

# INFRASTRUCTURE INVESTMENT AND PRODUCTIVITY

**Address to the Economic Society's annual  
Tasmanian Economic Forum**

*by*

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Thank you for again inviting me to be part of the annual Tasmanian Economic Forum. The theme of today's forum is 'Infrastructure for a Sustainable and Prosperous Tasmania' and in that context I've been asked to talk about the linkages between infrastructure and productivity.

For the purposes of today, I will limit this discussion to 'economic infrastructure', that is, those parts of the private and public sector capital stock which are intended to facilitate the production or distribution of goods and services. In thus defining the topic I don't want to suggest that 'social infrastructure' such as schools and hospitals don't also enhance productivity, through their impact on human capital. However that is not the primary purpose of these forms of infrastructure.

By contrast, a defining measure of the effectiveness of economic infrastructure should be its impact on the level and growth rate of productivity.

Economists well understand the importance of productivity as a key determinant of material living standards. In the current Australian context, productivity growth is also important as a means of ameliorating the impact of demographic change; reconciling conflicts between ecological constraints on the rate of economic growth and the deeply-entrenched desire which humans have had throughout history that their children will enjoy better lives than they have had; and as the best way of enabling those industries which are likely to be disadvantaged by some of the side-effects of the resources boom (of which Tasmania has an above-average share) still to be around when the resources boom eventually comes to an end (whenever that is).

As RBA Governor Glenn Stevens observed earlier this week, "while our terms of trade are handed to us, for better or worse, by international relative prices, the efficiency with which we work is a variable we can actually do something about" (Stevens 2010).

Australia's 1990s productivity 'miracle' owed much to a series of micro-economic reforms, explicitly designed to produce that outcome by consciously exposing both private and public enterprises to greater competition, both domestically and abroad, in order to spur managers into making changes to the way in which labour and capital were combined to produce goods and services.

How to foster the next round of productivity growth is less clear – it would appear that the "low-hanging structural fruit" have mostly been picked, and the political will for reforms which entail short-term pain for long gain has all but evaporated. Meanwhile Australia's productivity performance continues to deteriorate, with labour productivity growth having slowed to just 0.9% per annum over the five years to 2009-10 and multi-factor productivity having *declined* at an average annual rate of 1.0% over this period.

The Grattan Institute's productivity growth program is investigating the reasons for this decline and various remedies for it, including enhancing the quantity and quality of Australia's stock of infrastructure, improvements to skills and vocational training, and the role of innovation.

The quantity and quality of Australia's infrastructure is back on the agenda as Australia seems once again to be approaching a point where 'infrastructure bottlenecks' may detract from our economic performance and, in particular, our ability to capitalize on the opportunities generated by the ongoing industrialization and urbanization of China and India.

As the OECD observed in its most recent survey of the Australian economy,

“Australia faces a shortfall in infrastructure, which could worsen with the demand pressures exerted by the mining boom, population growth and environmental concerns. To respond to this demand and avoid bottlenecks, the authorities have put bolstering infrastructure at the top of their policy agenda” (OECD 2010).

Images of ships unable to meet the needs of a booming resource trade fuelled the suggestion that Australia was running up against capacity constraints during ‘mining boom mark I’ (which was terminated by the global financial crisis) – and seem likely to do so again during ‘mining boom mark II’.

At this stage of the business cycle, shortfalls or deficiencies in the quantity or efficiency of Australia’s infrastructure could also accentuate the development of inflationary pressures that are always a risk when our economy operates at close to ‘full employment’.

In the current political climate, infrastructure spending is a much more palatable option for governments than measures of the sort which dominated the reform agenda of the 1980s and 1990s. It involves spending money, provides politicians with a platform from which to deploy soaring rhetoric about ‘nation-building’, and gives them opportunities to open things in sensitive electorates at critical times. Infrastructure investment can be readily proclaimed in terms such as these from Treasurer Wayne Swan:

“Our historic investments in nation-building infrastructure are building productivity and capacity as our economy comes up the challenges of commodity boom mark II” (Swan 2010).

Yet a moment’s reflection on the history of major infrastructure projects in Australia (such as the Alice Springs to Darwin Railway) highlights that it is emphatically *not* the case - as the often seems to be assumed, or implied, by many in both Commonwealth and State government circles - that *all* infrastructure spending will generate productivity gains in the broader economy. The question of which *types* of infrastructure spending produce productivity gains needs more consideration.

There are strong arguments from a number of quarters about the decline in Australia’s capital stock. Engineers Australia’s regular report card on the fitness of Australia’s infrastructure for present and future purpose gives Australia a poor bill of health, with only one sector receiving an ‘A’ and a handful receiving a ‘B’ (and note that Tasmania is ranked last or next to last in every category except electricity).

This report card is widely cited, particularly by industry groups such as Infrastructure Partnerships Australia.

The American Society of Civil Engineers releases a similar report card in the United States, which fares even worse – the best sector being awarded only a C+ (and note Tasmania is at or near the bottom of the rankings on every sector except irrigation and electricity).

Moreover, in the most recent *Global Competitiveness Report* from the World Economic Forum, inadequate supply of infrastructure was cited as one of the most ‘problematic’ factors for doing business.

Australia ranked 34<sup>th</sup> in this report for the overall quality of its infrastructure, below Namibia, Slovenia and Estonia, amongst others.

Way back in 1989, economist David Aschauer of Bates College in New York famously pointed the finger at a lack of infrastructure investment as a major cause of the decline in the United States' productivity performance during the 1970s. His findings triggered a decade-long debate amongst American economists regarding the gains in private sector productivity fostered by public capital investment.

His argument has an intuitive attraction for policy: investment in infrastructure can increase the efficiency and efficacy of private investments in labor and capital stock. The simplest example is the truck and truck driver whose efficiency is undermined by congestion or other delays due to under-investment in roads.

Infrastructure can also deliver unexpected dividends through innovation and new products. Amazon is frequently cited – a 21<sup>st</sup> century giant whose business model is entirely dependent on high speed internet connections and an efficient postal service.

Politically, this research has become increasingly important. Within the last couple of months, the United States Treasury has released a glowing endorsement of President Obama's \$50 billion infrastructure spending plan:

“Research has shown that well designed infrastructure investments can raise economic growth, productivity and land values, while also providing significant positive spillovers to areas such as economic development, energy efficiency, public health and manufacturing” (US Treasury 2010).

But not all infrastructure spending is productive. National studies such as Aschauer's have tended to produce implausibly large estimates of productivity gains, which are not apparent in the disaggregated data.

On the other hand, a narrowly defined study may capture a local increase in economic activity produced by an infrastructure project which is simply the result in changed user preferences. For example, a new arterial road may attract clusters of economic activity from nearby regions, whilst having no impact on national productivity.

As another analyst has observed,

“It is important to distinguish investments in public goods which add to the productive capacity of the nation as a whole from those that simply provide advantages to some places over others” (Haughwout 1998).

Australia's infrastructure stock is not so dire that *any* capital spending will trigger increased productivity, despite the apparent instincts of some of our politicians.

Ideally, infrastructure spending programs should consider not only the relative merits of each stand-alone project, but also its implications for national and regional productivity.

But some of the implications of infrastructure choices are more difficult to capture in project-specific cost benefit analyses. The apparent benefits of a particular project may simply be the effect of drawing user and investment choices away from another region, or mode.

In infrastructure policy, consideration of long-run productivity is as important as stand-alone efficiency. As Treasury Secretary Ken Henry points out:

“Infrastructure assets are typically large fixed assets with significant capital costs; they take a long time to construct and are effectively irreversible. As infrastructure assets can also have important network features and generate significant positive and negative externalities, choices can lock-in; determining a network of transaction costs that then shape patterns of trade for a long time” (Henry 2010).

In other words: large capital projects have the peculiarity of locking in patterns of investment and user choices for a generation. For each project, the long-run effect on national productivity will be defined by a project’s impact on these choices.

Moreover, any individual project bears an unpriced opportunity cost for tying up capital that may have been more efficiently deployed elsewhere. There is even some interesting research that suggests voters in democratic systems tend to prefer these inefficiently large capital projects, due to their inability to make contracts with future voters, and ensure continuity of investment (Glazer, 1989). Infrastructure spending has the capacity to tie up both large amounts of capital and user and investment choices for an extended period of time.

This is a key point about the government’s proposed National Broadband Network, which will be the most expensive infrastructure project ever undertaken by an Australian government. I have no doubt that broadband is an ‘enabling technology’, and I would genuinely like to believe that the NBN will produce economic gains in excess of its purported cost, now put at \$37bn. But at this stage I have no idea whether that is the case, or whether the particular technology embodied in the NBN is the best available, or whether it risks locking Australia into a mode of broadband delivery that risks becoming obsolete quite quickly.

Incidentally, the estimated cost of the NBN is now only \$1 billion more than the cost of building 12 more Collins Class submarines for the Australian Navy. It’s an indication of the lack of critical scrutiny given to anything which falls under the heading of ‘defence’ or ‘security’ that this program has received far less attention than the NBN.

I like to say that success in infrastructure is not simply a matter of increasing spending, but also (and in some cases instead) one of getting the right spending in the right place and at the right time. This sounds perfectly obvious, but in practice we often run the risk of allowing planning to be driven by short-term bottlenecks, or by chasing funding opportunities. Or marginal electorates: as the vast difference in the amount of spending on the ‘national highway’ in Bass and Braddon, on the one hand, and Lyons or Franklin on the other, aptly demonstrates.

The consequences of getting the timing wrong can be a significant. Jerry Hausman at the Brookings Institute did some research in 1997 into the regulatory delay in approving the necessary infrastructure for mobile phones in the US: the technology had been sufficiently developed since the early 1970s, but the technology was not made available to US consumers until 1983, because of long delays in regulatory decision-making.

Hausman (1997) estimates the cost to consumers for this delay at billions of dollars per year. Perhaps even more important was the opportunity cost in terms of industry productivity.

The moral of this story is not that early and more infrastructure spending is better. In fact, this is a case where a clear regulatory framework would have allowed the private sector to make effective investments early. Instead, the delayed decision triggered expensive rounds of legal battles and intrusive revisions to regulation.

Last month, the *Weekend Australian* described a similar situation in Western Australia. In a particularly egregious example, excessive regulation seriously undermined the productivity of the state's road infrastructure.

"In one submission, trucking company Esperance Freight Lines described as a nightmare the then Main Roads WA system of breaking down the state's roads into 10 networks for which vehicle permits were needed according to the configuration of prime mover and trailer. Some of the company's prime movers operated on eight networks depending on the trailer being towed at the time, meaning drivers needed permits for all eight networks and had to carry 1652 pages of paperwork in the cab with them. It was only in May this year that the ridiculous regulations were changed" (*Weekend Australian* 2010).

A clear, efficient and pragmatic regulatory framework is crucial to fostering efficient infrastructure investment. Infrastructure projects tend to be subject to natural monopolies, and hence to controls on pricing and competition.

Even where the private sector bears a significant role in specific projects, infrastructure remains a question of public policy.

There remains large scope for improvement in prioritization: which requires that we examine the economic effects that we lock in with these sorts of large capital projects. Part of the difficulty in efficient prioritization derives from the fact that most of these effects are not given due consideration in the calculation of costs to taxpayers; nor are they represented in the prices communicated to users.

Therefore: the axiom for efficient investment which I mentioned earlier should be expanded: right place, right time, *and at the right price*.

A more comprehensive costing model makes some of the implicit choices and subsidies in building infrastructure more transparent. For example: a frequent complaint from the railway sector is that freight transported by road is implicitly subsidized by taxpayers, because trucks are not charged for the excess degradation that they cause to roads. By contrast, the cost of use for freight transported by rail is explicit, and is therefore communicated to its users.

The Productivity Commission (2007) didn't find this too compelling: its *Road and Rail Freight Infrastructure Pricing Inquiry* made the point that "overall rail does not even cover its operating costs". Nevertheless,

"when one mode is not paying all of its costs the most efficient solution is to remove the subsidy on that activity, that is, to ensure it pays its full costs. When dealing with external costs it is even more important to charge directly the activity responsible for the externality" (Productivity Commission 2007).

Pricing is also relevant in developing better risk management for infrastructure projects – which will be an important step in tapping Australia’s large pool of superannuation for infrastructure finance.

Risk transfer between the private and public sectors extends beyond the cost of capital associated with construction risk: many of the risks associated with profitable operation of a specific project are controlled by regulators. For example, the profitability of a toll road may be undermined by the approval of an alternative route at lower or no user cost.

New technology makes it increasingly feasible to communicate the costs of use to users. The easiest example is the ability to track truck and car use on a shared road via GPS, and to communicate the relative costs of their use. This is particularly interesting because of the potential to make better and more productive use of existing investments. If the cost of delaying other commuters is communicated to each road user, some commuters will choose to use the road outside of peak periods – ameliorating the productivity costs of congestion.

Sadly, it is unlikely that infrastructure prioritization will be resolved with changes to pricing systems and accounting standards alone. Large capital spending sprees – such as the one the federal government is currently engaged in – will lock in patterns of economic growth for some time. Almost certainly, there should be more attention paid to the patterns we are locking in.

Infrastructure Australia was founded two years ago, with the aim of providing this sort of prioritization at a national level. It is certainly a sound first step, and the body is still in its early days (assuming its funding is renewed).

At this stage however it appears to operate by assessing specific infrastructure proposals against its macro list of infrastructure priorities; including ‘a national broadband network’ and ‘creation of a true national energy market.’ This process lacks an important intermediary step. Whilst the projects presented might fit with our national priorities, there is no guarantee that they are the best or most efficient solution to the needs identified by Infrastructure Australia. For example, it seems possible that the ostensibly sound aim of a ‘national broadband network’ might have been better served by a different program than the one we have been presented with.

Private investment will always amplify the effect of our infrastructure decisions. More attention should be paid to the patterns of economic growth and trade that we are locking in.

This is not to suggest that the answer is more government intervention; the answer instead is likely to be more consistent and far-sighted regulation in order to foster more efficient long-term private sector investment. The energy sector would certainly benefit; and, as a corollary to this, so would transportation.

Let me conclude with some observations from a Tasmanian perspective. The most recent set of annual State accounts don’t paint an especially flattering picture of the Tasmanian economy. According to them, Tasmania’s real gross State product grew by just 0.4% in 2009-10, less than in any other State or Territory, and the worst outcome for Tasmania since 2000-01 (when real GSP fell by 1.5%) – although this came after a strong performance in 2008-09 when Tasmania’s growth rate was faster than any other State or Territory except WA and the Northern Territory.

Tasmania's relatively weak economic performance in 2009-10 was largely attributable to a fall of more than 25% in business investment (abstracting from the impact of transactions in second-hand assets), compared with a 4.4% decline in business investment on the mainland; and an 8.1% decline in international exports of goods and services, compared with a 4.5% increase in exports from mainland States and Territories. Household consumption spending was also fairly soft, growing by only 1.2% in real terms in Tasmania in 2009-10 as against 2.1% on the mainland.

It is of course an exaggeration to characterize this state of affairs as a 'recession', as others have done. A recession normally implies negative growth; and the annual State accounts don't show that. Nor do the quarterly State final demand figures released on Wednesday; on the contrary they show that Tasmanian State final demand rose by more in the September quarter than in any other part of Australia except for NSW and the ACT.

Neither do the labour market data support the contention that Tasmania's economy is in, or headed for, recession. Trend monthly labour force data show that employment has risen by 2.1% since troughing in November last year, while the trend unemployment rate has fallen by 0.8 percentage points since peaking at 6.2% in May of this year (the downward trend in unemployment being partly offset by a rise in the labour force participation rate as previously discouraged job-seekers re-enter the labour market).

However while these and other figures don't give any support to the idea that Tasmania might be in a recession, they do suggest that the key factors expected to drive growth in the national economy to an 'above-trend' pace in 2011 and beyond (business investment and exports) are largely passing Tasmania by.

The most recent (September) issue of *Access Economics' Investment Monitor* shows that Tasmania accounts for just 0.8% of all private and public non-residential investment currently under construction, committed, under consideration or possible, less than half Tasmania's (1.9%) share of Australia's GDP. And Tasmania accounted for just 0.2% of the total 'committed' investment expenditure at the time of that survey. (In passing, I acknowledge that outgoing Treasurer Michael Aird told the Legislative Council last month that 'the Government is aware of some potential investment, a sizeable investment, but some companies are not yet in a position to announce that level of investment' (Aird 2010)).

In some ways this is largely to be expected, given that mining accounts for a relatively small share of Tasmania's economy, while sectors which stand to be adversely affected by some of the side-effects of the 'resources boom' – including a strong exchange rate and higher interest rates – sectors such as agriculture, manufacturing and tourism, account for a relatively larger share of the Tasmanian economy than that of Australia as a whole.

There's not a lot which the Commonwealth Government can be expected to do, or indeed can do, to ameliorate these pressures, other than perhaps to use fiscal policy to shoulder more of the burden of restraining growth in consumption spending in order to 'make room' for increased business investment in a non-inflationary way (and thus take some of the pressure off interest rates and the exchange rate), and to continue to support the Commonwealth Grants Commission's role in redistributing GST revenue from the resource-rich States to other parts of Australia (including Tasmania).

Tasmanians should be particularly aware of the hostility towards the Grants Commission now being exhibited by the Western Australian Government, notwithstanding that WA has long (until recently) been a beneficiary of the Grants Commission's processes.

The most sustainable avenue open to Tasmania for minimizing the adverse impacts which the side-effects of the resources boom will have on Tasmania's economic performance (and the well-being of Tasmanians) is to improve the productivity of those of the State's industries and businesses which are most vulnerable to those side effects.

And here at least recent data provides some potentially good news. The upside of the relatively large downturn in employment in Tasmania during the 2009-10 financial year is that measured labour productivity in Tasmania grew quite strongly, by 4.6% (faster than any State except Western Australia), following a 3.4% increase (the fastest of any State or Territory) in 2008-09. Labour productivity is still lower in Tasmania than in any other State, but it is now up to 86.9% of the national average, the highest since 1998-99, from a low of 82.0% of the national average in 2003-04. Of course it remains to be seen whether this is merely a cyclical improvement – the result of lags between the cycles in output and employment – or a genuine and sustained improvement in Tasmania's productivity performance.

I've spoken many times previously of the negative impact which Tasmania's relatively low levels of educational participation and attainment have had on the State's productivity performance, and I don't propose to repeat those observations today.

However it is appropriate to note that Tasmania's persistently low productivity levels also owe something to this State's relatively poor and antiquated infrastructure. Even the most casual observer could hardly fail to notice the poor condition of Tasmania's major roads, with the exception of the Bass Highway between Launceston and Burnie, and the road to Hobart Airport. Someone who spent a little more time here would be appalled at the condition of the State's railway infrastructure, and the miniscule role it plays in moving goods, let alone people, around Tasmania. It's scandalous that people living in (or visiting) towns along Tasmania's east coast can't drink the water that comes out of their taps without boiling it first. I could go on (but I won't).

Part of the reason for this must surely be that Tasmania has invested a smaller proportion of its income in infrastructure than the rest of Australia.

That's particularly true of private sector infrastructure spending, which has declined as a proportion of gross State product over the past three years and in 2009-10 accounted for barely more than one-quarter of the share of GSP that it did across Australia as a whole (and note that in compiling these figures I have excluded spending on 'heavy industry' from the total).

And while infrastructure spending by or for the public sector represents a larger share of GSP in Tasmania than it does of GDP for Australia as a whole, the margin of only 0.4 percentage points is substantially smaller than the 5 percentage points by which Tasmanian State government operating expenses as a proportion of GSP exceeds the average for all States and Territories – especially when one considers that some of the more important infrastructure responsibilities, notably electricity generation and retailing, remain totally in public sector hands in Tasmania, unlike the situation in many other States.

It thus seems probable that there is considerable scope for well-targeted infrastructure investment to make an important contribution to improving Tasmania's productivity performance, and to that end the State Government would be well advised to re-weight the expenditure side of its Budget away from recurrent spending towards more spending on infrastructure.

However as with the rest of Australia, it is crucial that whatever infrastructure investment does take place is the *right* infrastructure, in the *right* place, at the time and accessible at *sensible* prices – and of course supported by robust cost-benefit analysis. 'State-building' for its own sake is no more defensible, and no more likely to boost productivity, than projects which have as their sole rationale the vague and woolly concept of 'nation-building'.

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