



A review of Process of Capital Budgeting and effect of Inflation on Capital Budgeting

Dr. Manu Umesh

Assistant Professor, Dept. of Commerce
Shyam Lal Evening College, University of Delhi

Abstract : “Capital budgeting is the process through which a company decides which fixed asset acquisitions to approve and which to reject. This procedure is used to provide a quantitative perspective of each proposed fixed asset investment, providing a logical foundation for making a decision”. In contrast to certain other forms of investment analysis, capital budgeting is concerned with cash flows rather than profits. Capital budgeting entails identifying the cash inflows and outflows associated with the investment, rather than accounting for the revenue and expenditure streams associated with the investment. For instance, capital budgeting includes non-expense items such as loan principal payments as cash flow transactions. Non-cash expenditures, on the other hand, such as depreciation are excluded from capital budgeting (save to the degree that they affect tax calculations for after-tax cash flows), since they are not cash transactions. Rather than that, the study includes the cash flow costs connected with the actual acquisition and/or financing of a capital asset. [4]

Key Words : Capital budgeting, Payback, PI, NPV, IRR

Introduction

Capital investments are long-term investments on assets with a usable life of many years. Capital investments include, but are not limited to, “the construction of new manufacturing facilities and the acquisition of machinery and equipment. Capital budgeting is a technique for determining the financial feasibility of a capital investment throughout its expected life”.

Capital budgeting and traditional profit-and-loss analysis will result in comparable net values over time. Capital budgeting techniques, on the other hand, include time value of money modifications. Capital investments generate cash flows that are often stretched across many years. To properly evaluate a capital investment, one must consider the timing of future cash flows and translate them to the current time period (present value).

“Inflation is the rate at which prices rise over a certain period of time. Inflation is usually quantified in broad terms, such as the total rise in prices or the growth in a country's cost of living. However, it may also be estimated more precisely—for specific commodities, such as food, or for certain services.”

Review of Literature

(de Souza Michelon et al., 2020) studied "*Capital budgeting: a systematic review of the literature*" And discovered that the “budgeting of capital” is one of the most critical choices facing every organization's financial management. It is an organization's planning process that evaluates how to allocate resources to investment projects and evaluates investment projects that provide advantages for the periods of over a year and helps the business to generate



revenues or decrease future expenses. “Capital budgeting” is a technique which may be used for basic operational choices such as equipment replacement or more sophisticated initiatives like building a new facility.

(SHUAIBU, n.d.) studied "*Capital Budgeting Decisions; A conceptual valuation Analysis*" And it was discovered that capital budgeting is one of financial management's most essential topics. The assessment of capital budgeting projects involves several techniques: “payback period (PP), net present value (NPV) and internal rate of return (IRR). Graham and Harvey (2002) stress that financial managers choose techniques like IRR or Payback Period without discount (PP)”. The findings of this study showed that PP is the most often utilised methane, followed by NPV. The more sophisticated techniques the big companies choose. The main shortcoming of the assessment process is the characterization of capital costs: around 70% of companies used non-quantitative methods to take risk into account.

(Mollah et al., 2021) studied "*A study on capital budgeting practices of some selected companies in Bangladesh*" And it concluded that financial management's fundamental goal is to “maximise shareholders' wealth” by concentrating on three choices, namely capital budgeting, capital structure decisions, and dividend decisions. Most scholars and experts believe that, while three choices are essential, company performance and survival are ultimately dependent upon a “solid investment decision”, since a “good investment decision” is still a successful business, even when poor financing has been chosen.

(Devine, 1988) studied "*Theory And Practice In Capital Budgeting: Evidence From Kuwait*" It discovered that the strategies of capital budgeting are a way of authorising capital expenditure by businesses on long-term projects. The evaluation of capital projects is based on both quantitative analysis and qualitative data. Most study of capital budgeting utilises cash inflows and outflows rather than net income, and some businesses use net income + depreciation and amortisation for simplicity to compute cash flow. Five methods are most common in evaluating a plan for capital budgeting, while the optimal way utilises the value of time of money principles.

(Hartwig, 2012) studied "*Capital Budgeting and Accounting Choices in Practice*" and discovered that the “techniques of capital budgeting” assist business choices. “Capital budgeting techniques” aim to capture in various ways the anticipated risk and profit of the investment, i.e. the quantity, timing and risk of cash flows generated by an investment and then process it in a quantitative manner. At first glance, this might be viewed as nothing more than a straightforward technical exercise that accepts and rejects successful investments, but the truth is more complicated. The choosing and implementation of the techniques of capital budgeting is a highly subjective art.

(Mohamed Ali Farah et al., 2018) studied "*Capital Budgeting Decisions And Profitability In Manufacturing Firms*" and found that decision-making in manufacturing enterprises on capital budgeting is a decision to invest in long-term assets such as the acquisition of new assets and equipment, machinery repositioning, research development investment and expansion of existing facilities are helpful to improve production system smoothness and provide high quality products”. Expansion choices, on the other hand, are focused at exploiting current market possibilities and leading the company to development.



(Wnuk-Pel, 2014) studied "*The practice and factors determining the selection of capital budgeting methods – evidence from the field* " And it revealed that the choices on capital budgets are one of the most significant areas for management of the business. The academics have been focusing on this area of business practise for many years, but the overwhelming bulk of study into the issue of capital budgeting has been carried out in highly developed nations, mainly in North America, Australia and West. Capital budgeting in developing nations which are less frequent, mainly Asian countries but also Central and Eastern Europe (CEE) countries are certainly less popular, but two works should be mentioned

(Rogerio et al., 2015) studied "*Capital budgeting practices: A comparative study between a port company in Brazil and in Spain*" And it was discovered that budgeting is an important tool for companies to assess and encourage their performance. Empirical studies indicate that budgets remain an important planning and monitoring tool and are frequently utilised by businesses. One of the key stages in budget preparedness is the creation and analysis of capital budgeting choices, which is vital for the long-term survival and performance of organisations as well as one of the hardest decisions for managers to make.

(Magni, 2011) studied "Accounting Measures and Economic Measures: An Integrated Theory of Capital Budgeting" And it is noted that the ARR is often regarded as economically useless or, at best, a poor IRR substitute. The IRR has respectable roots and is often used by the managers and analysts. In recent years, academics have made a great effort to connect accounting rates to the IRR. The latter being seen as the "real" yield, the ARR may play an economic function only if it has a substantial relationship with the IRR.

(Gowtham.C.S, Peter, 2017) studied "*Role Of Capital Budgeting In Project Management*" It discovered that the “budgeting of capital is a step-by-step procedure used by companies to evaluate the advantages of an investment project. Whether an investment project is accepted or denied as part of the development plan of a business requires a determination of the return on investments generated by such a project. However, additional variables which are unique to the business and to the project determine what rate of return is considered acceptable or unacceptable”. For example, a social or charity initiative is frequently not authorised solely on the rate of return, but rather on the desire of a company to promote goodwill to contribute to their society.

The Importance of Capital Budgeting

A fixed asset investment may need a significant amount of capital, which may result in a firm's insolvency if the investment fails. As a result, “capital budgeting is a required component of bigger fixed asset plans. This is less of an issue for smaller investments; in these cases, it is preferable to significantly streamline the capital budgeting process, so that the emphasis is on getting the investments made as quickly as possible; this way, profit centres' operations are not harmed by the analysis of their fixed asset proposals”.[1]

Process of Capital Budgeting

Following are the steps of “capital budgeting process:



1. **Idea Generation** The most important step of the capital budgeting process is generating good investment ideas. These investment ideas can come from a number of sources like the senior management, any department or functional area, employees, or sources outside the company.
2. **Analyzing Individual Proposals** : A manager must gather information to forecast cash flows for each project in order to determine its expected profitability. This is because the decision to accept or reject a capital investment is based on such an investment's future expected cash flows.
3. **Planning Capital Budget** : An entity must give priority to profitable projects as per the timing of the project's cash flows, available company resources, and a company's overall strategies. The projects that look promising individually may be undesirable strategically. Thus, prioritizing and scheduling projects is important because of the financial and other resource issues.
4. **Monitoring and Conducting a Post Audit**: It is important for a manager to follow up or track all the capital budgeting decisions. He should compare actual with projected results and give reasons as to why projections did not match with actual performance. Therefore, a systematic post-audit is essential in order to find out systematic errors in the forecasting process and hence enhance company operations”.

Techniques of Capital Budgeting

Capital budgeting strategies are used to assess investment proposals in order to assist the business in determining their attractiveness. “These methods are classified into two categories. : traditional methods and discounted cash flow methods.

Traditional Methods

Traditional methods determine the desirability of an investment project based on its useful life and expected returns. Furthermore, these methods do not take into account the concept of time value of money.

Pay Back Period Method

Payback period refers to the number of years it takes to recover the initial cost of an investment. Therefore, it is a measure of liquidity for a firm. Thus, if an entity has liquidity issues, in such a case, shorter a project's payback period, better it is for the firm.

Therefore,

$$\text{Payback period} = \text{Full years until recovery} + (\text{unrecovered cost at the beginning of the last year})/$$

Cash flow during the last year

Here, full years until recovery is nothing but the payback that occurs when cumulative net cash flow equals to zero. Cumulative net cash flow is the running total of cash flows at the end of each time period.



Discounted Payback Period

The Payback Period analysis does not take the time value of money into account. To address this shortcoming, the Discounted Payback Period technique was developed. As shown in Figure 1, this approach reduces future cash flows to their present value in order to evaluate the investment and the stream of cash flows over the same time period. Each cash flow is discounted over the number of years between the cash flow payment and the initial investment. For instance, the first cash flow is discounted over a year, whereas the fifth is discounted over five years.[4]

Average Rate of Return Method (ARR)

Under ARR method, the profitability of an investment proposal can be determined by dividing average income after taxes by average investment, which is average book value after depreciation.

$$ARR = \text{Average Net Income After Taxes} / \text{Average Investment} \times 100$$

Where, Average Income After Taxes = Total Income After Taxes / Total Number of Years

$$\text{Average Investment} = \text{Total Investment} / 2$$

Based on this method, a company can select those projects that have ARR higher than the minimum rate established by the company. And, it can reject the projects having ARR less than the expected rate of return”.

“Discounted Cash Flow Methods”

As previously stated, conventional techniques do not account for the time value of money. Rather than that, these techniques take into account both the current and future flow of revenue. The DCF approach, on the other hand, takes into consideration the notion that a rupee earned now is worth more than a rupee gained tomorrow. This implies that “DCF techniques” take both profitability and time value of money into consideration.

“Net Present Value Method (NPV)”

“The net present value” of a project is the sum of the present values of all anticipated additional cash flows discounted at a necessary rate of return less than the present value of the investment's cost.

“In other words, NPV is the difference between the present value of a project's cash inflows and the project's original cost”. The method selects projects with a net present value that is positive or greater than zero. “If a project’s NPV is less than zero or negative, the same must be rejected. Further, if there is more than one project with positive NPV, then the project with the highest NPV shall be selected.

$$NPV = CF_1 / (1 + k)^1 + \dots + CF_n / (1 + k)^n + CF_0$$

where CF_0 = Initial Investment Outlay (Negative Cash flow)
 CF_t = after tax cash flow at time t



k = required rate of return

Internal Rate of Return (IRR)

Internal Rate of Return refers to the discount rate that makes the present value of expected after-tax cash inflows equal to the initial cost of the project.

In other words, IRR is the discount rate that makes present values of a project's estimated cash inflows equal to the present value of the project's estimated cash outflows.

If IRR is greater than the required rate of return for the project, then accept the project. And if IRR is less than the required rate of return, then reject the project.

$$\text{PV (inflows)} = \text{PV (outflows)}$$

$$\text{NPV} = 0 = \text{CF}_0 + \text{CF}_1/(1 + \text{IRR})^1 + \dots + \text{CF}_n/(1 + \text{IRR})^n + \text{CF}_0$$

Profitability Index

Profitability Index is the present value of a project's future cash flows divided by initial cash outlay. Thus, it is closely related to NPV. NPV is the difference between the present value of future cash flows and the initial cash outlay.

Whereas, PI is the ratio of the present value of future cash flows and initial cash outlay.

$$PI = \text{PV of future cash flows}/\text{CF}_0 = 1 + \text{NPV}/\text{CF}_0$$

Thus, if the NPV of a project is positive, PI will be greater than 1. If NPV is negative, PI will be less than 1. Therefore, based on this, if PI is greater than 1, accept the project otherwise reject".

Inflation And Capital Budgeting

"Capital budgeting or investment" evaluation is a technique that forecasts future asset and cash flow expenditures. Investment evaluation considers a variety of variables that affect spending over time. Inflation is one such element that has an effect on "investments and returns".

"Inflation and capital budgeting" are inextricably linked, and no "capital budgeting" exercise can be completed without taking inflation into consideration. We are all aware that inflation reduces our buying power. Thus, "if we purchase an asset for Rs. 5000 today, it is likely that the same asset would be available for Rs. 10,000 in a few years. However, it is anticipated that both the project's cost and net income would rise according to inflation. As a result, inflation rates are not taken into consideration in practise. However, this is not always true; inflation does have an effect on capital budgeting". Cash flows are always impacted by "inflation and capital budgeting".

Effects of "Inflation and Capital Budgeting"

"Inflation affects discount rates and cash flows. There are two factors on which inflation acts. They are discount rate and cash flow.



I) Cash flows:

Mathematical representation,

Let us assume that

r - refers to the revenues;

t - refers to the tax rate;

c - is the cost and

d - is the depreciation.

By arranging the above variables in a formula the following is obtained.

$$(r-c) (1-t) + d = (r-c) (1-t) + dt$$

Inflation affects $(r-c) (1-t)$, which is on the right side of the equation. But Inflation does not impact dt . The reason can be attributed to the fact that historical costs determine depreciation costs. This implies that inflation has a tendency to decrease the value of real rate of return. Studies reveal that Net cash flow is more as compared to real cash flows provided we do not take inflation into account.

II) Discount rates:

Discount rates refer to the rate of return, which is the required rate or the target rate. The project cost is inflation adjusted. This adjustment is usually done in the premiums. The required rate or the target rate of return for the investors ought to be the same as real inflation return together with the expected inflation rate”.

Effects of “Inflation on Capital Budgeting” Analysis

Inflation has an effect on capital budgeting studies because the market cost of capital does not always “accurately reflect the true cost of borrowing money”. However, by compensating for inflation throughout the study, the capital budget's findings are unaffected.

Inflation has an impact on the analyst's choice of whether to do the “analysis in nominal or real terms, with nominal cash flows including the effects of inflation and real cash flows adjusted lower to exclude the effects of inflation.

By determining the actual rate of return and applying it in the capital budgeting cash flow calculations, inflation effects may be eliminated from the capital budgeting study. When calculating the actual rate of return in a capital budgeting scenario, the result has been adjusted for inflation. On the other hand, if the rate of return is left unchanged, the cash flows may be adjusted for inflation to reflect the inflation baked into the market rate of return. In any case, it is critical to ensure that cash flows and rates of return are comparable, with or without inflation. To discount nominal cash flows, a nominal discount rate should be employed; to discount real cash flows, a real discount rate should be used. The connection between real and nominal rates is shown here.

$$(1+\text{Nominal rate})=(1+\text{Real rate})(1+\text{Inflation rate})$$

Inflation shifts wealth from taxpayers to the government. Corporate taxes increase when there is higher-than-expected inflation because it reduces the depreciation tax shelter”. [18]



Conclusion

Capital Budgeting is a technique used by businesses to make long-term investment choices. It begins by identifying various investment possibilities. Following that, gathering and analysing different investment ideas; and finally, choosing on the most lucrative investment after which “Capital Budgeting” and allocation decisions must be made. Finally, the choice made must be executed, and performance must be evaluated on a timely basis.[6]

“Inflation and capital budgeting” are inextricably linked, and a project may be completed effectively provided all impediments are reduced, if not removed. Inflation erodes the value of our assets and should be paid appropriately.

Inflation lowers the value of bondholders' fixed payments. When inflation exceeds bondholders' expectations, actual payments fall short of expectations, thus transferring wealth to the companies that issued the bonds. After-tax cashflows of an inflation will improve or deteriorate depending on how revenues and expenses respond to changes in inflation. [18]

Reference :

1. <https://www.accountingtools.com/articles/what-is-capital-budgeting.html>
2. <https://cleartax.in/s/capital-budgeting>
3. <https://quickbooks.intuit.com/in/resources/budget/capital-budgeting/>
4. <https://www.extension.iastate.edu/agdm/wholefarm/html/c5-240.html>
5. <https://www.edupristine.com/blog/capital-budgeting>
6. <https://www.wallstreetmojo.com/capital-budgeting-process/>
7. <https://www.ibef.org/industry/cement-india.aspx>
8. de Souza Michelin, P., Lunkes, R. J., & Bornia, A. C. (2020). Capital budgeting: A systematic review of the literature. *Production*, 30, 1–13. <https://doi.org/10.1590/0103-6513.20190020>
9. Devine, P. E. (1988). *Theory and Practice in Ethics*. August, 213–223. https://doi.org/10.1007/978-94-009-2715-5_15
10. Gowtham.C.S, Peter, M. (2017). Ijpm.Eu. *International Journal of Pure and Applied Mathematics*, 116(16), 351–355.
11. Hartwig, F. (2012). *Four Papers on Top Management’s Capital Budgeting and Accounting Choices in Practice*. <http://www.diva-portal.org/smash/get/diva2:547888/FULLTEXT12>
12. Magni, C. A. (2011). Accounting and Economic Measures: An Integrated Theory of Capital Budgeting. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1498106>
13. Mohamed Ali Farah, A., Mohamed, A., & Farah, A. (2018). Capital Budgeting Decisions And Profitability In Manufacturing Firms. *Journal of Business and Management (IOSR-JBM)*, 20(1), 27–37. <https://doi.org/10.9790/487X-2001032737>
14. Mollah, M. A. S., Rouf, M. A., & Rana, S. M. S. (2021). A study on capital budgeting practices of some selected companies in Bangladesh. *PSU Research Review, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/prr-10-2020-0035>
15. Rogerio, J. L., Vicente, R. F., Arturo, G. F., & Fabricia, S. da R. (2015). Capital budgeting practices: A comparative study between a port company in Brazil and in



- Spain. *Journal of Public Administration and Policy Research*, 7(3), 39–49.
<https://doi.org/10.5897/jpapr2014.0294>
16. SHUAIBU, H. (n.d.). *Capital Budgeting Decisions; A conceptual valuation Analysis*.
17. Wnuk-Pel, T. (2014). The Practice and Factors Determining the Selection of Capital Budgeting Methods – Evidence from the Field. *Procedia - Social and Behavioral Sciences*, 156(April), 612–616. <https://doi.org/10.1016/j.sbspro.2014.11.250>
18. [<https://analystprep.com/study-notes/cfa-level-2/effects-of-inflation-on-capital-budgeting-analysis/>]