

Traditional Capital Budgeting – The Big Picture

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February 6, 2019

If the project has a positive NPV –when the future cash flows are discounted at wacc– then it will add value to the company.

- If a company doesn't have any positive NPV projects, then it should give the company's cash back to the shareholders and lenders.
- The nature of wacc explains why this is so. This is the link between the decisions made inside the firm to the capital markets, and to investors.
- The market value of the company is simply the sum of the net present values of all of its projects.

- 1 All incremental cash flows associated with the project must be included in the capital budgeting process. These must be on an after-tax basis.
- 2 All corporate resources (such as land, managerial time, etc.) that the project requires must be attributed to the project. Economically, these are opportunity costs.
 - An example of the wrong way to think about this issue: Suppose that a project requires a plot of land, and your boss says: “We (already) own the land and it is currently vacant, so we can use it for this project for free.”
 - Why is this wrong? As we will see, an asset like vacant land affords its owner valuable options. If a project ties-up the asset then for the life of the project that option is destroyed.

Opportunity Costs

- Another example is inventory of any kind. If you build a plant that requires maintaining inventory then this is akin to tying-up corporate resources. The cost of this restriction must be attributed to the project.
- Also, tying-up assets is not a (tax-deductible) expense, so every dollar's worth of tied-up assets must be charged as a cash outlay against the project at the time that the assets are tied-up.

Capital Budgeting: Practical Issues

- Hand-waving** Our capital budgeting approach has an annual time-line. Obviously cash flows will be much more continuous than modeled. If the intra-year timing is critical (for example expenses tend to occur in January while inflows occur in December), then we can increase the frequency of our time nodes.
- Objective** Ideally everyone in the company would agree with the structure of the capital budgeting model. Where they will differ is with respect to the assumptions. This is critical because in many organizations capital budgeting has “political” overtones.

Sensitivity Analysis Forecasts of revenues and expenses are notoriously difficult, and should not be trusted. You should use the model to identify potential soft spots and key value drivers. If the project is adopted, then the company should periodically compare the actual effects that it has on corporate value, and assess the viability of the original model.

Directly or indirectly (via the banking system), firms acquire capital from financial markets. Users of financial capital have to compensate the suppliers for three things:

- 1 The passage of time (i.e., the risk-free rate of interest).
- 2 Expected losses.
- 3 A risk premium (compensation for correlation between the value of what is being financed and the state of the economy).

And compensation for expected losses is not part of investors' expected return, and as such is not part of the cost of capital.

Debt We measure the expected return on debt, which is the firm's pre-tax cost of debt:

$$k_d = r_f + \text{Risk Premium}$$

Where the Risk Premium is one-half of the credit spread. The other half of the credit spread is compensation for expected losses.

Equity

$$k_e = r_f + \beta \{E(r_m) - r_f\}$$

Then we have:

$$\text{wacc} = w_e \cdot k_e + w_d \cdot (1 - \tau) \cdot k_d$$