
MAKING BETTER DECISIONS ABOUT PRIORITISING CAPITAL PROJECTS

Prioritising projects by risk-adjusted returns

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Introduction

Decision makers need to have a range of tools and methodologies available to decide which projects to prioritise, particularly when making strategic investment decisions on multibillion-euro capital projects and programmes.

Recently in Ireland there has been much discussion on capital budgeting, cost benefit analysis, the risks inherent in long term projects and how best to put a plan in place to identify and manage these risks. In particular, the past weeks commentary has focused on the National Broadband Plan - with a significant cost increase experienced in the project since project initiation it is likely that a number of other projects will have to be reprofiled. When significant cost increases occur in projects with a knock-on impact of curtailing funding for other approved projects, or during an annual capital budgeting process with differing project classes competing for scarce capital, you need to be able to prioritise projects. This paper illustrates an approach to prioritisation.

With high stakes and sometimes political pressure, elaborate financial and economic models¹ are prepared to justify potential projects. But when it comes down to the final decision, especially when hard choices need to be made among multiple opportunities, less rigorous assessment means are dusted down - arbitrarily discounting estimates of expected returns or economic benefit, for example, or applying overly broad risk premiums.

There are more transparent ways to bring assessments of risk into investment decisions. In particular, some analytical tools commonly employed in capital-intensive industries can be applied, such as those investing in projects with long lead times or those investing in shorter-term projects that depend on the economic cycle. The result can be a more informed, data-driven discussion on a range of possible outcomes. Of course, even these tools are subject to assumptions that can be speculative. But the insights they provide can still produce a more structured approach to making decisions and a better dialogue about trade-offs.

A simple residential real estate investment project is presented as a case study of using the approach which could be used for example by a development company when deciding how best to allocate investment over a portfolio of residential, commercial, retail and industrial project opportunities.

The real power of using these tools comes from using them systematically leading to better decisions from a more informed starting point. It is a stepwise approach: 1) create a standard comparable model for projects; 2) critical evaluation of how much an organisation's current performance is at risk; 3) carry out a consistent assessment of each project's risks and returns; 4) evaluate how those projects compare; and 5) determine how current and potential projects can be best combined into a single portfolio.

Create a standard, comparable model for projects

Problems can start in the proposal stage, when attempts to demonstrate the merits of a proposed project's underlying rationale and business case can be patchy and lack a standard methodology. Project teams can often propose highly complex projects, which means projects can be often overly expensive by design. In this situation few proposals are challenged, and most usually approved as long as they appear to be sufficiently robust to solve a real problem or can be justified on important dimensions of value or risk. This lack of standardisation in project development, decision process, and accountability creates opacity in a portfolio that makes it difficult to challenge proposals, compare projects, or assess the trade-offs of investing in one project over another without compromising operational integrity and sustainability.

To play a more constructive role, a standard model for all projects should be implemented that identifies the detailed sources of value in a business case and metrics that reflect that value for comparison with other projects. This includes setting standard rules and parameters for key outputs and assumptions on, for example, programme duration, inflation, capital costs, and prices. It's also essential to ensure that the

¹ The approach outlined is applicable to economic CBA and financial appraisal.

standard model includes the parameters necessary to create a business case both for straightforward expansion projects, where metrics like net present value and internal rates of return are easy to calculate, and also for replacement and compliance projects, where such calculations are often more complex.

A project model requires that each proposal demonstrate both expected direct benefits, in economic value added, and expected indirect benefits, in the value of prevented loss or mitigated risk over its life cycle. While this can initially impose a more extensive analytical burden on project teams, the effort always provided better and earlier clarity into the true value of each project and allows for important early adjustments - in itself a key element of defining an optimal capital portfolio. In addition, project teams can begin to appreciate the need to develop proposals more carefully and comprehensively up front, which can pay dividends later on, as fewer projects are delayed at important decision gates. Embedding a knowledge management process in an organisation is key and historic costs, direct and indirect benefits should be tracked in a database.

Assess impact of maintaining the status quo

When evaluating a new investment project, the instinct is to sometimes rush headlong into an assessment of risks and returns of the project alone without fully understanding the sources and magnitude of the risks already faced. This isn't surprising, perhaps, since managers naturally feel they know their own business. However, it does undermine their ability to understand the potential results of a new project. Even an optimal evaluation of a new project only goes so far if it can't be compared with the status quo/counterfactual or the incremental risk impact gauged.

Consistent evaluation of each project

Once there is a clear understanding of the risks of the current portfolio of projects, you can drill down on risks in these proposed projects and eliminate the need - and the temptation - to adjust net present value (NPV) or risk premiums arbitrarily. What's needed is a more consistent approach to evaluating project economics and risks, putting all potential projects on equal footing. The cornerstone for such an approach, for example, can be a standardised template for project evaluation that features three main components: 1) a project's risk-return profile at a glance, shown as a probability distribution of project value; 2) an overview of standardised summary metrics for risk and return; and 3) an explicit description of the sources of risk.

The project team specifies the basic economic drivers of a project, but a central strategic-planning and risk department prescribe consistent key assumptions, help to assess and challenge the risks identified, and generally ensure that the method underlying the analysis is robust.

Characterise each project with a simple risk-based dashboard

A corporate-finance purist might challenge the idea of a probability distribution of discounted cash flows and the extent to which a chosen discount rate accounts for the risk already, but in practice, a simple and transparent dashboard gives clarity to the analysis.

	Baseline metrics	Risk corrected
Capital expenditure, € million	35.51	36.21
NPV, € million	1.89	1.51
Before Tax IRR, %	12.67	11.79
Payback period, years	3.83	3.85
Return on capital², %	5.32	4.26
RAROC³, %		3.89

Table 1 - Key project metrics

² Ratio of NPV to investment

³ Risk-adjusted return on capital = (expected NPV) / (planned investment + NPV at risk)

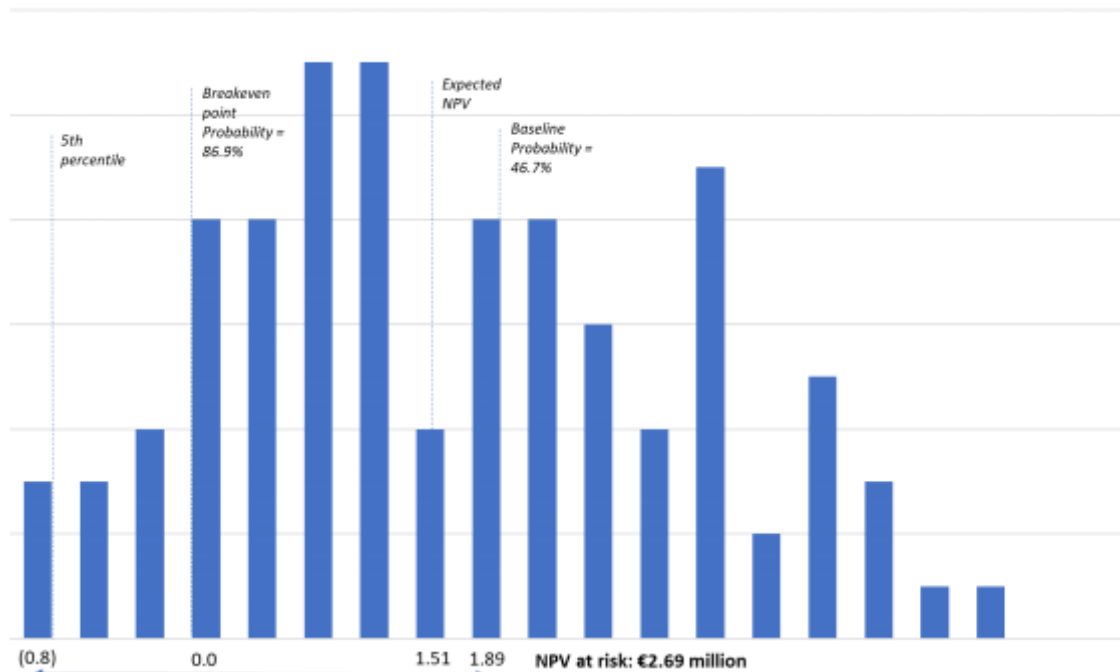


Figure 1 - Net present value (NPV) distribution, € million



Figure 2 – Impact on project NPV, € million

The project displayed in Table 1 and Figure 1 is one where the economics are clearly worse than in the original baseline proposal; indeed, this project is only 47 percent likely to meet that baseline. Nevertheless, it has more than an 85 percent chance of breaking even. And even after considering the potential need for additional investment after risks materialise, the project has attractive returns.

Making extra information about the distribution of outcomes available (Figure 2) shifts the dialogue from the typical go/no-go decision to a deeper discussion about how to mitigate risk. In this case, it is clearly worth exploring, for example, how to reduce the likelihood of overruns in capital expenditures in order to shift the entire probability distribution to the right. This is likely considerably easier to achieve if started early.

Rank and prioritise projects by risk-adjusted returns

The reality is that organisations typically have a large number of medium-size projects, many of which are attractive on a stand-alone basis - but there is limited capital headroom to pursue them. It isn't enough to evaluate each project independently; each must be evaluated relative to the others, too.

As business-unit leaders can see the capital budget as an opportunity to win allocation of as much money as

possible, with the expectation that they will later be able to spend as they see fit, a finance organisation can assert a level of rigour into the review of projects and scrutinise proposals for the kinds of arrangements that mask such problems. Business-unit managers can often bundle together projects with poor financial viability, typically under general labels of sustaining capital or environmental, health and safety risk, but since the process is set up to challenge both a business case and a technical case for a project through each stage-gate review, the process allows a detailed review of each proposal to be carried out, compelling project teams to single out discrete elements and justify those not directly related to the stated purpose of the bundle on their own merits.

It's not uncommon to rank projects based on some estimate of profitability, ratio of NPV to investment or ratio of benefits to costs. But since the challenge is to figure out which projects are most likely to meet expectations and which might require much more scarce capital than initially anticipated, a better approach is to evaluate them based on a risk-adjusted ratio instead. This approach can be put into practice by segmenting projects based on an assessment of risk-adjusted returns and then investing in new projects up to the limit imposed by the amount of capital available Figure 3.

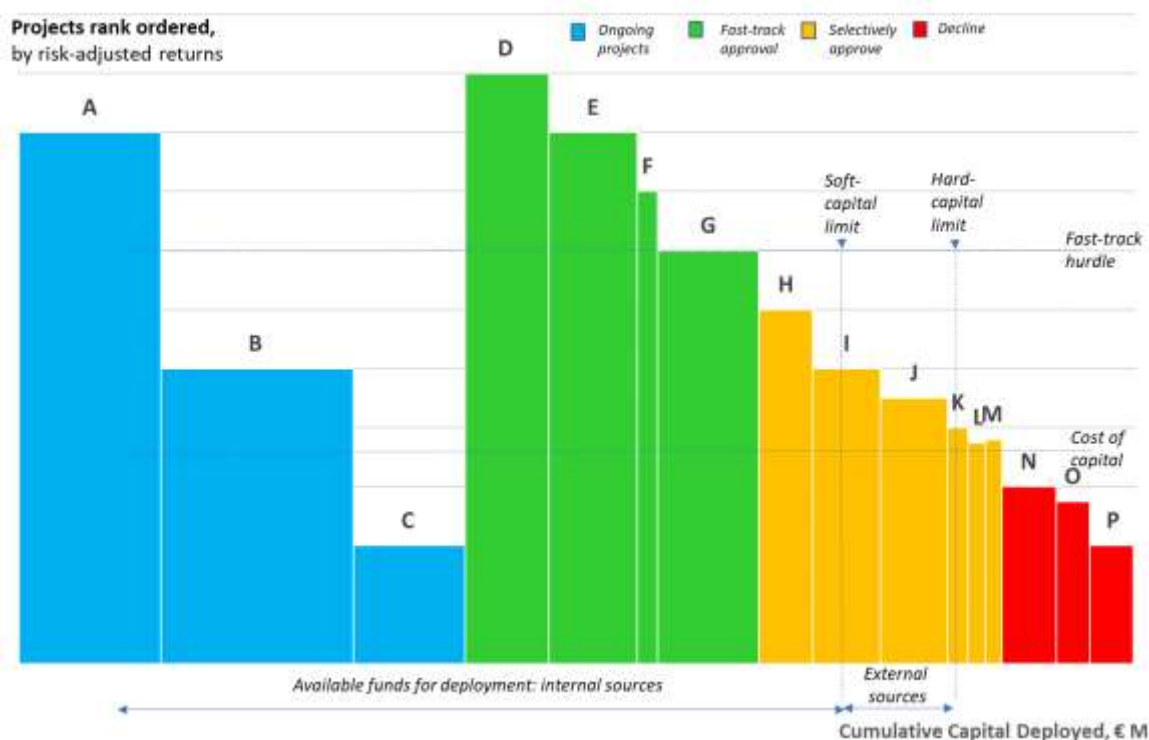


Figure 3 - Ranking of projects by risk-adjusted returns

Order projects by risk-adjusted returns to identify which to fast-track and which to decline.

1. Projects that clearly fail to meet their cost of capital - the lowest cut-off for risk-adjusted returns - are speedily declined or sent back to the drawing board.
2. Those that clearly meet an elevated hurdle rate are fast-tracked without waiting for the annual prioritisation process.
3. Projects in the middle, which would meet their cost of capital but do not exceed the elevated hurdle rate, are rank ordered by their risk-adjusted returns. For these projects, ad hoc discussion can shift the rank ordering slightly. But, more important, the exercise can also quickly focus attention on the handful of projects that require nuanced consideration. That allows a decision to be made on which ones can be moved forward safely, considering their risk and the constraints of available capital.

Determine the best overall mix of projects

An aggregated and dynamic view of all projects as a single portfolio should be built and managed. This is a critical yet often missing step that provides important insights for capital allocation. It allows fundamental questions about the likely returns of different portfolio configurations and the best mix of compliance and replacement relative to expansion projects to be addressed. The goal is to drive as much transparency and internal comparability as possible across a project portfolio and connect it to critical sources of value, so that informed decisions can be made as demands on capital shift—ideally acting pre-emptively, and, if not, then reacting quickly. The destination is transitioning from a no portfolio view at all to a formal capital-review process. Capital-expenditure-portfolio scenarios need to be compared on a semi-annual basis when funding decisions are made.

The approach above works well for organisations that seek to choose their investments from a large number of similar medium-size projects. But companies may face opportunities quite different from their existing portfolio - or they must weigh and set project priorities for multiple strategies in different directions - sometimes even before they've identified specific projects. Usually this boils down to a choice between doubling down on the kinds of projects the company is already good at, even if doing so increases exposure to concentrated risk, or diversifying into an adjacent business.

Conclusion

Managing risk (and return) in capital-project and portfolio decisions will always be a challenge. But with an expanded set of tools, it is possible to focus risk-return decisions and enrich decision making, launching a dialogue about how to proactively manage those risks that matter most in a timely fashion.

Appendix – Project Details

Development Description

Site area (A)	1.0
Average unit size (sq m NIA)	80.0
Target density (UPA)	100
Assumed N:G	90.0%
Units (#)	103
Development Area (sq m GIFA)	9,241
Average Height (FFL)	5.0
Coverage	44.0%
Plot ratio	2.20 x

Assumptions

Construction Costs (per sq m)	2,100
Site Development (per A)	625,000
Design Costs (% TCC)	9.0
Development Costs (per sq m)	405
Tender inflation (% p.a.)	6.0
Land (per unit)	50,000
Cost of capital	8.0
Av. Sales Revenue (incl. VAT)	460,000

Costs, € million

Site	5.15
Site Development	0.65
Construction	19.41
Inflation	1.83
Design & Soft Costs	5.71
Contingency	2.76
Total Development Cost	35.51

Revenue, € million

Total Sales (ex VAT)	41.74
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Project Cashflow, € million

p/e	31-12-19	31-12-20	31-12-21	31-12-22
Costs	(5.15)	(4.89)	(25.47)	-
Revenues	-	-	4.17	37.57
Nett CF	(5.15)	(4.89)	(21.30)	37.57
Cumulative CF	(5.15)	(10.04)	(31.34)	6.23

Appraisal

	Baseline	Risk Corrected
Capital expenditure, € million	35.51	36.21
NPV, € million	1.89	1.51
Before Tax IRR, %	12.7	11.8
Payback period, years	3.83	3.85
Return on capital, %	5.3	4.3
RAROC, %	-	3.9
Prob. to break even	87%	
Prob. to meet baseline	47%	

Further information and about Keogh Consulting

Individuals and organisations delivering projects face complex challenges from concept development, through feasibility assessment, delivery, to operation. Keogh Consulting provide specialist resources to assist and improve the development and delivery of capital projects. Through use of agile and lean approaches we ensure that the right projects are done in the right way on time and within budget.

Our consultants have practical industry experience in a range of sectors gained over 25 years in nearly every aspect of a projects life cycle and have advanced degrees in engineering, business administration, finance and corporate governance. We provide a broad range of integrated services touching upon almost every aspect of a project from idea generation to operation and have advised on projects ranging from business start-ups to major public capital projects and programmes.

For further information about this article or issues raised in the article or should you require further information on how Keogh Consulting can help your project please contact us at info@keoconsult.com.



Develop. Deliver. Improve.

Delivering projects involves complex challenges from concept development, through feasibility assessment, to delivery and operations.

Keogh Consulting provide specialist resources to assist individuals and organisations improve the development and delivery of capital construction projects. Specialising in the real estate sector we use a suite of decision, project management and cost control methodologies to help deliver projects.

Through use of these agile and lean approaches we ensure that the right projects are done in the right way.

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