

Concept Symposium 2006 Principles of Governance for Major Investment Projects

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Accountable Megaproject Decision-making

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Principles of Governance of Major Investment Projects

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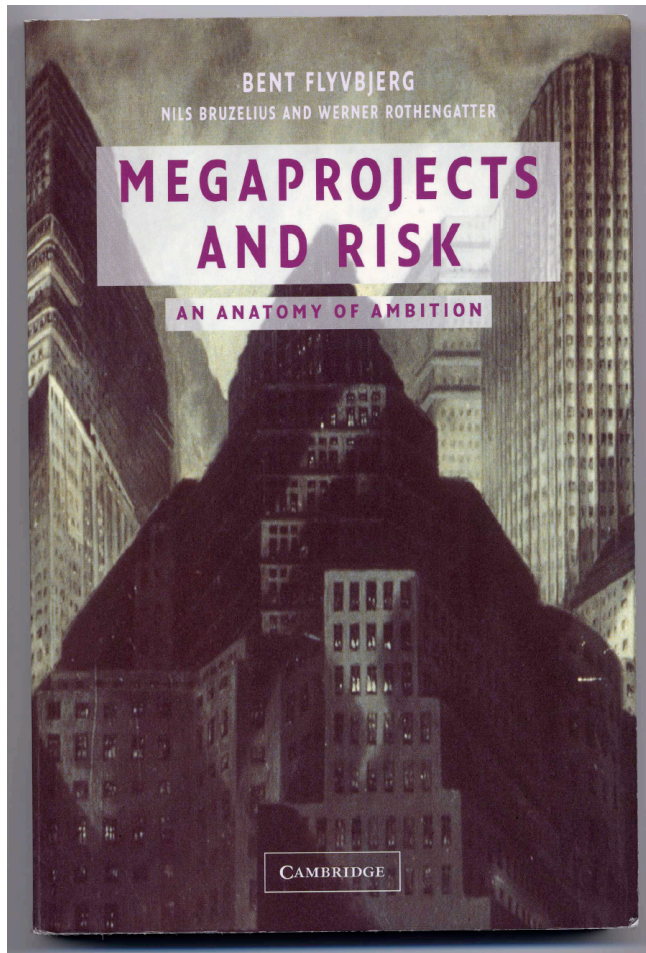
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Agenda

1. Problems of accountability
2. Case study
3. Measures of accountability

Basis for Presentation



Served as adviser:

- Amsterdam–Paris HSR
- Fehmarn Bridge
- Copenhagen Metro
- Dublin Metro
- Gautrain, SA
- Etc.

See also papers at:

<http://flyvbjerg.plan.aau.dk>

Project Types

- Transportation
- IT systems
- Public buildings
- Power plants
- Dams
- Water projects
- Oil and gas extraction projects
- Aerospace projects
- New products, plants, markets

Problem: Lack of Accountability

1. Pareto-inefficient investments = **waste**
2. Destabilizes project development
3. The problem gets bigger, because projects get bigger
4. Not only a problem for transportation

Example: Channel Tunnel



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Channel Tunnel Ex Post Evaluation

- Actual costs = 2 x forecast
 - Actual benefits = 1/2 x forecast
 - Actual NPV = \$-17.8 billion
 - Actual IRR = -14.45%
-
- Conclusion: “The British Economy would have been better off had the Tunnel never been constructed”

(R. Anguera, *Transportation Research A40*, 2006)

Example: Copenhagen Metro



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Copenhagen Metro Ex Post Evaluation

- Actual costs = 3 x forecast
- Actual patronage = 0.6 x forecast

Boston's Big Dig: 224% Cost Overrun, and Growing



Size of Cost Overruns

Type of project	No. of cases (N)	Avg. cost overrun %	Standard deviation
Rail	58	44.7	38.4
Bridges & tunnels	33	33.8	62.4
Road	167	20.4	29.9

Key Observations, Overrun

1. 9 out of 10 projects have cost overruns
2. Overrun is found in 20 nations on 5 continents
3. Overrun is constant for the past 70 years, estimates have not improved

Benefit Shortfalls

1. Average rail passenger shortfall is 51.4%
2. 9 out of 10 rail projects have overestimated traffic
3. For 50% of roads the difference between actual and forecasted traffic $> \pm 20\%$
4. Traffic forecasts have not improved for 30 years

IT Projects

- Average cost overrun: **43%**
- Projects over budget, over time, and under scope: **71%**
- Total project waste per year in USA: **US\$ 55 billion**

– Standish Report 2004

B/C-ratio for Average Rail Project

We know empirically:

$$B_{\text{out-turn}} = 0.5 \times B_{\text{approval}}$$

$$C_{\text{out-turn}} = 1.5 \times C_{\text{approval}}$$

Thus:

$$B_{\text{out-turn}}/C_{\text{out-turn}} = 0.33 \times B_{\text{approval}}/C_{\text{approval}}$$

$$B_{\text{approval}}/C_{\text{approval}} = 3 \times B_{\text{out-turn}}/C_{\text{out-turn}}$$

B/C-”error” of factor 3!

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London Calling: UK Department for Transport

- **2004:** Study of accountability problems (optimism bias)
- **2005:** New methods for risk assessment implemented (reference class forecasting)
- **2006:** New measures of accountability proposed (incentive alignment)

A Planner on the Cause of Cost Underestimation

“[Y]ou will often as a planner know the real costs. You know that the budget is too low but it is difficult to pass such a message to the counsellors [politicians] and the private actors. They know that **high costs reduce the chances of national funding.**”

A Planner on the Cause of Benefit Overestimation

“The system encourages people to **focus on the benefits** – because until now there has not been much focus on the quality of risk analysis and the robustness [of projects]. It is therefore important for project promoters to **demonstrate all the benefits**, also because the project promoters know that their project is up against other projects and **competing for scarce resources.**”

Passing the Test

“It’s all about passing the test [of project approval]. You are in, when you are in. It means that there is so much focus on **showing the project at its best** at this stage.”

Conspiracy Theory, Anyone?

“I don’t think it is very deliberate; it’s not that people sit around a table and make strategies to get money out of a government; it’s more that **everybody knows** of the competition.”

Main Cause of Problems

- Strategic misrepresentation caused by misaligned incentives (principal-agent problems)

Result: Survival of the UNfittest

Max(B/C) at approval

= Max(benefit shortfall, cost overrun) at implementation

= Max (size and frequency of disasters)

= Survival of the UNfittest, **inverted Darwinism!**

DfT Reform Proposal, 2006

1. 10% of capital cost to be paid by local authority, 25% for light rail
2. 50% of cost overrun within estimate to be paid by local authority
3. 100% of cost overrun above estimate to be paid by local authority
4. Quantified risk assessment (QRA) required
5. Full DfT approval not until firm tender price

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Three Observations

1. Lack of accountability is a political problem
2. You cannot solve political problems with technical solutions, i.e., better methods
3. Political problems require political solutions

Basic Principle of Accountability

- Place consequences of underperformance on promoters
- The principle is self-evident, **and** has typically not been followed so far, in the UK or elsewhere

ONE Accountable Project Organization

1. Project development should be vested in **one** organization with strong governance framework
2. The organization may be a company or not, public or private (agency, SOE, BOT, PPP)
3. This organization will enforce accountability vis-à-vis contractors, operators, etc.
4. This organization and its directors will be held **accountable** for cost overruns, benefit shortfalls, faulty designs, etc.

Measures of Accountability

1. Place financial responsibility of overruns and shortfalls on promoters
2. Make go-ahead contingent on min. 1/3 private capital, also in subsidized projects
3. In PPPs, make size of subsidy dependent on performance
4. Check price of insurance, or buy insurance
5. Independent reviews of costs and benefits
6. Enforce empirically based QRA

Pitfalls of Reform

1. The easy fix illusion (early privatization)
2. Reduced public control without increased market discipline (Danish SOEs)
3. Weak contract-writing skills (Cph. metro)
4. Paying too much for private involvement (Skye Bridge, Sydney Harbour tunnel)
5. Creating a new gray area for rent-seekers

Drivers of Reform

1. Increasing size of projects (Athens OL, Hong Kong airport)
2. Banks, pension funds, etc. invest in infrastructure (Macquarie Bank, ATP)
3. The principles of Good Governance

Final Observations

1. Accountability is changing
2. There is no easy fix
3. An experimental attitude is necessary

Best Practice

1. UK Dept. for Transport: “Procedures for Dealing with Optimism Bias in Transport Planning: Guidance Document.” June 2004.
2. HM Treasury, “The Green Book: Appraisal and Evaluation in Central Government. Treasury Guidance” (London: TSO, 2003)
3. Dutch Parliament Commission on Infrastructure Projects, 2004–05

If You Remember One Thing Only

Place risks with project promoters

The End: Thank You!

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