



A SURVEY OF ALTERNATIVE FINANCING MECHANISMS FOR PUBLIC PRIVATE PARTNERSHIPS

A Research Report

Michael Regan
Associate Professor of Infrastructure
Mirvac School of Sustainable Development
Bond University

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Copies of this report are available from Ms Marisa Mansfield
Mirvac School of Sustainable Development
Faculty of Business, Technology and Sustainable Development
Bond University
Gold Coast Queensland 4229
mmansfie@bond.edu.au
Telephone 07 5595 2064
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Executive Summary

Public private partnerships (PPPs) are a relatively recent form of major project procurement for delivery of major projects and infrastructure services. They account for less than 10% of state capital procurement in Australia and have introduced a more scientific approach to the delivery of large and complex public services measured in both quantitative and qualitative terms. The result has been a significant improvement in project delivery (cost and time), reduced procurement cost, greater certainty with full life cycle costing, higher levels of innovation and technology and better quality service outcomes. These benefits contribute to better value for money results for government than traditional procurement methods.

Recent events in international capital markets has had major impact on the ongoing rollout of PPPs and slowed their use. Capital has been hard to source especially for projects over \$300 million, the patronage risk model for economic infrastructure is no longer available, debt is more expensive than it was 18 months ago and credit risk insurance is no longer readily available. This has affected bid markets and slowed the delivery of new infrastructures with longer-term implications for economic performance across the whole economy.

There are two broad approaches that government can take to PPP procurement. Firstly, it may make greater use of alternate procurement mechanisms such as alliance contracting, management outsourcing and traditional procurement. Secondly, it may rethink its role in the PPP process and preserve the model by reducing risk and/or participate in the provision of debt finance.

This research report is based on a three-stage methodology. First, a review was conducted of the international literature to re-examine the performance of PPPs (described in greater detail in an earlier Infrastructure Association of Queensland and Bond University report). Alternative procurement options are identified and compared. Second, a survey is made of prevailing capital market conditions and state investment evaluation. Third, the empirical evidence is examined to critically evaluate the options for state provision of infrastructure and direct financial participation in PPP projects.

This report makes the following findings:

- PPPs are delivering better procurement outcomes than other procurement methods captured in superior value for money performance

- The advantages of maintaining the PPP model in its present form significantly outweigh the disadvantages – PPPs rely on a combination of incentives, design and service innovation, risk transfer and sustainable service delivery not replicated in other procurement methods
- Current capital market conditions close the door on market risk models for land transport projects, constrain the availability of debt capital above \$350 million, and impose limitations on capital structure and debt servicing capability for projects which increases the degree of difficulty raising debt capital for these projects
- There are a number of alternative methods for state provision of infrastructure – using existing appropriations, taxation, state debt, tax-preferred bonds, and mandated superannuation fund investment. The available evidence suggests that state debt, to the extent that this is prudent in fiscal terms, offers the least disadvantages to the state
- There are also several methods for state financial participation with PPP projects that preserve the model – state loans to PPP projects (which ultimately rely on state debt), indemnities and state debt guarantees. The advantages and disadvantages of these approaches are reviewed
- The form of state debt participation that best remedies prevailing deficiencies in capital markets, maintains the value for money drivers that are central to the success of the PPP model and, attracts lowest risk to the state, is the state debt guarantee option. Empirical evidence supports the proposition that this approach has a low probability and cost to government in the event of default under a PPP agreement.

My thanks to Professor Jim Smith, Head of the Mirvac School of Sustainable Development at Bond University for his review and assistance, the constructive comments of the management committee of the Infrastructure Association of Queensland and three anonymous referees. Nevertheless, all errors, omissions and deficiencies in this report remain with me.

Michael Regan
Mirvac School of Sustainable Development
Bond University

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Part 1 Review of Procurement Methods and Performance

1. Introduction

Public private partnerships (PPPs) are a relatively new and innovative procurement method for large and complex projects. PPPs in their current form came into use in Australia in the mid-1980s with projects like the Sydney Harbour Tunnel and the utility privatisations in Victoria. In the early 1990s, PPPs were first used to finance social infrastructure including corrective services and health projects and the Victorian Government introduced a formal private infrastructure financing policy. In 2001, this policy was formalised as Partnerships Victoria and applied to a wide range of social and economic infrastructure projects using a rigorous project selection and evaluation procedure. PPP programs were introduced in most OECD countries at this time and adopted progressively by the commonwealth, state and territory governments in following years.

PPPs are presently used by governments to acquire economic and social infrastructure services in industry sectors such as land transport, energy, justice, agriculture, health and education.¹ A PPP may take several forms although at the centre of most variants is a contractual arrangement that provides for a private consortium to deliver an asset or service, to or on behalf of, the state. However, the term is also broadly applied to many and various contractual arrangements involving the state and private firms. In many developing countries, the term is used to describe most procurement contracts including medium-term service contracts and outsourcing. In developed countries, it refers to privately financed long-term contracts with the state for the provision of assets and/or services by private firms including build own operate transfer (BOOT) arrangements.

In Australia, the term is only applied to projects specifically approved and processed under PPP policy frameworks set up by the commonwealth, state and territory governments. The first state government to develop and implement a comprehensive PPP policy was Victoria although there were earlier BOOT transactions for economic infrastructure in New South Wales (the Sydney Harbour Tunnel), Queensland (the Sunshine Coast Motorway) and Victoria (Melbourne's Citylink).² The Partnerships Victoria policy states that the objective of the program is the strategic use of public and private

¹ It is argued that PPPs are no more than a substitute for public capital and to the extent that private capital contributes to a growing national capital stock, this is partly true. Nevertheless, PPPs are a comparatively minor form of infrastructure procurement accounting for less than 10% of capital spending by Australian governments.

² In 2000-01 the Victorian Government's Department of Treasury and Finance set up a dedicated PPP unit, Partnerships Victoria, to develop policy, guidance and assist project implementation in that state.

sector resources including innovation and risk transfer to achieve improved value for money and better services to the community. A growing body of evidence supports the view that PPPs are delivering better quantitative and qualitative outcomes than alternative procurement models. The advantages include improved value for money outcomes and better quality public services.

2. Dimensions

Australian governments spend around \$43 billion in capital works each year. There is wide variation between the states with Queensland investing 6.9% of gross state product (GSP), the Northern Territory and ACT 6.6%, New South Wales 3.8% and Western Australia 3.6% (See Table 1).

Table 1
STATE CAPITAL INVESTMENT
Australia, 2006-07

AUD\$mill.	Investment	Gross State Product	%
New South Wales	12,805	335,144	3.82
Victoria	6,828	247,440	2.76
Queensland	13,431	195,704	6.86
South Australia	1,895	69,540	2.73
Western Australia	5,075	141,368	3.59
Tasmania	650	21,088	3.08
NT & ACT	2,383	36,080	6.60
Australia	43,067	1,046,364	4.12

SOURCE ABS 5220 2006-07 Current Prices

Plant and machinery account for around 69% of public capital spending and construction and engineering expenditure 31%.³ State spending on non-dwelling construction and civil works is mainly for roads, water storage and supplies, sewerage and drainage works.⁴ The majority of this activity is performed by the private sector for governments at the national, state and local levels.

In Queensland, purchases of non-financial assets were \$5.5 billion in 2006/07 and \$6 billion in 2007/08 and this level of spending is also forecast

³ ABS 2007, 2008.

⁴ ABS 2008, Tables 12 and 13.

for 2009/10 and 2010/11.⁵ The majority of Queensland's capital spending will go to infrastructure assets and services.⁶

3. Traditional Procurement

The majority of capital spending by Australian governments and government business enterprises uses traditional procurement, a tender-based procurement method based on a comprehensive input specification and an adversarial contractual framework. Traditional procurement incorporates all or several of the following features:

- A tender evaluation process weighted in favour of lowest procurement cost
- A project specification issued by government agencies and their advisers that provides a definitive requirement of the goods and services to be supplied by the contractor. In the case of buildings, this will generally refer to the design, the method of construction, the finishes and equipment levels.
- The procurement will be required to comply with standard state procurement policies and protocols
- An adversarial contractual framework
- Separation of the design, project management and construction tasks.

In practice, traditional procurement raises several problems, which are more acute with large-scale infrastructure projects.

The first problem concerns the alignment of incentives between state agencies and the contractor with the latter having much to gain from an incomplete specification and variations to the contract or changes to the specification, which may involve additional works. Traditional construction contracts are designed to transfer construction risk to the contractor in an adversarial setting. In the event of variations to the contract, which are not uncommon with large and complex projects, the contractor is incentivised to maximise its margins and expand the scope of the contract. However, the principal's objective is to minimise variations and ensure that the project is delivered on time and within budget. These are competing objectives and incentives, and frequently result in protracted and costly negotiations following completion of the works. The sub-optimal alignment of incentives contributes to sub-optimal procurement outcomes.⁷

⁵ Queensland Government 2008, p. 165.

⁶ ABS 2008.

⁷ NAO 2001, 2003a.

A further factor here is the incomplete nature of long-term construction and management contracts, that is, parties understand that not all of the terms of the contract were agreed at financial close. Incomplete contracts contain mechanisms for dealing with changed circumstances and future events. For example, a long-term road maintenance contract may contain a formula designed to reset financial terms in the event of upgrading of the road or road networks, road closures, increased wear and tear or the construction of new alternative roads. Incomplete contracts, in practice, create information asymmetries that may place greater bargaining advantage with one or other of the parties.⁸

The second concerns the serviceability of assets. The procurement cost for most fixed assets is a small component of lifecycle operating costs.⁹ For a standard commercial office building over a 20 year operational life, the ratio of lifecycle to procurement cost (in nominal terms) is in the range 4.5 to 5:1. For complex economic infrastructures such as information and communications technology, dedicated industrial plant and public transport systems, the ratio can be within the range 7:1 and 12:1. For social infrastructure projects such as public hospitals, it may be as high as 32.4:1.¹⁰

The third concerns the reduced scope for new technology and, design and construction innovation in an adversarial contract setting. Neither party to the contract is incentivised or rewarded for innovation because the scope of works is narrowly defined within a comprehensive input specification or design and construction is awarded to different contractors. The contractor bids with a one-dimensional view of the construction task and that is to meet the specification at lowest cost. The focus of the contractor's innovation or new technology is to reduce its costs and maximise margins.¹¹

Recent evidence suggests that an output specification (under which the contractor assumes responsibility for design and method of construction), collaborative contractual environments and early consultation with building contractors and facility managers in the design stages of the project, offers greater opportunity to improve innovation and new technology and improve long-term service outcomes. This is particularly important when a contractor

⁸ The theory of incomplete contracts also contemplates other variation mechanisms such as embedded and real options (Rose 1998; De Bettignies and Ross 2009).

⁹ Lifecycle cost includes real depreciation, capital expenditures for building rehabilitation, repairs and maintenance, and the cost of utilities and services.

¹⁰ NAO 2005. The multiple reduces in net present value terms (NAO 2002; OGC 1998).

¹¹ There are numerous compliance audits and performance reviews of state government agencies by their respective audit offices that identify inadequacies: Auditor General of New South Wales 2005; Auditor General of South Australia 2007.

assumes lifecycle asset management and costing risk. These approaches, which are building blocks of the PPP procurement model, create an incentive for the contractor to build quality assets designed specifically to deliver services over long service intervals.

Traditional contracts limit the opportunities for private bidders to compete with design and construction innovation or introduce new technologies that may achieve longer and lower-cost service life or improved user and service delivery benefits. The adversarial contractual framework produces a litigious context with disputes over the scope of the contract, rework and variations continuing well past the completion date. This is costly and contributes to low productivity at the industry level. Around 90% of major project procurement in Australia including major plant purchases, construction and civil works is delivered by traditional procurement. Periodic reviews of traditional procurement performance identify systemic problems with post-completion contract disputes, cost and time overruns.¹²

4. Government Business Enterprises

Most state infrastructure services are provided by corporatised statutory authorities and government business enterprises (GBEs). The procurement method used by these vehicles is predominantly traditional although there is evidence of much wider use of outsourced management and relationship contracting in recent years.

The sub-optimal performance of GBE traditional contracts in Britain, Canada and Australia was confirmed in a number of recent studies (see Table 2)¹³. Significant advances have been made toward improving traditional performance in recent years with the “gateway” program developed in the United Kingdom¹⁴. The program was employed in Victoria in 2004 and is being evaluated by other Australian jurisdictions. Gateway applies a rigorous project evaluation and approval process to 6 key elements of a traditionally procured complex project.¹⁵ The Gateway programs are improving the delivery of projects although evidence from the United Kingdom suggests that user satisfaction and service delivery outcomes are not at the same levels as those achieved with PPPs and outsourcing procurement methods.¹⁶

¹² NAO 2001, 2003b.

¹³ NAO 2003, 2005; Mott McDonald 2002; Allen Consulting 2007.

¹⁴ Office of Government Commerce 2004.

¹⁵ The procurement strategy, business case, procurement plan, tender decision, readiness for service and benefits evaluation (Department of Treasury and Finance 2004).

¹⁶ Mathias and Reddington 2006; KPMG 2005; NAO 2005.

Table 2
UK OGC Gateway Review Procurement Outcomes

TRADITIONAL PROCUREMENT PERFORMANCE				
	United Kingdom 2002-2006			
	Performance	Review	Objective	
	1999	2004	2006	
Cost Overrun	73-75%	45%	30%	
Late Delivery	66%	37%	27%	
SOURCE				
NAO 2005 Improving public services through better construction Report by the Comptroller and Auditor-General HC 364-1, NAO				

Do GBEs offer better performance at the enterprise level? Reviews of GBEs operated by state and territory governments over the 10 years to 2006-07 indicates improvement in some industries although average return on equity is less than the Commonwealth's 10 year bond rate (See Table 2).¹⁷ The Productivity Commission in its 2008 review of Government Trading Enterprises states:

“The 2006-07 performance continues the poor financial performance of the majority of GTEs that has been observed in previous reports in this series (see, for example, PC 1991, 2001, 2003, 2004, 2005, 2006). This suggests a lack of commitment by owner-governments to operate their businesses on a fully commercial basis, despite their previous undertakings to do so (NCC 1998; Trembath 2002; CoAG 2005).”¹⁸

The poor performance of GBEs is attributable to a number of factors including:

1. The pricing of output which may include unfunded community service obligations and output pricing not fully referenced to actual cost of production
2. A lack of competitive market performance benchmarks – GBEs tend to internalise organisational performance measurement and are subject to political interventions in operational matters

¹⁷ Task Force on Monitoring Performance of GTEs 1991; Industry Commission 1996, 1998; Productivity Commission 2001, 2003, 2004, 2005, 2006, 2007, 2008.

¹⁸ PC 2008.

3. Poor asset allocation decisions and failure to undertake lifecycle costing, continuing qualitative monitoring or risk-weighted evaluation of projects
4. Soft labour practices, over-employment and poor incentive structures
5. A reluctance to undertake innovation or new technology in the procurement of assets or delivery of services.¹⁹

Table 3
Performance of National Government Business Enterprises
1990-2007

	Year to June 30th					
	1990	1995	2001	2004	2006	2007
Electricity	11.2	8.8	6.6	9.0	13.6	16.4
Water	3.2	3.0	5.0	5.7	4.7	5.0
Urban Transport	3.1	8.5	1.1	1.9	-31.6	-22.2
Railways	-2.3	-2.1	3.2	2.9	-3.1	-3.2
Ports	6.8	8.1	6.5	5.6	3.8	3.8
10 Year Bond Rate ^a	13.4	9.2	6.0	5.1	5.7	6.6

NOTES

a Average 30 June

SOURCE

PC 1991, 1995, 2001, 2004.

RBA 10 Year Bond Yields 1992-2005

GBEs will be the diminishing source of infrastructure provision in the future if Queensland is to complete the privatisation of the Port of Brisbane, Queensland Rail and some energy services. Nevertheless, GBEs will retain an important role in the provision of public services in the state. The need for further reform with a view to improved operating efficiencies is clear with priority given to the following:

- fully-costed output pricing
- full compliance with regulatory impact assessment requirements
- greater financial and operational independence
- divestment of GBEs in competitive markets which may benefit from market disciplines.²⁰

¹⁹ Regan 2006.

5. Outsourcing

Outsourcing or the “contracting out” of core services has reduced procurement costs and improved public service delivery in a number of countries.²¹ The gains are greatest in the labour-intensive industries where opportunity exists to reduce overstaffing, introduce new technology and improve productivity.

Evidence from case studies completed for the outsourcing of waste management contracts in east European countries points to the following benefits from outsourcing arrangements:

- Reduced procurement costs and more efficient service delivery
- New technology is improving productivity at the enterprise level
- Innovation is expanding services to include recycling and hazardous waste management
- Ensuring compliance with new environmental and health standards
- Third party commercial contracts subsidise state service payments
- Enterprises are self-funding with lifecycle-costed re-equipment and maintenance programs
- Reduction in industrial pollution and the contamination of drinking water.²²

6. Alliance Contracting

Alliance or relationship contracting is an alternative form of traditional procurement that departs from an adversarial contracting framework by favouring a joint and collaborative approach to project costing, risk sharing and project management. The characteristics of an alliance contract may include some or all of the following:

- A mutually agreed contract price and margin
- Selection of the contractor by pre-qualification - organisational culture and the quality of the project team are important factors
- Risk and rewards are shared – the contractor is assured full payment of the actual cost of construction and project-specific overheads. Cost overruns are shared with the contractor losing all or part of the profit and corporate overhead for the project and sharing cost savings with the principal
- All disputes are resolved by alternative dispute resolution methods

²⁰ Office of Best Practice Regulation 2007; Productivity Commission 2005; Bureau of Industry Economics 1996; Productivity Commission 2007, 2008.

²¹ Hodge 2000; European Commission 2004.

²² European Commission 2004, pp. 21-23; 61-65, 80-82.

- Shared technology and, design and construction innovation.

Alliance contracts substitute an adversarial contract framework for one based on relationship management and collaboration. It also aligns incentives for the principal, the contractor and its sub-contractors. However, they are a contract for the delivery of assets and unless stapled to a long-term management contract, they do not incorporate lifecycle costing or value for money performance measures.

Evidence suggests that alliance contracts are delivering procurement cost savings in the range 2-4% or, in the case of large complex projects such as the new Terminal 5 complex at London's Heathrow airport, 24%.²³

7. Public Private Partnerships

Public private partnerships were introduced in Britain in the mid-1990s as one of several procurement initiatives introduced by the United Kingdom Government to address an infrastructure shortfall in that country and commence the procurement reform process identified in Constructing the Team (Latham Report) in 1994 and the Report of the Construction Task Force (Egan Report) in 1998.²⁴ This was the first significant policy-based procurement reform to be introduced in developed economies although privately financed and operated infrastructure services were in use at the time of Augustus in Roman times, by the Netherlands and British governments in their colonisation efforts during the 17th and 18th Centuries and the industrial revolution in the 19th Century. Several hybrid forms of private participation in local service provision were widely used by local government in France during the second half of the 20th Century and in the 1990s, build own operate transfer (BOOT) procurement methods were widely employed by cash-strapped governments in both developing and developed economies as a substitute for state capital to supply essential government services.

As a policy-based procurement framework sometimes embedded in enabling legislation, PPPs permit a standardised approach to large and complex procurements that incorporate rigorous project selection and evaluation process and best practice performance benchmarking. PPPs in Australia are excluded from traditional procurement policy frameworks and differ from traditional procurement processes in several respects.

First, projects are identified and developed by commonwealth and state agencies and proposals are advanced through a series of qualifying stages

²³ NAO 2005, Vols. 1 and 2.

²⁴ H.M. Treasury 1995, 2000.

or gateways in the approval process. The gateways are based on the following criteria:

1. Project selection – an analysis of the business case for each proposal
2. Project affordability - projects should have an existing capital budget allocation
3. Procurement strategy – an evaluation of different procurement options
4. Selection of a successful proponent and negotiation of the terms of the contract over an exclusive dealing period. This process includes negotiation about the regulatory and contract management arrangements
5. Contract finalisation and financial close.²⁵

Second, the project is put to competitive tender with an output specification.

Third, the construction of a public sector comparator. This is a risk-weighted measure of traditional procurement over the project lifecycle that is used for comparison with proposals submitted by private consortia in a competitive bid market.

The major challenge for governments using PPP procurement is to achieve changes in culture in its dealings with the private sector and undertake the extensive retraining necessary for line agencies to use advanced project evaluation and measurement methods, including:

- Discounted cash flow analysis
- Risk identification, measurement and valuation
- Lifecycle costing
- Project management
- Incentive-based regulation
- Real options
- Negotiations
- Economic and social impact assessment.

²⁵ Partnerships Victoria 2001a. PPP Policy and Guidelines have been issued by Infrastructure Australia and each of the Australian states and territories. Australia is moving toward a nation PPP policy framework with uniform project evaluation guidelines. Nevertheless, responsibility for PPP policy and approval processes will be the responsibility of Treasury Departments and Ministers in each jurisdiction (Infrastructure Australia 2008a, p. 12). Partnerships Victoria is widely regarded as international best PPP practice and provides the policy and guidance template for many developing economies.

PPPs represent one method of major project procurement that is well suited to undertakings involving long-term service delivery, innovation, high levels of risk and, complexity. However, the question of state funding for long-lived infrastructure assets applies to all forms of procurement where there is increasing need to improve procurement efficiency, delivery and operational performance and improve value for money outcomes for the state. The financing sources canvassed in this report apply to all forms of private participation in infrastructure – traditional input-specified construction contracts, outsourcing, alliance contracting and privately financed options such as the BOO, BOT and BOOT models and, PPPs.

A difficulty in recent years was identifying PPP project performance during the early years of a long-term contract and creating *ex post* measurement techniques that permitted recognition of the broader qualitative benefits arising from service delivery over long service intervals. A number of independent reports in Britain and Australia suggest that PPPs are delivering improved procurement outcomes, value for money and better public services.²⁶ PPPs are also improving state procurement practices in the following areas:

1. The scientific analysis of public procurement including the use of more rigorous methods for project selection, analysis and process management
2. Wider use of value for money evaluation methods incorporating quantitative and qualitative measures of output services
3. Wider use of whole-of-life service delivery analysis and costing
4. Greater use of the output specification and tender evaluation criteria that includes both quantitative and qualitative outcomes
5. A move to relationship models of service regulation with the emphasis on relationship management and graduated penalty scales to preserve incentive and encourage consistent performance over long service intervals
6. Greater use of collaborative contracting methods such as alliance contracts and mediation/arbitration mechanisms to minimise costly contractual disputes and encourage shared innovation and cost savings that result from improved project delivery outcomes.

Central to the performance of PPPs is the opportunity that the model presents for harnessing private incentive. This takes three forms:

1. Project delivery to specification, on time and within budget
2. The delivery of services to specification over long service intervals

²⁶ Regan 2008b; Fitzgerald 2004; Partnerships UK 2006.

3. The additional layer of performance monitoring and governance that private financiers provide to ensure compliance with covenants and debt servicing obligations of the consortium.

The incentive mechanism operates at a number of levels. It may apply between members of the consortium. For example, if a building contractor is late with delivery, revenue is deferred for the asset operator and other members. This suggests a group incentive to ensure delivery on time and within budget. There also exists incentive for the contractor who may carry the cost of time overruns and/or liquidated penalties for late delivery. Similarly, poor service delivery may result in penalties and abatements which effects overall investment value, it may delay refinancing or reduce the return for both equity and debt providers. In the case of financiers, the lender to the project will not usually be a member of the consortium. The lender maintains an arm's length relationship to the consortium and will monitor the contract to ensure compliance.

A PPP arrangement may also include a credit insurer who provides a guarantee or credit "wrapping" of the SPV's financial obligations. If the PPP consortium vehicle, (the special purpose vehicle or SPV) defaults, the credit insurer will assume servicing of the project debt. Credit insurance creates an additional web of incentive with both the lender and the insurer monitoring the SPV's operational and financial performance.

8. Comparative Review of Procurement Methods

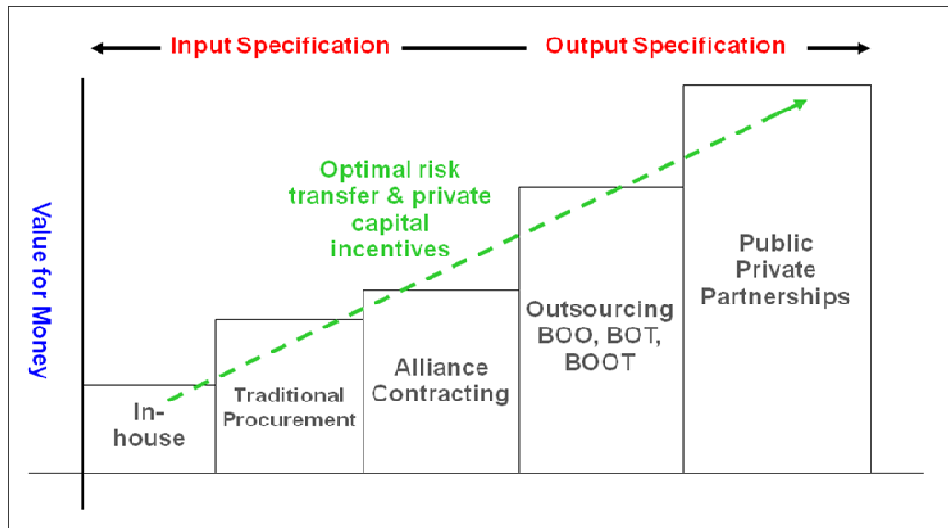
There is sound international evidence that traditional procurement models based on lowest cost evaluation are the worst performing of the state procurement options. Recent studies point to the benefits of private sector participation in the provision and management of economic and social infrastructure.²⁷ Notwithstanding the difficulties comparing different procurement mechanisms over different time frames and measurement criteria, there is evidence of better procurement outcomes with methods that employ a full or partial output specification, a medium-term management contract and full lifecycle costing (see Diagram 2). The output-specification contracts achieve higher levels of risk transfer, innovation, technology, value for money and improved service delivery compared with traditional procurement.

The major difference between input and output-specified procurement contracts is the optimal alignment of incentives. This is achieved with a

²⁷ NAO 2001, 2003a, Mott McDonald 2002, Allen Consulting 2008; Mathias and Reddington 2006; KPMG and BSA 2005; Fitzgerald 2004.

combination of financier-led market disciplines, a payment system that balances incentives for over-performance with penalties for non-performance, and the retention of a framework that ensures a high marginal return on investment.

Diagram 1
Comparative Procurement Findings



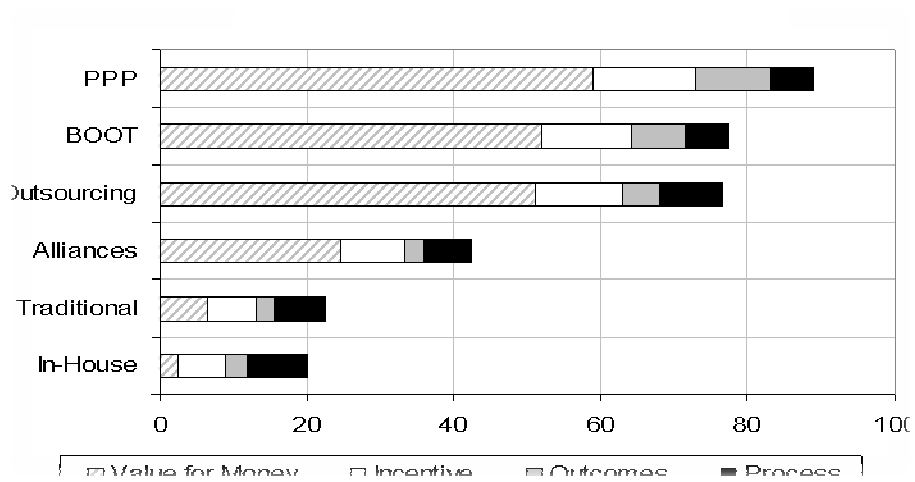
A comparative study of procurement methods suggests that contracts employing an output specification and lifecycle management significantly outperformed traditional procurement models (see Table xx). The evaluation criteria used in the study included value for money in place of lowest procurement cost, a measurement of incentives, process duration and cost, and both quantitative and qualitative service outcomes.²⁸ A difficulty here is that comparisons are predominantly based on *ex ante* evaluation criteria, that is, prior to commencement of service delivery. Operational performance can only be monitored over long service intervals and few PPPs in Australia have sufficient maturity for a comprehensive benchmarking study to produce meaningful results. Nevertheless, evidence from Europe, where there is greater depth and experience in private infrastructure provision, confirms that operational expectations are largely being met.²⁹ User and manager surveys and performance audit reviews are also providing useful evidence of *ex post* performance and these are now

²⁸ The evaluation criteria is based on assessment criteria that included (a) value for money, (b) the role of incentive (c) project delivery cost and timeliness, and (d) process time and cost (Regan 2008c).

²⁹ European Commission 2004.

widely employed in the United Kingdom and in the early post-commissioning stages in Australia.

Diagram 2
Comparison of Procurement Methods, 2008



SOURCE: Regan 2008

A comparative review of procurement performance is set out at Appendix A.

Part 2 Capital Market Conditions

A survey conducted by the Infrastructure Association of Queensland in December 2008 canvassed the views of leading Australian financial services firms including credit insurers, financial intermediaries, equity and debt providers, credit rating agencies and fund managers. The survey was supported by anecdotal evidence and media reports. At the transactional level, large programmed PPP projects encounter difficulties with capital raising exceeding \$600 million. Social infrastructure projects with unitary payment arrangements are readily bankable to \$500 million and economic infrastructure involving patronage risk is very difficult at any value. An additional difficulty experienced by bidders of projects such as Melbourne's desalination project is the requirement for consortia to arrange parallel financial commitments for their bids. If the financing requirement is \$2 billion or more, three bidders will each require commitments from their lenders for that amount. This locks up to \$6 billion in debt markets with consequential impacts on market liquidity and the availability of capital for other projects. The survey predicted further volatility in risk margins, debt pricing and equity values. Other specific conclusions included:

1. Evidence of capital rationing with lending ceiling currently in the range \$300 (economic infrastructure projects) to \$700 million (social infrastructure projects)
2. Higher debt costs
3. Contraction in the debt guarantee market with a reduced number of providers, higher margins and increased transactional scrutiny
4. A lender preference for social infrastructure projects with a revenue stream based on the state payment of a capital or availability charge
5. More exacting credit standards, conservative leveraging and higher debt service coverage ratios
6. High aversion to patronage risk
7. Demise of the initial public offering (IPO) model for new infrastructure projects.³⁰

The survey also pointed to immediate difficulties for project refinancing in present conditions. The mismatch between long-term investments and medium-term finance that is used in Australia requires refinancing of part or all of project debt every 4-7 years.³¹ Refinancing risk includes the cost of capital and the probability of securing new finance on similar terms. In Europe, Asia and North America, debt is generally structured as long-term project finance which reduces refinancing risk and provides greater certainty with the cost of debt.

³⁰ Regan 2008a.

³¹ ConnectEast 2004; River City Motorway 2006; BrisConnections 2008.

The survey respondents were contacted in early May with a request to revise their assessment of existing and future capital market conditions. Three respondents each with international operations suggested that the volatility in the domestic equity market would continue until mid-2010. The remaining respondents indicated no significant change in debt market conditions with the major problem being refinancing of capital-intensive assets that mature in the period 2009-2011. Nearly all of the respondents made the point that infrastructure finance in Australia was a seller's market and that little change was expected in these conditions for several years.

Given the performance benefits of PPPs over traditional procurement methods, the issue now confronting government and markets is to identify alternative funding mechanisms over the medium-term to sustain privately financed infrastructure and preserve the incentive framework that is so fundamental to its success.

State Investment Evaluation

How does the state capitalise its infrastructure investments? As a general rule, the state can finance new investment in one of two ways – by applying taxes or borrowing, that is, via fiscal policy. If the state is to draw capital from existing consolidated revenue, it will do so at the expense of existing appropriations.³²

The state generally prices its capital using social time preference – the rate that the state estimates is the price that the community will pay to defer immediate consumption.³³ The government's cost of capital (the bond rate) serves as a proxy for social time preference and is used as the discount rate for cost benefit and business case studies and the public sector comparator in some jurisdictions. However, Campbell and Bond argue that this rate is too high and should be reduced for the effects of future growth in wealth and activity, intergenerational equity, uncertainty and diminishing utility. The authors suggest that the utility discount factor substitutes for the social discount rate and at a 10 year bond rate of 4.4% per annum, the social discount rate would be around 1.4% per annum.³⁴

³² Projects submitted to Infrastructure Australia in 2008 for purposes of prioritisation were required to meet qualifying criteria (Infrastructure Australia 2008). However, the projects announced by the Commonwealth Government in May 2009 were determined in cabinet. The allocation to the states and territories (on a per capita basis) broadly corresponded with state population distribution.

³³ Campbell and Brown 2003, p. 221-237.

³⁴ See also Campbell and Bond (1997). The authors employ a labour supply incorporating average and marginal tax rates. The model tests the effect on the supply of labour of a 1%

The bond rate as a proxy for social time preference is not a wholly satisfactory approach to measuring state investment.³⁵ If a state funded project is to fail, taxpayers will be called upon to carry the losses in the form of either further state debt (on which interest is paid and principal repatriated) or new taxes are applied. That is, taxpayers are indemnifying the state against loss and carry the contingent liability for the risk of the undertaking.³⁶ If taxpayers were to apply a risk-adjusted discount rate incorporating a shadow cost of equity, it would be significantly higher than the cost of debt.³⁷ Brealey, Cooper and Habib argue that the social discount rate is the expected rate of return for comparable capital market investments.³⁸ However, the state does not apply this higher discount rate because it sees itself as essentially a risk-free borrower, ie. risk of default is negligible.³⁹ The only break in this circular argument lies with an analysis of the risk attaching to the returns from a particular investment rather than the actual cost of capital.⁴⁰ Grimsey and Lewis argue that the risks associated with a given undertaking are similar for both private and public investors – the sources of capital and its relative cost has no bearing on how we calculate the project's risk premium.

The risk premium built into a project has two components – systematic and unsystematic risk. Systematic risk is mainly exogenous and outside the control of investors or project managers. Examples of systematic risk include change in government or government policy, business cycles, interest and exchange rate movements. The investor's main tool for measuring systematic risk is the stock exchange. The capital asset pricing model permits comparison of the price and return performance of an individual stock and the market as a whole, an index or other stocks in the market. The co-efficient of variation or beta measures volatility between the selected stocks or indexes, and the market performance serves as a proxy for market-wide or systematic risk albeit an historical indicator with limited forecasting potential.

increase in marginal tax rates – the changes in tax revenues and deadweight loss are used to estimate the marginal cost of public funds in Australia.

³⁵ H.M Treasury 2003 (the Green Book).

³⁶ Grimsey and Lewis 2004, p. 133.

³⁷ Klein 1997. This approach was adopted by Commonwealth business units in 1998 (Commonwealth Competitive Neutrality Complaints Office 1998).

³⁸ Brealey, Cooper and Habib 1997.

³⁹ The risk of default has a low probability provided the country has a superior credit rating. However, in conditions of economic stress, national fiscal management may deteriorate and national sovereign ratings quickly revised. An adverse revision of a state's credit rating may increase the cost of servicing all state debt and impose significant current and future burdens on taxpayers and public borrowings.

⁴⁰ Flemming and Mayer 1997; Anderson, Finn and Peterson 1996.

Unsystematic risk describes the idiosyncratic characteristics of a project; it is generally endogenous in nature and will differ between projects. It can be eliminated by diversification and is recognised in the public sector comparator calculations for Partnerships Victoria projects.⁴¹ In Britain, the public sector comparator is no longer used for PPP projects and when it is applied, there is no recognition of market or project risk.⁴² Why are discount rates important? The risk weighted lifecycle costed model of traditional procurement (the public sector comparator or PSC) is determined using discounted cash flow analysis and the discount rate is central to the valuation of future cash flows – positive and negative.⁴³ The PSC is used to compare private bids with the public sector comparator and provides the quantitative component of the value for money test. Value for money measures the entire procurement option and if the private bid is lower than the PSC, the cost of capital is not a decisive factor. It is the total value for money outcome that drives a successful private bid. There is no evidence to suggest that the cost of capital *per se* is a decisive influence in the state's selection of the better method of procurement for a particular project.⁴⁴

Two other matters which are not readily identified in the literature but which nevertheless are of importance to the state's investment decision. Firstly, when should the state invest? It is argued that the state should invest in infrastructure when the social rate of return exceeds the cost of capital.⁴⁵ A difficulty here is identifying economic benefits for public goods and placing a value on social benefits.⁴⁶ For example, a survey of cost benefit studies for

⁴¹ PV 2003.

⁴² HM Treasury 2003; Infrastructure Australia 2008c.

⁴³ In discounted cash flow forecasts, low discount rates operate to increase the value of deferred cash flows whilst high discount rates have the opposite effect. A given set of cash flows with a low discount rate will disclose a higher internal rate of return than it will with a higher discount rate.

⁴⁴ Lower cost of capital improves the value of private bids. For social infrastructure using an availability payment structure, a reduction in capital costs would be reflected in a lower unitary charge (McKenzie 2008). However, a criticism of PPPs is that the state pays excessively for the services it contracts to buy because the private operation requires a return on its investment and its cost of capital is higher than that of the state. Notwithstanding the validity of this argument, value for money relies on more than the cost of capital. The tender process effectively has the state as a competing bidder with its public sector comparator. If private bids are lower than the comparator, the state delivery option is more costly. In the bid evaluation process, the state will not have access to the innovation, technology, incentives or efficiencies available to private consortia and the collective effect of these benefits is to outweigh the disadvantage of a higher private cost of capital and the requirements for private investors to make a market return.

⁴⁵ Smith 1995 cited in PC 2009, pp 55-56.

⁴⁶ Most economic and social infrastructures are public goods. Public goods are provided by the state from revenues for the benefit of the community as a whole and include items such as public roads, street lighting, nature reserves and lighthouses. Public goods do not generate revenue sufficient to meet their cost and are therefore the responsibility of the state because the market has no interest in their provision.

infrastructure investments in developed economies found that highest social returns was derived from investments in land transport and communications with destination freight rail the best performer.⁴⁷ At the bottom of the list were social infrastructure projects including new schools and hospitals and, dams and water resources. The dilemma is one faced by the state every day and the state's selection of priorities is generally based on policy considerations and the broader public interest informed by underlying economics.⁴⁸

Second, how relevant to the state's investment decision is management efficiency? In the United Kingdom, the PSC for the authority operating assets used by London Underground was viewed by the National Audit Office as an inefficient manager and confirmed the view of advisers that the PSC should include an adjustment for an inefficiency premium.⁴⁹

Capital productivity and operational efficiencies are major issues to be addressed by policy-makers and regulators if we are to improve the performance of Australia's strategic infrastructure. This will require further research that examines comparative efficiency of supply chains at the industry level and operational performances in both the public and private sectors at the enterprise level.

⁴⁷ Regan 2007.

⁴⁸ Such as fiscal stimulus during a recession. Affuso, Masson and Newbery 2003.

⁴⁹ The reasons for the inefficiency may reside in the system of public administration of the authority, budget cut-backs, program suspension or curtailment of maintenance work (NAO 2000, pp. 3, 5, 8).

Part 3 State Financed Infrastructure Provision

In Australia, the state has provided most of the continent's economic and social infrastructure from first settlement. It has done this directly with appropriations from budgets, with taxation by applying user-pays charges and raising public debt or by using a combination of these methods.⁵⁰ The difficult capital market conditions of the past 12 months has led to calls for a return to state provision using state debt or tax-preferred bonds and a number of other financing methods.

The traditional options for state financing of infrastructure procurement include the budget framework, taxation and state debt. In the past 40 years, other methods have been attempted – special purpose bonds, state financial assistance,⁵¹ state investment authorities,⁵² and special-purpose bonds. None of these methods has provided sustainable models for ongoing state financial support for privately-managed infrastructure services. This Part will examine the options for state financing of infrastructure and state participation in public private partnerships with a view to considering how the state can address the difficulties of raising private infrastructure finance at the present time.

1. Taxation as a Source of State Capital

The state may provide infrastructure by raising taxes. There are several different approaches to raising taxes:

- An increase in direct or indirect taxation levels with economy-wide effect
- The raising of a tax or levy with state or regional application
- The imposition of a user-charge.

In its 2009 budget, the Queensland Government anticipated revenue of \$37 billion derived from the following sources:

⁵⁰ From federation, infrastructure was viewed as a public good and with successive interventionist federal and state governments, most infrastructure assets and businesses were owned and managed by state agencies or corporations. Following the recession of 1989-90 and the move to improved microeconomic efficiency that was ushered in by the Hawke and Keating governments in the 1990s, many infrastructure assets and businesses were reformed or privatised. In the past 10 years, private infrastructure provision has assumed much greater significance and state investment has continued its decline in GDP terms.

⁵¹ Supported debt model (Queensland).

⁵² For example, Australian Investment Development Corporation, Queensland Industry Development Corporation.

- Grants from the Commonwealth \$18.7 billion (50.4%)
- State taxes \$9.3 billion (25.0%)
- Sale of goods and services \$3.7 billion (9.8%)
- Other revenue \$2.4 billion (6.3%)
- Interest income \$2.0 billion (5.4%)
- Dividends and tax equivalence payments \$1.2 billion (3.1%)

Taxation accounts for around 25% of state government revenue although this increases to around 35% in the case of local governments. Government transfers account for around half of state government revenue.⁵³

The effectiveness of taxation and alternative methods of financing urban infrastructure was examined by Allen Consulting for the Property Council of Australia in 2003. The comparative research is based on GCE methodology which examined the net economic impacts (including output and employment) for five financing methods - taxation, user charges, producer levies, state debt and privately sourced capital. The study found that the highest net returns were state debt and privately financed projects (218% and 182% respectively) which nearly doubled the state taxation benchmark of 100%.⁵⁴

Taxation is a source of revenue for government, however, it also carries with it adverse economic impacts and deadweight costs.

Deadweight Cost of Taxation

The deadweight cost of taxation includes direct costs such as taxation administration, compliance and enforcement and induced effects whereby taxpayers have less disposable income to invest or change their behaviour to activities of lower utility which attract a lower incidence of tax. These effects represent the disincentive or deadweight cost of taxation.⁵⁵ Thomas examined the deadweight cost of income taxation in New Zealand and found that tax cuts introduced in 1986 reduced deadweight costs by 27% or 23% of the tax revenue raised.⁵⁶ In contrast, tax increases in 2000 raised deadweight costs to 15% of tax revenue collected. The welfare cost of taxation was estimated at \$1.01 for every extra dollar of tax revenue raised. A study of Australian taxation suggests the deadweight cost is closer to 1.2 to 1.3 times the revenue raised.⁵⁷

⁵³ Productivity Commission 2009, p. 57f.

⁵⁴ Allen Consulting Group 2003.

⁵⁵ Diewert and Lawrence 1998.

⁵⁶ Thomas 2007.

⁵⁷ Robson 2005.

Taxation is also a problematical issue when private debt is substituted for public debt. Unlike a government agency or business enterprise, a private company pays tax on its taxable income albeit after the deduction of depreciation and interest expense from its assessable income. A trust may also claim these deductions and qualify for tax transparency which shifts the burden of taxation to investors. This can affect the incidence of tax and the timing of its collection. For example, an investment structured as an unincorporated association may derive advantage from tax benefit transfer during the early years' operation of the project. Implicit in tax-based bond financing is a transfer payment from the Australian Government to private investors. Private or public expenditure involving a transfer of benefits from the state to private investors is an additional deadweight cost.

2. State and Municipal Bonds

Many central, provincial and local governments raise private capital for infrastructure development by issuing bonds. In many cases, the bonds are issued by the regional authority seeking to raise the capital, the interest payable on the bonds offers some form of tax exemption and the obligations of the issuing authority are fully or partially supported by central or provincial government guarantee.⁵⁸ Australia has used infrastructure bonds in the past and they are widely used in the United States, Canada, New Zealand, Chile, Malaysia and by members of the European Union. Several countries issue generic state bonds that are applied to infrastructure projects, amongst others (Sweden and Germany).

Developed economies with established capital markets trade infrastructure bonds in competition with traditional public and private bond issues. In developing economies, small or inefficient capital markets, unstable exchange rates, high rates of interest and sub-investment grade sovereign credit ratings limit the opportunity for this form of investment capital. Nevertheless, countries that have issued infrastructure bonds to develop domestic capital markets include Kenya and India.

In Australia, the Commonwealth Government introduced an infrastructure borrowings taxation scheme in 1992 which was designed to stimulate private investment in infrastructure with a tax exemption of interest derived from qualifying loan facilities.⁵⁹ The program was modified and extended in 1994 as the Infrastructure Borrowings Taxation Concession and replaced in 1997 with the Infrastructure Borrowings Tax Offset Scheme. The latter

⁵⁸ Alternatively, the bond may be issued by a Treasury or Treasury Corporation that has the advantage of a better credit rating which attracts a lower cost of capital.

⁵⁹ Income Tax Assessment Act (*Cwlth*) 1936, Division 16L; Land Transport Infrastructure Offset; Income Tax Assessment Act 1997, ss. 40-830 to ss. 40-885.

program was limited to large scale land transport projects and the largest and last major infrastructure project to take advantage of bond financing in Australia was Transurban Group's Citylink tollway in Melbourne. These programs granted a tax benefit to secured private lenders but not the unsecured risk-taking equity investors. It followed that the scheme was mainly employed by promoters to develop hybrid tax advantaged debt securities for high net worth individual investors. The scheme was phased out in 2004.

The United States has long supported tax exempt bonds as a method of raising private infrastructure finance for state and local governments. The US legislative framework has been subject to many changes over the past 20 years and in its current form, legislation authorises state and local governments to issue tax exempt bonds for investment in ports, urban transport, public schools, waste management systems, energy, water, intercity rail services, public housing and airports. Critics of this approach argue that tax-based infrastructure is inefficient for the following reasons:

- The low equivalence between the tax benefit granted to corporate and high net worth individual investors and interest savings to state and local governments (average marginal tax rate saving 35.7% and interest rate savings of 1.80% per annum)
- The tax exemption to investors with high marginal rates of tax fails the test of Pareto efficiency
- The arrangement operates as a transfer payment to state and local governments together with authority and discretion to issue what is, in effect, a federal government tax handout
- The extension of the program to quasi-social infrastructure such as sports stadiums and public entertainment facilities
- Eligibility for the tax exemption is denied to lending institutions, public and private pension funds and institutional investors.⁶⁰

The Role of Taxation

The infrastructure bonds employed in developed economies generally employ a taxation concession in the form of a full or partial interest exemption (or rebate). Tax-based incentives present a conundrum for government. If investment is advantaged with an exemption, there is an explicit transfer payment from the state to the private investor. First, funds raised by the state will be invested in public goods that deliver welfare and private benefits.⁶¹ Second, the security will be priced at a discount to other state securities in the market. This may reflect the lower risk of state bonds

⁶⁰ Regan 1999.

⁶¹ Hillman 2003, p. 131-138; Abelson 2003, pp. 404-418.

or simply that buyers recognise the real post-tax return of the bonds and adjust for the tax benefit.

Alternatively, the bond may be indexed in which case there is a discount in the yield spread (or interest) that is paid to retail investors. In both cases, there is an advantage to government in that the infrastructure security is generally priced at a lower rate than other bond issues in the market.⁶²

The benefit cost analysis for this approach is as follows:

$$B = W - (C + D)$$

Where:

B is the net benefit to the state

W is the welfare and private benefits
of the investment

C is the cost of transfer payment

D is the deadweight cost.

The role of dedicated infrastructure bonds in project procurement remains contentious particularly if the bond is offered with tax exempt status. Nevertheless, it remains an option. The challenge for government in following this path to infrastructure provision is to undertake a cost effectiveness comparison between the different funding options available to it after adjusting for the distortions and adverse economic outcomes of each particular approach.

3. Financing Infrastructure with State Debt

The state may finance current and future infrastructure needs from existing budget appropriations or special purpose debt. Public debt generally takes the form of bonds, treasury notes or commercial paper issued by the commonwealth, state and territory governments.⁶³ Overall government borrowings are subject to voluntary undertakings or caps agreed at a meeting of the Loans Council which is formally a Commonwealth-State Ministerial Council comprising Treasurers of Australian governments.

By international standards, Australian public debt levels are low and in the period 1994-2003, average aggregate state debt stood at around 20% of GDP compared with the EU group 52%, Japan 39%, the United States 48%, OECD average 47% and New Zealand 25%. Recent events in the international and domestic economies and fiscal interventions by the Australian Government has increased public debt to around 14% of GDP

⁶² Chan, Forwood, Roper and Sayers 2009, p. 84.

⁶³ Queensland Treasury Corporation 2008.

and in Queensland, increases in state borrowings to a forecast deficit of \$1.6 billion contributed to Standard and Poor's recent downgrade in the state's credit rating from AAA to AA+. ⁶⁴ The re-rating increases the average cost of all state debt although subsequent intervention by the Australian Government with a state debt guarantee reduced the impact of the pricing differential. ⁶⁵

Comparative analysis of infrastructure financing options using general equilibrium analysis show that the social returns are highest with the state debt option and generate nearly twice the output and employment outcomes offered by taxation. ⁶⁶ Nevertheless, state debt is subject to borrowing limits and adverse impacts including deadweight costs and difficulties matching the tenor of borrowings to the financial life of infrastructure assets.

Deadweight Cost of State Debt

Deadweight cost or loss refers to the direct and indirect cost of state debt raisings in capital markets. It is the reduction of consumer surplus or welfare that results from a particular state activity and is a measure of the inefficiency of that activity. ⁶⁷ The cost includes the actual expenses associated with the capital raising, future interest payments and administrative costs. ⁶⁸ Additionally, state borrowing in capital markets has a "crowding out" effect on private firms which is generally reflected in changed investment behaviours, credit rationing, higher interest rates and the diversion of investment away from higher yielding private investment. The effect of the crowding out effect depends on the supply and demand elasticity for debt at a given point in time

Deadweight cost adversely affect medium term growth prospects and domestic savings ⁶⁹. Deadweight cost also increases in proportion to the size of the capital raising. ⁷⁰

⁶⁴ Australian Government 2009, Budget Paper 1, Statement 7: Asset and Liability Management, Budget Strategy and Outlook 2009-10, Canberra.

⁶⁵ The actual pricing differential is the guarantee fee paid by the state to the Australian Government.

⁶⁶ Allen Consulting Group 2003.

⁶⁷ Stiglitz 2000, pp. 111-112.

⁶⁸ Direct costs can be significant. For seasoned IPO infrastructure equity offerings it is around 3% and for debt raisings it is 8.5 to 12.5 basis points per annum for BBB credit rating (Allen Consulting 2004). For government business enterprises, debt raising transaction cost is around 15.5 basis points per annum for regulatory purposes (Hird and Grundy 2008).

⁶⁹ Stiglitz 2000, p. 780, 784.

⁷⁰ Campbell 1997.

Alternatives available to the state include federal government interest rate subsidies for state and local infrastructure borrowings and the issuance of tax exempt debt securities which permit the separation of the tax exemption component for sale in capital markets which has a parallel to emissions trading schemes.

4. The State as a Project Lender

The state may maintain the PPP procurement model in its present form and assume the role of an arms' length lender to projects. This financing option may be feasible in several situations:

1. When capital markets cannot supply the consortium's project finance requirement (a form of market failure)
2. When borrowers cannot raise the credit insurance necessary to secure credit ratings that reduce the cost of debt capital
3. When the cost of private capital is sufficiently high to adversely affect value for money outcomes.

State bonds attract a lower risk premium (spread) than non-government securities of the same maturity and credit rating. At 31st January 2009, the spread between AA rated corporate bonds and Commonwealth bonds stood at 270 basis points (bp), for A rated securities, 409bp and for BBB rated securities, 443bp.⁷¹ Critics of PPPs regularly point to the lower borrowing costs of government compared with the private sector. Indeed, at 31 May 2008, AAA rated corporate bonds with maturities of 1-5 years offered yields of 8.52% pa. Australian Government 3 year (AAA rated) bond yields were 6.73% and 5 year bond yields were 6.59% pa.⁷² The spread between state and corporate bond yields is dynamic and moves on a daily basis. However, the average spread for the 11 months to June 2008 is 1.27% pa. If the cost of capital was the only element of the value for money outcome, the lower cost of state debt is a decided advantage. However, value for money is both a quantitative and qualitative test. The quantitative test compares competitive private bids against a public sector comparator which is a risk-weighted lifecycle costed model of traditional procurement that takes into account those risks retained by the state and those transferred to bidders. The qualitative test requires critical examination of a proposal with a view to the public interest, sustainability, design amenity, user benefits and improved service delivery.⁷³

⁷¹ RBA 2009.

⁷² RBA 2008. New South Wales Treasury Corporation bond yields were 7.2% (3 years) and 7.04% (5 years) at 31 May 2008.

⁷³ Partnerships Victoria 2001b.

The State as Lender at the Project Level

In the United Kingdom, HM Treasury sought to improve the value for money performance of PPPs by creating a credit guarantee fund (CGF). The fund was created by Treasury capital market borrowings and on-lent to successful PPP consortia with the aim of reducing the cost of capital of the project.⁷⁴ The loan takes the form of senior debt guaranteed by consortium bankers and significantly, it is structured in such a way that the incentives attaching to the consortium's lenders, contractors and facility managers remains intact. A variation of the CGF is presently being used with the South East Queensland Schools project by the Queensland Government. However, these models do present several conceptual problems and the CGF approach was shelved in the United Kingdom after two pilot projects.⁷⁵

There are two precedents for this, the United Kingdom credit guarantee finance program and a variant employed in Queensland to support the South East Queensland Schools PPP project, the supported debt model. Both approaches require the state to select, evaluate and put to market the PPP project and then to provide debt capital to the successful consortium to construct and/or assume a long term investment position with the undertaking. An important feature of both these arrangements is that the state assumes responsibility for both loan and contract administration.

4.1 Credit Guarantee Finance

Credit guarantee financing (CGF) was introduced in the United Kingdom in 2003 to provide a multi-purpose mechanism for employing public debt capital to PPP projects. In a conventional PPP, the consortium arranges the equity and mezzanine capital requirement (for example, shareholder loans) and raises its debt requirement from the capital market.

To lower the cost of debt capital, the SPV will have the project assessed by a credit rating agency (the underlying rating) with a view to obtaining credit enhancement (credit risk insurance) from a monoline agency. For a fee, the SPV will secure an AAA credit rating from the insurer which lowers borrowing costs. The recent sub-prime credit crises has reduced the numbers of active monoline insurers in international and domestic capital markets and many of the major insurers no longer possess the important AAA credit rating.⁷⁶ The higher cost of SPV debt over contracts of 20 and 30 years significantly impairs value for money outcomes.

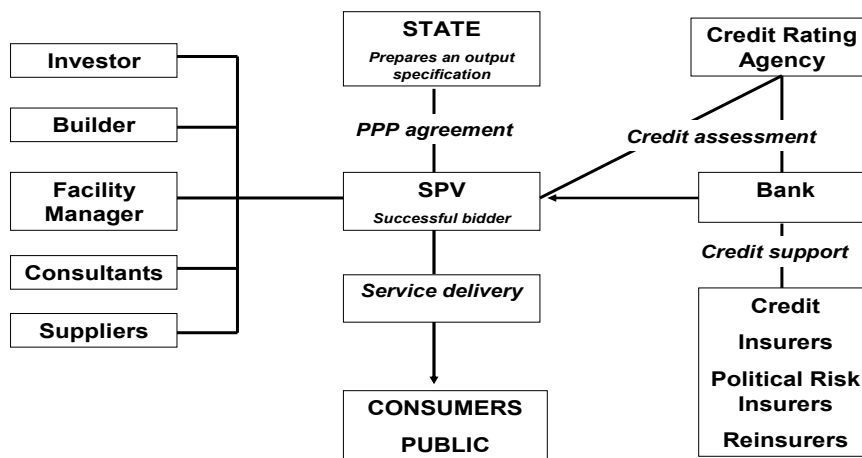
⁷⁴ Standard and Poor's 2004.

⁷⁵ McKenzie 2008; Regan 2008a.

⁷⁶ Regan 2008a, p. 18.

The CGF approach has the state providing senior debt to the SPV supported by a monoline agency's AAA guarantee of the consortium's obligations. CGF was financed with an initial £1 billion of debt raised by HM Treasury in 2004. CGF was trialled with two health projects in 2004 (Leeds) and 2005 (Portsmouth). In the Leeds project, the consortium's financiers provided the credit guarantee and for the Portsmouth project, the guarantee was furnished by a monoline insurer. An assessment of both projects identified lifecycle interest cost savings to be in the range 8-16% of aggregate finance costs.

Diagram 3 PPP Contractual and Finance Arrangements



The nucleus of the transaction is the guarantee furnished by the consortium's bankers or a credit enhancement agency (monoline insurer) to the state as security for the loan. The objective of CGF is to reduce the consortium's cost of capital and thereby improve the long-run and overall value for money outcomes for the state. This arrangement is a departure from traditional project finance principles whereby senior debt is limited recourse and secured over underlying project assets. CGF is, in fact, full recourse debt and this does affect the traditional incentive mechanisms that are a feature of conventional project financings.⁷⁷

⁷⁷ The finance is full recourse to the guarantor. This also takes place with credit enhancement of conventional project financing arrangements and the credit insurer is required to meet shortfalls in principal and interest. Nevertheless, under CGF, Treasury requires the unconditional guarantee of repayment in the event of default (HM Treasury 2005).

The CGF modifies the underlying PPP transaction in a number of important ways. PPP transactions rely on a combination of incentives, regulatory and governance frameworks and, market discipline. Against this background, the effects of CGF are as follows:

1. CGF gives the state three roles in a PPP transaction – project origination, project finance and contract administration during the term of the contract. The multiple roles create contractual complexity and potential conflicts of interest. For example, a discretionary or disputed abatement of a unitary (or asset availability) payment by a contract administrator may impair the SPVs capacity to service debt leading to default and a call under the guarantee.⁷⁸
2. The substitution of state for corporate debt effectively reduces the SPVs cost of capital. At 28th February, 5 year AAA bonds issued by the Commonwealth offered a yield of 3.73%, AAA bonds issued by T-Corp (NSW) 4.86% and AA corporate bonds 5.52%.⁷⁹ This suggests interest savings of 179bp and 66bp respectively. However, the benefit is reduced by direct and deadweight costs, and transaction costs. Additionally, for the state to assume transactional and guarantee risk, the interest rate should also recognise a credit risk premium notwithstanding an unconditional guarantee.⁸⁰
3. Application of CGF requires Treasury to assume the role of an arm's length lending bank involving loan documentation and administration, legal and advisory fees, regulatory oversight and industry-specific technical knowledge and the agency costs involved.
4. CGF introduces another layer of contractual complexity into the PPP transaction which contributes to additional decision-making friction that will incur time and cost delays.
5. In the volatile market conditions of the past 18 months, a number of leading monoline insurers have received credit rating downgrades and several have withdrawn from the market altogether.⁸¹ In August 2008, only 18% of the domestic credit insurance market had held their Standard and Poor's AAA credit ratings. This suggests that the void will need to be filled by consortium members and/or domestic banks with associated guarantee fees and transaction costs that would offset the cost of debt savings. The underlying credit rating of

⁷⁸ NAO 2003b.

⁷⁹ RBA 2009.

⁸⁰ Corporate AAA debt attracts a higher spread than state debt and a corporation cannot have a credit rating superior to that of the sovereign government.

⁸¹ Regan 2008.

PPP projects in Australia is BBB or investment grade reflecting project fundamentals and the credit strength of the principal contractors as a proxy for the likelihood of satisfactory project delivery. This raises the question of a shadow credit risk premium suggesting the impact of the CGF in prevailing market conditions may well be negligible.

6. PPP consortia are generally a collection of entities with different incentives and timing objectives. Few corporations plan much beyond 5 years and most for much less than that. Construction companies have an appetite for delivery risk but are averse to long-term equity holding positions. Portfolio investors prefer stable, long-term revenue streams which favour projects with mature income and expense characteristics and a low risk profile. SPV members may migrate across different industry sectors attracted by diversification, higher returns or greener pastures. The dynamics of the listed market favour flexibility. The CGF model with its long term debt obligations inhibits this flexibility, which may reduce depth in bid markets.
7. PPPs are an incomplete contract - commercial and financial settings change, risk profiles are dynamic, opportunity may arise for renegotiation of parts of the agreement, real and embedded options may be exercised, and there will be ongoing changes to the marginal return on investment and underlying investment economics. Long-term debt arrangements may inhibit sponsor flexibility.
8. Economies of scale suggest that for the CGT program to derive large scale benefits for the state and mitigate unsystematic risk, it would need to be applied to a large number of industry-specific projects.⁸²

The CGF model provides a substitute for private debt and therefore maintains the important incentive framework for the members of the SPV to perform under the contract. However, it does away with the independent private financier and removes an important performance monitoring and governance check on the SPV. A bank lender advancing senior debt to a SPV holds a limited recourse asset under a loan agreement that gives the lender a step-in right in the event of default. The lender assumes an independent financial monitoring role with a view to minimising non-

⁸² A further criticism of the CGF model is that it doesn't offer the incentive mechanism available with conventional PPPs whereby senior debt providers possess a right of subrogation in the event of default and possess incentives to negotiate a commercial and operational rescue of the project whilst maintaining service delivery. Under CGF, the incentives are less clear.

compliance with KPIs that result in abatements, penalties and reduction in debt servicing capacity. Additionally, private lenders bring market disciplines, know-how, financial risk-management expertise and industry experience to the role and apply a further level of governance. The CGF replaces the bank with financial institutions that don't bring the same commercial acumen or experience to the role. A passive debt guarantor and a Treasury Corporation will be required to deal with performance monitoring, loan administration, a dynamic risk environment, financial risk management and the financial economics of a long-term PPP. These activities are not always central or core competencies.

The CGF model is better suited to the European SPV structure than the variation employed in Australia. European SPVs are generally contractor-led and employ long-term project finance arrangements with embedded refinance options. In Australia, SPVs are often led by financial intermediaries who provide the capital underwritings for bids. CGF was not used after the Leeds and Portsmouth hospital PFI contracts although comprehensive guidance and standard form documentation has been put in place.⁸³ There is no commitment to proceed further with CGF although it remains an option for the future.

4.2 The Supported Debt Model

In 2008-09, the Queensland Government conducted a pilot program for a PPP in the education sector using a hybrid variation of CGF described as the supported debt model (SDM). The SDM has several distinguishing characteristics:

1. The SPV arranges private construction finance
2. When the asset is commissioned, the state provides a long-term finance facility to repay construction finance
3. The level of state debt employed is calculated using a formula that equates to a minimum asset value (or recoverable amount) in the event of consortium default. This may be expressed as a percentage of on-completion value. The state assumes the role of limited-recourse lender although the arrangement does not rule out a requirement for full and partial guarantees.
4. The state holds the senior debt position. The SPV will raise additional subordinated debt and equity capital from private sources. The SDM preserves traditional *ex ante* incentives and does not require credit enhancement or supporting private guarantees.

⁸³ HM Treasury 2003.

5. The lower cost of state debt reduces the cost of capital for the SPV and improves value for money lifecycle finance costs which should be reflected in an improved value for money outcome for the state.

The SDM takes advantage of the significant change in risk profile that accompanies the commissioning of a PPP project. The SDM is calculated against a notional risk-free minimum value for the project against which the state can make debt finance available to the project at cost. The SDM has three distinctive characteristics:

1. SDM financing is attractive from a value for money perspective, particularly given the recent increased spreads for private debt following the global financial crisis and it avoids the costly requirement for credit insurance.
2. The SDM model gives rise to high transactional costs during the early stages of the project although these may decline when the project reaches operational maturity. Overall contractual friction should be less for SDM than CGF with lower transaction and agency costs.

SDM has parallels with conventional project finance but shares little in common with the short to medium-term corporate finance employed in most Australian PPPs. An implication of the model that may adversely affect improved value for money outcomes is the need for privately sourced junior and mezzanine debt or equity capital to bridge the gap between the recoverable amount and the higher level of senior and subordinated debt usually sourced from banks. Subordinated debt carries higher risk premium.

Recent research suggests that the average state contribution to PPP debt capitalisation will be around 65-70% of capital requirement suggesting a mezzanine/junior debt participation of around 15-20% in addition to the equity contribution. The overall cost of debt will be determined on a project basis and particularly on the underlying credit strength of the underlying transaction and the quality and experience of the consortium. The use of higher levels of private mezzanine/subordinated debt and equity capital in prevailing market conditions may increase the SPV's cost of capital and offset part of the SDM's savings in lower debt cost without the relief offered by revaluation and refinancing. However, when capital is difficult to source, this is less of a consideration provided the VFM outcome remains positive.

The break-even point for SDM is narrow and estimates suggest that this may occur when average private debt spreads exceed 500 basis points.⁸⁴ Depending on the unsystematic risk profile of the underlying transaction,

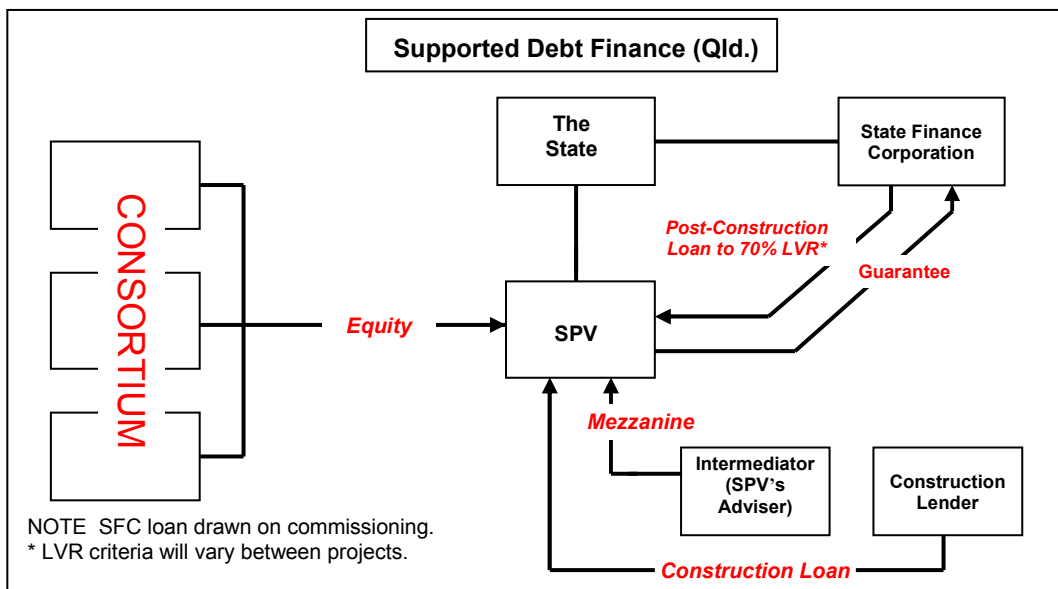
⁸⁴ McKenzie 2008.

this is most likely to occur in prevailing market conditions. SDM may raise the sponsor's overall cost of capital and this could offset a significant part of the cost savings achieved with lower cost senior state debt.

A second issue is the consortium's lack of flexibility. The SDM removes the short and medium term revaluation and refinancing gains of the Australian approach to long-term PPP contracts. PPPs are long-term incomplete contracts frequently containing embedded options to deal with changed operational or broader network conditions. Revaluation enables early-stage risk-taking equity investors to exit the project and sell down to more risk-averse fund managers and institutional investors.⁸⁵

Refinancing has several important advantages for mature projects – it permits an increase in senior debt (thereby reducing more costly subordinated debt and overall cost of capital), and facilitates higher leverage and a withdrawal/return to equity. Refinancing gains are shared with the state under Australian PPP guidelines.

Diagram 4



A third issue is the additional administrative cost that SDM imposes on the state. As a secured lender to the project, the lending agency will need to replicate private banking credit assessment and loan administration roles. This will add significantly to transaction and agency costs and in the nature of government, adds a layer of procedural and governance friction.

⁸⁵ Tapper and Regan 2007.

The SDM has only been used for the South East Queensland Regional School project at this time.

Summary

The SDM and CGF meet two important needs in present market conditions. First, both approaches preserve the PPP procurement method and permit its continued evolutionary development. Second, they offer a form of state project participation and risk sharing in projects. Both models preserve the basic characteristics and advantages of PPPs – risk transfer, an output specification, innovation and new technology. Nevertheless, both approaches raise several potential difficulties.

The first concerns the sustainability of lower cost of capital after adjusting for higher levels of equity or mezzanine capital and the friction costs associated with loan administration.

The second concerns direct and indirect costs. The state will finance these projects by borrowing in capital markets, raising taxes or sourcing the capital from existing appropriations. The first two methods attract deadweight costs and the third carries an opportunity cost.

The third concerns the removal of the capital markets disciplines normally associated with bank or bond finance. PPPs rely on symmetrical incentive frameworks – bankers seek to minimise the probability of default and put in place comprehensive reporting, governance and monitoring systems to administer the loan. These include performance criteria that include debt to value profiles, contributions to sinking funds and reserve accounts, debt service coverage ratios and cash flow management. This process operates quite independently of the operational performance indicators agreed with the state under the franchise agreement. The state monitors performance under its contract management framework and this continues for the term of the loan. This is essentially the monitoring of operational performance although a comprehensive contract management framework will include matters at a corporate level that may affect a company's participation in a long-term contract.⁸⁶

Each of the central parties to the PPP arrangement, the state, the consortium or SPV and lenders, are contractually linked in a tripartite agreement. If the SPV defaults under either the PPP or the loan agreements, the lender holds step-in rights to secure the asset and

⁸⁶ This is essentially a relationship management role that is framed around monitoring of operational performance and the state of health of the SPV and its members (Partnerships Victoria 2001d).

maintain service delivery. Failure to preserve this incentive framework will affect the long-term performance of PPPs. The removal of capital markets disciplines affects the incentive framework of the PPP and reduces investor flexibility.⁸⁷ This may have an adverse effect on private sector appetite for PPP projects in the future and depth in competitive bid markets. Finally, the CGF and SDM require the state, as a project lender, to administer the loan, ensure adequate management practices are in place and regulate the PPP arrangement. This will add significantly to transactional friction and cost which should be explicitly recognised in the value for money evaluation.

5. State Guarantee of Private Debt

An alternative form of state support for PPP projects not widely used in Australia is the issue of state guarantees or indemnities to support privately sourced project finance. The guarantee may be conditional or unconditional, full or partial, permanent or reducing, medium or short-term and it may impose on the indemnified bank positive covenants designed to preserve the contract performance, monitoring and loan administration roles that lenders assume under traditional project finance arrangements.

A state guarantee can be viewed as a trade-off in project and service delivery risks. Conventional PPPs transfer most project risks to the SPV. The state may retain full or part responsibility for site conditions and residual political risk, which principally concerns service delivery failure. Responsibility for asset delivery, operational performance and financial risk vest in the SPV and step-in rights vest in the lender in the event of default under either the SPV's agreement with the state or the loan agreement. Under a state guarantee arrangement, the state assumes a contingent liability for the SPV's default under either agreement. Under a traditional procurement, subject to specific risk transferred to contractors, the state carries ultimate responsibility for infrastructure service delivery and the multiplicity of risk that this involves.⁸⁸ The benefit of state allocation of risk to the SPV is improved value for money. A state debt guarantee increases risk borne by the state in the form of contingent liability for the secured debt component in the event of SPV default under the loan agreement. This risk

⁸⁷ This is a greater concern in economic infrastructure projects where investors are exposed to full or partial patronage risk. In social infrastructure projects, the scope for revaluation gains is reduced if revenue takes the form of a capital charge or availability payment. Nevertheless, the existence of abatement and incentive payments in the early years' operation may lead to high investor return volatility and refinancing gains (NAO 2005b).

⁸⁸ These risks may concern site conditions, design and contractual disputes, industrial relations, access to networks, patronage, operations and life cycle cost risk (Partnerships Victoria 2001a).

should be measured and incorporated into the PSC. If the quantitative VFM result is positive, the decision to proceed with a PPP is justified.

The guarantee risk has two elements – the probability of the guarantee being called and the cost to the state if it was. The probability of default is greater with economic infrastructure and particularly those projects that feature market risk than it is with social infrastructure. The two economic infrastructure projects that failed in Australia were the Airport Rail Link and the Cross-City Tunnel PPPs in Sydney. In both cases, the SPV overestimated patronage levels and shortly after opening, both operations moved into administration with financiers exercising step-in rights and assuming management of the assets. The Cross-City Tunnel was sold and refinanced and is currently performing to expectation. No significant loss was incurred by lenders to the project with losses absorbed by equity investors. The state carried partial patronage risk in the Sydney Airport Rail Link project and the project remained under administration until 2006 when it was sold to an institutional fund manager, Westpac.

The La Trobe Hospital in Melbourne and the Deer Park correctional facility were social infrastructure projects that encountered performance and operational problems in Victoria. In both cases the state repurchased the assets at less than replacement value. Other PPPs that struck problems were Southern Cross Station (delivery time and cost), Port Phillip Correctional Facility (operational performance), Enviro Altona (failure of the parent company) although none of these projects resulted in service delivery failure or high cost to the state.

In the projects that were negotiated as surrender of the franchise, losses were incurred by equity investors and no significant loss was incurred by lenders and in all projects, service delivery was maintained.

The distinction between economic and social infrastructure projects is important. Economic infrastructure in the form of land transport projects that include patronage risk possess the greatest overall risk profile. International evidence and research over 20 years confirms that, on average, most transport projects achieve an average 70% of forecast patronage and that level of error has persisted for decades.⁸⁹ Rail projects experience higher forecasting error than road projects and market risk increases the likelihood that the state will face a call under the guarantee. This is demonstrated in the Sydney Airport Link Rail PPP in which the state retained partial

⁸⁹ Standard and Poor's 2002, 2003; Flyvbjerg, Skamris Holm and Buhl 2006.

patronage risk.⁹⁰ Patronage risk in most land transport projects is held by the SPV.

In the case of PPPs for social infrastructure, the fundamental risk to the state is service delivery failure and asset utilisation. The state is the source of the unitary payment under the contract and can use this to mitigate obligations arising under a guarantee of private debt.

A further consideration is whether the value for money benefits of PPPs exceeds the risk-weighted cost of traditional procurement including a fully-costed guarantee. International evidence suggests that projects with an underlying Standard and Poor's credit rating at AAA or AA grade have a almost negligible risk of default. The risk increased to 3.4% at BBB and 9.7% or more at less than investment grade.⁹¹

Debt guarantees in the form of a present obligation that may, but probably will not, require a payment in the future are accounted for as a contingent liability and noted in the financial reports of government agencies.⁹² Where the present obligation "probably requires" a future payment by the state, the guarantee is recognised as a provision and disclosed as such in the agency's financial reports.⁹³

In Australia, public agencies entering into concession arrangements for the supply of goods or services are required to disclose their interest.⁹⁴ The disclosure requirement is determined by a control test whereby (a) the grantor controls or regulates what services the operator must provide, to whom it must provide them, and the prices or rates that can be charged for services; and (b) the grantor controls the residual interest in the property. Shading-in provisions apply to partly qualifying arrangements.⁹⁵ These changes will amend present Loans Council practice whereby obligations arising under concession agreements are not taken into account in Loan Council allocations each year.⁹⁶ Nevertheless, such arrangements are disclosed as contingent liabilities.⁹⁷ In 2009, the Ministerial Council

⁹⁰ The Airport Link rail project in Sydney achieved around 25% of forecast patronage in its sixth year of operation. The Brisbane Airtrain also experienced patronage well below the levels forecast for its first 5 years of operation.

⁹¹ Greer 2009.

⁹² In Queensland, this is Accounting Policy Guideline (APG) 9 and Australian Accounting Standard AASB137, Provisions, Contingent Liabilities and Contingent Assets.

⁹³ AASB137, Appendix A, p. 30; Queensland Treasury 2005, p. 86.

⁹⁴ Australian Accounting Standards Board 2008.

⁹⁵ AASB 2008.

⁹⁶ Webb 2002; English and Guthrie 2002.

⁹⁷ The Loans Council is formally a Commonwealth, State and Territory Ministerial Council operating under the Financial Agreement between the Commonwealth, State and Territories, a schedule to the *Financial Agreement Act 1994*; Australian Accounting

foreshadowed a wider role for the Loan Council in financial arrangements for the provision of infrastructure.⁹⁸

A guarantee may take several forms. It may be a partial, capped, conditional or an unconditional guarantee of a loan for all moneys owing or specific obligations such as loan principal repayment, payments of accrued and/or future interest, the guarantee of future capital charge payments by the state, a guarantee against specified political risks such as changes in taxation law or guarantees relating to revenue or tariffs.

The guarantee of a bank loan implies that the cost of debt capital will be any less than a conventional PPP transaction with credit enhancement. This can be expected to be offset or exceeded by a state guarantee fee. However, it does change the credit risk of the underlying transaction to the bank and will attract a smaller risk spread than for AAA rated monoline insurers. It should also reduce transaction and agency costs. However, it may impair the important incentive framework under which the bank monitors service delivery, compliance with the concession agreement and administers the loan agreement with the SPV. However, this effect may be no different than already applies under credit enhancement arrangements.

From the state's perspective, the advantage of a guarantee over direct lending is that it does not attract deadweight costs or transaction fees, and it may not have an adverse impact on state debt levels.⁹⁹ Transactional and agency responsibilities can be transferred to the lending bank together with governance and reporting obligations. A state guarantee in these circumstances may reinstate competitiveness in debt markets and address the shortfall in debt capital for PPP projects.

Empirical evidence suggests that the form and scope of the guarantee determine its risk and cost. Wibowo tested the different forms of contingent state support of concession toll roads in Indonesia with a view identifying the forms of guarantee that offer the best risk-return payoff to the state.¹⁰⁰ The study values the effective state put options using stochastic probability measures and discounted cash flow valuation with a view to identifying the forms of guarantee that reduced most risk for the concessionaire at least cost to the state. Using a standard probability ranking index, the lowest state risk exposures were for debt guarantees followed by guarantees of traffic and revenues. Nevertheless, whilst the state guarantee for debt had a

Standards Board 2007, *Whole of Government and General Government Sector Financial Reporting*, AASB1049, October.

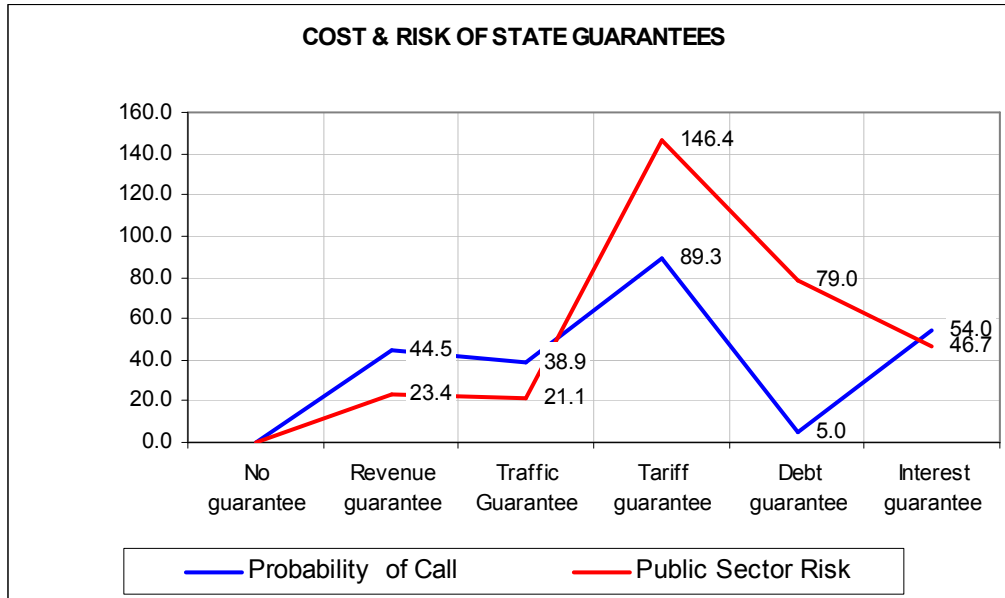
⁹⁸ Commonwealth of Australia 2008.

⁹⁹ Public debt is one of the indicators taken into account with sovereign credit ratings (Standard and Poor's 2005, 2007).

¹⁰⁰ Wibowo 2004.

low probability of being called (the lowest value of the group), it can be costly if it is called (second highest) (See Diagram 5).

Diagram 5



The Wibowo study only measures headline risk which does not take into account risk mitigation and management planning that can reduce the impact of both risk and uncertainty in long-term infrastructure contracts. State guarantees may also be conditional, subject to limited liability caps or reducing over the life of the project. These qualifications may reduce state liability with this method of project support.

Infrastructure is generally financed on the basis of limited recourse debt. The lender's security interest is limited to the assets and contracts that are being financed. In Australia, there has been a preference for medium-term syndicated bank debt which is refinanced periodically during the early stage of the project following periodic revaluation.¹⁰¹ This exposes SPV's to periodic refinancing, interest rate and currency risks not encountered with traditional project finance. Project lenders have a loan agreement with the SPV and possess certain "step-in" rights in the event of borrower default including breach of debt servicing obligations.

¹⁰¹ Tapper and Regan 2008.

Table 4
COST & RISK OF STATE GUARANTEES

	Probability of Call	Private Sector Risk	Public Sector Risk
No guarantee	0.0	17.9	0.0
Revenue guarantee	44.5	9.3	23.4
Traffic Guarantee	38.9	13.8	21.1
Tariff guarantee	89.3	16.5	146.4
Debt guarantee	5.0	16.5	79.0
Interest guarantee	54.0	15.3	46.7

***NOTE** Assumes full guarantees only without "shading in" variations Introduced by caps and collars on liability exposure or negotiation of conditions precedent.*

***SOURCE** Wibowo 2004.*

Most of Australia's infrastructure service providers and nearly all major PPP projects are rated by credit agencies. For new projects, this takes place at the time of raising initial capital and on a continuing basis. Most of Australia's recent listed PPP projects were rated investment grade which corresponds with Standard and Poor's BBB rating level.¹⁰² Credit ratings are a proxy for default risk and a correlation exists between the rating, credit spreads and the rate of default.¹⁰³ The credit default rates for corporate credit ratings is set out at Table 5.

of Australia's PPP projects have underperformed against expectation and resulted in the exercise of step-in rights or surrender of franchise. They include La Trobe Regional Hospital, Sydney's Cross-City Tunnel and the Sydney Airport Railway project. In all each case, the principal investment loss was carried by equity investors. In the case of the Cross-City Tunnel, the asset was sold and refinanced by new concessionaires with another lender. In land transport projects, the defaults were primarily a result of overestimation of patronage although in both the land transport projects, other factors were also evident.¹⁰⁴

¹⁰² Standard and Poor's 2005, 2006, 2007.

¹⁰³ Standard and Poor's 2009.

¹⁰⁴ Auditor-General of NSW 2006.

**Table 5
Credit Default Rates**

Credit Rating	Default Rate %	Credit Spread bp pa
AAA	<1.0	<362
AA	<1.0	>362
A	1	425
BBB	3.4	670
BB	9.7	880
B	20.3	1,500
CC	44.6	3,370

SOURCE Standard and Poor's 2008

Summary

The state guarantee of PPP bank debt does not require actual state finance and the friction costs associated with this. A guarantee may be a contingent liability of government for borrowing limit purposes and does not attract the “crowding out” and deadweight cost disadvantages of direct state capital contributions. Other advantages include:

1. The preservation of traditional incentive frameworks which are important to the effectiveness of the PPP procurement method
2. Flexibility - guarantees may be full or partial and may be withdrawn over time
3. The refinancing option remains available to private investors
4. The cost of a state guarantee is small
5. Lower transactional and agency costs than direct or indirect state debt
6. This method of support does not require the state to assume a loan administration role.

Research in developing countries points to the relatively low risk of state guarantee support for project senior debt compared to other forms of assistance for PPP projects. A review of state support for Indonesian BOT toll roads measured the contingent liability of five forms of support – revenue guarantees, interest subsidies, tariff guarantees, minimum traffic guarantees and guarantees of debt. The study found that the probability of

a guarantee being called in projects with an average 80:20 debt to equity ratio was 5% compared with 89% for tariff guarantees, 54% for interest guarantees and 39% for traffic guarantees. On a risk payoff basis, project debt guarantees were found to be the least risky form of guarantee for government. The findings of this study are supported by recent research by the World Bank.¹⁰⁵

7. Mandated Superannuation Fund Investment

A support mechanism periodically canvassed by industry and advisers from time to time is a mandated requirement for fund managers to hold a proportion of funds under management in infrastructure securities. The Australian superannuation industry is one of the largest in the world in per capita terms with funds under management around A\$1 trillion (around 89% of GDP at current prices).¹⁰⁶ Superannuation funds are regulated by the Australian Prudential Regulatory Authority (APRA). The average portfolio allocation of a sample of leading superannuation fund managers in 2007 is set out at Table 6). The disclosure of infrastructure investments varies between funds and the different style of investment accounts that are offered. Infrastructure appears under several asset categories – listed equities, debt securities or unlisted/other securities. In 2003 institutional investors (including fund managers) held over 70% of the equity securities issued by listed infrastructure companies.¹⁰⁷ A survey of a sample of listed infrastructure entities for the year ended 30 June 2008 suggests that this remains the case. Around 64% of institutional investors act for superannuation fund managers.¹⁰⁸

Fund managers serve the investment preferences of their members who may choose between cash, growth, balanced, high-growth, sector-specific and many other investment options. Several funds maintain dedicated infrastructure funds which may include participation in local PPP projects.

Superannuation funds would appear to be an appropriate store of capital that may be used to invest in listed and unlisted infrastructure projects. The funds can match long-term liabilities to members with similar term investments offering relatively low risk and strong yield performance particularly in the latter stages of the holding term. Local and international fund managers are already significant investors in listed sector-specific

¹⁰⁵ Irwin 2003, 2006; Wibowo 2004.

¹⁰⁶ Life insurance company superannuation funds and superannuation funds under management at 31 December 2008 (Reserve Bank of Australia 2008).

¹⁰⁷ Regan 2004.

¹⁰⁸ This estimate is based on beneficial ownership of voting securities for a sample of 13 substantial shareholder notices and the 2007-08 annual reports for listed infrastructure entities (Corporations Act s. 671B, Form 604) (Regan 2009).

portfolio infrastructure vehicles such as Macquarie Infrastructure Group and Macquarie Airports, portfolio funds, unlisted portfolio vehicles such as the Australian Infrastructure Fund and asset-specific PPP investment vehicles such as River City Motorway, Connect East and BrisConnections.

Superannuation fund investment in listed and unlisted infrastructure will continue for managers in pursuit of diversification, returns or long-term yields. However, mandated investment in infrastructure projects and PPPs in particular raises a number of concerns and certainly erodes neutrality between investments which is a cornerstone of an efficient capital market.

First, superannuation fund trustees are required, under the Superannuation Industry (Supervision) Act 1993 to act in the members' interest. The investment strategies employed by trustees are different and may include a member choice of investment profile, reliance on in-house and outsourced management expertise, active and passive investment strategies and links to associates in the retail advisory and financial planning industry.¹⁰⁹ Equity also imposes a fiduciary duty on trustees to serve the interests of those for whom they act.

The return of a superannuation fund is largely determined by the manager's performance and this is influenced by asset allocation and the particular investment profile of the fund. As members have discretion to move their accounts between fund managers, the investment performance of the manager is central to the size of the funds that they manage. Central to the fund manager's performance is liquidity and discretion to adjust equity portfolios from time to time, especially with the industry's short-term approach to fund performance measurement.

To require fund managers to invest in PPP infrastructure projects is to limit management discretion and impair liquidity and possibly, overall fund performance. An irreconcilable tension exists between mandated investment strategies and fund manager's fiduciary and contractual obligations to members.

Second, requiring fund managers to invest in greenfield PPP projects may impair fund performance if lower cost PPP investments are available in listed markets. These conditions have existed in Australia in the past 12 months and a large number of listed PPP entities were trading at significant discount to valuation.

¹⁰⁹ Ellis, Tobin and Tracey 2008; Sy, Inman, Esho and Sane 2008.

Table 4

Portfolio Allocation of Australian Superannuation Funds 2001-2006

Australian shares	33.4
International shares (unhedged)	14.0
International shares (hedged)	7.9
Listed property	3.7
Unlisted property	4.6
Australian fixed interest	1.7
International fixed interest (unhedged)	14.8
International fixed interest (hedged)	4.5
Cash	9.3
Other	6.1
	100.0

SOURCE *Ellis, Tobin and Tracey 2008*

NOTES Sample comprises 32% of funds under management and 39% of funds over \$200m in size. Based on growth default option. 1848

Third, to require fund managers to invest in PPP assets is to impair the level playing field and create distortions for asset allocation and investment neutrality.

Conclusion

Public private partnerships have delivered significant improvements to the science of public procurement and improved the quantitative and qualitative performance of public services. The difficulties posed in present market conditions threatens to slow down the rollout of new infrastructures and reduce private participation in project delivery and management. There are options in the form of alliance contracting, outsourcing and traditional procurement using the gateway process. However, the principal catalyst for change will diminish and the expectation of further refinement of incentive frameworks, the output specification, risk transfer and the value for money measure of procurement performance, will not be met.

This report finds that for these reasons, the PPP model should be maintained and further developed for specialised applications. This will require the state to consider two types of interventions.

First, the provision of financial support to PPPs in the short-term. To preserve those characteristics of PPPs that support innovation, certainty,

risk transfer and essential incentive frameworks, a case can be made for support in the form of full, partial or short-term guarantees for bank finance in the form of senior debt.

Second, greater state sharing of risk in the problem areas that are of most concern to bank lenders. The market has closed the door on patronage risk projects in the medium-term and IPOs for single-asset land transportation projects. However, there is opportunity to further develop the PPP procurement solution for social infrastructure projects. Victoria continues to lead the way with new projects in the justice, health and education sectors and demonstrated both flexibility and a willingness to innovate in present market conditions. The Melbourne Desalination project received 5 expressions of interest in its first testing of market appetite for a debt requirement exceeding \$2 billion. Sourcing debt was always going to be difficult and the project was a state priority. The government's response was to run a 2-bidder tender process and then pool lenders from both bids whilst minimising the number of syndicated lenders. The government offered a take or pay contract for a base component of the contract providing a unitary payment to the consortium that will service a significant component of the debt. The government also offered an underwriting of part of the consortium's debt requirement as a lender of last resort at market rates. The consortium is confident that all of the debt would be sourced from private sources before the project was commissioned in 2011.

The response of the Victorian government was to achieve a number of things. First, it preserves an independent role for the lending panel, holds down transaction and agency costs and preserves the important lender incentive framework and the market discipline that this brings to a PPP transaction. If the state is required to provide a loan to the consortium, it will share the same security status as the bank lenders.

Second, the approach preserves the PPP model and the improvement that this will bring to service outcomes over a 30 year project life.

Third, it provides an important signal to capital markets that the government is committed to PPP procurement and will act to deliver certainty as the circumstances require.

Fourth, it suggests that the Victorian Government is willing to react quickly and with innovation to assist the market in adverse conditions. The solution was not a policy formula or a prescriptive model of general application such as the credit guarantee fund or the supported debt approach. It was a solution that met the requirement of the project and the time and provides a template for other jurisdictions in Australia.

APPENDIX A

COMPARATIVE PROCUREMENT PERFORMANCE

Introduction

In 2007 Bond University undertook a comparative review of procurement methods for the purpose of objectively determining the relative strengths and weaknesses of the principal methods for the state procurement of economic and social infrastructures.

The study concerned procurement alternatives commonly used with large or complex projects and available to government, including:

- In-house provision using a state agency or works department
- Traditional procurement
- Outsourcing
- Build own operate and related forms of asset procurement
- Alliance contracting
- Public private partnerships.

Around 90% of state procurement in the late 1980s was traditional which employs a comprehensive input specification, a lowest price tender selection process, separation of the design and construction components of the project and an adversarial approach to contractual relationships. The main measurement methods were delivery on time and within budget.

In the 1990s with wider use of the build own operate transfer (BOOT) group of procurement methods, three evaluation criteria became more relevant. First, lifecycle costing was central to private investment economics and a higher level of science was applied to the operation of assets over 20 and 30 year lifecycles. Second, private bidders were assuming greater levels of risk that related not only to asset delivery but to the quality of service outcomes over the investment lifecycle. Third, private sector incentives are central to long-term incomplete contracts and the marginal return on investment came to be associated with improved asset design for the lower cost and sustainable delivery of quality services.

Outsourcing contracts for both procurement and delivery of services became more common in the early 1990s especially for the delivery of non-core government services such as waste management and long-term contracts in areas such as road and rail maintenance. Incentive is central to private performance under these contracts although there is generally less contractor input to service specifications or use of private capital than exists with the BOOT configuration.

Alliance contracting came into wider use in Australia in the early 1990s and was applied to large infrastructure procurement that could be articulated into a

number of multi-staged contracts. Alliances are hybrid arrangements that remove the adversarial features of traditional contracting, give effect to risk transfer and may integrate the design and construction phases of a project. However, they do not necessarily involve a lifecycle approach to investment economics, the contractor is incentivised for project and not service delivery and there is little mobilisation of private investment.

Table 1 Project Procurement Performance *a*

		On Budget <i>a</i>	On Time	User Benefits <i>b</i>
Traditional Procurement				
1	<i>e</i>	25%	34%	27%
2	<i>d</i>	27%	30%	35%
3	<i>f</i>	55%	63%	55%
Gateway Programs	<i>d</i>	69%	73%	65%
Alliance Contracting	<i>e</i>	77%	78%	n.a.
PFI (UK)	<i>f</i>	78%	76%	n.a.
PPP (Australia)	<i>g</i>	79%	82%	74%
Defence Contracts	<i>h</i>	17% (14%)	8% (24%)	<i>Refer notes</i>

SOURCE

MR 2008

NOTES

a Sources as noted. Sample sizes vary.

b Qualitative assessment from independent NAO 2004, 2006 reports.

d 2000-01 results: NAO 2001 Modernising Construction.

Projects delivered on or under scheduled time and price.

e 1999 results: NAO 2005 Improving Services Through Construction Part B

f 2004 results: NAO 2005 Improving Services Through Construction Part A

g Fitzgerald 2005; Audit Office Reports Victoria & NSW 2004-08; IPA 2007

h NAO 2004, 2006 MOD Defence Contracts.

Performance met minimum requirements.

j NAO 2005 provides insights. No direct evidence identified.

Public private partnerships (PPPs) are a combination of many of the procurement characteristics outlined above. However, the competitive bid process has two

distinguishing features – the service is provided to an output specification and the design and construction phases of the project are integrated into a single process. This form of procurement involves private capital and the transfer of asset and service delivery risk to the contractor. PPPs also involve full lifecycle cost; they are long-term incomplete contracts and require new approaches to relationship management. A comparison of procurement methods using quantitative measures is set out at Table 1.

Evaluation Criteria

Traditional procurement is used for most state procurement of civil works, buildings, plant and information technology. It provides the benchmark against which other procurement methods are measured and the first step in this study was to identify standard quantitative evaluation criteria. As traditional procurement is mainly concerned only with the delivery of assets, most performance measures concern the timeliness and cost of delivery and these are mainly applied (*ex ante*) at commissioning. Tender evaluation criteria may take into account the qualitative aspects of bids such as the bidder's credit strength, expertise and track record. However, these values are generally subordinated to price and few traditionally procured projects are evaluated again during their service life. It is not common in government to determine whether or not the *ex post* services being produced by the asset meet the requirements of either the state or users. The first step in this study was to identify the documented procurement outcomes for each procurement method based on quantitative measures – delivery on time and within budget. Where available, the results of *ex-post* surveys of managers and service users were included.

The second step was to identify qualitative procurement outcomes using four widely accepted benchmarks used in the literature:

- The concept of value for money
- The effectiveness of incentives
- User and service outcomes
- Process management (level of design and delivery complexity, cost of delivery and project management and the extent to which the principal and contractor were in an adversarial relationship).

The comparative procurement methodology involved a comparison of quantitative and qualitative outcomes. The evidence was sourced from the procurement outcomes of 124 economic and social infrastructure projects commissioned by governments or state agencies in Australia, Canada, New Zealand and the United Kingdom. This review also informed the selection of category weightings. The data included a number of independent review agencies including the National Audit Office and Audit Commission, State Government Audit Commissions and a series of reports prepared by Mott McDonald (2002), Allen Consulting (2007), the House of Commons (U.K.) (1993, 1994), Serco Institute (2004, 2005, 2006, 2007), the BCI (2007), KPMG (2006, 2007).19951 and Fitzgerald (2004). Additional data was sourced from the annual and special reports commissioned by a number of committees, inquiries and government

departments, and surveys conducted by governments, their agencies and industry associations.

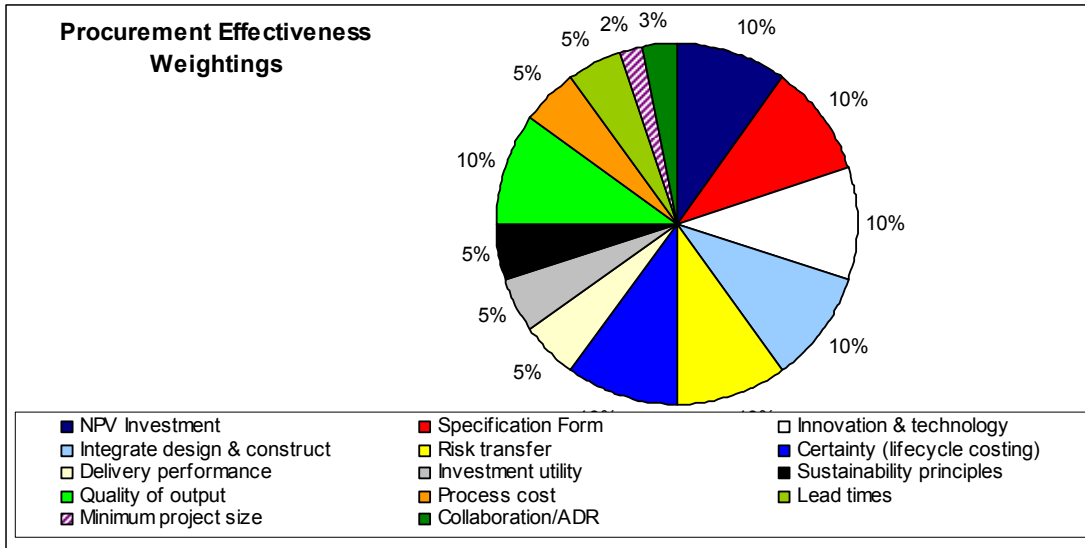
Evaluation Criteria Weighting

Identifying a systematic procurement evaluation tool requires identification, measurement and weighting of each of these procurement characteristics. In the final analysis, this process is a matter of judgement and the selected weightings will be influenced by subjective views about what is important and what isn't. For these purposes, the weightings used in this comparison were sourced from a review of empirical data that employed procurement performance reviews conducted by state government audit offices and independent procurement reviews commissioned by government and industry in the four countries from which the sample was sourced (See Diagram 1). Additionally, the analysis was tested using both weighted and non-weighted evaluation criteria.

The weightings selected for testing were value for money (60%), delivery performance (15%), quality service outcomes (10%) and process management (15%). The components of each category are set out in Diagram 1 and Appendix A.

The weighted comparison indicates the superior procurement performance of the non-adversarial contracting forms whereby design is integrated with construction, the private contractor's incentives to meet performance benchmarks were structured in a collaborative rather than an adversarial context and the contract was delivered to a full or significantly output-based specification. PPP was found to be the most effective procurement mechanism, followed by the build own operate transfer (BOOT) method and outsourcing. Each of these procurement methods has a significantly greater value for money score and is their economics are built around full lifecycle costing. However, the BOOT model was the outlier here because it employs an input specification, it has an asset rather than a service delivery focus, contractors are selected by lowest-price tender and there are adversarial aspects to contract formation and administration. Nevertheless, the strong incentive characteristics, contractor design input and the intervention of new technologies and innovation were drivers of its better performance. BOOT and similar arrangements are frequently described as PPPs in Asia and Europe and the formal distinctions between these two procurement methods is rapidly disappearing. Alliance contracting was also a more effective procurement method than traditional lowest price tender models and in-house provision.

Diagram 1 Procurement Efficiency Weightings

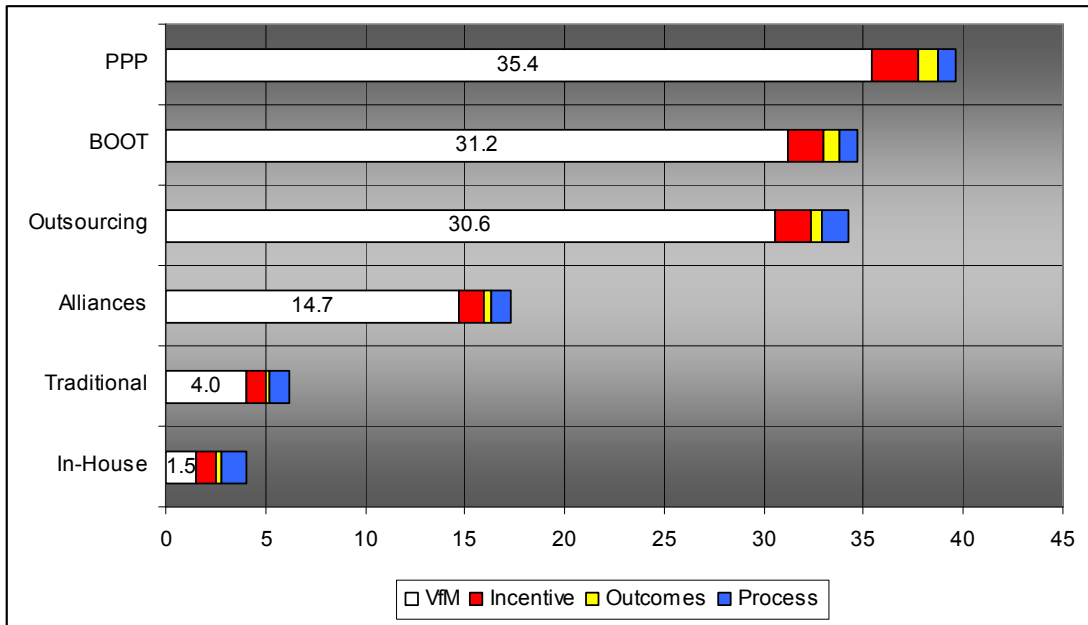


Findings

The PPP and outsourcing models are clearly the most effective methods of large project procurement although it needs to be remembered that neither are appropriate for all projects. PPPs are a better procurement option when the state is delivering services that can benefit from risk transfer, the certainty of lifecycle costing, and the integration of design and construct services, an output specification (innovation, new technology) and efficient management. The model is based on an *ex ante* evaluation of procurement methods which does not capture *ex post* improvements in service delivery. However, a number of studies in Britain and Australia in recent years point to the significant benefits in health, education and justice user outcomes from services delivered by PPP, BOOT and alliance contracting methods that are not being achieved with the traditional model.

Two further findings were identified in this comparative analysis. The first is the important role that incentive plays in procurement outcomes. The three most effective methods of project procurement are those that create a strong incentive for private performance over the life of the contract. In this context, incentive operates at two levels - the alignment of contractor payment mechanisms to delivery performance and creation of mechanism that create a high marginal return on investment for private investors. The top three performers in this comparison scored highly in the evaluation areas of certainty (lifecycle costing), private investment and strong private incentive.

Diagram 2 Weighted Procurement Effectiveness Results



The second finding is the strong association between qualitative procurement outcomes and the use of output as opposed to input service specifications. The evidence for this association has only recently come to light and follows 15 years of broader procurement experience in the United Kingdom and Australia. It also requires new approaches to the measurement of government service delivery and outcomes which are now being implemented such as user surveys and public value (Moore 1995). Both of these relationships are the object of further research activity at the School in 2009.

NOTE

The references for this document are available from the author at mregan@bond.edu.au.

ABBREVIATIONS

ABS Australian Bureau of Statistics

BIE Bureau of Industry Economics

BTCE Bureau of Transport and Communication Economics

CCNCO Commonwealth Competitive Neutrality Complaints Office

EC European Commission

PPP Public private partnership

SPV Special purpose vehicle (the bid consortium)

VAGO Victorian Auditor-General's Office

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APPENDIX