

# Productivity Commission Inquiry into Public Infrastructure

---

## Supplementary Submission on the Economics of Capital Recycling

**Professor Henry Ergas**

**4/1/2014**

\*The views expressed in this submission are provided in a personal capacity by the author and do not represent the views of any organisation.

1. This Supplementary Submission examines some economic aspects of the practice now commonly referred to as “capital recycling”. These matters are discussed in the Productivity Commission’s Draft Report on Public Infrastructure at pages 206 and follows of volume I.
2. The aim of this Supplementary Submission is to elaborate on material I presented in my initial Submission to this Inquiry. In that initial Submission, I suggested it would be rational for governments to act as if they face capital rationing. I examine this contention in greater detail below and discuss its implications.
3. Consistent with my initial Submission, I argue that there are factors that can make “capital recycling” economically efficient. Those factors include:
  - (a) Constraints, rooted in principal-agent problems, on the absolute size of governments’ balance sheets, and notably on the level of their gross liabilities;
  - (b) The potential for a resulting inability to fund worthwhile projects through an expansion in gross debt;
  - (c) The fact that some worthwhile new infrastructure projects do not lend themselves to being structured as concessions, as well as the high costs that can be incurred in securing private finance when projects are at early stages of their lifecycle;
  - (d) In contrast, as projects mature, the transactions and governance ratio of structuring projects as concessions may fall, while the ratio of privately appropriable benefits to total social benefits rises;
  - (e) To that extent, efficient management of the public sector’s infrastructure balance sheet would involve undertaking and directly financing new stage projects while disposing of some projects that approached maturity;
  - (f) Obviously, that in no way detracts from the need for proper project appraisal and for overall improvements in the management of public sector balance sheets, as discussed in my earlier Submission and emphasised in the Productivity Commission’s Draft Report.

## Background

4. Economic appraisal of infrastructure projects is inherently complex. Causes of that complexity include:
  - (g) the difficulties involved in forecasting demand, and in translating demand forecasts into a measure of society's willingness to pay for an infrastructure asset;
  - (h) uncertainties about the costs of infrastructure projects, especially those that are relatively large-scale, and about how long a project will take to complete; and
  - (i) technically difficult, and at times contentious, issues about factors such as the treatment of risk and the determination of the opportunity cost of capital.
5. Combined, those factors create a risk of error in evaluation and/or prioritisation. Moreover, the selection of infrastructure projects attracts political attention, as electorates value those projects both because of the services infrastructure provides and because of the economic activity they generate. The result can be to distort infrastructure decision-making away from the projects with the highest social value.
6. What is meant by saying that a project has high social value can be given a more rigorous definition. Generally, an infrastructure project is worthwhile if its expected rate of return exceeds the appropriate 'hurdle' rate or the 'social rate of discount'; alternatively but equivalently, if the project is projected to yield a stream of benefits with a present value in excess of that of its costs of investment and operation. Simplifying somewhat, assessing whether that condition is met involves:
  - (a) Estimating the flow of benefits from the project over its life-time. Those benefits include the benefits that accrue directly to its users, as well as any indirect benefits the project yields to society more generally. For example, a new road link may provide travel time savings to those who use the link and also reduce congestion on other roads.
  - (b) Estimating the costs of the project over its life-time. These costs include the costs of constructing and operating the project and any indirect costs the project imposes. For instance, the new road link may not only involve costs of

construction and operation but may also generate noise or harm the local environment.

- (c) Discounting the difference between the stream of benefits and that of costs to the present, using a discount rate that reflects the cost to society of making capital available to the project. That discount rate will reflect both the cost to society of foregoing immediate consumption (the 'pure rate of time preference') and the riskiness of the project.
- (d) Examining whether the present value of the net benefits so discounted is positive. If it is, the rate of return on the project exceeds the opportunity cost of capital and the project, if it is undertaken, will add to society's wealth.

### **Constraints on funding infrastructure projects**

- 7. Even if projects are worthwhile in the sense defined above, funding constraints may prevent them from proceeding. To explain those constraints, the following discussion first examines the role of public sector borrowing and then of private finance.
- 8. Historically, public sector borrowing has been the primary source of infrastructure finance in Australia. However, even a summary account of the history shows it has never been entirely unproblematic.
- 9. The Australian Colonies began borrowing on their own account on the international market in the 1850s, mostly to finance the construction of railways. By the 1880s, they absorbed almost three-quarters of the portfolio investment that passed through the formal British capital markets. However, lending collapsed in the 1890s, and loan servicing put a severe strain on the Colonies' public finances, durably slowing overall economic growth.
- 10. Those strains became even more acute following the formation of the Australian Commonwealth, as the Federal Constitution deprived the States of their main tax sources, customs duties and excises. So as to ease the resulting pressures, the Constitution allowed the Commonwealth to take over State debts as of 1901; section 105A (inserted in 1929) extended that to all State debts, by agreement. A voluntary Loan Council, formed in the early 1920s to 'coordinate' borrowing and thus lower the States' borrowing costs, was formalized under the Financial Agreements Act of 1928. Through it, the Commonwealth imposed limits on State

borrowing; and made grants to assist the States meet interest payments and contributions to the National Debt Sinking Fund. The Loan Council remit was extended in 1936 to cover semi-governments and local authorities.

11. In partial recompense for the States' loss of their main revenue base, the Commonwealth made revenue grants to the States, which in the 1910s and 1920s came as equal per capita payments. State finances, which had suffered from the increasing competition of road transport with their railways, were severely harmed during the Great Depression, as loan funding dried up, increasing the states' dependence on the Commonwealth. In 1942, the lasting blow was the Commonwealth's assumption of the income tax.
12. After World War II, the Commonwealth's fiscal dominance allowed it to underwrite State borrowing, which reduced the interest rate to be paid, but brought State borrowing under tighter central control. However, the States found ways to circumvent Commonwealth borrowing restrictions, so in 1984 the Commonwealth imposed 'Global Borrowing Limits' on the States and their instrumentalities.
13. By 1993-94, financial innovations had so eroded the Loan Council system as to make it ineffective. With the expiry of the mandatory provisions of the 1928 Agreement, a shift was made to a system in which the States could borrow essentially as they chose, subject to the discipline of credit (and more broadly, financial) markets. As the crises caused by Tri-Continental, Pyramid Building Society and the State Bank of South Australia attest, the States did not always wisely use their new freedom to borrow; nor did capital markets seem to rate State debt correctly. More generally, there seems to have been excessive investment in electricity generation and elsewhere and a degree of inefficiency in operation that the Hilmer report on National Competition Policy was designed to correct.
14. The advent of the GST (in 2000) temporarily relaxed the fiscal constraints on the States but it also reduced their direct control over their revenue base, introducing new risks into their borrowing. In the financial crisis, that started in 2007-08 (the "Global Financial Crisis"), the Commonwealth temporarily guaranteed State debts. Due to 'quantitative easing' in the United States and Europe, a prolonged period of slow growth in the advanced economies and an increased demand for 'safe haven assets', some official interest rates fell to historically-low levels. Although the burden of debt servicing was nothing as severe as that of the 1890s or 1930s, a high credit

rating became more valuable, as the crisis had made international capital markets far more risk averse. However, even States with high credit ratings had greater reason than ever to be careful about incurring more public debt: experience in Australia and overseas shows those ratings can, and in some instances have, fallen rapidly, substantially increasing debt service costs and constraining otherwise worthwhile public expenditure.

15. In short, the Australian experience with public borrowing has always involved a tension between the desire to fund long-term investments and the constraints imposed by borrowing capability and by the risk of adverse economic shocks. As that tension plays itself out, it has not been uncommon for governments to find themselves in a position where projects believed to be worth pursuing could not be accommodated within prudent borrowing constraints.
16. From an analytical perspective, that tension is in many respects unsurprising, even if it leads to a situation where governments cannot or do not borrow to fund projects whose social rate of return is above the hurdle rate for public investment. There are, in effect, sound reasons for each of lenders, taxpayers and governments as borrowers to be concerned not merely about the merits of individual projects but also about aggregate levels of public borrowing.
17. Specifically:
  - (a) *Potential lenders* are concerned about the aggregate size of public borrowing, relative to the government's revenue base, because:
    - (i) that aggregate size indicates the extent of the liability for repayment;
    - (ii) cyclical fluctuations and other adverse shocks may adversely affect the capacity to pay out of ordinary revenues;
    - (iii) raising taxes in the event of such adverse shocks may be economically costly and politically difficult; and
    - (iv) it may also be difficult to undertake asset sales in such an event, and the value of many state assets is uncertain and difficult for bondholders to evaluate.

- (b) *Taxpayers* themselves may want to limit the aggregate size of public borrowing, as:
  - (i) they bear ultimate liability for that borrowing;
  - (ii) in the event of government needing to raise revenues so as to service that borrowing in a period of economic difficulties, that would impose high costs on them; and
  - (iii) they find it difficult to ensure governments only invest in high quality assets.
  
- (c) Finally, *governments* too may want to limit the aggregate size of their liabilities because:
  - (i) that gives them room to borrow in the face of unanticipated adverse shocks, thus avoiding socially painful and disruptive reductions in outlays;
  - (ii) restraint signals to voters and lenders their commitment to fiscal responsibility and to prudent expenditure – particularly, current governments cannot bind future governments not to engage in actions and policies that weaken government capacity or willingness to service the loan;
  - (iii) by not borrowing to fund all otherwise worthwhile projects, governments allow an appreciable margin for error or bad luck and leave themselves the scope to fund unexpected opportunities that may arise (such as new, but currently unanticipated, highly worthwhile projects); and
  - (iv) while the Commonwealth might ‘bail out’ a State that got into difficulty, perhaps under the provisions of s.105A of the Federal Constitution, experience shows that is uncertain and where it occurs, politically and economically costly.

18. The net result is that it may be desirable, from the point of view of lenders, taxpayers and governments themselves, for governments to be subject to a degree of ‘credit rationing’. There may, in other words, be constraints on the absolute size

of governments' balance sheets, and on their ability to expand those balance sheets so as to finance economically worthwhile projects.

19. In principle, those constraints could be relaxed by relying on private financing. At least as far as transport infrastructure is concerned, private funding generally occurs within the framework of concession contracts, which cede to a private operator the right to construct, maintain and operate an infrastructure asset, along with service obligations.
20. These concession contracts are often referred to as "public private partnerships", which is a form of project finance. The distinguishing feature of PPPs is that the private entity to which the concession is allocated has an equity stake in the project and consequently claims all or a share of the net income the project generates.
21. In most cases, the entity's costs (including the capital costs of the asset) are intended to be recouped through user charges, such as road tolls, though there are instances in which those charges are supplemented or replaced by public subsidies, for instance, on a 'shadow toll' basis, which involves the payment of a subsidy per vehicle using a road. Payments similar to shadow tolls have been used in PPPs for social infrastructure (such schools, hospitals and jails) including through so called "availability payments", which compensate the investors through a periodic payment for making the capacity available.
22. Where infrastructure is privately funded, the risks associated with eventual cost recovery may be borne entirely by the venture, or may to some greater or lesser degree be underwritten by government, i.e. by taxpayers. When they are placed on taxpayers, those risks amount to a contingent liability that will weigh on a government's fiscal position. The greater the degree to which government bears the cost-recovery risk, the greater the degree to which the concession is effectively financed by taxpayers.
23. There are limits on the reliance that can be placed on concession contracts, and hence on private financing.
24. To begin with, not all infrastructure assets are readily severable, in the sense of having well-defined boundaries and associated service requirements. For instance, unlike major point-to-point links (such as motorways), densely meshed urban road networks cannot readily be broken down into discrete components that could be

converted into concessions; and even if they could be disaggregated in that way, it would not usually be efficient to vest the ownership, management, operation and expansion of the various segments of such a network in different hands. Allowing the concessionaire in each segment to set charges for road use would likely only add to the inefficiencies, as those charges could not be relied upon to optimize use of the network as a whole. Last but not least, the contracts required to manage such a concession in a manner consistent with the public interest would almost certainly be extremely complex, highly costly to develop, and vulnerable to various forms of abuse.

25. Additionally, the development, tendering out and administration of concession contracts typically involves substantial costs, making those contracts less useful for dealing with small scale projects, such as the ongoing maintenance of widely dispersed road networks or upgrades to assets such as bridges. Those projects may be, and typically are, more efficiently contracted out, which means that the public sector retains responsibility for financing the project but has the work undertaken by a private entity.
26. Finally, recent experience with some major PPPs, including the Cross-City and Lane Cove tunnels in Sydney, may have affected the willingness of private investors to finance the initial construction and operation of large-scale infrastructure assets. In particular, the large losses incurred on those projects could be expected to increase the rate of return private investors require, at least for projects with highly uncertain patronage and difficult to predict construction timelines and costs. In turn, higher required rates of return imply higher project costs.

#### **“Capital recycling” and infrastructure investment**

27. The mere fact that private investors demand higher returns so as to compensate for project risks does not imply that the project should instead be undertaken relying on public financing.
28. After all, simply shifting risks on to taxpayers does not eliminate them – in itself, it just transfers the risks from one set of parties (private investors) to another (taxpayers). It is if and only if government is better able to bear those risks or to capture the relevant returns that such a transfer will be justified.

29. It would be a mistake to assume that condition will always be met: indeed, there are many cases in which governments do a poorer job of bearing and managing risks than does the private sector. That said, there are circumstances in which governments can carry risk at lower cost than could the private sector. Examples of those circumstances include:
- (a) *Sovereign risk*: If initial patronage on a roadway is significantly affected by other government decisions (say about the expansion of alternative routes, or more broadly about land use planning), shifting the patronage risk onto government ensures it faces the full consequences of its decisions. In contrast, when such a roadway is funded and operated as a PPP, investors in that PPP will need to be compensated for the sovereign risk to which they are exposed, and governments – because they do not bear the full cost of their decisions – may not take those decisions efficiently.
  - (b) *Risk pooling*: It may be that the government, because it holds a wider portfolio of (say) roads, will be best placed to pool the patronage risk associated a particular segment of the road network. All else equal, the government’s risk-bearing costs will then be lower than those of a PPP limited to that link.
  - (c) *Benefit capture*: Finally, compared to a private owner, the government’s taxing powers may mean it can more readily capture the benefits associated with a new infrastructure asset, for instance because it ultimately secures those benefits over a wider base of activity (the entire State economy, say, rather than just the specific road link) and additionally, because it values those benefits even when they do not accrue to the government as such but to the electorate. The ability to tax over a wide base can reduce risk (as it effectively pools the risk of the project with the risk facing the economy more widely) though that needs to be assessed taking account of the efficiency costs of taxation (discussed below).
30. The relevance of these factors may vary over time, and with them, the ratio of potentially privately appropriable benefits to aggregate social benefits. In other words, the transactions and governance costs involved in structuring contracts under which the assets could be privately managed would fall as a project matured, while the benefits of so doing remained significant. Among those benefits would be

relaxing the overall constraint on the ability of the public sector to undertake worthwhile new projects.

31. For example, it could be that government is best placed to manage initial patronage risk on a major new arterial link, including by adjusting tolls, while still securing commercial efficiencies by contracting out the project's design and construction. However, once the uncertainties associated with patronage and construction cost are resolved or reduced, private owners may be better able to manage the road's ongoing operation, for instance because their dependence on toll revenues strengthens their incentive to ensure prompt road clearance in the event of disruptions, to properly schedule maintenance and to expand capacity as demand grows. Moreover, once demand and costs stabilize, it becomes easier to identify the appropriate level and structure of regulated tolls. To that extent, it would be efficient for the government to undertake the project initially and then convert it into a concession at a later date.
32. Equally, and perhaps even more importantly, it may be that in the initial stages of a project, the benefits it yields are not only difficult to predict but diffuse. Some of those benefits, for example, may translate into gains in land values that are not directly adjacent to the project but indirectly linked to it – for instance, because the project relaxes a transport constraint whose major effects are felt up- or downstream. Through their taxing powers, governments may be best placed to capture these diffuse and indirect effects. Conversely, as patronage stabilises, and the project's effects become clear, the ongoing impacts may be more readily privately appropriated.
33. As the ratio of potentially privately appropriable benefits to aggregate social benefits rises, the case for retaining the infrastructure in public ownership weakens.
34. This type of portfolio management, in which the government carries out projects and then disposes of them, possibly using the proceeds to fund new investments, is referred to as 'capital recycling'.

## **Conclusions**

35. In short, as foreshadowed in my initial submission, "capital recycling" can be a rational response to agency problems that lead to governments being capital rationed.

36. That in no way weakens the need for proper project appraisal. Projects should only be funded and undertaken – be it through “capital recycling” or by other means – when there is a high degree of confidence that their benefits exceed their costs, including the opportunity cost of using the funds for other purposes (such as reducing debt or lowering taxes).