Ultimate funding options

According to this inquiry's *Terms of reference*:
"Ultimately infrastructure can only be funded through taxation, borrowings or direct user charges."
Technically that is incorrect, as there is a fourth possibility: the government can simply print the money to fund the infrastructure. That option is typically ignored because of inflation fears, though it is far less inflationary than most people think. In practice there is so little difference between printing money and borrowing money that there is really no point in including it as a separate policy option, but it is mentioned here to highlight an extremely important point: **if the deflationary effect of the infrastructure (from the productivity gains it brings) exceeds the inflationary effect of printing the money to fund it, the infrastructure effectively costs nothing.**

Financing inefficiency

State governments have large debts and are typically more worried about their credit ratings than they are about infrastructure. In order to maintain a healthy credit rating, state governments have resorted to two sorts of false economies: underspending and inefficient PPPs.

Underspending is mostly self explanatory – governments fail to provide the infrastructure that will solve a problem. The results of that include congestion in cities and an electricity supply that is unreliable, expensive or inadequate for new developments. But underspending can also involve building infrastructure with inadequate provision for future requirements. The classic example is Adelaide's Southern Expressway, which only carries traffic in one direction at a time. Although it was always planned to duplicate it eventually, no provision was made for that in the bridges crossing it, hence its duplication works have been very expensive and disruptive.

The problem of inefficient PPPs is largely (though not entirely) the result of governments (and ratings agencies) assuming the problem to be the debt figure rather than the ability to pay it. Hence in an attempt to keep the cost of their existing debt low, they pay far more for new infrastructure than they would with conventional debt financing. This doesn't mean there isn't a role for PPPs, but financing infrastructure from an expensive private source is unlikely to be the best way to keep the risk in the private sector.

RBA spending and economic misconceptions

There is great potential to bypass the inefficiency of private sector funding and the credit ratings obsession of state governments by enabling infrastructure to be financed by borrowing directly from the Reserve Bank. However in order to do so it may be necessary to refute some of the misconceptions that are common among the public, politicians and even some economists. The best way of doing so is likely to be by open public debate so everyone can see the evidence, as this

method will best enable any policy based on it to survive a change of government. Four myths in particular are likely to need addressing:

Myth 1: printing money is sufficient to cause hyperinflation.
In reality that problem only exists for countries with pegged currencies, large sovereign debt levels or an inadequate taxation system (or in Zimbabwe's case, a government that treats its biggest export industry as the enemy).

Myth 2: Governments should always source their money from bond markets because in a crisis it enables them to avoid financial disaster by defaulting.
The obvious problem with that claim is that the prospect of default would cause a far bigger crisis.

Myth 3: fractional reserve banking means that every dollar borrowed from the Reserve Bank gets multiplied several times by commercial banks.
In reality the amount commercial banks lend is limited not by deposits or reserves, but rather by the capital requirements of the Basel Accords, and also by their ability to lend profitably.

Myth 4: Public funding is more inflationary than private funding
The ability of commercial banks to lend to and borrow from the RBA means that there is at most only a small difference. The fact that commercial banks source some of their funding in foreign currencies (wheras the government sensibly doesn't) means that private funding may be slightly less inflationary in the short term, but as it increases the dollar's short term value, making exports less competitive, this is not something that should be encouraged.

Appropriate interest rates

The way infrastructure costs and benefits are currently calculated is terribly biased towards doing nothing or too little because they use an inappropriately high discount rate. The worst recent example has been the NBNCo Strategic Review Final Report, which used a discount rate of 8% (despite the RBA cash rate being only 2.5%) to contrive the conclusion that FTTN was better value for money than FTTP. Their excuse for using such an absurdly high rate was that other companies in the industry use a higher rate. But that is because other companies in the industry have higher finance costs, need to make a commercial return on investment, and have to price in risk – and after the communications bubble of the early 21st century they are understandably risk averse. A great advantage of the public sector is that these sorts of funding inefficiencies can be bypassed, but this advantage is being ignored.

The official RBA rate should be the maximum rate used to calculate whether infrastructure is worthwhile. But it should always be kept in mind that the RBA's purpose in setting interest rates is to balance economic growth with the inflationary effects of spending money. Therefore if it can be demonstrated that spending on constructing infrastructure will have a lower inflationary effect than general private sector spending, a lower discount rate should be used to

calculate the effectiveness of the infrastructure spending, and the RBA should lend the money at a correspondingly lower interest rate.

There are two situations where infrastructure spending will have a lower inflationary impact than general private sector spending. The first is if there is a direct deflationary effect from provision of the infrastructure. For instance, upgrading the Adelaide to Melbourne railway to accommodate double stacked container trains would substantially cut the cost of freight transport on that route. The second situation is in areas where the unemployment rate is high. Spending that employs people who would otherwise be unemployed is far less inflationary than competing against other employers for workers. These differences can not normally be controlled by varying interest rates because the government does not control where the private sector spends its money. But this limitation does not apply to infrastructure spending – most of which is directly under government control and the rest of which is subject to government approval.

Engineering skills shortage

The *Issues paper* for this inquiry rightly acknowledges a shortage of civil engineers. But demand depends on experience, so from a graduate engineer's perspective the opposite problem exists – the barriers to entry are so high that some have quit the industry completely while others are reliant on Centrelink. Because so much depends on tenders (which are hard to win at the best of times) the prospect of future income is uncertain, therefore small engineering firms are often reluctant to take on more staff, and starting a successful engineering business is very difficult. This could be one of the reasons for the lack of competition that the *Issues paper* mentions. There needs to be some way of making work available to engineers without significant barriers to entry. Crowdsourcing scrutiny of infrastructure plans and studies could be a very effective way to address this problem, but more importantly it would solve an even bigger problem.

The need for scrutiny

The lack of scrutiny of infrastructure plans and reports has had terrible repercussions in many parts of Australia. Billions of dollars have been wasted by failure to recognise the most efficient solutions. In South Australia the Southern Expressway duplication included an unnecessary extra northbound lane, and the South Road upgrade plans are grotesquely overengineered because the potential of rail based solutions is being ignored. Meanwhile the second busiest railway was closed for almost a year, partly due to a botched electrification and resignalling program, but also to construct an underpass that would not be needed if the railway line that is really needed (the Adelaide Hills Freight Bypass) were constructed.

The Adelaide Hills Freight Bypass would enable trains to completely avoid the suburbs. Not only would that solve the substantial noise problems from freight trains negotiating the tightly curving track through the Mount Lofty Ranges, but

it would also cut the cost of running trains (as the gentler gradients would reduce motive power requirements) and make upgrading the line to accommodate double stacked containers much easier. Yet the case for building the line is has largely been ignored since the Adelaide Rail Freight Movements study unfairly rejected the case for building it. Despite the study being conducted by a very well respected engineering firm (GHD) its methodology was extremely shoddy. The study's report does acknowledge (on page 38) that their calculated social benefits outcome is largely the result of noise costs being estimated according to train kilometres travelled rather than the severity of impost on local residents. Yet it ignored the obvious implication that such figures are worse than useless, and instead attempted to justify their use. In the sensitivity analysis it tested the result of deeming the impact of noise in urban areas, but no explanation was made of why its authors thought noise affecting thousands of people had only ten times the impact of noise affecting cropland. The same sensitivity analysis was reported as showing that a lower discount rate would worsen the case for building it and a higher rate strengthen it, despite common sense indicating it is obviously the other way round.

The problem is not confined to economic infrastructure either - the Royal Adelaide Hospital is being moved to an inferior location because Durrow Health Services Management (a company with a history of downplaying the potential to upgrade existing hospitals) managed to convince the state government that a public private partnership to build a new hospital would be good value.

Lest anyone think the problem is peculiar to SA, bad value PPP deals are becoming common nearly everywhere. One of the worst is in NSW where, partly due to an incorrect claim regarding the relative performance of single and double deck trains, the North West Rail Link is planned to be operated with single deck trains – despite the route's characteristics strongly favouring double deck trains. The loss of interoperability depriving passengers of a direct ride to the CBD and threatens to cause severe overcrowding problems when it opens (which would probably force immediate spending on a rail tunnel beneath Sydney Harbour, whereas double deck trains could easily share the track across the Harbour Bridge for several years).

Requirements for crowdsourcing

In order to crowdsource scrutiny of infrastructure plans and studies, the first requirement is transparency. Currently, state governments in particular like to keep the public in the dark, using the excuse of "commercial in confidence" to cover up bad deals, and the excuse of "cabinet in confidence" to keep unpopular plans secret. Obviously these tactics are incompatible with crowdsourced scrutiny, but regardless of that, they're always undesirable. No federal assistance should be given to fund or finance any infrastructure project where the details are kept secret (with the rare exception of details with national security implications, and the obvious temporary exception of things subject to ongoing negotiation which would remain commercial in confidence until those negotiations are complete).

The second requirement for crowdsourcing is a procedure. Preferably the same procedure in all states regardless of whose infrastructure it is.

The third requirement is a financial reward for identifying errors, omissions and unrealistic assumptions in infrastructure plans and reports.

A potential fourth requirement (not absolutely necessary but highly desirable even without crowdsourcing) is to make as much information about past projects available as possible so that everybody can learn from all past successes and mistakes.

Coordination between projects

Another way of cutting the costs of infrastructure projects is to coordinate the timing of different projects. There are several different reasons why this could increase overall efficiency:

Firstly, one infrastructure project may make another unnecessary. For example, high speed rail to Melbourne Airport would remove the need for a conventional railway to Melbourne Airport.

Secondly, two infrastructure projects could combine to do something that is uneconomic for either project alone. For example, the Sydney Harbour Bridge could be modified to accommodate a high speed railway and a suburban railway beneath the main deck but still within existing clearances.

Thirdly, even where projects are viable alone, savings can still be made by combining them. Examples include the railways and freeways constructed together in Perth.

Fourthly, some infrastructure projects are much more productive in their late stages than earlier on. By treating one project as a continuation of an earlier project it should be possible to benefit from efficiency gains during the first project. For example, it usually takes a long time for a tunnelling crew to discover how to get the best out of a tunnel boring machine, so if there are any other plans for tunnels of similar size to be constructed in similar geological conditions, it makes sense for the plans to be brought forward to enable the same crew and machine to be used.

And fifthly, it may be possible for one project to utilize the waste product of another. For instance, tunnel spoil may be useful in a construction project.

Summary of recommendations

- **A procedure should be set up to enable money to fund infrastructure to be borrowed directly from the Reserve Bank**
- **This may require some economic myths to be refuted**
- **The interest rate for funding from the RBA (and the discount rate for cost benefit analyses) should normally be equal to the RBA cash rate, but should be lower where it can be shown that the infrastructure would have a lower inflationary impact than private sector spending.**
- **Scrutiny of all publicly funded infrastructure projects should be crowdsourced**
- **Crowdsourcing scrutiny requires transparency, a procedure (preferably a uniform one), a financial reward for identifying errors, omissions and unrealistic assumptions in reports and plans**
- **As much information as possible should be made available about past projects so that everybody can learn from all past successes and mistakes**
- **Coordination between projects has great potential to increase overall efficiency**