

Evaluating Megaprojects

*Bent Flyvbjerg, Nils Bruzelius and Werner Rothengatter, **Megaprojects and Risk: An Anatomy of Ambition**, Cambridge University Press, Cambridge, 2003*

*Reviewed by **John Quiggin***

It is a commonplace of Australian political debate that a project like the Snowy Mountains Scheme could not be undertaken today. This is largely because of the prevalence of the kinds of criticisms raised in books like *Megaprojects and Risk*.

As the authors observe, megaprojects, despite their actual and symbolic importance, 'have strikingly poor performance records in terms of economy, environment and public support' (p. 3). This observation is backed up by empirical evidence showing that the studies used to justify transport megaprojects typically underestimate costs and overestimate benefits, sometimes by orders of magnitude.

The central task the authors set themselves is to investigate the processes behind the approval and implementation of megaprojects. The primary focus is on transport projects such as international transport links and urban passenger rail networks. Three case studies are offered: the Channel Tunnel; the Great Belt link between East Denmark and Continental Europe and the Øresund link between Sweden and Denmark.

The central thesis of the book may be summarised as follows: The typical ex ante evaluation of a large transport project is based on what the World Bank calls EGAP (Everything Going According to Plan). In practice, of course, things do not go according to plan. Occasionally, things go better than expected, as in the case of the Øresund road bridge, which experienced substantially more traffic than was expected. But, more often than not, things go worse than expected. Hence, the EGAP evaluation yields estimated benefit-cost ratios that are biased upwards.

The extent of this bias is startling. The authors find that real cost overruns of between 50 and 100 per cent are common, and overruns above 100 per cent are not uncommon, while demand is typically overestimated, with typical overestimates between 20 and 70 per cent.

The tendency to overestimation is particularly severe in the case of urban rail projects. The average cost overrun for urban rail projects studied by the authors was 45 per cent, with 25 per cent experiencing overruns of more than 60 per cent. Meanwhile, the average ridership was half that estimated in ex ante evaluations, and 25 per cent of projects realised less than 30 per cent of the estimated ridership. Thus, the typical benefit-cost ratio actually realised was about one-quarter of the estimated value, with many projects performing even worse than this.

The core of the book is devoted to illustrating the central problem of over-optimism in *ex ante* evaluations, and discussing the characteristics of the policy process that generate systematic bias on the part of project proponents. The authors make a range of useful suggestions

In addition to the core point regarding overestimation of benefits, the book offers useful discussion of environmental aspects of the megaproject process, and of the costs and benefits of private provision of infrastructure.

As regards environmental issues, little has changed since the introduction of environmental impact assessments in the 1970s. Typically, these occur in the middle of the process, after the design phase, and before construction begins. The authors argue for more consistent attention to environmental issues beginning in the design phase and ending with *ex post* assessments of actual, as compared to predicted, environmental impacts.

Privatisation is an issue that will be of particular interest to Australian readers. In the 1980s, the poor performance of infrastructure projects was commonly attributed to public ownership and the associated potential for political concerns to override economics. Privatisation was commonly presented as a panacea. As the authors observe, however, private provision of infrastructure solves some problems and creates others. Moreover, the complexity of the issues raised by transport megaprojects, including environmental concerns, planning implications and international negotiations is such that the idea of getting politics out of the process is chimerical.

Their conclusion (p. 104) is so carefully balanced as to give no comfort to either side of the debate. 'Whilst far from offering a panacea to the risk and accountability problems for megaprojects, given an appropriate and properly implemented institutional framework, private involvement may be helpful'.

This conclusion is reinforced by the equivocal example of the Channel Tunnel, one of the three main case studies. This was a BOOT (Build, Own, Operate and Transfer) project, with a lease initially set at 35 years. Cost overruns and demand shortfalls substantially reduced the viability of the project. While much of the risk was borne by private investors, the project was salvaged only because the British and French governments agreed to a longer and more favourable lease. Unless governments are prepared to allow projects to fail outright, privatisation leaves them in the position of guarantors, bearing substantial risk for no returns. More generally, the willingness of governments to let a project fail, an enterprise close down, or a service be withdrawn is a good test for the viability of privatisation.

The book suffers from one important analytical weakness. As is common in discussion of benefit-cost analysis, the term 'risk' is used in an ambiguous fashion. Most of the time, 'risk' is used in its ordinary-language meaning, to refer to the possibility of an adverse outcome (this is sometimes called 'downside risk'). On other occasions, however, the authors implicitly refer to the concept of 'pure risk', that is, uncertainty that may produce either favourable or unfavourable outcomes relative to some given mean or other measure of central tendency. In economic analysis, the term 'risk' is normally used to refer to 'pure' risk.

The failure to distinguish between 'downside' and 'pure' risk leads the authors into serious analytical errors. They assert that governments should employ market discount rates, on the assumption that the risk premium for equity reflects the expected loss associated with downside risk. In fact, the risk premium implies a market price for 'pure' systematic risk far higher than that implied by standard consumption-based versions of the capital asset pricing model. If as seems likely, this excess risk premium arises from capital market failure, there is no reason to include it in the discount rate for public projects (Grant and Quiggin, 2003). Although a case can be made for the use of the private market risk premium, the authors do not make it.

A couple of more minor criticisms may be made: The book opens with the claim that the 'megaproject' phenomenon it addresses is a new one. On the contrary, the history of public and private megaprojects stretches back to the pyramids of Egypt, and there is no good reason to believe that megaprojects are more important today than in the past.

To take a more homely example, the authors mention among a list of worldwide megaprojects, the Sydney Harbour Tunnel, which was completed in 1992 at a cost of a little under \$800 million or 0.2 per cent of GDP. Sixty years earlier, the Sydney Harbour Bridge cost 6.25 million pounds or about 1 per cent of GDP (based on the estimates of Clark and Crawford, 1938).

Also, although the authors (p. 2) correctly observe that the Internet is 'the ultimate megaproject' their attention is confined to transport infrastructure. This is understandable, given the authors' background and the difficulties raised by an assessment of the recent economic bubble. However, consideration of the Internet and telecommunications bubble would have reinforced the authors' doubts about the likelihood that private provision of infrastructure would reduce the likelihood of megaproject disaster.

The total amount invested in Internet and telecommunications megaprojects, mainly undertaken by private enterprises, during the bubble of the late 1990s was of the order of \$1 trillion. Except for the portion paid to European governments for telecommunications spectrum this money was almost entirely wasted. Over 90 per cent of the optical fibre cable laid during the bubble has never been used. Most investments in 'dotcom' businesses were lost; in many cases there was barely enough left to pay the liquidators. Even for enterprises such as Yahoo and Amazon that have survived and reported intermittent profits, the rate of return on invested capital has been low.

Despite these limitations, this book is a valuable contribution to the debate on infrastructure investment and on public policy formulation in general. The suggestions for a more transparent and forward-looking policy process are well thought-out and well-argued. If adopted such proposals would greatly improve the process of project selection and evaluation.

References

Clark, C. and J. Crawford (1938), *The National Income of Australia*, Angus and Robertson, Sydney.

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John Quiggin is a Federation Fellow in the Schools of Economics and political Science at the University of Queensland and an Adjunct Professor at the ANU.