

Assessing Projects and Risk: When the NPV is not Enough

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Discounted Cash Flow is the most widely-used technique for project assessment and is supported by modern corporate finance theory. Under this method, the expected future cash flows must be discounted by a rate that will compensate for the systematic risk of these flows. After this, decisions are based directly on the Net Present Value (NPV): if it is more than zero, the company should invest, since the project will bring wealth to the company.

Despite the theory supporting this model, it's obvious that decisions are not actually based only on the "NPV>0" rule. Companies often reject projects with a low positive NPV and relevant cash flow uncertainty. For example: suppose that a company has R\$ 90 million in available cash and is considering a project with immediate results that can be divided into two scenarios with equal probabilities of occurrence: the company could earn 102 or lose 100. Should it invest? The project would have an expected value of 1 (NPV>0), so in theory the company should accept it. Even with such reasoning, it would be hard to imagine a company carrying that project through.

We can see, therefore, that NPV analysis is not always enough for a decision. So how can we explain this type of situation from the optics of financial theory, and how can we incorporate it objectively into project assessments?

NPV analysis considers the systematic risk of a project itself, but ignores its effect on a company's total risk, including an increased or reduced probability of a company going into financial distress. A lack of financial flexibility could compromise a company's operational and commercial performance and impede investments that would create value.

Conceptually speaking, engaging in a project with low positive NPV and high volatility adds value to a company by increasing the total expected value. On the other hand, it reduces a company's value by increasing the probability of financial distress. Thus, analyzing the total risk would enable managers to obtain a complete understanding of a project's value creation, allowing a comparison of its associated benefits and costs.

According to Stulz¹, the effect on a company's total risk can be analyzed with statistical techniques, such as CFaR (cash flow at risk) and VaR (value at risk). This allows us to answer questions such as "will adding this project increase the company's likelihood of going into financial distress?", or "what is the tolerable level of volatility for this project?". Applying these techniques would explain the rationale for purchasing an

insurance policy, for example. Typically, the expected value of the loss is less than the premium paid for the policy, i.e. the NPV is negative. However, purchasing insurance can add value to a company by reducing its probability of financial distress.

Hence, hedging strategies may have a prime role in the valuation of projects with volatile cash flows, by reducing the effects on a company's likelihood of financial distress. This brings us to an interesting conclusion: based on total risk analysis, it is perfectly possible that an unhedged project would be rejected, but if it were hedged, the same project would be approved.

Although NPV analysis provides the adequate answer as to the value created by a given project, managers intuitively know that its results ignore any effects on a company's total risk. Therefore, adopting a complete analysis framework would reduce the subjectivity of decisions and allow a more transparent understanding of all the impacts of a project on shareholder value.

(1) STULZ, R., What's wrong with modern capital budgeting? (1999)