



## BENT FLYVBJERG

### *Comment*

*Evidence suggests that infrastructural stimulus initiatives often detract from the economy in the long term.*

**A** year ago, *The Economist* called current spending on infrastructure the “biggest investment boom in history”. Spending was the largest it had ever been as a share of world gross domestic product. The deepening fiscal crisis could have ended the boom, when banks and capital funds began cutting back on lending. But the opposite has happened.

Reductions in funds have been offset by hundreds of billions of dollars for government stimulus spending. Heads of state, led by US president Barack Obama and China premier Wen Jiabao, have singled out investment in infrastructure as a key means to create jobs and keep the economy from slumping. China was first mover when its State Council, in November 2008, passed a \$586bn stimulus plan, mainly for investment in infrastructure. In February 2009, the US followed suit, with Congress passing President Obama’s \$787bn New Deal. India has a \$475bn plan, and the UK, Germany, France and other nations are ready with additional billions if the economy worsens.

With so much money in the pipeline – and with the health of the global economy riding on the success of infrastructure investment – the efficiency of infrastructure delivery is particularly important at present. Done

right, the investment boom could become a boon, because infrastructure investment is appealing in several ways: it creates and sustains employment; there is a large element of domestic inputs relative to imports; it improves productivity and competitiveness by lowering producer costs; it benefits consumers through higher-quality services; and it improves the environment when infrastructures that are environmentally sound substitute infrastructures that are not. But done wrong – which unfortunately is the usual way of doing large-scale infrastructure investments – the thrust may become a bust, with ‘boondoggles’ worse than any seen yet.

It is well documented that even in the best of times large infrastructure investments have a dismal performance record in terms of cost overruns, delays and benefit shortfalls. Nine out of 10 projects experience cost overrun, and overrun has not diminished for the 70 years for which data is available, to mention but two revealing statistics. Just think of your latest, local boondoggle and you get the picture.

For Americans, Boston’s Big Dig, Los Angeles’s subway, San Francisco’s Bay Bridge, Denver’s new International Airport, and the New Woodrow Wilson Bridge in Washington, DC, come to mind, not to speak of the rebuilding of Iraq. For Britons, the London Tube public-private partnership, the West Coast Main Line upgrade, the Railtrack fiscal collapse, the Millennium Dome, the Scottish parliament building, the Humber Bridge, the Channel Tunnel, and the cost overruns on the 2012 London Olympics have been major financial embarrassments. Other nations, and even cities, have their own lists of underperforming projects.

#### ROAD TO NOWHERE

A recent study of the actual impact of the Channel Tunnel found that the rate of return on the investment was negative, at -14%. However convenient for the users of the service – who number approximately half of those forecasted, and are heavily subsidised – the Channel Tunnel detracts from the economy. If stimulus money is used for projects such as this, the economy will be worsened, not improved.

Throwing hundreds of billions of extra dollars at an underperforming business such as infrastructure provision is therefore highly risky at best. Fears include rampant pork-barrel, fast-tracking, bid-rigging, local governments pulling their funds out of ongoing projects in anticipation of national funding that may not come or comes late, and projects left unfinished because of cost overruns on stimulus projects that local government cannot finance. The consequences could be dire to the economy, and to public trust in the institutions and people who administer infrastructure spending. Perhaps this is why Macquarie Bank – probably the largest and most experienced infrastructure investor in the world – has recently been reducing its infrastructure portfolio, moving into energy instead.

Add to this that global infrastructure investments are shifting geographically from developed to emerging economies, where risks of ineffective project delivery are higher. More than half of infrastructure investments are

now taking place in emerging economies. In the past five years, China has spent more on infrastructure in real terms than in the whole of the 20th century. In the past four years, China has built as many kilometres of high-speed passenger rail lines as Europe has in two decades.

Morgan Stanley predicts that emerging economies will spend \$22,000bn in today's prices on infrastructure over the next 10 years. Political risk, risk of corruption, and logistical risk are higher in emerging economies. As a consequence, risk of cost overruns and benefit shortfalls are also higher. A recent study documented that the average cost overrun on rail projects – measured in real terms from the decision date to completion – was 64.6% in emerging economies against 40.8% in North America and 34.2% in Europe. Geography matters to project performance. The striking shift in infrastructure investments to emerging economies is therefore placing increased pressure on project delivery.

### HI-TECH PROJECTS

Finally, information and communication technology (ICT) has fast become a large and rapidly increasing part of more major infrastructure projects. The consequences are often devastating, because large ICT projects appear to perform even worse than other major projects. Recently, a group of ICT experts contacted me to ask how they might learn to manage cost overruns, delays, etc... in ICT projects “as well as transportation infrastructure projects do”. I laughed out loud because I mistakenly thought they were making a joke. As mentioned, the evidence is clear that most major transportation infrastructure projects perform poorly. But here is another project type, ICT, that apparently performs so much worse that it can use transportation as a benchmark to be strived for. At Oxford University, we did a pilot study, and sure enough, the ICT experts were right: if a major project is not already messed up, injecting a good dose of ICT will do the job.

Hong Kong international airport is a case in point, with initial ICT hiccups so bad that the whole Hong Kong economy suffered. Terminal 5 at London Heathrow is another example. An infrastructure planner recently told me: “We know how to build large, expensive tunnels by now, but we don't know how to build the ICT safety systems that go into the tunnels; ICT busts us every time.” Or take Germany's Toll Collect, a consortium of DaimlerChrysler, Deutsche Telekom and Cofiroute of France responsible for tolling heavy trucks on German motorways for the Federal government. The new tolling system was designed to be a showcase for public-private partnership in infrastructure management. By the time tolling at last started, several years delayed, and with significant software shortfalls that contributed to an estimated total €6.5bn in toll losses, ‘Toll Collect’ had become a popular byword among Germans used to describe everything wrong with the national economy.

And here's the crunch: not only are clients and managers of major projects rushing headlong into risky ICT investments that are really new product development schemes, but a rapidly increasing part of these investments are shifting to emerging economies, which is a source of risk in its own right, as previously highlighted.



**INCENTIVES NEED TO BE PUT STRAIGHT, SO THAT BAD PERFORMANCE IS PUNISHED AND GOOD PERFORMANCE REWARDED, AND NOT THE OTHER WAY AROUND, WHICH IS OFTEN THE CASE**

Between 2003 and 2008, the share of ICT spending in emerging economies rose by 60%, from 15 to 24% of global ICT spending, according to the Organisation for Economic Co-operation and Development.

In sum, the following formula captures the current trends in major infrastructure investment:

Rapid increase in infrastructure spending;  
+ rapid shift in spending to emerging economies;  
+ rapid increase in spending on ICT;  
= risk to the third degree of financial and economic disasters.

Whether stimulus infrastructure spending will improve or worsen the global economy will be decided by how well these main trends are dealt with. Thus the efficiency of project delivery is both particularly important at present and particularly challenged. The major challenges are to not lower standards as the project pipeline rapidly expands, to navigate the particular risks of doing more projects in emerging economies, and to harness the bull in a china shop that is ICT in major projects.

Three main ingredients will help meet the challenges. First, we need to honestly acknowledge that infrastructure investment is no easy fix but is fraught with problems. It is a great help that Barack Obama has openly identified “the costly overruns, the fraud and abuse, the endless excuses” in public procurement as key problems. *The Washington Post* calls this “a dramatic new form of discourse”, and so it is. Before Mr Obama, it was not *comme-il-faut* to talk about overruns, deception, and abuse and the few who did were ostracised. However, we cannot solve problems we cannot talk about. So talking is the first step.

Second, we must arrive at a better understanding and better management of the long, fat tails of financial and economic risks – the abundance of black swans – that apply to infrastructure investment. Risks have so far been as misunderstood and as mismanaged in infrastructure investment as in the financial markets, with equally devastating outcomes.

Third, incentives need to be put straight, so that bad performance is punished and good performance rewarded, and not the other way around, which is often the case today.

At any rate, the trend is clear: with all the extra money and attention coming its way, infrastructure investment is moving from the frying pan into the fire. **TF**

BENT FLYVBJERG IS A PROFESSOR AND ACADEMIC DIRECTOR AT OXFORD UNIVERSITY