

## **Advances in Project Management Series<sup>1</sup>**

### **Let in the Light on Project Finances**

**By Derek Salkeld**

We bequeath three things to our descendants: one is genetic material, and the other two, things that are not: our culture and our infrastructure. Of these two, it is infrastructure that contributes most to the quality of the lives we lead because it provides the greatest good for the greatest number. However the genesis and development of infrastructure is not common knowledge in the way that, say, those of film or music are but even so there are two things everyone knows about infrastructure projects. I was asked to give a lecture to an audience of academics a few years ago. I introduced myself and then wrote up the names of half a dozen fictional projects on the board: the Buenos Aires Tram, the Russo-Canadian Air Traffic Control system, the Australian Federated Health Care Record System, and so on. I made them up as I wrote but I did not reveal this to the audience.

I then asked the audience why these infrastructure projects had suddenly become newsworthy in their own countries. After five minutes, we had a broad agreement that it must be because these projects were late and over budget. Late and over budget: this is what people who know little about infrastructure projects do know about infrastructure projects. But is it true? Do projects overspend and overrun? Or is it an urban myth?

Research into this is clear: yes they do. The research is not extensive, which is surprising in itself because the business of delivering infrastructure has to be large simply because there is so much of it out there, and what is more, it has been underway for centuries. The academic analysis is summarised in two excellent books. In *The Management of Projects* (ISBN 0 7277 1693), Peter Morris describes how he set out to check the truth behind the oft-heard objective of the project management profession that it aims to deliver on time and on budget. He found published accounts for 1449 projects, of which only twelve had. He wrote that he later repeated the analysis with 3000 projects and found a similar result. In *The Anatomy of Major Projects*, Bent Flyvbjerg, Bjorn Azelius, and Werner Rothengatter. (ISBN 0 521 00946 4) assessed 260 projects and concluded that to be 90% confident of delivery within budget it would be necessary to add mark-ups of the order of 60% to their estimates, depending on the type of infrastructure: rail or roads and so forth.

Such is the concern among the funders of infrastructure projects that there have been some analysis-based initiatives that seek to compensate in advance of committing to a project for its anticipated overspend. Like in Professor Flyvbjerg's book, these seek to identify a

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<sup>1</sup> *The Advances in Project Management series includes articles by authors of program and project management books published by Gower in the UK. The articles are coordinated by series editor Prof **Darren Dalcher**, who is also the editor of the Gower Advances in Project Management series of books on new and emerging concepts in PM. For more on Gower project management, visit <http://www.gowerpublishing.com/default.aspx?page=2063>.*

percentage uplift that should be applied to a project estimate to give a desired level of confidence that its final cost will not exceed a target value. Generically, they are known as reference case forecasts. I think the approach may not be useful in practice because, first, no two projects are ever quite the same. Even if the next string of pylons or the next viaduct is the same as the previous one, the project context: geomorphological, geological, environmental, public reception...and so on will be different and these influences can easily cause changes to an otherwise standard project that will alter its costs and timescales.

Second, reference case forecasting seems to me a self-fulfilling prophecy, a perfect feed-forward loop. Say a mark-up of 60% is added to the estimate at the time of project approval to cover potential overspend, then I cannot imagine normal marketplace behaviour ever resulting in the final costs being appreciably less than 60% more than the estimate. The funding is there so suppliers will try to get it.

I would therefore like to propose something different, something that avoids the pitfalls of reference case forecasting. I think we should try to calculate the extent to which a project may overspend (or overrun) before it is sanctioned. I think this will have two major benefits.

First, the funding required will match the project and its context more accurately than a generic mark up.

Second, and more importantly, the calculation will reveal the potential causes of overspend, probably in some detail, and this knowledge will allow us to mitigate those causes in a way that a generic mark-up will definitely not, and thus we may be able to deliver infrastructure projects for less cost, and possibly in less time too. I will explain how this calculation could be done in a second article.

It surprises me, as indeed it did Professor Morris, that there is very little data on projects available for academic scrutiny. Given the number of projects out there and the sustained period of their design and construction, why is this?

This is certainly not the case, for example, in the fields of Accounting and Economics, where there are mountains of published accounts and records of prices, costs, demand levels and supply capacities to analyse. However the library of project data is an empty building even though the papers with the numbers written on them must all have existed at one time. They have vanished.

I suspect the reason is simply that many of us work in this large though largely unrecognised sector of the economy, and we depend on it to provide our current security and future prosperity.

We cannot, or do not, easily leave infrastructure projects for a career in manufacturing goods or supplying services, and therefore to admit to a track record of working on projects that have overspent and overrun could be career limiting. It would therefore perhaps be

better for all involved if the project data were not put in the library for academic research. Does it sound too cynical to say “we deliver on time, on budget, on occasion” might not be the best of marketing pitches for an infrastructure delivery business even if it is frank and honest?

I think reform is called for. Before the 1840s, the economy of the United Kingdom was largely an agrarian one in which taxation was minimal and businesses were local in scale, with their owners usually being the managers and often among the labourers too. This changed with the industrial revolution. Businesses became financed by investors who sought profits that could be maximised only if those businesses had a greater trading reach, a greater manufacturing capacity and, crucially, access to capital that could be used to pay for increases in both. Businesses then became too big for owners to run entirely themselves and this led to the emergence of a separate management class. Ownership started to become shared with outside investors. Investors though were wary. How could they trust the accounting data produced by the managers? The UK government of the day needed to act to ensure investment into industry was not deterred and so passed the Joint Stock Companies Act in 1844, which required books of accounts to be kept and honest balance sheets to be prepared. It required these were to be presented to shareholders and to be reported on by independent auditors.

In essence, accounts that were previously a private matter now became subject to public disclosure, and after a further 166 years of legislation they became the standardised chartered accounts of today that limited liability companies must file with UK Companies House. The light was let in on business finances and nowadays we can if we want to, generally, satisfy ourselves about the financial probity of the companies in which we choose to invest.

Infrastructure had the same beginnings: the owner and operator of a bridge over a stream would as likely as not, be the landowner, who in all probability designed and built it too. But as infrastructure became bigger in terms of its geographic extent, design sophistication and operational complexity, there emerged a natural separation between the delivery companies and the funders that we readily accept as rational. However unlike managers and investors in industry, disclosure of key information about infrastructure that would allow investors in it to be aware of how their money was being used is not required by the law.

I suggest disclosure is necessary for project accounts too, particularly so where public money has been invested, and particularly so if the infrastructure is held in common stock for use by us all.

Disclosure of project accounts will let us see who is good and who is bad at the delivery of infrastructure projects and in so doing, we will see the bad either wither away or improve. We may even see small investors, you and me, put money into projects we think will generate secure returns, just like we do into companies, a development that could ease some of the difficulty governments have raising funds for infrastructure. And perhaps we

will begin to gain the improvements in efficiency and effectiveness in the delivery of infrastructure projects that are commonplace in the goods and services sectors of the economy.

The form and content of disclosed project accounts will take years to mature, and a whole new profession of Chartered Project Accountants may emerge – there is a 150 years of catching up to do. But when we do have standardised, independently audited project accounts available in the public domain then perhaps party goers will no longer look away when I answer their inevitable question about what I do but will instead lean forward and ask whether or not I think a small investment in a high speed rail link would be a good thing?

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*Derek Salkeld is the author of **Project Risk Analysis: Techniques for Forecasting Funding Requirements, Costs and Timescales**, published by Gower in March 2013. For information about the book, visit <http://www.gowerpublishing.com/isbn/9780566091865>.*

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## About the Author



### **Derek Salkeld**

Southwest England, UK

Derek Salkeld has been a risk analyst and risk manager for 20 years. He trained as a geophysicist and led a signal processing systems design team for a UK military systems manufacturer. He has extensive experience of multi-disciplinary engineering projects covering a wide range of assets including: the assessment of Network Rail's IT investment programme; the development of an asset investment model of waste water treatment systems owned by the Water Service of Northern Ireland and the business case for the London Cross Rail system. He was risk manager on both the recently opened London cable car and the East London Line projects. He is currently advisor to London Underground Limited on its stations capital works programme and to Genesis Power on its Tekapo hydro-electric projects in New Zealand. He is a doctoral research student at the University of Exeter researching risk management methods.