rule, it does not consider the importance of time value of money and so the relevant dimensions of profitability.

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

Accounting rate of return method (ARR):

This method helps to overcome the disadvantages of the payback period method.

Accounting Rate of Return (ARR) is the average net income an asset is expected to generate divided by its average capital cost, expressed as an annual percentage. The ARR is a formula used to make capital budgeting decisions. These typically include situations where companies are deciding on whether or not to proceed with a specific investment (a project, an acquisition, etc.) based on the future net earnings expected compared to the capital cost.

However, this method also ignores time value of money and doesn’t consider the length of life of the projects. Also it is not consistent with the firm’s objective of maximizing the market value of shares.

ARR= Average income/Average Investment

Discounted cash flow method:

The discounted cash flow technique calculates the cash inflow and outflow through the life of an asset.

These are then discounted through a discounting factor. The discounted cash inflows and outflows are then compared. This technique takes into account the interest factor and the return after the payback period.

Net present Value (NPV) Method:

This is one of the widely used methods for evaluating capital investment proposals. In this technique the cash inflow that is expected at different periods of time is discounted at a particular rate. The present values of the cash inflow are compared to the original investment. If the difference between them is positive (+) then it is accepted or otherwise rejected. **Net present Value (NPV) Method:**

$$NPV = \left[\frac{A_1}{(1+k)^1} + \frac{A_2}{(1+k)^2} + \frac{A_3}{(1+k)^3} + \ldots\ldots + \frac{A_n}{(1+k)^n} \right] - C$$

$$= \sum \frac{A_1}{(1+k)^1} - C$$

$$= t = 1$$

Where A1, A2…. represent cash inflows, K is the firm's cost of capital, C is the cost of the investment proposal and n is the expected life of the proposal. It should be noted that the cost of capital, K, is assumed to be known, otherwise the net present, value cannot be known.

NPV = PVB – PVC

where,

PVB = Present value of benefits

PVC = Present value of Costs

Internal Rate of Return (IRR):

This is defined as the rate at which the net present value of the investment is zero.

The discounted cash inflow is equal to the discounted cash outflow. This method also considers time value of money. It tries to arrive to a rate of interest at which funds invested in the project could be repaid out of the cash inflows. However, computation of IRR is a tedious task.

$$C = \frac{A_1}{(1+r)^1} + \frac{A_2}{(1+r)^2} + \frac{A_3}{(1+r)^3} + \ldots\ldots\ldots + \frac{A_n}{(1+r)^n}$$

$$C = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t} \neq C$$

$$0 = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t} - C$$

If IRR > WACC then the project is profitable.

If IRR > k = accept

If IR < k = reject

Profitability Index (PI):

It is the ratio of the **present value of future cash benefits, at the required rate of return to the initial cash outflow of the investment.** It may be gross or net, net being simply gross minus one. The formula to calculate profitability index (PI) or benefit cost (BC) ratio is as follows.

PI = PV cash inflows/Initial cash outlay A,

$$= \frac{\sum_{t=1} \frac{A_t}{(1+k)^t}}{C}$$

PI = NPV (benefits) / NPV (Costs)

All projects with PI > 1.0 is accepted.

DIVIDEND POLICY

"Dividend policy determines the ultimate distribution of the firm's earnings between retention (that is reinvestment) and cash dividend payments of shareholders.“

In other words, dividend policy is the firm's plan of action to be followed when dividend decisions are made. It is the decision about how much of earnings to pay out as dividends versus retaining and reinvesting earnings in the firm.

DIVIDEND THEORIES

1. Walter’s model
2. Gordon’s model
3. Modigliani and Miller’s hypothesis

1. Walter's model:

Professor James E. Walter argues that the choice of dividend policies almost **always affects the value of the enterprise**. His model shows clearly the importance of the relationship between the firm's internal rate of return (r) and its cost of capital (k) in determining the dividend policy that will maximize the wealth of shareholders.

Walter's model is based on the following assumptions:

1. The firm finances all investment through retained earnings; that is debt or new equity is not issued;

2. The firm's internal rate of return (r), and its cost of capital (k) are constant;

3. All earnings are either distributed as dividend or reinvested internally immediately.

4. Beginning earnings and dividends never change. The values of the earnings pershare (E), and the divided per share (D) may be changed in the model to determine results, but any given values of E and D are assumed to remain constant forever in determining a given value.

His proposition may be summed up as under:

(a) When r > k (Growth Firms):

(b) When r<k (Declining Firms):

(c) When r = k (Normal Firms)

According to the Walter's model, if r > k, the firm is able to earn more than what the shareholders could by reinvesting, if the earnings are paid to them. The implication of r > k is that the shareholders can earn a higher return by investing elsewhere. If the firm has r = k, it is a matter of indifferent whether earnings are retained or distributed.

$$P = \frac{D}{k} + \frac{r\,(E - D)\,/k}{k}$$

$$\text{or,} \quad P = \frac{D + \frac{r}{k}\,(E - D)}{k}$$

where, P = Market price per share;
D = Dividend per share;
E = Earning per share;
r = Internal rate of return;
k = Cost of capital or capitalization rate.

Criticisms:

(i) Walter assumes that all investments are financed only be retained earnings and not by external financing which is seldom true in real world situation and which ignores the benefits of optimum capital structure.

(ii) Walter also assumes that the internal rate of return (r) of a firm will remain constant which also stands against real world situation.

(iii) Finally, this model also assumes that the cost of capital, k, remains constant which also does not hold good in real world situation.

Gordon's Model:

Another theory on relevance of dividend has been developed by **Myron Gordon.**

Gordon's model is based on the following assumptions:

(i) The firm is an all-equity firm;

(ii) No external financing is available or used. Only retained earnings are used to finance the investment programmes;

(iii) The internal rate of return, r, and the capitalization rate or cost of capital, k, is constant;

(iv) The firm has perpetual or long life;

(v) Corporate taxes do not exist;

(vi) The retention ratio, b, once decided upon is constant. Thus the growth rate,

$g = br$, is also constant;

(vii) $k > br = g$.

According to Gordon's model, the market value of a share is equal to the present value of an infinite future stream of dividends.

$$P_1 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)} + \ldots\ldots\ldots + \frac{D_x}{(1+k)^x}$$

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

It can also be re-written in a very simple way as under :

$$P_1 = \frac{E\,(1-b)}{k-br}$$

where, P = Price of shares;
E = Earnings per share;
b = Retention ratio/fraction of retained earnings;
k = Cost of Capital;
br = g = Growth rate in r;
r = Internal rate of return.

However, his proposition may be summed up as under:

(a) When r > k (Growth Firms):

When r > k, the value per share P increases since the retention ratio, b, increases, i.e., P increases with decrease in dividend pay-out ratio.

(b) When r < k (Declining Firms):

When r<k, the value per share P decreases since the retention ratio b, increases, i.e., P increases with increase in dividend pay-out ratio.

c) When r = k (Normal Firms):

When r = k, the value of the firm is not affected by dividend policy and is equal to the book value of assets, i.e., when r = k, dividend policy is irrelevant.

Modigliani-Miller (M-M) Hypothesis:

Modigliani-Miller hypothesis provides the **irrelevance concept of dividend in a comprehensive manner.** According to them, the dividend policy of a firm is irrelevant since, it does not have any effect on the price of shares of a firm, i.e., it does not affect the shareholders' wealth.

They expressed that the **value of the firm is deter-mined by the earnings power of the firms' assets or its investment policy and not the dividend decisions** by splitting the earnings of retentions and dividends.

M-M Hypothesis — Assumptions:

1. Perfect capital market.
2. Investors are rational.
3. There are no tax.
4. The firm has fixed investment policy.
5. No risk or uncertainty.

$$P = \frac{1}{(1 + k)} \cdot (D_1 + P_1) \quad \ldots \quad (1)$$

where P = The prevailing market price of a share at time 0;
k = Cost of equity capital;
D_1 = Dividend to be received per share at time 1;
P_1 = Market price per share at time 1.

P1 can be calculated with the help of the following formula.

P1 = Po (1+Ke) – D1

Criticism of M-M Hypothesis:

(i) Tax Differential:

M-M hypothesis assumes that taxes do not exist, in reality, it is impossible. On the contrary, the shareholders have to pay taxes on the dividend so received or on capital gains.

(ii) Existence of Floatation Costs:

M-M also assumes that both internal and external financing are equivalent. It indicates that if dividend is paid in cash, a firm is to raise external funds for its own investment opportunities.

(iii) Existence of Transaction Costs:

M-M also assumes that whether the dividends are paid or not, the shareholders" wealth will be the same. When the dividends are not paid in cash to the shareholder, he may desire current income and are as such, he can sell his shares.

(iv) Diversification:

M-M considers that the discount rate should be the same whether a firm uses internal or external financing. But, practically, it does not so happen.