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Improving public infrastructure contracts with the private sector: Lessons from the Cross-City Tunnel

Submission to

NSW Parliament's Joint Select Committee on the Cross City Tunnel

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Summary

- Infrastructure policy should deal with both physical infrastructure such as roads, electricity supply systems and ports. and social infrastructure such as schools and hospitals.
- One way or another, consumers and taxpayers, as a group, must pay for the goods and services they collectively use. The decision to invest in public infrastructure inevitably involves an increase in the level of public debt.
- Hypothecating revenue from special-purpose taxes and charges may be an appropriate way of financing infrastructure
- Governments in Australia and overseas have seen private financing as a way of delivering infrastructure without incurring public debt. This idea is false. There is no 'magic pudding' in private finance.
- The dangers of shifting debt off the balance sheet are illustrated by private-sector examples such as Enron.
- Problems of infrastructure policy are exacerbated by vertical fiscal imbalance between the Commonwealth and the States
- Proposals for private infrastructure investment in the 1980s and early 1990s were motivated by a desire to reduce measured levels of public debt. This apparent reduction was entirely spurious.
- In general, first-generation private infrastructure projects resulted in a higher cost to the public than would have been the case with standard public procurement.
- First-generation private infrastructure projects have largely been replaced by Public-Private Partnerships (PPPs)
- The official basis for PPPs is to achieve value for money through optimal risk allocation. In practice, however, the desire to avoid public debt, or to implement projects that would not be approved the associated increase in debt were taken into account, remains an important political motive for adopting the PPP approach
- The term 'partnership' is misleading. Although the public partner is committed

to the deal, private parties can and do on-sell their interest or walk away from failed projects. Hence the notion of shared understanding implicit in the term 'partnership' is not applicable to PPPs.

- The long-term nature of PPP contracts is, in most cases, inconsistent with standard principles of risk allocation and contract design. Contracts for operational services should, in general, have a term of no more than five years
- The allocation of demand risk to private parties in PPP contracts is, in most cases, inconsistent with standard principles of risk allocation. The public partner has most capacity to influence demand and should bear the associated risk
- The allocation of systematic risk to private parties takes no account of the lower cost of risk capital for government borrowers
- PPP contracts are, in general, desirable only in special cases. They should not play a major role in infrastructure provision.
- The Cross-City Tunnel contract shows that many of the problems evident in private provision of infrastructure for more than a decade have not been resolved
- It is desirable, on the one hand, that a range of models for contractual relationships between the public and private sectors should be available, and that there should be sufficient scope to allow for beneficial innovation.
- Where PPP contracts are used, the inclusion of put and call options enabling the termination of the contract by either party after, say, five years would increase the transparency of the process.

Improving public infrastructure contracts with the private sector: Lessons from the Cross-City Tunnel

Problems associated with inadequate investment in physical and social infrastructure have received a good deal of attention recently, along with skill shortages that have been attributed to inadequate investment in human and social capital. Areas of particular concern have included transport infrastructure (notably ports and urban rail), electricity and water supply systems and social infrastructure such as health.

Public-private partnerships (PPPs) have been widely adopted in Australia, in part because they are seen as a source of additional funds for infrastructure investment and in part because they are seen as providing better value for money than alternative modes of procurement, essentially because of superior risk allocation.

In this submission, it will be argued that, although the idea of PPPs as a source of additional funds for infrastructure investment has been repeatedly discredited, and disavowed in official policy statements, it remains influential and continues to distort public policy. On the second point, it will be argued that most of the claimed advantages of PPPs can be achieved through a modernised version of public procurement, allocating construction and some maintenance risk to a private construction, dealing separately with operational risks and retaining demand and macroeconomic risk through public ownership.

What is infrastructure ?

The term 'infrastructure' is commonly restricted to physical infrastructure such as roads, electricity supply systems and ports. However, investments in social infrastructure through schools, hospitals and the like share many of the characteristics of physical infrastructure and compete for resources with physical infrastructure.

Paying for public infrastructure

One way or another, consumers and taxpayers, as a group, must pay for the goods and services they collectively use. In the case of marketed goods and services, individual consumers typically bear the cost of their own consumption (though there may exist discounts and cross-subsidies). Public services are normally provided through taxation.

Some important areas of infrastructure, notably including electricity gas and water provide marketed services. For such services, the issue of financing is handled through prices, and the main concerns relate to regulation of monopoly prices.

User charges for transport infrastructure typically represent an intermediate case, since they are not closely related to the value of the good or service being used. In the case of roads for example, users pay through specific road user charges such as vehicle registration, some component of fuel taxes and general taxes. In addition, users in some parts of the system are required to pay tolls while users in other parts of the system are not. Thus tolls are more akin to a tax (in the Australian context, usually an arbitrary tax) than a market price. The discussion in this paper will deal primarily with public infrastructure that is financed by taxes, including quasi-taxes like tolls and user charges.

The key feature of infrastructure is that in involves assets that provide services over a long period of time. To any such asset is associated a liability to make the corresponding payments, that is a commitment of capital and therefore a debt[1]. In one form or another, the decision to invest in public infrastructure inevitably involves an increase in the level of public debt.

No magic pudding

Governments in Australia and overseas have seen private financing as a way of delivering infrastructure without incurring public debt.

This idea is false, but has survived repeated exposure and reputation over

[1] This summary disregards, for the moment, the distinction between debt and equity, classing all capital obligations as debt.

the past decade or more. Infrastructure services must be paid for, either through taxes or charges. If neither users nor taxpayers are willing to pay, then the services should not be provided.

The Secretaries of the Victorian and New South Wales Treasuries, both supporters of the idea of PPPs, have explicitly repudiated the idea that Public Private Partnership projects represent a way of funding infrastructure without incurring debt. On the contrary, it has been stated: that

> both NSW and Victoria do not regard the use of private finance or public private partnerships as a means of expanding the overall level of resources available to it to spend on government-funded social infrastructure. Even though social infrastructure may be *financed* by the private sector, the government, through payments made through the contract's life will ultimate *fund* it. These payment commitments are as real as those associated with servicing balance sheet debt and in the context of a government's fiscal strategy, need to be considered in a similar manner.

The key point, put more succinctly, is that Public Private Partnerships are

> not a magic pudding ...PPPs/PFIs do not provide governments with an additional bucket-of-money for use on infrastructure projects.

Enron and off-balance sheet debt

Governments are not the only institutions with a desire to minimise their recorded debt or a belief that financial innovation is the way to achieve this outcome. Before its recent spectacular bankruptcy, the Enron corporation was nominated by Fortune magazine as 'America's most innovative' for six years in succession. It grew rapidly to be the No 7 firm in the Fortune 500 (in terms of reported revenues) in 2001.

Enron attributed its success to two basic principles. The first was an 'asset light' approach. Whereas traditional energy businesses owned power stations,

pipelines and transmission systems, Enron believed that a modern corporation should not be in the business of owning assets. This business was best dealt with through contracts with private partners (what might be called corporate-private partnerships)

The second principle was that of financial innovation. Enron's army of lobbyists were vociferous in their claim that private-sector innovation would yield outcomes far superior to those achieved through public sector regulation, let alone public ownership. In particular, Enron lobbied vigorously for the deregulation of the electricity industry in California and elsewhere. The system adopted in California reflected a compromise between Enron and established distributors such as PG&E, which also went bankrupt last year.

A third factor in Enron's meteoric rise, not publicly acknowledged until near the end, was the practice of shifting debt off the balance sheet through complex contractual arrangements. This practice was crucial in maintaining a strong credit rating, seen as a vital vote of confidence by Enron management.

In late 2001, Enron ran into financial difficulty, and shortly thereafter collapsed altogether in one of the largest bankruptcies in US histories. It is an illustration of the dangers of using cosmetic devices to conceal debt, public or private.

User charges, special-purpose levies and general revenue

The financing of public investment special-purpose bonds serviced by a nominated stream of revenue is relatively uncommon in Australia, but is commonly adopted in the United States, particularly by state and local governments. At the local government level in particular, it is common for proposals involving the issue of bonds for a given investment and financed by an increase in property taxes to be put forward for public approval by referendum. Thus, although infrastructure bonds may be seen as 'innovative financing' in the Queensland context, they are not, like Public-Private Partnerships untried and untested innovations.

Australian Treasury departments have historically disliked the creation of

special categories of debt and the 'hypothecation' of revenues (that is, the allocation of specific tax revenues to specific purposes), and it is possible that similar objections will be raised to a system of infrastructure bonds. However, as has already been noted, the treatment of infrastructure bonds proposed here is consistent with the approach adopted when infrastructure services are provided by government-owned corporations.

In summary, the idea of raising bonds for a specific purpose, such as investment in transport infrastructure, and allocating a specific revenue stream to service interest and capital repayments is well-established and well-understood, with a long track record. There is no reason why such bonds should attract a significant interest premium relative to ordinary state government debt.

Private infrastructure and public-private partnerships - Historical background

First-generation approaches: privatisation, sale and leaseback, BOOTs

Of the expedients adopted in response to the fiscal crisis of the 1970s, the two that raised the most important issues in relation to public accounting were privatisation and private participation in the provision of public infrastructure. In the United Kingdom, the Thatcher government embarked on a large-scale privatisation program beginning with the sale of British Telecom in 1984. However, private involvement in the provision of public infrastructure in the United Kingdom was delayed until the 1990s by the Ryrie Rules (established in 1981) which established that private expenditure could not be additional to public expenditure and required a strict 'value-for-money' test to ensure that the cost of private provision was lower than that of traditional financing through public debt.

In Australia, the position was the opposite of that in the United Kingdom. Hostility to privatisation within the Labor party, which was politically dominant for most of the 1980s meant that large-scale privatisation did not commence until 1990, when the Commonwealth Bank was partially privatised. By this time, governments had experimented with a range of fiscal expedients involving private

provision of infrastructure, particularly at the state level.

The archetypal examples were the sale and leaseback of the Eraring power station and the construction of the Sydney Harbour tunnel. The Eraring transaction was a transparent attempt to evade Loan Council restrictions on aggregate public borrowing and to exploit the differential tax treatment of private corporations and state governments. The Loans Council loopholes were plugged to prevent future use of this device and, in 1992, Eraring was recognised as an asset of the publicly-owned Pacific Power Corporation. As the Audit Office of New South Wales recognised, this decision was made ' on the basis of substance over form '.

In the contract for the construction of the Sydney Harbour Tunnel, a more serious attempt was made to give the arrangements the form of a private investment project. In particular, toll revenue was paid to the private party, the Sydney Harbour Tunnel Consortium (SHTC), which undertook construction and bore the associated risk. However, the value of this revenue was guaranteed by the public party, the Roads and Traffic Authority, which therefore bore all the demand risk. As a result, the Audit Office of NSW concluded:

> In many senses the Sydney Harbour Tunnel project was merely a more sophisticated construction-financing agreement than the model used in the Eraring Power Station project, with the same basic properties. Apart from construction risks, all the risk associated with the project remained with the Roads and Traffic Authority and the SHTC has little benefit from its continuing association with the Tunnel. Thus, the Audit Office concluded, the RTA was the effective owner of the Tunnel and its contractual obligations were debts to the SHTC.

The more elaborate structure of the Sydney Harbour Tunnel contract overcame some of the objections to the Eraring deal. However, the innovative financing arrangements, including one-sided guarantees regarding the risk of changes in taxation arrangements, created new risks, all of which were borne by the public.

The same pattern may be seen in subsequent contracts, such as those for the M4 and M5 motorways in Sydney. At each stage, there was an attempt to overcome criticism of previous deals by transferring risks to the private sector. At the same time, the increasing complexity of financial arrangements created new risks, mostly borne by the public.

In the United Kingdom, the Ryrie Rules were scrapped in 1989 and replaced in 1992 by the PFI. In its initial version, the PFI, like earlier Australian initiatives, was little more than a device to finance public investment without breaching politically sensitive limits on the Public Sector Borrowing Requirement. The resulting projects were criticised, as in Australia, because they increased the costs borne by the public sector with no corresponding transfer of risk to the private sector.

In retrospect, although they were arguably too rigid, the Ryrie Rules had considerable merit. The non-additionality requirement, namely that private infrastructure investment must replace, rather than supplementing, public investment reflected the point that it is inappropriate to use private financing as a device to overcome limits on aggregate public investment that have been imposed on the basis of concerns about macro-economic policy or about the sustainability of fiscal policy. In most cases, the replacement of traditional debt financing by more innovative methods of private financing will not affect these concerns. Thus, if restrictions on aggregate public investment are justified, they should, as in the Ryrie Rules, encompass privately-funded projects as well as traditional public investments. If the restrictions are not justified they should be modified or scrapped.

A separate set of concerns arose in the context of privatisation and other asset sales. During the 1980s, the proceeds of asset sales were treated as current revenue or as negative expenditures. The result was that privatisation was seen as a painless way of financing public expenditure or tax cuts.

The inappropriateness of selling income-generating assets to finance current expenditure was gradually recognised. The initial response was the *ad hoc* device of publishing an 'underlying' budget balance, excluding the impact of asset

sales. As with the *pro forma* profits reported by many enterprises during the recent Internet boom, this device was not entirely unjustified, but gave rise to opportunities for various kinds of manipulation, such as shifting attention from one set of accounts to another depending on the political demands of the occasion.

A more systematic response was the shift to accrual accounting, which treated capital and current expenditure separately, unlike the system of cash accounting that it replaced. The process was marked by some unfortunate excesses, such as the attempt to recast the defence forces as a business enterprise, producing defence services at a substantial profit. Nevertheless it seemed, until recently, that the transition to accrual accounting would produce, in the medium term, an improvement in the transparency and usefulness of public accounts.

Unfortunately, this prospect is now receding. Two factors are evident. First, there is the decline in the quality and informativeness of the Budget Papers over recent years. Although contemporaneous with the shift to accrual accounting, this decline is a more general reflection of the view that a businesslike government should not reveal commercially sensitive information to satisfy the curiosity of the general public. Second, and more significantly in the present context, there is the continued focus of senior political leaders, most notably the Commonwealth Treasurer, Mr Costello, on the cash accounts and the associated measures of debt. This focus largely negates the supposed shift to accrual accounting.

Second-generation approaches

The United Kingdom has taken a systematic approach to private involvement in infrastructure projects from the outset[2]. Unlike the ad hoc developments in Australia, the first generation of projections was undertaken within the organised framework of the 1992 version of the PFI.

With the election of the Blair government in 1997, the PFI, like other policies of the outgoing Conservative government, was modified, but not abandoned. Moreover, while privatisation was slowed down (and, in some cases,

[2] While a systematic program is preferable to *ad hoc* deals drawn up behind a veil of secrecy, it should be borne in mind that if the policy framework is wrong, a systematic approach will be systematically wrong

such as that of the railway track operator Railtrack, reversed), the PFI was greatly expanded.

The Blair government downgraded the public sector borrowing requirement (PSBR) from the role it had held under the Conservative government as the central target of fiscal policy. Instead, it adopted a 'Golden Rule', under which current expenditure should equal current revenue over the course of the business cycle, leaving a cash deficit equal to the level of net public investment. Thus, in principle, the level of public investment, and the associated growth in debt, could be determined on the basis of the microeconomic criteria of cost–benefit analysis, rather than on the basis of aggregate targets. However, a second component of the golden rule, the "sustainable investment rule", restricted aggregate public debt to 40 per cent of GDP.

This change in emphasis is reflected in Treasury statements about the PFI. Rather than providing a method of avoiding debt financing, the stated objective of the PFI is to achieve the most efficient possible division between the public and private sectors of responsibilities in the provision of services, thereby meeting social objectives at the lowest possible economic cost ('value for money' is the standard term). In particular, this requires an efficient allocation of risk.

As noted in the introduction, the crucial innovation in the modified PFI is the introduction of the 'Public Sector Comparator' as a device for ensuring value for money. The idea is to estimate the costs of delivering a given service through the public sector. Financing under the PFI is approved if and only if the cost of service delivery is less than that of the Public Sector Comparator. However, the converse is not true. Even if the Public Sector Comparator is cheaper, there is no guarantee that funding for public provision will be provided.

The most extensive external survey of British performance has been that of the Institute for Public Policy Research a think-tank generally described as being Labour-oriented, and, more specifically, as supportive of the 'Third Way'. The Institute concludes:

> that the expected benefits of the PFI are mixed. Prisons

> and road schemes have tended to demonstrate value for money, but for schools and hospitals the results are much less impressive. The evidence looked at by ippr (*sic*) assesses the expected value for money of PFI schemes after the deals are signed, but before the projects are up and running. There is currently no evidence to suggest whether or not the PFI schemes deliver expected benefits once they are underway.

A formalised approach to PPPs has also been adopted in most Australian states. Most have been modelled on the Victorian policy document, *Partnership Victoria* and the associated guidelines.

The rhetoric of partnership

it is important to look at the assumptions embodied in the term 'Public-Private Partnership'. The capitalisation suggests that such things are new, but any public provision of services involves interaction with private sector partners, whether as suppliers, contractors or (as in official PPP programs) joint venturers.

A crucial problem with the use of the term partnership to describe these arrangements is that a partnership is normally a relationship between specific parties, who can be assumed to operate on shared understandings of mutual benefit, rather than relying primarily on written contracts. Much of the political rhetoric surrounding PPPs suggests that the public parties to these agreements anticipate a partnership of this kind.

The public partner is indeed committed to the relationship, with little or no ability to walk away from the deal. Changes of government have frequently been followed by attempts, typically unsuccessful, to renegotiate agreements. Such episodes suggest that shared understandings are unlikely to persist through the life of a PPP project, but that contractual obligations are durable.

As experience has shown, however, private parties can walk away from unfavourable contracts relying, if necessary, on the protection of bankruptcy. Equally importantly, the income flows and obligations on the private side of the deal are tradeable and actively traded assets. Shared understandings with a

private partner are of little value if the asset is sold to a third party.

What is new in official PPP programs is a strong preference for relationships with several specific characteristics. First, rather than contracting with a range of private partners for various phases and aspects of a project (construction, maintenance, corporate services and so on), all of these are bundled into a contract with a single partner, which then subcontracts the various components of the project.

Second, whereas service contracts in both private and public sectors typically operate over limited terms of five years or so, the preferred model in PPP contracts is typically twenty to thirty years. Despite the supposed absence of financial cosmetics as a consideration, the standard term seems to reflect the financial structure of the project rather than any operational considerations. Many of the services being provided in these PPP arrangements are commonly contracted out by both private and public enterprises. However, the typical term of such service contracts is less than five years, rather than the twenty or thirty years usual in PPP arrangements.

With a long term contract of the kind usual in PPP arrangements, the government not only forgoes any benefit that might arise from the entry of new competitors, but loses any capacity to alter the contract terms to meet changing needs and circumstances, except insofar as these can be negotiated with the private partner. As anyone who's built a house knows, it is contract variations that are the source of most of the big blow-outs in any project. Unless the government thinks it can predict in detail, the way in which individual schools and hospitals will be operating in twenty or thirty years time, it should not be signing contracts with such long durations.

Third, the standard PPP program involves the transfer of demand risk to the private party. Without this element, the deal is classed as a finance lease rather than an operating lease, and the debt remains on the books of the public. But in most cases, it is the government, and not the private partner that is best placed to manage demand risk.

This is obvious in the case of service-based PPPs like those for the

construction and management of schools and hospitals, where the level and location services is directly determined by public policy. But it is also true in relation to toll roads. The traffic flowing over a toll road will depend to a certain extent on the design and construction of the road, the efficiency of the tolling mechanism and so on. But it will be much more affected by decisions concerning the rest of the road network, the provision (or not) of competing public transport decisions, and land use planning in areas feeding in to the road. All these decisions are in the hands of the public sector.

The result is that PPP road contracts usually involve either guarantees to the private partners against public policy decisions adverse to their interests or rates of return that compensate for an inefficient allocation of resources. Making binding commitments regarding future transport policy is costly and inefficient.

On the other hand, compensating private investors for bearing risk that properly belongs with the public is also costly. When the Victorian Liberal Party proposed buying out the toll on the Scoresby Freeway recently, Premier Steve Bracks claimed that scrapping the toll would cost $7 billion, with a cost for buying the project outright estimated at $4.5 billion. It appears that the $7 billion is an estimate of the present value of the toll revenue needed for private finance of the road. Yet the estimated construction cost for the project is only $2.5 billion and 'other financial costs' add another $1.3 billion.

The difference between the $7 billion value of toll revenue and the $4.5 billion buyout costs presumably reflects the difference between the cost of private equity capital and the government bond rate. It implies that the government could realise a gain of $2.5 billion, at fairly low risk by buying the project out and keeping the toll. The difference between the $4.5 billion private value of the project and the $2.5 billion construction costs reflects, in part, the cost of inappropriate allocation of demand risk.

A further critical element of risk is that associated with ambiguity in contractual terms. The disputes between the Ontario government and the owners of the private toll road Highway 407 provide an example of the way in which such understandings can break down. The motorway was sold to a private consortium

under terms that, to the apparent surprise of the government involved, included no limit on the tolls that could be charged. As a result, the provincial government and the roads owners have engaged in protracted litigation.

Infrastructure finance and risk allocation

Beginning with the revised version of the Private Finance Initiative introduced by the Blair Labour government, proposals of this kind, now generally referred to as public-private partnerships (PPPs), have been justified , not in terms of debt reduction, but on the basis that they yield improved value for money by achieving an optimal allocation of risk. Nevertheless, ideological and accounting considerations still play a substantial role in the British PPP process and the evaluation procedure is biased in favour of the PPP option, since rejection of this option usually means rejection of the project. Even ex post evaluations of British PFI projects are of limited value.

The oldest systematic PPP program in Australia is Partnership Victoria, established in 2000. Partnership Victoria is based on the British Private Finance Initiative, but incorporates significant improvements. In particular, projects are approved (or rejected) before the financing method is decided. At the time of writing, however, only four Partnership Victoria projects had reached the service delivery stage, according to the Partnership Victoria website, and none of these has produced an evaluation of operating performance or even an annual report.

In the absence of adequate empirical evidence on the operational performance of PPPs, and given the poor performance of first-generation private infrastructure projects, any assessment of the effectiveness of risk allocation in PPP projects can draw on only limited empirical evidence. Assessment must rely, to a large extent, on general principles of contract design.

To begin with, it is important to look at the assumptions embodied in the term 'Public-Private Partnership'. The capitalisation suggests that such things are new, but any public provision of services involves interaction with private sector partners, whether as suppliers, contractors or (as in official PPP programs) joint venturers.

A crucial problem with the use of the term partnership to describe these arrangements is that a partnership is normally a relationship between specific parties, who can be assumed to operate on shared understandings of mutual benefit, rather than relying primarily on written contracts. Much of the political rhetoric surrounding PPPs suggests that the public parties to these agreements anticipate a partnership of this kind.

The public partner is indeed committed to the relationship, with little or no ability to walk away from the deal. Changes of government have frequently been followed by attempts, typically unsuccessful, to renegotiate agreements. Such episodes suggest that shared understandings are unlikely to persist through the life of a PPP project, but that contractual obligations are durable.

As experience has shown, however, private parties can walk away from unfavourable contracts relying, if necessary, on the protection of bankruptcy. Equally importantly, the income flows and obligations on the private side of the deal are tradeable and actively traded assets. Shared understandings with a private partner are of little value if the asset is sold to a third party.

What is new in official PPP programs is a strong preference for relationships with several specific characteristics. First, rather than contracting with a range of private partners for various phases and aspects of a project (construction, maintenance, corporate services and so on), all of these are bundled into a contract with a single partner, which then subcontracts the various components of the project.

Second, whereas service contracts in both private and public sectors typically operate over limited terms of five years or so, the preferred model in PPP contracts is typically twenty to thirty years. Despite the supposed absence of financial cosmetics as a consideration, the standard term seems to reflect the financial structure of the project rather than any operational considerations. Many of the services being provided in these PPP arrangements are commonly contracted out by both private and public enterprises. However, the typical term of such service contracts is less than five years, rather than the twenty or thirty years usual in PPP arrangements.

With a long term contract of the kind usual in PPP arrangements, the government not only forgoes any benefit that might arise from the entry of new competitors, but loses any capacity to alter the contract terms to meet changing needs and circumstances, except insofar as these can be negotiated with the private partner. As anyone who's built a house knows, it is contract variations that are the source of most of the big blow-outs in any project. Unless the government thinks it can predict in detail, the way in which individual schools and hospitals will be operating in twenty or thirty years time, it should not be signing contracts with such long durations.

Third, the standard PPP program involves the transfer of demand risk to the private party. Without this element, the deal is classed as a finance lease rather than an operating lease, and the debt remains on the books of the public. But in most cases, it is the government, and not the private partner that is best placed to manage demand risk.

This is obvious in the case of service-based PPPs like those for the construction and management of schools and hospitals, where the level and location services is directly determined by public policy. But it is also true in relation to toll roads. The traffic flowing over a toll road will depend to a certain extent on the design and construction of the road, the efficiency of the tolling mechanism and so on. But it will be much more affected by decisions concerning the rest of the road network, the provision (or not) of competing public transport decisions, and land use planning in areas feeding in to the road. All these decisions are in the hands of the public sector.

The result is that PPP road contracts usually involve either guarantees to the private partners against public policy decisions adverse to their interests or rates of return that compensate for an inefficient allocation of resources. Making binding commitments regarding future transport policy is costly and inefficient.

Applying the principles of risk allocation

The allocation of risk is the central issue in contracting. The *Partnership Victoria* document on PPPs sets out the optimality principle governing risk

transfers:

> The principle governing risk transfer is that risk will be allocated to whoever is best able to manage it at least cost, taking into account public interest considerations. This does not mean that all risk is transferred. If risk is transferred inappropriately, the Government will pay a premium. The ability to secure risk transfer on worthwhile terms requires the scope of the project to be drawn sufficiently widely.

The general principle of allocating risk to the party best able to bear it is sound. However, the detailed treatment of risk is less satisfactory. The presentation of a long list of risks raises the danger of 'not seeing the woods for the trees'. In addition, there are significant inconsistencies between the general principles and the detailed rules that have been adopted in practice. In this section, a summary of the main categories of risk is presented, with an assessment of the optimal allocation of risk.

Construction

Proposals to undertake a transport infrastructure project typically include an estimate of the costs of construction. However, this estimate may be turn out to be an underestimate because of increases in wages or the costs of other inputs, or because of unforeseen technical difficulties, such as equipment breakdowns and adverse weather. The political processes surrounding the evaluation of proposed projects tend to encourage underestimation of costs. In an economic sense, failure to complete the project on time reduces the present value of the services provided by the project and therefore increases the effective cost of the construction phase. Less frequently, things may turn out better than expected, with the project being completed 'on time and under budget'.

Until the 1970s, it was common for Australian public infrastructure projects to be constructed by government Public Works and Main Roads Departments using public sector employees. In general, this arrangement has

proved less satisfactory than the alternative of competitive tendering.

Competitive tendering, with the successful tenderer receiving a fixed price on completion of the project, is designed to ensure that the tenderer bears most of the risk associated with the infrastructure projects, and therefore has incentives to ensure cost-efficient construction. By contrast, the incentives for individuals within a government department to minimise costs are relatively weak and diffuse. In practice, a complete transfer of risk is not possible in most cases. Since governments bear substantial costs if a project fails, or is behind time, they are subject to pressure to extend additional finance to contractors who run into difficulties. Nevertheless, in most cases, the optimal allocation of risk requires construction risk (including site risk and design risk) to be borne, as far as possible, by the enterprise undertaking construction. This is consistent with the 'government preferred position' presented in *Partnership Victoria*.

Operation

Operational risk encompasses risks relating to industrial relations and maintenance as well as commissioning and operating risk. After completion of the construction phase, an infrastructure asset must be maintained. In addition, the operator may provide a range of operational services using the asset. For some assets, such as roads, costs of operation and maintenance are relatively stable and predictable and are small relative to initial costs of construction. For other assets, such as airports, operations may be complex and subject to substantial risk.

Another important issue regarding risk and operational costs is the relationship between the construction and operation phases. In some cases, decisions made in the construction phase, for example regarding the quality of materials, may have a substantial impact on subsequent costs of operation and maintenance. In such cases, contractual arrangements in which the constructor is required to undertake maintenance may be optimal.

In other cases, there is no such link, and the appropriate contractual relationship involves a 'turnkey' contract with payment on completion of the construction phase. Recent public infrastructure projects have involved the

creation of a consortium providing a combination of construction, operation and financing, with which the government enters into a contract. In the absence of inherent links between these activities, such an approach reduces the transparency of arrangements and increases the risk of adverse outcomes for the public sector.

In summary, no simple principle can be stated with respect to the optimal allocation of operational risk. Broadly speaking, where costs of operation are substantially influenced by decisions made in the construction phase, risk should be allocated to the enterprise undertaking construction through such mechanisms as guarantees. In other cases, risk should be borne by the agency or enterprise providing the relevant service, which should be separate from the construction enterprise.

This recommendation differs from the 'government preferred' approach presented in *Partnership Victoria*. In the 'government preferred' approach, the government contracts with a single party or consortium for both construction and operation. As is argued below, this approach, which is often referred to as 'bundling', will be optimal only in cases where there is a close link between special design features and subsequent operation.

Service specifications

The principle that risk should be allocated to the party best able to bear it applies to changes in service specifications. Where the services required from an infrastructure project are subject to frequent and unpredictable change, the risk must be borne by the service user, in this case, the government.

As the costs of changes in service specifications have been recognised, construction contracts have increasingly relied on a clear preliminary specification of required standards with little scope for changes in specification prior to completion of the project.

In many cases, however, it is impossible to avoid changes in service specifications. This is clearly true in relation to core public services such as health and education, and in the medium term it also applies to less complex activities,

such as ancillary services for hospitals. Because service specifications are subject to change, risk analysis implies that governments, and for that matter private corporations, should not enter into long-term contracts for the provision of complex services.

Since the optimal term for most service contracts is shorter than the life of associated capital infrastructure such as schools and hospitals, this analysis reinforces the point that the 'government preferred' approach of contracting with a single party is unlikely to be appropriate in such cases. Except where service specifications are stable and preferable, contracts for the provision of services should be separate from contracts for the construction and maintenance of physical infrastructure.

Demand or market risk

Demand risk refers to the possibility of unforeseen variation in the demand for the services generated by a project. Where there are many consumers, demand risk is appropriately borne by the service provider. However, where there is a single major consumer, that consumer should bear the risk associated with changes in their demand. This situation applies to many public infrastructure projects. The analysis in *Partnership Victoria* is somewhat equivocal The general guideline is that:

> Where the private party has little or no control over the level of service demand, it is not optimal to structure the payments to include a significant usage component. However, wherever possible, there should be a volume component with some volume risk being borne by the private party.

The obvious, and correct, implication of the first sentence is that, where a department or agency is the sole or predominant user of an asset, demand risk should be borne by the public sector. This is usually the case for schools, hospitals, prisons and other special purpose public facilities. Exceptions include infrastructure projects where services are marketed, such as the Sky Train in

Brisbane and dual-purpose facilities such as the Spencer Street railway station redevelopment project in Melbourne.

However, the suggestion that volume risk should be transferred 'wherever possible', tends to undermine this analysis. The preference for transfer of volume risk may reflect, in part, the fact that the allocation of volume risk is the most important single distinction between a PPP program and the contracting out of publicly provided services, which typically does not involve a transfer of asset ownership.

Regulatory risk

All businesses are subject to regulation, and must bear the risk of possible regulatory change. It is useful to distinguish between general regulations, applying equally to all firms (or at least all firms in some large class) and firm-specific regulation. Examples of general regulation include employment law and environmental regulation. Price regulation of monopoly enterprises, and oversight of PPP arrangements are examples of firm-specific regulation.

Under public ownership, regulatory risk is 'internalised'. That is, if a government directs a public enterprise to keep prices low or to improve services, it bears both the costs, in the form of lower earnings or higher costs, and the benefits, in the form of lower prices or improved service to users, who are also citizens. By contrast, under privatisation, regulatory risk generates substantial transfers between governments, service users and service providers. The resulting conflicts will result in the consumption of resources in litigation, lobbying and risk management strategies.

Regulatory risk may be reduced by the provision of guarantees, ensuring private service providers that rules will not be changed to their disadvantage or that compensation will be provided if rules are changed. But such guarantees reduce the capacity of governments to respond to new information, and discretionary regulation is desirable primarily where there is inadequate information to set well-specified rules in advance.

Where regulatory risk is important, the principles of optimal risk allocation

require that the government undertaking regulation should, as far as possible, bear the associated risk. It follows that where complex and intrusive regulation is required, public ownership will yield a more efficient allocation of risk. The more significant and complex the regulatory risk, the stronger the case for public ownership.

Network risk

The term 'network risk' describes a class of risks applying to an individual asset that is part of a larger network, for example, an individual road in an urban road network. Usage of a particular road will depend, to a large extent, on decisions made with respect to other elements of the transport network. Hence, in many cases, it is inappropriate to consider the risks associated with an individual asset in isolation from the larger network.

In some cases, typically described as 'interface risk', interaction with the larger network is of relatively modest importance in relation to the services of the asset in question. In such cases, a division of risk between the owners of the asset and the owners of the network is appropriate.

In other cases, however, the value of the asset is primarily determined by its interaction with the network as a whole. Where network risk takes this form, the optimal allocation of risk can only be achieved if the owner of the network also owns the asset. In particular, this conclusion applies to most urban roads. Public ownership is appropriate where the dominant risk arises from either network risk (where the main network is publicly owned), market risk (where government is the sole or main consumer of services) or regulatory risk.

Systematic and idiosyncratic demand risk

A crucial aspect of demand risk is the distinction between risk that is correlated with movements in the general economy (often referred to as systematic risk) and risk that is specific to a particular project (often referred to as idiosyncratic or unsystematic risk). Under plausible conditions, idiosyncratic risk can be pooled and diversified in such a way that no individual bears any

significant risk. By contrast, because systematic risks are highly correlated, pooling and diversification has little effect other than to redistribute a given risk within the population.

The *Partnership Victoria* guidelines do not address systematic risk explicitly. Rather, systematic risk is reflected in the 'cost of capital' or 'discount rate' applied to projects, which is typically substantially higher than the real rate of interest applicable to public debt. This approach fails to take of the fact that the cost of private equity capital is inflated by capital market failures.

Summary

In most cases, the optimal risk allocation will involve construction and maintenance risk being borne by the private contractor, operational risks being addressed through a mixture of public provision and separate contracts with private parties and ownership and demand risk being borne by the public sector. Such an allocation can be achieved through modernised versions of traditional public procurement.

Only in special cases will the optimal arrangement for provision involve a partnership arrangement with a single private party, responsible for both construction and operation, and bearing demand risk. Such arrangements are most suitable in the case of once-off projects involving large and risky design innovations, the value of which can be determined only in the operational phase.

The case of the Cross-City tunnel

The Cross-City Tunnel contract shows that many of the problems evident in private provision of infrastructure for more than a decade have not been resolved. The emergence of serious problems shortly after the tunnel opened led to the exposure of undesirable aspects of the process that would otherwise either have attracted little attention, or been concealed by commercial confidentiality clauses.

First, despite the protestations noted above, it is clear that the desire to avoid any increase in public debt played a central role in the contract design and

in the setting of tolls. Considerations of rational road pricing were not taken into account.

Second, the problems of road closures illustrate the danger of a contractual process in urban planning. Although some road closures may well have been justified, a sensible planning process would allow flexible adjustment as new information became available. Under the Cross-City Tunnel and similar contracts, any change in policy runs the risk of triggering penalty clauses in contracts.

Most of the old abuses familiar from the 1990s present in this contract. Even more striking was the reintroduction of an abuse not seen since the days of the Tudor and Stuart monarchs, the payment of an upfront fee in return for the right to collect a monopoly charge., in this case a higher toll. Such 'tax-farming', also practised in pre-Revolutionary France, is one of the worst expedients of public finance, and should never be considered in a modern democracy.

Improving the contract design process

Except in rare cases, it seems unlikely that the allocation of risk inherent in the standard PPP model will be the optimal one. There are, of course, cases where the terms associated with the PPP model are appropriate, particularly those involving complex and innovative projects with a tight link between design and operation. But these are the exception rather than the rule. Rather than favoring a particular model, governments should strive for a better understanding of the principles of risk allocation.

Despite the criticisms of the PPP model that have been presented above, there is little likelihood that systematic programs aimed at promoting contractual partnerships between the public and private sectors will be abandoned, and little reason to suppose that such a step would be desirable. As has already been observed, any policy involving public provision or funding of services necessarily involves a relationship between the public sector and private suppliers of goods and services. Hence, it seems sensible to consider options for reforming the contract design process associated with current PPP programs, rather than scrapping them and starting afresh.

It is desirable, on the one hand, that a range of models for contractual relationships between the public and private sectors should be available, and that there should be sufficient scope to allow for beneficial innovation. On the other hand, if the public is to be protected from the consequences of poorly-drafted contracts, it is desirable to avoid the kinds of innovations that have typically characterised 'once-off' deals like the Sydney Harbour Tunnel and the Ontario 407 Motorway. A systematic framework like that of Partnership Victoria may help to overcome these problems.

The existing framework suffers from two main drawbacks. First, the processes and criteria set out in these programs leads naturally to the choice of a long-term, fully-bundled PPP contract, in the absence of compelling evidence that some alternative would be superior. As has been argued above, such contracts are appropriate only in a minority of cases, and therefore represent an inappropriate choice of 'default option'. Second, although some flexibility is available, there is inadequate incentive to explore options intermediate between the public sector comparator (typically a turnkey 'design build and construct' contract with subsequent public operation) and the PPP option.

Put and call options

Systematic flexibility could be introduced into a PPP system through the inclusion of put and call options, exercisable at intervals of, say, five years. Using such options, either party would be able to terminate the partnership at the specified date, with the private party receiving a lump sum payment, determined by a valuation of the flows of payments and services remaining under the contract.

In a contract with put and call options, it would be expected that the exercise price for the put option would be lower than that for the call option. That is, the government would have to pay more to terminate the partnership than the private party would receive if they chose to terminate. This is appropriate, since unilateral termination imposes costs on the other party.

The spread between the exercise prices of put and call options is a measure

of the revenue risk borne by the parties. The parties may have different expectations as to the likely value of contractual payment flows. In the presence of put and call options, however, this difference must be bounded by the put-call spread.

The use of put and call options could yield substantial improvements in the transparency and risk allocation properties of PPP contracts. In particular, both parties would be protected from many of the risks associated with disputes over contract terms.

The case of price determination provides an example. Parties may disagree about the range of pricing options available to the private partner under the terms of a contract. Under present circumstances, this disagreement can only be resolved by litigation.

In practice, because private parties can already walk away from unsatisfactory contracts (sometimes, but not always at the cost of forfeiting a performance bond), the specification of put and call options would protect the public partner more than the private partner. This would presumably reduce the willingness of private partners to tender at any given price.

More importantly, put and call options would help to resolve the problems associated with lengthy contractual terms and the need for contract variation and renegotiation in the light of changing circumstances. By giving both sides a plausible threat point, the availability of put and call options would enhance the likelihood of mutually beneficial outcomes from bargaining.

Again, this feature of put and call options would operate primarily to the benefit of the public partner, representing the service users. Most requests for contract variation arise from changes in the requirements of users, and the resulting bargaining game favours service providers, in this case the private party, since their threat point is simply to insistence on performance of the existing contract.

However, since the nominal contract price reflects the asymmetry and unclear specification of risks under existing contractual arrangements, a higher contract price combined with explicit put and call options would yield greater

transparency. In particular, governments would be open to criticism for entering agreements where the cost of the call option was clearly unaffordable. As noted above in cases where governments have sought to renegotiate toll road contracts, this criticism is applicable to many current PPP contracts.

Concluding comments

The provision of physical and social infrastructure is a central task of governments. The provision of infrastructure assets financed through taxes and quasi-taxes inevitably involves a corresponding increase in public debt whether or not this is acknowledged in the public accounts.

In most cases, Public-Private Partnerships are not an appropriate basis for the provision of public infrastructure. Past instances of such projects have been motivated largely by the desire to achieve spurious reductions in measured levels of public debt. More recent instances involve a misapplication of the principles of risk allocation and contract design, resulting in higher lifetime costs for projects than would have been the case under standard debt-based project financing.

The inclusion of put and call options in PPP contracts would impose bounds on the risk associated with unpredictable revenue streams, while maintaining the positive incentive effects associated with competitive contracting.