



WHAT IMPACT WILL CURRENT CAPITAL MARKET CONDITIONS HAVE ON PUBLIC PRIVATE PARTNERSHIPS?

A Research Report

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

**Research Report 121
12 November 2008**

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A copy of this report is contained in the Public Infrastructure Bulletin (ISSN: 1448-0328) Issue 7 December 2008. Hard and soft copies of this publication are available from Ms Michelle McWhirter
Faculty of Business, Technology and Sustainable Development
Bond University
Gold Coast Queensland 4229
Telephone 07 5595 1111

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Preface

This research report is prepared for the Infrastructure Association of Queensland and is a joint undertaking of the Association and the Mirvac School of Sustainable Development at Bond University. The purpose of this study is to examine the present and future use of public private partnerships (PPPs) in Queensland given recent events in international and domestic credit markets and prevailing capital market conditions. The essential research question to be answered here is whether current volatility and uncertainty in capital markets in Australia affects the feasibility of privately financed infrastructure and specifically, the PPP method of procurement.

This research will also examine the likely impact on the use, form and configuration of public private partnerships by canvassing three further issues:

1. Whether changes to the financial environment will affect the type of projects suited to this method of procurement.
2. Are opportunities presented in present market conditions and how these can be accessed and further refined?
3. What changes may be necessary to the PPP procurement model in the light of prevailing market conditions and what is required by stakeholders to adapt to changes in this market?

The report is organised around the following key research themes:

1. The background to infrastructure procurement in Australia and its role in regional economic development
2. What are public private partnerships and what benefits do they bring to public infrastructure procurement and the delivery of public services?
3. What role do capital markets play in the operation of the PPP model?
4. Do PPPs depend on capital markets?
5. What are present market conditions?
6. What impact are present conditions likely to have on future PPP projects?
7. What is the medium term outlook?
8. What are the alternative PPP funding mechanisms?
9. Do present market conditions create opportunities and how can these be addressed by government? By the private sector?

This report also contains the following information:

1. An informal survey of leading finance sector executives - lending institutions, institutional investors, monoline insurers and financial advisers (Appendix 3).
2. An examination of the operational performance of PPPs (Appendix 1)
3. A comparative review of procurement efficiency (Appendix 2).

The finance sector survey was informal because of concerns that the views of senior executives may impact capital markets in a time of considerable market volatility and uncertainty. The informal approach also permitted executives to speak openly about recent and current transactional experience. The comments and feedback from the survey are summarised at Appendix 3 and integrated into the appropriate sections of this report.

Introduction

The Infrastructure Association of Queensland has since its establishment, been championing the cause of infrastructure in this state. The private sector over time has developed a significant role in this space in recent years as more privately funded, built and operated projects have rolled out especially down the East Coast of Australia.

As a State, Queensland has moved more cautiously than others in adopting the PPP model of infrastructure procurement the South Bank TAFE Campus re-development being probably the most noteworthy to this point. There are other state sponsored PPP infrastructure projects namely, the South East Queensland Schools Project that is currently under consideration and the recently allocated Airport Link Project. The IAQ has been concerned about the effects that the world financial crisis may have on the appetite for PPP's and how the financial markets will view their continuing involvement in such procurement models.

It was obvious to the IAQ Management Committee that it was necessary to have a research paper prepared to investigate as quickly as possible what the effects of the world credit crisis would be on the PPP market and how this crisis would shape the type of project that the private sector could still have the confidence to support.

In conjunction with Dr Michael Regan Associate Professor of Infrastructure at Bond University's Mirvac School of Sustainable Development the IAQ commissioned this paper as a matter of urgency to try and establish a perspective on what the future may hold for PPP's in the short to medium term.

Clearly, the financial crisis is going to effect the industry adversely as it will most others however, the reader will note that there still remains an underlying vein of confidence in this procurement vehicle. There are still projects that will attract the private sector and there are emerging opportunities that may have the ability to bring more players into the field that, in the past, would not necessarily have been able to accommodate the risk profiles of some big-ticket projects. Time, of course will be the judge of this.

Our thanks go to Dr Regan and his team for preparing a quality document in a very tight time frame with great enthusiasm and good humour.

It is hoped that the material in this document is of help to our members, the government and the industry in general. The IAQ intends as the world situation continues to unfold, to provide updated information complimentary to this publication so that members can be informed as to how the market for PPP's is evolving.

Paul Clauson

Executive Director
Infrastructure Association
Of Queensland

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Executive Summary

1. Infrastructure is one of Australia's largest asset classes and plays an important role in the economy's productive capacity, output and microeconomic performance. Governments at all levels provide around 70% of economic and 64% of social infrastructure.

2. Infrastructure is especially important to the Queensland regional economy and for many years, state investment was a demand-response approach to high levels of population growth, particularly in urban areas, and strong regional economic growth.

3. Public investment in infrastructure has declined as a share of gross domestic product (GDP) from around 6% in the 1960s to 3.8% in 2007. The average age of infrastructure is increasing and in 2007, 54% of all new investment was accounted for by depreciation and capital retirements. In Queensland, real infrastructure investment between 1996 and 2004 fell in both per capita and gross state product (GSP) terms.

4. The South East Queensland Infrastructure Plan and Program 2008-2026 (SEQIPP) is a supply-led approach to infrastructure provision and contemplates significant private investment in the next 18 years. The private sector is increasing its share of infrastructure investment and management mainly through outsourcing and public private partnerships which currently account for up to 10% of state capital spending on infrastructure.

5. Internationally, PPPs are being used across a wide variety of economic and social infrastructure projects in more than 85 countries. PPPs are a procurement methodology that brings a rigorous risk-weighted approach to major projects using a competitive bid process and private sector expertise and innovation. PPPs are achieving a number of significant improvements in major project procurement and improved public service delivery. A wide body of evidence supports the following findings:

- PPPs are bringing forward the delivery of major projects
- The model is achieving value for money, reducing procurement costs and delivering more projects on time and within budget than traditional methods
- PPPs are improving the science of state procurement and have led to wider application of Gateway Review and alliance contracting methods with significant benefits for state procurement outcomes
- Certainty with lifecycle costing
- High levels of construction and design innovation and new technologies.

6. PPPs are highly leveraged and a number of major assets are either listed on the Australian Stock Exchange (ASX) or controlled by listed portfolio investment funds. PPPs are highly dependant on capital markets for many services including:

- Raising equity capital through initial public offerings
- Debt finance
- Financial risk management
- Intermediation, credit insurance and related services
- Innovation from financier-led competitive bids.

7. Conditions in international and domestic capital markets are unstable and volatile. Present conditions exhibit the following characteristics:

- A 50% fall in stock prices since the market peak in 2007 and stock price volatility
- Limited opportunity for on-market equity raisings

- Increased difficulty raising debt and higher debt financing costs
- Limited supply and repricing of credit insurance
- Uncertainty and lack of confidence.

A consequence of these market conditions is limited availability of equity and debt capital and a higher cost of capital. This condition is exacerbated in Australia where projects listed on the ASX make greater use of medium-term corporate debt and periodic refinancing than other countries. Revaluation and refinancing, once revenue maturity is achieved, are key elements of investment economics through increased leverage, a return to equity and a reduction in the cost of debt. Present market conditions would indicate that these opportunities will be considerably reduced over the medium term.

8. Present market conditions imply that future PPPs will be subject to new disciplines – lower leverage, higher reserves, stronger underlying credit credentials, higher debt service coverage criteria and higher cost debt. This will affect both bid depth and state risk allocation with lenders expected to take a tougher approach to the support of delivery and operational risks. This suggests some impact on the value for money outcomes for the PPP model in the short-term.

9. PPPs with positive credit characteristics will fare much better regardless of size. These characteristics include:

- More conservative leverage than has been common in recent years
- Availability based payment regimes and benign regulatory frameworks
- Strong reserves and debt servicing capability
- No exposure to patronage risk for debt service coverage
- Availability of appropriate credit insurance
- Capabilities, financial strength and track record of consortium members
- Limited or shared lifecycle servicing obligations.

10. To maintain a PPP bid market and to maintain a flow of PPP transactions in present market conditions, government has several policy options including the issue of state bonds, the credit guarantee finance model, the supported debt model and direct guarantees. Bonds remain a state option at any time although they are treated as state debt for Loan Council purposes and carry both deadweight and, to the extent that they offer tax deductibility of bondholder interest receipts, revenue costs. Direct guarantees are a contingent liability for the state and offer a relatively low-cost support mechanism for PPP projects. The credit guarantee and supported debt models may lower cost of capital but also increase transaction and agency costs. The options for government are examined in further detail in this report.

11. PPPs deliver procurement benefits and are improving the science of state procurement. Present market conditions do not close the door on PPPs but do provide an opportunity for both government and industry to develop a more refined model that is more appropriate for the new environment. This may require a more scientific costed approach to risk allocation, state guarantee support, improved underlying credit credentials and a rethinking of patronage risk. It is a shared responsibility. It may also be a further step in the continuing evolution of alternate major project procurement mechanisms.

1. Overview

Infrastructure describes the structural framework, systems and networks that facilitate economic and social activity in an economy (Rutherford 2000). Infrastructure is also one of Australia's largest asset classes accounting for around \$616 billion in assets and around 22.8% of GDP each year (ABS 2007) (See Table 1). However, economic and social infrastructure plays a much greater role in the economy because of its extensive multiplier effects on most other sectors of the economy. Infrastructure also accounts for 13.6% of private capital investment and around 17% of aggregate gross fixed capital formation, an important driver of domestic demand, output and economic growth (Regan 2004).

Table 1 NET CAPITAL STOCK Australia 2005

	\$ million	Av. Age (Years)
NCS (All Industries)	2,405,900	17.1
NCS (I) (Infrastructure)	615,910	19.4
Dwellings	992,494	19.8
Commercial property	712,104	19.8
ASX	959,979	

SOURCE

ABS 5204.0; RBA Bulletin Oct. 2006

In Australia, around 68% of economic and social infrastructure is provided by the state although in recent years, private infrastructure investment has increased to around 2% of GDP (See Diagram 1). The average age of infrastructure is increasing and overall net contribution to capital stock accumulation is less than the average for Organisation of Economic Cooperation and Development (OECD) countries (See Table 2).

Table 2 NET GROSS FIXED CAPITAL FORMATION Australia 2005

	\$ m	COFC* \$ m	%	Net \$ m
GFCF (All Industries)	226 910	134 771	59.4	92,139
GFCF(I):				
Utilities	10 163	5 701	56.1	4 462
Transport	18 527	11 254	60.7	7 273
Communications	6 375	4 135	64.9	2 240
Government	5 181	4 567	88.1	614
Education	5 510	3 820	69.3	1 690
Health	6 088	3 447	56.6	2 641
Total	51 844	32 924		18 920
GFCF(I):GFCF				
%	22.8	24.4		20.5
NCS(I):NCS %	25.6			

SOURCE ABS 5204 2006

NOTE * Capital wasting and depreciation.

Infrastructure is an important element of regional economic development. Queensland is especially reliant on land transport infrastructure to service its strongly growing regional economy. The Queensland economy exhibits a number of features that distinguish it from other regional economies such as its greater reliance on the agribusiness, mining, construction, transport, tourism and the retail sectors than is the case nationally. The state is also under-represented in the finance and insurance, manufacturing, property and business services industries. Industry composition is reflected in the strong contribution of the construction and the resources industries to growth in total factor income, a characteristic shared with Western Australia (ABS 2006c). The decentralised nature of the state population and its industry mean that Queensland places greater reliance on land transport infrastructure than other states.

Investment was the major driver of Queensland's economic growth in 2006 with private gross fixed capital formation (GFCF) increasing by 20.1%. There were several underlying factors here – international commodity prices, greater investment and productivity in the resources sector and strong domestic demand in the services sector (Department of Treasury 2006a, p. 5, 8). This trend continued into the 2007-08 year. Given the importance of investment to regional economic performance, the current rate of both public and private investment will play a significant role in the region's future economic, social and spatial development.

Household consumption is also a strong contributor to growth in Queensland supported by population growth and favourable labour market conditions including strong growth in employment. In the 10 years to 2006, non-dwelling capital investment in Queensland increased from 17.7% to 19.3% of GSP.¹ Reflecting a national trend over this period, public investment declined from 5.9% to 5.4% of GSP and private investment increased from 11.8% to 14%. In the same period, national public investment increased slightly from 3.6% of GDP to 3.9% and private investment increased from 12.2 to 13.2% (ABS 2006c). Public capital investment is a major driver of growth in public final demand which reached record levels in 2005-06. The data indicates that non-dwelling public investment in Queensland in this period was the highest of all the states. However, investment was declining in both monetary and per capita terms.

An alternative measure of investment is the value of non-dwelling engineering construction activity². Queensland accounted for around 22% of expenditure in the 6 years to 2006 which compares with New South Wales 24%, Victoria 16.9% and Western Australia 26%. This is the second highest spending nationally in GSP and per capita terms behind Western Australia. Both states are characterised by large land mass, relatively low population density and, in the case of Queensland, a decentralised economy with around 36% of the State's population and 38% of economic activity located outside the South East Queensland regional economy (SEQRE) (ABS 8762.0 2004, 2006; OESR 2007).

In the 2006 State Budget, the Treasurer announced significant increases in public capital investment with capital outlays of \$8 billion, a 32% increase on estimated actual 2005-05 capital outlays. Around 66% of this expenditure is earmarked for regional areas outside the SEQRE and 43% of the capital will be provided by government business enterprises (GBEs). The investment will be applied to transport

¹ Investment includes expenditure on machinery, equipment and non-dwelling construction and excludes livestock and intangible fixed assets. Current prices.

² Includes public and private investment in roads, highways and urban land sub-division, bridges, railways, harbours, energy, water, telecommunications and heavy industry (ABS 8762.0 September, 2006).

infrastructure (34%), energy (27%), other infrastructure (21%), health (7%), education and training (7%) and law, order and public safety (4%).

A significant component of the SEQIPP program is underway using a combination of procurement mechanisms – traditional procurement, alliance contracting and public private partnerships. PPPs are essentially a procurement method that employs various combinations of private sector capital and management. In Queensland and the other Australian states, PPPs follow a formal project evaluation and selection process based on an output specification for the delivery of services to or on behalf of the state.

1.1 The Role of Infrastructure

Early research into the role of infrastructure was based on simple production function using time series macroeconomic data and a focus on output growth and productivity (Aschauer 1989a). The research that followed established a link between public infrastructure and these variables although estimates of the effect were excessive and the analytical techniques failed to accurately measure two-way causation that was evident in much of the early analysis. Subsequent research established a correlation between infrastructure investment and various measures of growth, productivity, employment, incomes, private sector costs, and regional development was clearly established for both developed and developing economies (Regan 2004). However, the question remained whether it was economic growth that stimulated investment or the other way about.

In recent years, research addressed the causation issues and there has been wider use of disaggregated data and both value and physical measures of infrastructure investment. Single nation case studies and a growing body of evidence for regional economies are providing fresh insights. In particular, the role of endogenous and institutional growth theory, the effectiveness with which infrastructure is used, industry differences, the role of development policy and in particular, the role of private capital investment are now being explored.

A review of the empirical evidence suggests that, as a general rule, economic and social infrastructure contributes to the productive capacity of an economy; it is positively associated with productivity and private sector costs and is an important driver of output growth (Queensland Treasury 2005, Regan 2004). In the past 25 years, a considerable body of research has examined the relationship between state spending on public infrastructure and a number of economic indicators including:

- Output and growth
- Productivity
- Private firm operating costs, returns and profits
- Employment and incomes
- Private sector investment
- Differences in regional development
- The spatial development of industry and communities.

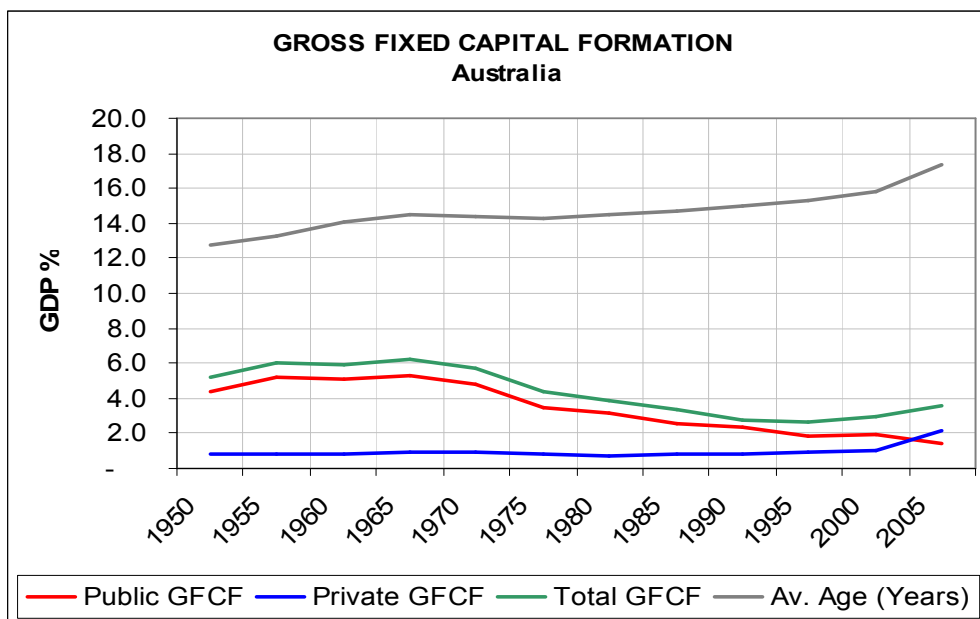
This evidence points to a positive and causal association between public investment in core or economic infrastructure and all of the above indicators. Infrastructure is now recognised as important to contributor to Australia's output and research confirms that it is also a key driver of national productivity performance, private sector costs and returns, employment and incomes. This is particularly the case in Queensland where infrastructure spending by government is the highest in the

country. The SEQIPP proposes \$107.4 billion of capital spending across the transport, industry development, water, energy, the health and education sectors. The program also proposes expenditure on justice services, vocational training, regional sport and recreation (Department of Infrastructure 2008).

The empirical evidence suggests that there are several additional broad conclusions that can be drawn from international and single-country studies:

- The effectiveness with which state infrastructure investment is directed and used is just as important as the amount of investment
- There are major differences in the returns offered by different infrastructure industries – land transport and communications generally offer greater productivity and growth returns than other industries
- A significant component of state-owned infrastructure services is not priced on the basis of production cost or opportunity cost
- Infrastructure generates higher returns in urban than regional areas (Regan 2007).

Diagram 1 Infrastructure Spending GDP % Australia 1950-2007



1.2 State Infrastructure Spending

In Australia, Commonwealth, State, Territory and Local governments provide around 72% of all economic and social infrastructure (Regan 2004). In most OECD countries, infrastructure spending has declined over the past 20 years. In Australia, state capital spending on infrastructure has declined over a much longer period and most new investment after 2004 was provided by the private sector (Diagram 1). The average age of infrastructure capital stock has also increased since the 1950s and 53.5% of all current investment is accounted for by depreciation and capital retirements (ABS

2008).³ In Queensland, state infrastructure spending in the period 1996-2004 fell in both GSP and per capita terms.⁴

The major challenge for the Queensland Government is maintaining an optimal level of investment, achieving value for money and ensuring efficient delivery and lifecycle management. Accessing private capital and improving procurement efficiency are central to the achieving these outcomes.

2. Public Private Partnerships

PPPs have been widely employed in developing economies for over 10 years as a small but significant alternative method of procuring economic and social infrastructure. During calendar year 2008, international capital markets experienced high levels of instability with a sharp fall in the share market prices of listed infrastructure securities, a sudden and acute contraction in structured and project debt markets and institutional restructuring that saw state bailouts or acquisitions of a large number of privately owned financial institutions. These events were quickly felt in Australia and reflected in sharp falls in security prices, a decline in business and asset-based lending and a sharp rise in lender spreads for corporate, project and structured finance. Capital market observers suggest that current market conditions are the worst they have been since the Great Depression and economic forecasters are predicting continued capital market instability in the short to medium term and a long recovery period.

In Australia, PPPs account for around 10% of state capital spending in Victoria, around 7% in Queensland and lesser proportions in the other States and the Commonwealth. PPPs are highly leveraged in listed or private forms and rely on capital markets for both equity and debt capital.

A significant body of evidence points to the advantages of PPPs over traditional procurement methods. The benefits include:

1. The delivery of projects on time and on budget
2. Reduced procurement costs and improved value for money outcomes
3. Improved project management – integration of design and construction processes and full lifecycle costing
4. Adoption of an output specification to encourage design and construction innovation and new technologies
5. Improved public services and qualitative user outcomes (Mott McDonald 2002, Fitzgerald 2004, Allen Consulting 2007; National Audit Office 2005).

These results are supported by a comparative review of state procurement methods undertaken in 2008 by Bond University (Regan 2008c). This study identifies the improved performance of PPPs, build own operate transfer (BOOTs) and, to a lesser extent, alliance contracting methods using *ex ante* measures of value for money, the optimal alignment of incentives and process management. The executive summary from this study is set out at Appendix 2.

PPPs also offer a rigorous project selection and evaluation process using a risk-weighted analytical framework that features both qualitative and quantitative

³ Declining public capital spending on infrastructure was also a feature of OECD countries over the past 20 years.

⁴ This is partly explained by the high population growth in the State over this period especially in the SEQRE which accounts for around 68% of state population and GSP.

measurement techniques. This process is now being applied to traditional procurement processes and is achieving similar value for money improvements.

The empirical evidence suggests that PPPs are improving government infrastructure performance in three additional ways:

1. PPPs are an important innovation in the evolution of the science of major project procurement and studies suggest they are a more efficient method of project delivery than the alternatives (See Appendix 2).
2. PPPs are worth preserving – along with alliance contracting and the input specification models, they are driving favourable value for money outcomes and form part of the diverse procurement tool box available to government for appropriate applications.
3. Private capital markets provide an important alternative source of capital for governments hard pressed to meet the high levels of investment needed to renew Australia's ageing infrastructure.

The performance of PPPs as a method of infrastructure procurement is examined in further detail in Appendix 1.

3. Public Private Partnerships and Capital Markets

The past 12 months has been a turbulent time for global credit markets. In Australia, there has been a dislocation in the asset-backed and corporate bond markets with rating downgrades for monoline bond insurers and calls on guarantees for recently commissioned projects. This has affected both distribution and credit guarantee pricing (Reserve Bank of Australia 2008). Nevertheless, Australia has fared better than many OECD countries with exposures confined to relatively few projects although full and partial refinancing of a number of mature projects in the next 18 months will test this (Debelle 2008).

3.1 Equity Capital

In 1995 an Infrastructure Sector Index was created on the ASX and within a brief time, infrastructure achieved recognition as a distinct asset class. By 2001, market capitalisation of the sector reached \$18,557 million and within 12 months, this had increased to \$25,632 million (Regan 2004). The early practice of forming diversified multi-sector portfolio funds (Infrastructure Trust of Australia 1996; Australian Infrastructure Fund 1997) evolved to a sector-specific focus within a few years with the listing of Macquarie Airports Group and the creation of Macquarie Infrastructure Group. The Transurban and Hills Motorway initial public offerings (IPOs) were the first single asset property vehicles. The market experienced considerable "churn" in the period 1995-2003 with few of the original companies in the sector surviving in the same form 8 years later.

Australian superannuation fund managers became the largest investor group in this asset class. The long-term investment horizon and low demand elasticity offer a good match for the fund manager's liabilities and yield requirements. In 2001, institutional investors accounted for 75.8% of listed infrastructure vehicles, a greater level than for other sectors of the ASX at that time (Regan 2004). Studies conducted in recent years suggest that listed economic infrastructure entities exhibit distinct asset class characteristics. In the relatively benign market conditions of the 1990s, these investments offered effective counter-cyclical properties avoiding the return volatility of other leading sectors such as manufacturing, transport, telecommunications and indirect property. Additionally, infrastructure offers different reactions to movement in

leading economic indicators such as United States and domestic GDP, short and medium-term interest rates, inflation and stock price movements (AMP Capital 2006, Regan 2004). Recent events in capital markets may have removed some of the insularity to market volatility previously believed to be a characteristic of this asset group and infrastructure has revealed a vulnerability to delivery risk, high leverage and patronage risk in conditions of uncertainty.

The three recent Queensland PPP projects were large by Australian standards and commenced with the Southbank Institute (2004) to be followed by the North-South By-Pass Tunnel (2006) and the Airport Link project (2008). PPP projects are capitalised with high levels of debt which is well suited to long-term capital-intensive projects. Infrastructure is a specialised asset class possessing investment characteristics not commonly found in other asset classes. These characteristics include:

1. Stable, indexed revenue streams
2. Low variable cost structures
3. High earnings before interest tax and depreciation (EBITDA) margins
4. Low demand price elasticity (Regan 2004).

Infrastructure also features low demand price elasticity although recent evidence from toll roads suggests that this asset group may be the exception. These assets are well suited to high levels of debt which has the effect of lowering the sponsor's weighted cost of capital and improves return on equity. Several early PPP toll road IPOs employed stapled security structures and high leverage compared with other capital intensive asset classes such as the resources sector, direct and indirect property. The market appeal of these assets was their robust and indexed revenue stream, strong debt service coverage and the long-term investment horizon which matched the long-dated liabilities of pension and fund managers.

The important role that capital markets play in the capitalisation of these assets is demonstrated by the early toll road PPPs.⁵ Australia's first toll road was the Sydney Harbour Tunnel commissioned in 1988 and this was followed by Hills Motorway in 1999 and the Transurban City Link project in Melbourne which was commissioned in 2001. Transurban listed in the ASX in 2001 and undertook a program of expansion in recent years which included the acquisition of Hills Motorway in Sydney, an interest in other Australian toll roads and new projects in the North America. The Eastlink project was listed as ConnectEast Group in November 2004 prior to construction commencing in early 2005 and included completion risk in the parcel of risks transferred to buyers of its securities.

The Eastlink project in Melbourne was listed on the ASX by Macquarie Bank in 2004, ABN Amro followed with the North-South By-Pass Tunnel in Brisbane in 2007 and Macquarie Bank with the Airport Link project in Brisbane in 2008. The collapse in equity prices for both these projects in 2007-08 was partly a result of the sharp fall in stock prices and highly-leveraged infrastructure stocks in particular. Falling stock prices is also attributed to concern about traffic forecasts and high energy prices which adversely affect the patronage and financial economics of these assets. The veracity of traffic forecasts has been a problem for transport projects for many years

⁵ The Hills Motorway, Transurban and Sydney Harbour Tunnel projects were BOOT transactions and not implemented under State Government PPP policies. However, for these purposes, the wider definition of PPP is used and this includes outsourcing as well as the build own operate (BOT) and BOO procurement methods (Regan 2008).

and attracted wide publicity with the troubled Sydney Airport Rail Project, Brisbane's Skytrain, and the Cross-City Tunnel in Sydney.

In 2008, the recently opened Land Cove Tunnel and Eastlink projects also failed to achieve forecast revenue within the early ramp-up period. Recent research by Bond University suggests that 65% of security price contraction in 2008 for listed infrastructure motorway stocks is due to systematic or market risk factors common to the sector. The balance of the loss of value mainly reflects unsystematic or project-specific risk concerns (Regan 2008). Research by Standard and Poor's using 282 international transport projects identified systemic overestimation of patronage with land transportation projects (Standard and Poor's 2002, 2004). The average error rate was 30% (projects on average achieved 70% of forecast revenue in the first 3 years of operation). Research in 2006 using a sample of 210 projects found that:

1. 25% of projects had an average forecasting error +/- 40%
2. 50% of projects had an average forecasting error +/- 10%
3. If the error is evident in year 1, it will continue during the revenue "ramping up" period (Flyvbjerg, Skamris Holm and Buhl 2006; Standard and Poor's 2004).

It is disconcerting that optimism bias has been a problem with transport forecasting for over 25 years despite significant changes in measurement methods and the benefit of precedent. The study suggests that forecasters are not learning from experience.

An alternative view is that PPPs are long-term investments and early stage patronage error does not necessarily mean projects are not viable in the medium to long term. The recent purchase of Sydney's Cross City Tunnel by Leighton Contractors, financed by ABN Amro, indicates that even at patronage levels around 60% of those originally forecast, the investment is viable to the new owners.

Few other PPPs are listed on the ASX as single asset investments although most are dependant on off-market bond issues and debt syndication for the limited recourse finance that they require.

3.2 Debt Capital

Most infrastructure debt in Australia takes the form of bank loans, the issue of bonds or private placements with institutional investors and fund managers. The stapled security offerings of listed infrastructure groups are treated as equity for these purposes although a significant component of the subscription price is structured or distributed as a loan to another entity within the group. Many listed and unlisted PPP projects raise debt by issuing bonds. The capital structure of the Southern Cross Station project in Melbourne employed three tranches of bonds:

- US dollar denominated 11.5 year fixed-rate bonds (A\$126 million)
- Australian dollar denominated 12 year floating-rate bonds (A\$200 million)
- US dollar denominated 30 year indexed bonds (A\$135 million).

The composite bond method of financing PPPs is widely used in Britain and Canada and is based on project finance principles and high leverage. An advantage of this financing method is the opportunity to structure financial risk management into the tenor, currency and pricing of the bond issue. Standard & Poor's survey of unlisted European PPP projects in the period 2004-06 suggests initial debt capitalisation

averages 76-82% increasing to 85% at the first refinancing (National Audit Office 2005; Standard & Poor's 2004, 2005).

Table 3 CAPITALISATION OF THE IPO PPP MODEL

AUD millions	RiverCity Motorway Brisbane	BrisConnections Airport Link Brisbane	Eastlink Melbourne
IPO Equity Raising	724	1,226	1,120
Bank debt	1,434	3,055	2,088
Dividend Reinvestment Plan	150	361	297
Deferred Equity	155	200	290
State Contribution	377	47	
Total	2,840	4,889	3,795
Construction Cost	2,003	3,400	2,502
Debt: Equity Ratio	<i>a</i> 51%	62%	55%

SOURCE Prospectus 2004, 2006, 2008.

NOTES

a Market capitalisation at date of listing on the ASX. Debt %

The pricing of debt is largely determined by credit ratings for the larger Australian projects and by credit evaluation for privately sourced senior, junior and mezzanine finance. Present tight liquidity in capital markets, higher spreads and tighter credit standards suggest that sponsors of new PPPs will need to adjust overt leverage levels more in line with the average debt levels of the market as a whole. In March 2008, average debt capitalisation of the ASX All Industrials stood at 64.3%. Such a figure is non-weighted and fails to take into account the important relationship between stable, indexed revenue and debt servicing capability that are a feature of mature infrastructure investments. These properties suggest that infrastructure has the capacity to support debt levels over and above ASX sector averages and the appropriate level of leverage is best determined on a case by case basis.⁶ Non-listed investments are generally more highly leveraged than either listed infrastructure or ASX market averages.

3.3 Intermediation and Credit Enhancement

Credit enhancement or credit wrapping is a technique for reducing investor's cost of debt for a PPP project. The underlying credit rating of most Australian PPP projects is BBB (Standard and Poor's 2004, 2005). Credit wrapping is essentially a AAA guarantee of the borrowing consortium's debt purchased for a fee which is less than

⁶ Infrastructure assets possess many of the characteristics of listed property. Research conducted in recent years found that the return of listed property trusts and infrastructure assets disclose a statistically significant correlation and both asset classes show a strong negative correlation with direct property. In a test of leading economic indicators, both asset groups showed a strong negative correlation to short and medium-term interest rates and some similarities in the way that returns were negatively correlated with those of fund managers with a lead time of less than 6 months. Neither listed property nor infrastructure shares a correlation with short-term movements in Australian and US GDP, short, medium and long-term bond rates, the labour participation rate or inflation (Regan 2004).

the difference in borrowing costs between the two rating standards. This can be significant over the life of a PPP with the spread of 5 year corporate bond swap rates at 30 June 2008 standing at 159 basis points (1.59% pa) for BBB and 106 basis points for AA (RBA 2008). At 30 September, the spreads were 251 basis points and 135 basis points respectively. The monoline insurer guarantees against default in the payment of both bond interest and principal.

Table 4 Credit Insurance Market, Australia, 2007-08

	Market Share %	Rating			
		2007	2008		
			S&P	Moody's	Fitch
MBIA	37	AAA	AA	A2	
Ambac	25	AAA	AA	Aa3	
FSA	17	AAA	AAA	Aaa	AAA
FGIC	11	AAA	BB	B1	CCC
XL/Suncora	9	AAA	BBB-	B2	CCC
Assured	1	AAA	AAA	Aaa	AAA

SOURCE RBA August 2008

Most PPP projects in Australia are highly leveraged, debt is generally raised by the issue of rated bonds and the project's (underlying) credit rating is calculated by reference to the credit characteristics of the PPP deal and this includes the track record and credit strength of the consortia members as a measure the principal contractor's capacity to complete delivery of the project. In Australia, few of these companies are rated above investment grade (BBB). Borrowings costs are correlated with risk reflected in credit ratings. In the past 12 months, spreads have increased. Consortia issue bonds and these are credit-wrapped by AAA rated intermediators and rated by credit agencies. The effect is to reduce the cost of debt and extend maturities.⁷

In June 2007, the Australian credit-wrapped bond market stood at \$27 billion, accounting for around 7% of the domestic non-government bond market (RBA 2008). This market has increased dramatically in size in recent years, doubling since 2004 largely as a result of strong growth in the number of motorway PPP projects commissioned in this period. In June 2007, over 60% of this market was shared by two institutions – MBIA and Ambac (see Table 4). At that date, the guarantees of all 6 firms in this market were rated Standard and Poor's AAA. In August 2008, only 2 of the firms retained their AAA status with MBIA and Ambac re-rated to AA and FGIC and XL/Syncora re-rated to BB and BBB- respectively. The rating downgrades are reflected in increased margins between credit wrapped bonds and other non-government unsecured AAA-rated bonds in the secondary market. Average margins

⁷ The definitions of credit ratings AAA, AA, BBB and BB are set out in under Abbreviations.

increased from an average 25 basis points (0.25% pa) in July 2007 to 130 basis points (1.3% pa) in July and 240 basis points (2.4% pa) in November 2008.

The recent revised agency for credit insurers followed a general repricing of risk on international and domestic capital markets and will impact both the cost and availability of future debt raisings and financial risk management tools for PPP projects.

4. PPPs are Dependant on Capital Markets

PPPs generally concern the production of economic and social infrastructure services and are heavily dependant on capital markets. This dependence occurs at five levels.

1. Equity capital.

Australian PPP projects draw their equity capital from the ASX, listed portfolio investors, banks, private equity, fund managers and institutional investors. Three of Australia's largest and most recent toll road projects were listed on the ASX and listed portfolio investment vehicles hold significant interests in ports, airports, toll roads, energy production and distribution within Australia and overseas. The ASX is the single largest source of PPP equity capital in Australia.

2. Debt capital.

PPPs are highly leveraged using medium-term bank debt, project finance or long-term bonds. These securities are placed in debt markets and with private investors. Australian PPPs also make greater use of medium-term corporate debt than traditional long-term project finance. This permits investors to take advantage of short-term revaluation and refinancing although it requires consortia to assume refinancing risk and more frequent visits to the debt market than would be the case with conventional project finance.

3. Financial services.

The financial economics of PPPs place strong reliance on capital markets for fragmentation of risk and services that include intermediation (debt and equity underwriting), credit enhancement (monoline insurance), credit rating and financial risk management.

4. Market drivers.

In Australia, the drivers of the PPP bid market are the financial service providers. Their selective participation or withdrawal from future bids combined with barriers to entry created by softer market conditions may lead to some realignment of the bid market. Whether building and facility management contractors are willing to assume a greater equity and mezzanine finance role in their bids remains to be seen.

5. Capital market innovation.

PPPs benefit from capital market innovations such as the stapled security, unit trust structures and credit enhancement. Recent credit rating downgrades for financial intermediaries including credit insurers will adversely impact competition in PPP bid markets, weaken value for money outcomes and affect the fast-tracking of infrastructure projects which are major attractions of the PPP procurement method.

PPPs are strongly dependant on capital markets although the level of dependency varies across industry sectors, projects and the nature of the revenue stream. In present market conditions, capital will generally be harder to find, it will be more expensive and stricter credit standards may require bidders to take a more conservative approach to risk acceptance. This suggests some weaknesses in bid depth, private sector appetite for greenfield projects and those projects involving patronage risks. A less competitive bid market may also have an adverse impact on value for money outcomes. In summary, debt markets have become strongly risk averse. For projects involving the refinancing of existing debt against mature revenue streams, availability payment streams and sponsor-provided equity, bid market depth and debt market activity levels are expected to remain buoyant albeit with stricter credit standards.

5. Present Market Conditions

The present conditions in debt markets follow 12 months of instability that had its origins in the US sub-prime mortgage market and sub-optimal risk pricing in international capital markets for some years. The asset write-downs, lack of liquidity and low confidence in the market that followed, led to a repricing of risk, a significant increase in spreads (risk premiums) in interbank markets and higher corporate borrowing costs. These conditions were recognition of the deterioration in risk management practices in the financial services industry and lack of trust in financial institutions and capital markets over the preceding 12 months. A decade of low interest rates, bank asset disintermediation and high leverage in buoyant market conditions created circumstances for a pro-cyclical correction which was amplified by tighter liquidity conditions (Reserve Bank 2008).

Capital markets in Australia and overseas are presently characterised by:

1. Historically low share prices
2. Limited opportunity for new on-market capital raisings
3. Reduced activity in mergers, acquisitions & divestments
4. A fall in asset values at odds with underlying fundamentals.

The instability in debt markets has spread to equity markets with sharp falls in share prices experienced in all OECD countries. The ASX's 200 Share Price Index fell 29.95% in the 12 months to 30 September 2008 and ASX market capitalisation stood at \$1.333 trillion on 31 August 2008, a fall of 14.98% over the previous year (RBA 2008). In the past 12 months, uncertainty in capital markets was accompanied by volatile currency exchange rates. In the 12 months to 27 October 2008, the Australian dollar fell 27.4% against the US dollar and 38% against the Japanese yen (RBA 2008d; Australian Financial Review 27 October 2008). Market conditions have stabilised in recent weeks although the survey of capital market executives suggests that asset price and exchange rate instability may be the predominant market characteristic in the medium term. A number of survey respondents held the view that equity prices and the falling exchange rate may not stabilise before mid 2009 (see Appendix 3).

In tandem with uncertainty in the equity market, international and Australian debt markets are experiencing a liquidity squeeze following the collapse of the United States property market and write-downs in sub-prime debt that has threatened most United States financial services corporations. Additionally, risk has been re-priced

and distortions introduced with state interventions.⁸ International portfolio investment in the sub-prime debt market has produced a default risk in other capital markets and led to a crisis in confidence.

A consequence of present market conditions and reduced liquidity is the reduced availability of corporate and project finance, increased borrowing costs and by extension, increased cost of equity capital. Project finance is a specialised form of finance although not commonly used for Australian PPP projects where the benefits of short-term revaluation and refinancing of assets favours medium-term corporate finance (Regan 2007b, pp. 21-24). There will also be significant demand for medium-term corporate finance in the infrastructure sector with the refinancing of existing listed assets in the period 2009-12 including Transurban, the ConnectEast and RiverCity Motorway Groups.

Capital market uncertainty in the past 6 months has also had a significant impact on the listed infrastructure sector. The major Australian investment banks actively packaging and managing assets experienced sharp declines in share price with consequential impacts on portfolio debt structures, borrowing covenants and asset liquidity. The IPO model is not presently an option for PPP projects and the ASX is unlikely to be a source of equity capital for some time yet in this country.

6. How are PPPs Affected by Present Market Conditions?

The prevailing capital market conditions are expected to have the following effects on PPP bid markets:

1. Risk is in the process of being repriced but has not yet stabilised. This will place sustained short-term pressure on the pricing of debt capital for PPP projects.
2. A reduction in the availability of debt capital in the short to medium term.
3. Tighter credit standards including lower debt to equity ratios (leverage), higher debt service coverage ratios (interest cover) and wider use of capital reserves and sinking funds to manage revenue volatility risk.
4. Limited availability and increased cost of credit enhancement services and tougher credit rating standards.

A further effect will be the disappearance of the IPO capital-raising model for transportation projects in the short to medium term (1-5 years). The Australian equity market has demonstrated a long-standing appetite for infrastructure securities. The many innovations include the single asset investment vehicle, sector-specific investment vehicles and innovations such as the stapled security. Nevertheless, present uncertainty suggests that the IPO method of raising capital is not feasible in present market conditions and unlikely to make a re-appearance in the new future. There are three factors at play here:

First, the market is wary of high debt levels and distress premiums are greater now than at any time in the past 15 years.

Second, the market has demonstrated a reluctance to carry delivery risk. Promoters may need to revert to quarantining the delivery risks for future large-scale construction projects. The investment grade credit rating given to the Lane Cove

⁸ For example, cash deposits in Australian banks guaranteed by the commonwealth are now, in effect, risk free. This has effectively altered the cost of capital for individual and portfolio investors.

Tunnel project by Standard and Poor's in 2006 was influenced by the underlying credit rating of the constructor, Leighton Group and a qualitative assessment of that company's capabilities and track record.

Third, new IPOs will need to address the question of optimism bias in forecasting and the perception of systemic forecasting error.

The survey of PPP financial advisers and lenders suggests that PPP transactions will be harder to do in present market conditions but not impossible. The degree of difficulty increases with projects that carry patronage risk and those that require investors to absorb high levels of delivery and operational risk. The degree of difficulty in raising capital for future PPP projects can only be determined on a case by case basis. The factors that will mitigate finance risk for PPP projects in present market conditions include:

- conservative leverage
- high debt service coverage ratios
- adequate reserves
- source and stability of the payment stream
- underlying credit rating
- benign abatement regimes
- availability of appropriate credit insurance
- capabilities and track record of consortium members, and
- state risk allocation.

Refinancing risk is also a potential difficulty for existing projects although mature projects with strong revenue streams, staged maturities and availability-based payment arrangements mitigate this risk. For projects not featuring these covenants, refinancing risk presents a more serious problem.

The survey of finance executives suggests that the cumulative effect of recent events in capital markets can be expected to have the following long-term impacts on the PPP bid market.

1. Equity will be difficult to source. The demise of the IPO equity raising option will also mean the end of other equity-raising techniques employed with this model such as the dividend reinvestment plan and deferred equity subscription arrangements. Firms will find it increasingly difficult to meet new minimum equity capital standards and the short-term outlook is for higher cost of equity pricing.
2. It may be increasingly difficult for small firms and non-credit rated market participants to find a place in consortium line-ups. In tighter capital market conditions, this is expected to result in a reduced number of players in the bid market.
3. The construction industry will be reluctant to provide long-term equity capital for PPPs when the alternative is relationship contracting and lower project risk absorption.

A contraction of the PPP bid market has important implications for the future provision of infrastructure in Queensland. These include:

1. A decline in the number of PPPs with the loss of benefits available from this procurement method

2. A slowing of the roll-out of the South East Queensland Infrastructure Plan and Program with consequential effects on both transitional and long-term economic development in Queensland (Regan 2007)
3. A greater emphasis on State provision of infrastructure financed through state debt or taxation with associated “deadweight” costs.

Financiers and advisers responding to the survey agreed that new PPP transactions over the next 12 to 18 months will attract higher spreads or risk premiums. As previously identified, this is especially the case with greenfield projects that carry market or patronage risk. Projects where the revenue is by way of state availability payments such as projects in health, justice and education and the refinancing of mature market risk projects should be easier to finance although risk pricing, leverage and debt servicing criteria are expected to be tougher throughout 2009.

A further factor influencing the financing of PPP transactions is the relative maturity of the industry and the allocation of risk. Research by the Australian Centre for Public Infrastructure in 2006 suggests that some infrastructure industries attract lower lending risk premiums than others. Mature tollway projects, energy generation and transport hubs (airports and ports) and social infrastructure generally attract lower debt funding margins, on average, than projects in higher risk categories such as in the water and urban transport industries. This research was based on capital market indicators for the period 1995 to 2005 and a return beta proxy for systematic risk (Regan 2004, 2006).

7. What is the Medium Term Outlook?

The difficult conditions presently being experienced in overseas and domestic debt markets are not expected to continue indefinitely. Anecdotal response from industry suggests that equity and debt finance will continue to be available for PPP projects in the sub-\$300 million capitalisation sector of the market. However, as noted, lending criteria will be tougher and projects with lower delivery and operational risk profiles are more likely to raise capital than those with projects carrying greater risk burdens. This is a view supported by the capital market survey (Appendix 3). In this latter category are projects requiring high levels of innovative design or technology, patronage risk and greenfield land transport projects.

A significant part of the problem for PPPs in Australia is the wide use of IPOs and medium-term corporate finance as opposed to long-term project finance more common in Europe and the United States (Regan 2007b). The IPO may not be an option in the foreseeable future and medium-term corporate debt may be difficult to source. However, financiers and credit rating agencies report that larger projects with lower overall credit risk will continue to attract long term project finance. Project finance creates a problem for the Australian PPP financing model for several reasons including the early stage refinancing to capture shift in the risk and return profile of the project, the preference for early stage contractor withdrawal, and an inability to extract the preferred risk and incentive framework favoured by local firms.

Adverse market conditions also present opportunities and Australia’s capital market has proven adroit in developing innovative financial solutions designed specifically to facilitate investment in this asset class. The stapled security, deferred equity contribution and composite group structure are examples of this. Superannuation fund managers and institutional investors are attracted to this asset class because of its investment characteristics which include:

- High capital intensity and EBITDA margins

- Low variable costs and high yield in maturity
- Indexed long-term cash flows
- A long-term investment horizon that is well matched to the tenor of fund liabilities.

This group of investors have a reduced appetite for delivery and forecasting risks associated with land transportation projects. However, as projects shed early-stage risks and revenue streams mature, these projects are more attractive to fund managers. Further innovation in structuring PPP projects for listed and unlisted investments may well target the quarantining of early stage project risks with a view to attracting earlier participation by fund managers.

Further innovation in the PPP model is also a possible response to present market conditions. PPPs are a hybrid procurement form that has proved remarkably resilient since its first use in Australia with the Sydney Harbour Tunnel in the 1980s. Continued refinement of the model to meet changed circumstances including the withdrawal of franchisees, the apportionment of windfall gains, extension of the model to complex social infrastructure services including specialised applications in corrective services, the health sector (Royal Children's Hospital, Royal Women's Hospital) and education (schools projects in NSW, Victoria and Queensland).

8. What are the Alternative PPP Financing Mechanisms?

If new infrastructure projects are harder to deliver as PPPs, the options for privately financing state infrastructure services are few. Alternative procurement methods are as follows.

Traditional Procurement

Traditional procurement or adversarial contracting is a relatively flawed procurement model with recent evidence suggesting that it is not an appropriate method for managing the delivery of infrastructure projects and services. A number of studies employing comparative analytical techniques suggest that traditional procurement fails to meet value for money assessment criteria, it is correlated with significant cost overruns and late delivery and by virtue of the articulated delivery approach, this method often fails to address the key considerations of lifecycle costing and asset management. This is examined in further detail at Appendix 1.

Relationship Contracting

Relationship contracting is a form of project delivery designed around the shortcomings of traditional procurement. The Latham Report (1994) and the Egan Report (1998) were reviews of the poorly performing United Kingdom construction industry and both identified weaknesses in the adversarial basis of lowest price tender procurement. Both reports pointed to the benefits of alliance contracting and were influential in its wider use for government projects in Britain and Australia.

Relationship contracting is a collaborative approach to procurement under which there is agreement on price and method, a sharing of risk and rewards and an avoidance of adversarial methods to project manage the delivery, resolve disputes and settle claims. Relationship contracting may take the form of a long-term project articulated into a series of separate contracts with the same contractor group. However, it does not offer the lifecycle costing and delivery performance characteristics of PPPs, outsourcing or BOOT delivery. Accordingly, performance is mainly measured on the basis of delivery time and cost.

Recent studies suggest that relationship contracting is improving procurement and service delivery outcomes (NAO 2005) (see Table 5). Contractors in Australia have long expressed a preference for non-adversarial contracting over both the traditional and PPP procurement models.

Table 5 Procurement Outcomes 1999-2008 a

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

SOURCE

MR 2008

NOTES

a Sources as noted. Sample sizes vary. Parenthesis denotes average overruns for sample

b Qualitative assessment from independent NAO 2004, 2006 reports. Defect reporting.

d 2000-01 results: NAO 2001 Modernising Construction. Delivered on or under 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

State and Municipal Bonds

The Australian 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. 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 program was limited to large scale land transport projects and was not widely used. Each of these programs granted a tax benefit to secured private lenders but not the unsecured risk-taking equity investors. Accordingly, 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 program 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. The scheme has been criticised for many years as an inefficient method of attracting private infrastructure investment. The major objections concern:

- 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 with authority to issue the bonds at the discretion of state and local governments
- 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 (Regan 1999).

Alternative arrangements include direct 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 is a variation to a carbon trading scheme.

Credit Guarantee Finance

Credit guarantee financing (CGF) was introduced in the United Kingdom in 2003 to provide a mechanism for using public debt capital to finance PPP projects. The arrangement requires the participation of credit enhancement agencies to raise the credit rating of the project to AAA status with the state assuming a senior debt role in the project. 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 secured only by recourse to the 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.

The CGF model was trialled with two PPP projects in the health sector 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.

The CGF model can lower the cost of capital and improve value for money. It also creates practical problems. These include:

1. The spread in funding costs at the AAA credit rated level between Commonwealth and United Kingdom governments, Australian state governments and private firms. The effective saving in interest cost may

reduce interest costs by 50 basis points in average market conditions although the implicit risk transfer back to central government is of similar dimension.

2. Application of CGF requires Treasury to assume the role of an arm's length lending bank which involves loan administration, legal and advisory fees, oversight and industry-specific technical knowledge and the transaction and/or agency costs involved.
3. CGF introduces another layer of contractual complexity into the PPP transaction which contributes to additional transactional and decision-making friction and incurs time and cost delays.
4. Volatile capital market conditions have reduced the number of monoline insurers issuing credit guarantees in Britain and Australia which transfers this role to consortium bankers. This is not the core business of banks and not the optimal method for them to leverage their balance sheets to maximise interest spreads, underwriting and transaction fees.
5. PPP consortia are generally a collection of entities with different incentives and timing objectives. Therefore flexibility is of high importance and it is common for them to lock in on medium term debt with a view to potential refinancing windows where risk has diminished and asset value improved. The CGF model with its long term debt obligations inhibits this flexibility, which may reduce competitive tension in the bid process.
6. PPPs are an incomplete contract - commercial and financial settings change, risk profiles are dynamic, opportunity may arise for revaluations and re-financings and real and embedded options may change the marginal return on investment or underlying financial economics. Long-term debt arrangements may inhibit sponsor flexibility.
7. Economies of scale suggest that for the CGT program to derive large scale benefits for the state, it would need to be applied to a large number of industry-specific projects.⁹

The CGF model has not been applied beyond the Leeds and Portsmouth hospital PFI contracts. Guidelines have been put in place together with standard form documentation (HM Treasury 2003). There is no commitment to proceed further with CGF although it remains an option for the future.

The Supported Debt Model

The Queensland Government is presently running 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 State refinances a predetermined level of project debt when the PPP is commissioned and operational.
2. 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.

⁹ 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 are incentivised to negotiate a commercial and operational rescue of the project whilst maintaining service delivery. Under CGF, the incentives are less clear.

3. The construction and residual (junior) debt finance needs of the project will be met by private financiers. SDM preserves traditional *ex ante* incentives and does not require credit enhancement or supporting private guarantees.
4. The lower cost of state debt reduces lifecycle finance costs which are passed on to the state through an improved value for money outcome.

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 capital 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 sector debt following the global credit crisis.
2. The SDM model attracts high initial administrative tasks although this reduces once the project is commissioned. Overall contractual friction should be less for SDM than CGF with lower transaction and agency costs.
3. The state debt is senior in status and private junior debt providers assume a stronger role in the administration of the transaction preserving the important incentive framework that underpins lifecycle contractor performance.

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 requirement for higher levels of privately sourced junior or mezzanine debt or equity capital which carries high risk premiums. Recent research suggests that the average state contribution to PPP debt capitalisation will be around 70% suggesting a mezzanine/junior debt participation of around 30% in addition to an equity contribution. The overall cost of debt will be determined on a project basis and particularly on the underlying credit strength of the consortium and its members. The use of higher levels of private mezzanine/subordinated debt and equity capital in prevailing market conditions may in fact increase a PPP project's average cost of capital. The break-even point for SDM is narrow and estimates suggest that this may occur when average private debt spreads exceed 500 basis points (McKenzie 2008). Depending on the unsystematic risk profile of the underlying transaction, 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 likelihood that SDM may remove the incentive for the consortium to revalue the contract and refinance. 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), it permits higher leverage and it permits a withdrawal/return to equity. Refinancing gains are shared with the state under Australian PPP guidelines.

Debt Guarantees

An alternative form of state support for PPP projects not widely used in Australia is the use of state guarantees to support privately sourced project finance in adverse capital market conditions. Debt guarantees, unlike the CGF and SDM approaches, are a contingent liability of government for borrowing limit purposes and do not attract the “crowding out” and deadweight cost disadvantages of direct state capital

contributions. They can also reduce the overall debt funding costs and improve the value for money outcomes for PPP transactions. 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. Transactional and agency costs are less than under the CGF or SDM
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 (Wibowo 2004). The findings of this study are supported by recent research by the World Bank (Irwin 2003).

9. Market Opportunities

Financiers, advisers and the credit rating agencies indicate that present market conditions favour PPP projects with strong credit attributes. Many of the characteristics of these projects are highlighted above but can be summarised here. PPP projects have a greater chance of success in attracting private debt and equity finance in present market conditions if they possess more of the following characteristics:

- An availability based revenue stream
- Equitable and not wholesale risk allocation by the state
- A benign regulatory framework with a graduated abatement regime, incentives for high performance and robust mechanisms for dispute resolution
- Low leverage or equity contributions commensurate with actual project risk
- Strong debt service coverage and adequate stand-by liquidity
- Manageable technology and lifecycle risk
- Strength in the underlying financial covenants
- Track record, financial or well rated contractors
- Adequate measures for project and financial risk management (Standard and Poor's 2007, 2008).

Projects that meet this criteria are generally PPPs in the social infrastructure sector especially non-core service delivery in health, education, public buildings, law courts and police stations, corrective services, waste management, energy and the water resources industries. Project size is not a barrier to raising capital for PPPs with these characteristics.

Governments keen to maintain a strong bid market should consider fast-tracking projects that meet these criteria. Governments should also consider a more equitable cost-based approach to risk transfer and guarantees to support privately-sourced

senior debt in projects that are suited to delivery by PPP but cannot be financed in present market conditions. This may not be a significant number of projects and will mainly concern those with complex construction or patronage risk. Such a measure will also have the advantage of preserving value for money outcomes in an environment of higher cost private capital.

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ABBREVIATIONS

ABS Australian Bureau of Statistics
ASX Australian Securities Exchange
BOO Build own operate
BOOT Build own operate transfer
BOT Build own transfer
EBITDA Earnings before interest, tax depreciation and amortisation
EBITDA margin EBITDA as a percentage of enterprise revenue
CGF Credit guarantee fund
GBE Government business enterprise
GDP Gross domestic product
GFCF Gross fixed capital formation
GSP Gross state product
HMT Her majesty's treasury (United kingdom)
IPO Initial public offering
OECD Organisation of Economic Cooperation and Development
OESR Office of Economic and Statistical Research
PPP Public private partnership
RBA Reserve Bank of Australia
SDM Supported debt model
SEQIPP South East Queensland Infrastructure Plan and Program
SEQRE South East Queensland regional Economy

Standard and Poor's Issue Credit Rating Definitions

AAA The obligor's capacity to meet its financial commitment on the obligation is extremely strong.

AA This rating differs from AAA only to a small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong.

A The obligation is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than higher rated obligations.

BBB The obligation exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to meet financial commitments under the obligation.

Ratings BB or less are regarded as having significant speculative characteristics.

Appendix 1

MIRVAC SCHOOL OF SUSTAINABLE DEVELOPMENT

WORKING PAPER SERIES

PUBLIC PRIVATE PARTNERSHIPS What lessons have we learnt?

Working Paper WP100 Rev. 27 July 2008

Michael Regan

This is a draft research paper that is work in progress. Comments, suggestions, criticism and contributions are welcome and will be acknowledged. Responsibility for errors, omissions and inaccuracies remain with the author. The final report will be published in December 2008.

Mirvac School of Sustainable Development
Faculty of Business, Technology and Sustainable Development
Bond University 4229 Gold Coast, Australia

www.bond.edu.au

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1. Background

PPPs are a derived procurement mechanism with roots in privatisation theory, outsourcing and the liberalisation policy initiatives of the 1980s. However, the idea that the private sector could effectively deliver public goods on behalf of the state was first recognised in the time of Constantine and there is clear evidence of private provision of transport and utilities throughout the long tenure of the Roman Empire. More recently, European powers in the 17th and 18th Centuries used the Royal Charter to vest authority in private organisations such as the East India Company and the Hudson Bay Company to administer colonies in the Far East, North and South America.

In the 1980s, economies in most developed countries were characterised by high levels of public participation in the economy, high levels of state debt and deficits, stagflation and low levels of economic growth. The response of government was to reduce public debt, downsize government, privatise government business enterprises, improve microeconomic performance and outsource the delivery of public assets and services. Private capital was an appealing substitute to state investment and in the early 1990s, procurement models based around build own operate transfer arrangements became more common for the delivery of networked public assets such as roads, water and sewerage plants, pipelines, ports and public buildings.

These arrangements were generally input-specified stand-alone assets for periods of 15-25 years. In 2001, the United Kingdom introduced its Private Finance Initiative which eventually came to consolidate a number of procurement methods including PPPs. The Victorian Government introduced its Partnerships Victoria program about the same time and policy variants of these approaches were eventually adopted by the commonwealth, state and territory governments in the following 6 years. Victoria has employed PPPs for more economic and social infrastructure projects than any other Australian jurisdiction and the Partnerships Victoria policy template is widely used as a best practice template in developing economies in Asia, the Pacific and Africa.

Queensland employed build own operate principles in several early projects including the Sunshine Coast Motorway and Brisbane's proposed light rail project. However, the former was nationalised following a change of government in 1989 and the latter failed to move beyond the expression of interest stage. In 1997, Queensland introduced a new policy framework titled *Private Sector Involvement in Public Infrastructure and Service Delivery* and in 2002, the Department of State Development set up an Infrastructure Partnerships Task Force. PPP policy guidelines broadly based on the Partnerships Victoria model followed. However, few projects were approved until the Southbank Institute PPP in 2004. In 2006 the Brisbane City Council adopted a PPP procurement approach to the north-south by pass tunnel and the State Government followed with the Airport Link motorway in 2008. The slow progression from policy framework to project initiation led to a perception that Queensland's policy settings and institutions favoured state provision of infrastructure and, amongst the Australian states as recently as 2006, Queensland had the lowest level of private participation in the infrastructure sector.

In 2007, PPPs accounted for around 12% of state procurement in most developed economies. In Australia, PPPs account for less than 6% of capital works expenditure by Australia's commonwealth and state governments.¹⁰

¹⁰ Around 10% of capital works in Victoria and less than 7% in the other states.

2. What Is a PPP?

PPPs are broadly defined because the term includes a number of similar but not necessarily identical procurement methods. A PPP is a long-term contractual arrangement or franchise under which a private firm finances and manages the production of goods and/or services for, or on behalf of, the state.

The PPP contract is put out to a competitive tender and the successful tenderer (or franchisee) is selected on the basis of the best value for money outcome for the state. Value for money is determined using both quantitative and qualitative criteria. Quantitative analysis involves a comparison of private bids with the risk-weighted model of state procurement (the public sector comparator or PSC) after adjustment for competitive neutrality, risk transfer and retention. The qualitative test looks at the bidding consortium's capabilities and track record, the innovation and new technology brought to the delivery solution and a comprehensive public interest test.

PPP tenders are generally conducted on the following basis:

- The private provision of an asset for state use on a take-or-pay basis (for example, the provision of a serviced hospital bed or a primary school building)
- The private delivery of services to or on behalf of government (for example, a convention centre or public transport system)
- Private provision of an asset on a market-risk user-pays basis (for example, a toll road).

The first two payment methods have two components - a base fee calculated by reference to quantitative service provision under the contract and an incentive fee calculated by reference to service delivery that exceeds key performance indicators.¹¹ Service delivery failure can result in an abatement of fees or the imposition of financial penalties. At the end of the tenure period, the asset reverts to the state.

3. Traditional Procurement

The vast majority of state capital spending employs traditional procurement methods whereby the state internally manages or outsources design, development and project management usually as separate contracts. The most common method is an input specified asset and/or service procured by lowest price tender. There is a significant body of evidence that points to the failure of traditional procurement for complex construction and infrastructure projects. The larger and more complex the task, the greater the risk that projects will not be delivered efficiently or in a cost effective manner. This adversely affects the quantity and the quality of public service delivery. Recent evidence from Europe and Australia suggests that when governments use lowest price tender methods, around 70% of projects are late and a similar percentage are over budget.¹² This does not necessarily mean that procurement by

¹¹ PPPs are generally bid on the basis of the fee to the state or the user-pays tariffs. However, bid criteria and non-conforming bids may also include up-front payments to the state (Cross City Tunnel, Sydney), the length of tenure (Eastlink, Melbourne) and the value of up-front state contributions to the project (RiverCity Motorway Prospectus 2007).

¹² NAO 2003. The 2002 Mott McDonald report found that traditionally procured standard building projects (those not requiring special design considerations) had taken between 1-4% longer to complete than expected at business case stage, before contract award. Non-standard buildings (those involving special design considerations, for example, specialist hospitals, innovative prisons, high technology facilities other unique buildings or refurbishment

tender is the problem. Evidence suggests that the poor performance of traditional procurement is a consequence of government agency failure in the preparation of the business case, inter-agency friction, the separation of the design, construct and operations elements of the project and an input specification that is either incomplete at the time of tender or is subject to ongoing change during the early stages of the project (Flyvbjerg 2003; NAO 2003, 2004a). It is not unusual for a combination of an incomplete design and the lowest price tender for a project to end up the more costly form of procurement. This is evident from a long list of traditionally procured projects and Federation Square in Melbourne, the Scottish Parliament building in Edinburgh and the Opera House in Sydney are obvious examples. Less well known examples include the Southampton Oceanographic Laboratory, Guy's Hospital Stage III, the New British Library and Quarry House in the United Kingdom (NAO 2003, 2005).

Poor procurement performance involves large sums of public monies and is a form of public failure. Public failure occurs when governments fail to allocate resources efficiently or the social cost of a state intervention exceeds its benefit (Winston 2007; Regan 2008). Additional contributing factors include optimism bias (the overestimation of benefits and underestimation of costs), low levels of design and construction innovation and, little regard to lifecycle costing and the risks associated with the long-term management of complex assets such as hospitals, corrective service institutions, public utilities and telecommunications systems. Steps are being taken to improve traditional procurement and many of the improvements are flowing from lessons learnt with alternative procurement methods including alliance contracting, public private partnerships, outsourcing and the build own operate transfer arrangements. It is improvements to the science of public procurement that is the central issue here and not the benefits and disbenefits of specific procurement methods.¹³

4. The PPP Methodology

PPPs employ a very different approach to project procurement. The state develops an output specification which is a schedule of services or outcomes that are required to be delivered. The focus is on outputs and not the asset that will deliver them. This creates an incentive for private bidders to examine innovative methods of service delivery in a competitive tender situation. The bid process commences with an expression of interest (EOI) process which is designed to provide a project briefing, lay down the government's preferred risk allocation position and test market depth. A limited number of preferred bidder's are selected for the tender and all bids including the variations to conforming bids are measured against a risk-weighted model of traditional procurement (the public sector comparator or PSC). The decision is made to proceed with a PPP only if the bid offers better value for money than the PSC.

Value for money is a broadly defined term that includes both quantitative and qualitative criteria. The quantitative analysis includes preparation of a business case for a reference project and a risk-weighted model of traditional procurement (the public sector comparator or PSC). The quantitative analysis requires an evaluation of specific proposal attributes and a comprehensive public interest test that takes into account matters such as public equity, health and safety, access and the impact on

projects) had taken between 2-39% longer. The 1999 report, *Benchmarking the Government Client*, found that construction programmes overran by an average of 13% compared to the tender stage (NAO 2003, p. 3, n. 2).

¹³ NAO 2005 Improving Public Services Through Better Construction; Egan 1998 Rethinking Construction; NAO 2001 Modernising Construction.

particular sections of the community. It is interesting that value for money determinations are not a standard requirement for traditionally procured projects.¹⁴

The bidders for a PPP compete on the basis of design and construction innovation, an appetite for absorbing project risks, new technologies and lifecycle costing for the delivery and operation of the service. Construction cost is a factor although innovative design and construction methods are more likely to be a point of difference than outright construction prices. Additionally, bidders will be allocated a number of project risks that may include construction cost and time, patronage (toll roads and some transport projects), operational risk including lifecycle repairs and maintenance and force majeure. The Southern Cross Station project in Melbourne demonstrates how governments can be insulated from the high risk of construction cost overruns. In the UK, construction cost overrun experienced by contractors demonstrates that risk transfer is effective (NAO 2003). The greater the level of design innovation, the greater this risk will be. Some risks cannot be effectively transferred to the private sector. A major reason for the failure of early hospital PPPs was the transfer of case mix clinical services risk to the private sector. The lessons were learnt and subsequent PPPs in the health sector limited risk allocation to non-core services such as the provision of buildings and beds, car parking, catering, cleaning and waste management.

PPPs are mostly delivered on time and within budget. In 2003, the UK National Audit Office surveyed a sample of 39 PPPs across multiple industry sectors and found that 76% were delivered on time and 78% were within delivered on budget (NAO 2003, pp. 8-13).

The PPP process involves a number of clearly defined “gateways” through which the project must progress. Under Partnerships Victoria guidelines, each gateway is conducted with Treasury oversight and independently reviewed. The process is rigorous and ministerial signing-off is required at critical points in the process. The PPP proposal is developed, evaluated and managed by the line agency and it is important for the PPP implementation framework to preserve agency ownership of the project from inception through to delivery and contract management. In the United Kingdom, the Gateway Review process was adapted for use with traditionally procured projects in 2001. The program employed five gateways similar to the first four stages of the development of a PPP project. The Gateway Review has led to significant improvements in traditional procurement and in 2006; most projects were achieving PPP levels of construction performance (NAO 2005). The Gateway Review program was introduced in Victoria in 2004 and evidence from the United Kingdom and Victoria confirmed both the weakness of traditional procurement practices on the one hand, and the value of risk-weighted rigorous procurement evaluation on the other (see Table 1).

5. Procurement Cost Savings

PPPs are reducing the cost of public procurement although there is significant variation between industry sectors and types of projects. In the United Kingdom, a series of reports since 1997 suggests cost savings based on a comparison of the PSC and winning bid were within the range 10-20% (see Table 2). In Australia, the

¹⁴ The introduction of the Gateway program in 2004 is introducing more systematic project evaluation methods for traditionally procured projects including value for money (NAO 1999a). However, at the present time, Gateway accounts for a small number of projects in Australia and the program has not yet been introduced in all States.

**Table 1
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				

results have been at the lower end of that range with the Fitzgerald Report identifying an average 9% cost saving for a portfolio of diversified projects, Allen Consulting 11.4% and the N.S.W. schools project 7-10% (stage 1) and 22% (stage 2) (Fitzgerald 2004; Allen Consulting Group 2007; Auditor-General NSW 2006).¹⁵

6. Value for Money

Most traditional procurement is based on an input specification for the assets and/or services being acquired, separate contracts for design, construction and asset management, and a public tender for each contracts. Contracts are let by government departments and agencies pursuant to conventional procurement guidelines and in all but the largest value projects, without Treasury, Public Accounts Committee or Works Committee oversight.

There is a presumption in favour of the lowest price tender and this tends to dominate evaluation criteria. The Egan Inquiry in 1998 examined the state of the UK construction industry and in its recommendations observed,

“Too many clients are indiscriminating and still equate price with cost, selecting designers and constructors almost exclusively on the basis of tendered price. This tendency is widely seen as one of the greatest barriers to (industry) improvement. The public sector, because of its need to interpret accountability in a rather narrow sense, is often viewed as a major culprit in this respect. The industry needs to educate and help its clients to differentiate between best value and lowest price (Egan 1998, Report of the Construction Task Force, p. 7)”.

¹⁵ The difference is explained by the greater opportunity that existed in the United Kingdom with early PFI projects, the opportunities for improvement in traditional procurement practices, the deal flow and economies of scale that exist in that market. Recent evidence suggests some convergence between the two jurisdictions (Audit Commission UK 2003).

Table 2
PPP Procurement Cost Savings

15%	<i>a</i>	BTCE 1996, Australia
8-14%	<i>b</i>	Hodge 2000 (worldwide survey)
17%	<i>c</i>	HM Treasury 1998, United Kingdom
17%		Anderson-Enterprise LSE 1999, United Kingdom
19.70%		HM Treasury 2002-03, United Kingdom
10%	<i>c</i>	Allen (House of Commons) 2003, United Kingdom
9%	<i>d</i>	Fitzgerald 2004, Australia
11%		Allen Consulting 2007, Australia

SOURCE

Compiled Michael Regan from original reports 2006

NOTES

a Comparison of PPP/PFI outcomes against the PSC

b,c Contracting out only

d All procurement

e Buildings only

In the past 15 years, state procurement policy in Australia and the United Kingdom has moved away from strict lowest tender selection criteria to value for money (VfM). VfM is a wide construct that examines the direct and indirect impacts of a particular procurement. The Northern Territory Government's procurement directions policy employs the following VfM tender assessment criteria:

- Past performance
- Whole of life costs
- Local development and value-adding
- Timeliness
- Capacity, and
- Innovation.

For PPPs, comprehensive qualitative and quantitative criteria are employed that may include:

- Lower procurement cost or user charges using a comparative evaluation against a risk-weighted traditional procurement model
- Early project delivery or minimum community disruption during construction
- Variations to specification that create additional utility or value for the state
- Improved state resource allocation or utilisation
- The transfer of additional project risks
- Service delivery outcomes that exceed specification or improve service standards, consumer utility or enhancements to the public interest
- Improvements in the quality, scope and scale of service delivery
- The use of processes and inputs which are likely to produce more reliable and better quality services

- Sustainability and environmental protection
- Design amenity (NAO 2003; PV 2001, 2003; Grimsey and Lewis 2004).

Table 3

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SURVEY OF PROCUREMENT OUTCOMES ^a

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

SOURCE

MR 2008

NOTES

a Sources as noted. Sample sizes vary. Parenthesis denotes average overruns for sample

b Qualitative assessment from independent NAO 2004, 2006 reports. Defect reporting.

d 2000-01 results: NAO 2001 Modernising Construction. Delivered on or under 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 2004; Audit Office Reports Victoria & NSW 2004-08; IPA 2007

h NAO 2004c, 2006 MOD Defence Contracts

The key quantitative measure of value for money with PPP projects is the PSC. The PSC is frequently criticised on grounds of accuracy. The general rule adopted in many countries is for a PSC to be prepared when traditional procurement is an option. When the state does not have the capital to undertake the project, a PSC may be prepared as a benchmark although it is expected that, in these circumstances, a competitive market will deliver lowest procurement cost and value for money. The PSC is based on a reference case built around the best traditional procurement option. As with the private bids, preparing a financial forecast for an infrastructure project is a complex exercise that is more art than science and relies on the estimates, advice and judgement of the project management group.

The qualitative measure of value for money involves an analysis of each bid on the basis of:

- A public interest test
- The prospects for the quality and reliability of service delivery
- Design amenity
- The sustainability of the bidder's proposal (PV 2003, pp. 12-14; NAO 1999b).

The evidence suggests that the drivers of value for money in PPP projects include:

- Risk transfer
- Innovation in design and construction
- Price certainty including lifecycle costing of refurbishment, repair and maintenance obligations
- Timeliness of delivery
- The use of new and more effective technologies (Fitzgerald 2004; Regan 2007).

The literature also points to wide variation in the achievement of these outcomes between projects. Matters that affect value for money outcomes include the size of the project, the complexity of the construction and operational tasks, the scope for innovation and technology, and bid criteria. Another source of difference is qualitative outcomes such as landmark design (Southern Cross Station project); e-tolling (Transurban Citylink, Melbourne); construction methods that do not impose congestion on existing roads (Heathrow Terminal 5; Eastlink, Melbourne); up-front payments to the state (Cross-City Tunnel, Sydney; River City Motorway); new filtration technology (Enviro Altona); early commissioning (Albury Wodonga Treatment Plant); public security, technology services and user amenity (County Court Building, Melbourne), lower consumer charges (Eastlink, Melbourne) and improved asset management (NSW Schools Project; Darent Valley Hospital).

The value for money evaluation process offers a more comprehensive method for evaluating proposal attributes and offers a platform for comparing proposals and the PSC. Value for money is acknowledged as a best practice template for project procurement especially one off, large and complex projects offering scope for innovation and the deployment of new technology.

Nevertheless, a number of recent UK PPP audit reviews point to inaccuracies and systemic optimism bias in state agency evaluation of major projects. The PSC can be difficult to price particularly when a government agency has a long history of underperformance under traditional procurement principles (NAO 2004b). Optimism bias is being addressed by a number of techniques being employed at the early business case development stages of the project including reference forecasting methods (Flyvbjerg and COWI 2004). Lifecycle costs are also difficult to accurately predict over service intervals of 20-40 years and may account for up to 5 times the initial procurement cost, in nominal terms, for an average commercial building over a 20 year investment period. This suggests that the PSC is not definitive for large and complex projects and offers little more than a guide (NAO 2004b). The identification, measurement and pricing of risk are a subjective exercise for long-term projects and forecasts prepared on a risk-weighted basis are as sound as the quality of the thinking that is employed in their construction. The same problem exists for the private sector bidders although the financial costs of error go straight to the bottom line. Possibly it's a question of incentive and the marginal utility of investment – the investor with more at stake is more likely to take greater care in measuring the risk profile of an undertaking than one with less.

7. A Rigorous Project Delivery Framework

A major driver of better value for money outcomes with PPP projects is the rigour imposed by the project development process. Although processes vary in each country and state, a PPP originates with a state department or agency and is evaluated with a view to the procurement options with Treasury oversight. When the

project is nominated as a PPP, the agency prepares the output specification and proceeds through the approval “gateways” (see Table 3).

Table 4
The PPP Project Delivery Framework

Step	Benchmarks
1. Identify the service need	Output specification
2. Appraise the options	Procurement alternatives Evaluate financial impacts
3. Develop the business case	Risk identification Cost benefit analysis Build the PSC
4. Project development	Commercial principles
5. The bid process	EOI, RfP, evaluate bids
6. Project finalisation review	VfM determination
7. Final negotiation	Contract & financial close
8. Contract management	Formalise contract management, monitor project delivery, CAM
1481	

The value of the PSC will also depend on the bid criteria which may include the PPP franchise term, user charges such as a toll, state charges such as an availability cost of a hospital bed, or up-front payments to the state. In the case of the Eastlink project in Melbourne, the project was awarded to the bidder with the lower user charges and the bidder based its tariffs on traffic forecasts somewhat higher than those forecast in the PSC. This was considered in the interest of toll users and met both the quantitative and qualitative value for money tests applied under the Partnerships Victoria model. In the United Kingdom, the PSC is being gradually being eliminated from the PPP evaluation process.

8. Bid Criteria

A difficulty arises with multiple criteria for the PPP bid process. This is demonstrated with Sydney’s Cross-City Tunnel (CCT) which invited bids on the basis of length of tenure, an up-front payment and user charges.¹⁶ Multiple bid evaluation criteria can create problems for government and generate consumer resistance. Up-front payments to the state contribute to higher user charges and consumers eventually reimburse any up-front payment to government over the life of the project. The Audit Office of NSW reviewed the CCT project which proceeded as a PPP on a no cost to government approach. The up-front fee was designed to meet all of the costs of the project incurred by the state so far. The surplus was unallocated. The Audit Office

¹⁶ The bid documentation recommended a franchise term and a recommended toll which left the amount of any up-front payment to the discretion of the bidder (Auditor General NSW 2006).

found that an up-front fee needs strong justification if the cost is to be met by tunnel users.

A further matter raised in the CCT review was variations in the cost of the project requested by the state. These were paid for by raising tolls and changing the toll escalation factor. The review found that the basis for changing the tolls was reasonable but the result was to significantly increase medium-term toll revenue (Auditor General NSW 2006).

The strategy for the CCT project aimed at reducing surface traffic volumes, easing road congestion and improving amenity within the Sydney CBD with partial road closures. However, poor communication with stakeholders and a bid framework that used a “no cost to government” approach led to the perception that partial road closures were designed to benefit the tunnel operators. Two recent state inquiries found that this was not the case. Nevertheless, this was the perception and the outcome is a bad one for Sydney – a tolled tunnel competing with free urban roads and only minor alleviation of the CBD congestion problem. However, the CCT project should not be viewed as a total failure although this is the result for the project’s equity investors. It is not the case for the project’s secured lenders or the New South Wales Government. The state has secured the private investment that it needed for a strategic east-west by-pass for the city and it has not been required to provide additional capital nor ongoing revenue support for the project.

The CCT tunnel also demonstrated demand price elasticity for this group of assets. Patronage increased significantly during toll-free periods suggesting that demand is quite sensitive to pricing in the presence of substitutes. Transurban City Link tollway in Melbourne has met traffic forecasts and options within the contract have proved sufficiently robust to meet the cost of financing the recent Calder Interchange upgrade suggesting that long-term contracts can retain flexibility to meet changes in future operating requirements. Flexibility was also achieved with the re-franchising of Victoria’s public transport PPPs with the withdrawal of National Express in 2002. The Victorian Government maintained uninterrupted service delivery and conducted bilateral negotiations with other franchisees for the transfer of the services preserving value for money outcomes in the process (VAGO 2005). Service continuity was also maintained with other failed PPP transactions including the Sydney Airport rail link and La Trobe Hospital.

9. Ex ante Measures of Performance

Once commissioned, PPPs are generally measured against conventional performance benchmarks – key performance indicators and compliance with the terms of the contract. It is often difficult to build qualitative user benefits into these long-term contracts although recent case studies in Australia and Britain suggest that PPPs are generating significant unplanned benefits. In the County Court building in Victoria, it is greater building flexibility, higher court utilisation and employee satisfaction with the operational performance of the new building compared with conventional government buildings (Fitzgerald 2004).

10. Innovation

In Britain, recent case studies suggest that innovative design is improving educational outcomes and attendance at government schools and colleges, better public housing, improved health standards in juvenile detention centres and reduced accidents and injuries in the operation of public transport systems (Mathias & Smith

2007; NAO 2005). Recent surveys point to better relationship management with operational PPPs resulting in low abatement deductions for under-performance and average performance levels that exceed the contract specification (KPMG 2005; Mathias and Reddington 2006). A review of recent contract performance in Britain suggests that the integration of design and construction elements of a project and incentive performance-based management techniques are improving the effectiveness of service delivery in corrective services and local area health (Smith 2006).

In Australia, private innovation and new technology has been employed in motorways (the e-tolling system), the water sector (new water filtration technology), building design and optimal use of facilities (County Court Building; Southern Cross Station) and project delivery methods (Eastlink).

11. Transactional Experience

In Australia, several early build own operate transfer (BOOT) transactions were taken over by the state including Deer Park Women's Prison and La Trobe Hospital. The state has "step in" rights in the event of specified franchisee financial or operational failures and the terms of the intervention may include full or partial compensation. However, rarely does the exercise of step-in rights impose extraordinary costs on the state. As with the Cross City Tunnel, the project is sold to new investors and the loss is carried by equity investors. The debt providers recovered their loan. The PPP failure rate is low with Standard and Poor's measuring defaults for international credit-rated projects of less than 1% in 2004, a lower rate than for other rated securities and significantly lower than the rate for business failures generally. Transurban's M7 motorway in western Sydney recently obtained a credit rating of A-, making it one of one of the few private toll roads in the world to achieve such a high underlying rating.

12. Lessons Learnt

Australian PPP policy and guidelines are being continually revised in the light of lessons learnt. Recent changes include standardised commercial principles, the taxation of windfall gains and a more scientific approach to risk allocation. Risk transfer is the major driver of value for money outcomes and the wholesale risk transfer of earlier years is being replaced by a systematic approach based on the capacity of the parties to best manage risk at the lowest cost. Independent reviews suggest that risk transfer leads procurement cost savings in the range 12-19% (Regan 2006). Risk transfer significantly outweighs the lower cost of state capital when measured under value for money criteria although this hasn't prevented critics of this procurement method from misrepresenting the cost of capital as the major determinant.

13. Certainty

An important benefit of the PPP method of procurement is that new projects are being viewed from the perspective of lifecycle operation. Investment economics need to consider not only the project delivery costs but the maintenance, repair and refurbishment expenses likely to be incurred over operational lifecycles of up to 40 years. International evidence is pointing to large multipliers for lifecycle costs over these time frames. It is not unusual for conventional commercial buildings to carry lifecycle costs for to five times the initial procurement cost in nominal terms and the multiplier increases with more complex applications such as power generation, water filtration and recycling, hospitals and public transport facilities.

Traditional procurement is subject to the stop-start budgetary volatility of governments elected for terms of 3 or 4 years. Short-termism and the mismatch of short-term fiscal cycles and long-term operational economics is mainly responsible for the poor condition of Australia's infrastructure assets and the frequent breakdown in service delivery of essential services such as urban transport. The lifecycle approach used with PPPs avoids this problem and assures long-term operational certainty.

PPPs are also applied to a wide range of applications. In Victoria, this method of procurement has been successfully used for public buildings (Royal Agricultural Society showground, convention centre); corrective services, law courts, hospitals, communications services, water treatment and waste management, a film and television studio, public transport facilities and new projects are underway for schools and a desalination plant. The Partnerships Victoria model is considered a best practice benchmark and is being employed as a policy framework in transition economies.

14. Incentive

The PPP procurement framework strikes a balance between penalties for under-performance and incentives to exceed minimum performance criteria. Identifying, correctly structuring and harnessing the incentive for managers to perform consistently to best practice standards is central to the performance of alternative project procurement methods. Public choice theory provides a framework for understanding incentives in the public sector and attempts to explain the drivers of public policy formation, implementation and management. The theory acknowledges public failure which arises when the state creates inefficiencies in the process of market interventions or when it could have solved a problem or furnished public goods more efficiently thereby achieving outcomes that are less than optimal (Wolf 1993; Winston 2006, pp. 2-3).¹⁷

In the private sector, incentive is generally linked to financial return although agency and privatisation theory and the Coase theorem explanation of the powerful role of property rights suggest that what motivates the private sector in long-term contracts is not always readily identifiable. The procurement methods that create the strongest incentive for *ex ante* private investment and *ex post* operation are those where the private operator's remuneration is linked to key performance indicators that extend over the project lifecycle. These methods include asset-based procurement such as build own operate transfer (BOOT) arrangements, long-term outsourcing contracts and output specification-based PPPs (Hodge 2000; Megginson 2005). The objective of infrastructure projects is to deliver sustainable services over long periods of time in industries whose economics are frequently determined by short-term impacts such as volatile energy prices, changes to networks and the introduction of legislation imposing limits on greenhouse gas emissions. If we consider the relatively minor role that project delivery costs play in lifecycle service delivery outlays, the design of incentive-based remuneration structures that reward performance over contracts of up to 39 years duration assumes an important role.

¹⁷ Competition and privatisation theory offer similar conceptual approaches in the context of delivery of public goods. In the absence of market failure, private firms operating in competitive markets are the most efficient means of production (Boardman & Vining 1989; Megginson 2005, pp. 44-45).

Public goods delivered by traditional procurement and services managed by government agencies or business units operate within a poor incentive framework. These units achieve rates of return equal to or less than the bond rate (Productivity Commission 2007). There are several reasons for this – the institutions responsible for construction and management may be different, there are few rewards if management delivers ahead of time or earlier than planned, investment decisions may include social as well as economic objectives. At enterprise level, government agencies and business units are also expected to meet community service obligations, output pricing is not always set by reference to production costs and there can be political interference in board and senior management appointments. This is reflected in the state’s poor track record of project delivery and asset management using traditional practices (NAO 2001).

PPPs based on availability payments generally contain a base charge calculated by reference to the goods or services supplied and a smaller incentive payment that is activated by performance against qualitative criteria or consistent achievement of key performance indicators. An abatement formula also applies to reduce payments in periods when the agreed quantity of goods or services is not supplied or performance falls below the required standard. PPPs involving full transfer of patronage risk also give the private operator a strong incentive to achieve forecast operating revenues and meet minimum debt servicing criteria.

Incomplete contracts with embedded real options also enter the incentive argument. Many PPPs contain maximum return on equity thresholds that cap investor returns, and revaluation gains attract profit-sharing arrangements with the state. These requirements limit windfall profits for the private sector without exposing the state to operating losses. The broad effect of these limitations on “blue sky” returns is to preserve incentives for investors to maintain efficient lifecycle operation whilst avoiding the possibility that it is cheaper for them to walk away from a project than continue with a contract that offers insufficient return or worst case, involves future losses. This occurred with the original arrangements for the franchised management of Melbourne’s public transport assets.

15. Intergenerational Equity & Fiscal Sustainability

Intergenerational equity describes the economic, sociological and philosophical relationship between current and future generations and living standards. In the context of major project procurement, it essentially refers to state debt or taxation that will need to be paid for by future generations to meet the cost of current investment.¹⁸ This is also referred to as fiscal sustainability and favours a “user pays” approach to public benefit – those who derive benefit from the asset should pay and those that don’t should not (Thompson 2002, pp. 4-5). Fiscal sustainability has greater relevance with state spending on current consumption than it does with current investment in economic and social infrastructure assets that continue to deliver benefits over several generations.

For traditional procurement, intergenerational equity favours the use of debt for capital investment amortising over the economic life of the asset (Coombs and Dollery 2004). Public private partnerships essentially come in two forms – the private sector assumes market risk and charges consumers for the service or the state pays an availability charge for the use of an asset. Both forms fit within use pays principles

¹⁸ The Charter of Budget Honesty Act 1998 (*Cwlth*) established a formal reporting mechanism to assess the long-term sustainability of current government policies over a 40 year horizon.

and neither pass inequitable taxation or debt burdens to future generations. However, inequity in user charges does give rise to potential inequities. The level of tolls and negotiated changes to the toll escalation factor were criticised by the NSW Audit Office in its review of the Cross City Tunnel project. The Audit Office took the view that:

“The (change in toll escalation factor) distorts inter-generational equity between tunnel users. If it was appropriate for tunnel users to fund these costs, this should have been done by changing the base tolls. Escalation factors should do no more than reflect underlying cost movements or inflation (Auditor General NSW 2006, p. 3).”

Under nearly all PPP arrangements in Australia, property in the asset passes to the state without cost at maturity. PPPs do not give rise to concerns in either intergenerational equity or fiscal sustainability terms.

16. The Cost of Capital Debate

Critics of public private partnerships 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 (RBA 2008).¹⁹ 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.

How does the state capitalise its infrastructure investments? As a general rule, the state can finance investment in one of two ways – by applying taxes or by borrowing. If the state is to draw capital from existing consolidated revenue, it will do so at the expense of alternative projects. Investment decisions and priorities are made by the state on policy rather than investment grounds. The state generally prices its capital on its marginal cost of debt or social time preference – the rate that the state estimates is the price that the community will pay to defer immediate consumption. However, governments use different approaches to calculate social time preference or the social discount rate. Campbell and Brown (2003, p. 221) argue that the state can use the marginal cost of state debt with adjustments for diminishing utility, tax distortions and uncertainty, as the case may be.²⁰ These calculations imply the social discount rate will generally be slightly higher or lower than the marginal cost of state debt. However, the role of intergenerational equity and particularly the user-pays principle that is increasingly embedded in the pricing of infrastructure services suggest that the marginal cost of debt is a reasonable proxy for the social discount rate.

The use of the cost of state debt is not a wholly satisfactory approach. 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 or new taxes. That is, taxpayers are indemnifying the state against loss and carry a contingent liability for that investment (Grimsey and Lewis 2004, p. 133). If taxpayers were to apply a risk-adjusted discount rate equal to the shadow cost of equity, it would be significantly higher than the cost of debt (Klein

¹⁹ New South Wales Treasury Corporation bond yields were 7.2% (3 years) and 7.04% (5 years) at 31 May 2008 (RBA 2008).

²⁰ 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% 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.

1997). Brealey, Cooper and Habib (1997) argue that the social discount rate is the expected rate of return for comparable capital market investments. However, the state does not apply this higher discount rate because it sees itself as essentially a risk-free borrower, ie. As a result of taxpayer indemnity, the risk of default is negligible.²¹ 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 (Flemming and Mayer 1997; Anderson, Finn and Peterson 1996). Grimsey and Lewis argue that the risks associated with a given undertaking are the same for either private or 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 risk which is exogenous and outside the control of investors in the market. Examples of systematic risk include change in government, business cycles, interest and exchange rate movements. The investor's main tool for dealing with systematic risk in listed markets is portfolio theory and careful selection of investments based on the return volatility expressed as the beta of particular stocks, sectors or indexes. Systematic risk is recognised in the discount rates used for Partnership Victoria PPP projects (PV 2003). 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 cash flow forecasts for Partnerships Victoria projects. Both forms of risk are recognised in private investment including PPP bids but neither is recognised in state discount rates used for PPPs in the United Kingdom (HM Treasury, The Green Book, 2003).

Why are discount rates important? The PSC is modelled using discounted cash flow analysis and the discount rate is central to the valuation of future cash flows – positive and negative.²² The cost of capital is one of many components that constitute the PSC and provide the basis for comparing traditional procurement with private bids. It is the entire procurement option that is measured and if the private bid is lower than the PSC, the cost of capital has clearly not a decisive factor. The other value for money drivers have contributed to the lower private bid. There is no evidence to suggest that the cost of capital is a decisive influence in the PPP selection process and if it was, fewer PPPs would be commissioned.

In the United Kingdom, HM Treasury sought to improve PPP value for money performance 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 (Standard and Poor's 2004). 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. Variations of the CGF are presently being evaluated in Queensland.

17. Non-Adversarial Contracting Methods

Traditional procurement is based on adversarial contracting methods. Following negotiation of the building contract, the state agency, contractor and sub-contractors

²¹ The risk of default has a low probability. However, the risks associated with state fiscal management are much greater – 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.

²² 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.

commence a process whereby omissions or incompleteness in the specification, variations to the contract and the settlement of claims is a source of ongoing friction against the backdrop of potential litigation if the intermediate steps of negotiation and alternative dispute resolution are unsuccessful. Adversarial contracting and staff time devoted to resolution of disputes is a major impediment to improved industry productivity with flow-on consequences for industry profitability and investment (Egan 1998, p. 7). The adversarial foundations of traditional procurement are estimated to cost around 10% of annual construction capital spending and 5% of building operating costs (NAO 2005b, p. 6).

Alternative procurement methods including PPPs and relationship contracts are circumventing the numerous problems associated with adversarial contracts including its cost and adverse impact on productivity performance. Project collaboration enables real-time sharing of information, drawings, specifications, time-scales and budgets. From the state agency's perspective, the benefits of collaborative project management software are better communication, a reduction in mistakes and increased speed. A PPP assigns design, construction and operation risk to the consortium to be managed on an integrated basis with significant value improvement and cost reduction (Egan 1998, p. 8).

18. Conclusion

When viewed in context, PPPs are a new approach to large project procurement that is reforming the costly inefficiencies associated with traditional government procurement methods. The changes that have been introduced include more rigorous project evaluation, the adoption of output specification to encourage innovation and technology, the use of risk-weighted models of public procurement, certainty created by life cycle costing, independent project reviews and government capacity building in the areas of project and contract management. The model has and will continue to improve the science of large project procurement, it is an evolving model that is being modified in the light of experience and new applications and it has led to major improvements in state procurement that will lead to significant cost savings and efficiencies in the 90% of projects that are not procured in this way.

This evidence confirms that PPPs are a feasible alternative procurement method for specialised applications which offer scope for improved delivery of public assets and services. The PPP procurement option remedies the major failings of traditional procurement – delivery time and cost overruns, poor lifecycle costing practices, lack of rigour in the asset allocation and project development processes and sub-optimal service delivery outcomes. PPPs also deliver improved value for money outcomes (via lower procurement cost and capped lifecycle expenditures), incentivised management, design and construction innovation and new technology, improved sustainability at both the asset and service levels, and a rigorous project evaluation framework that is informing traditional procurement process. Issues remain – uniform methods for dealing with accountability and transparency, private sector capacity constraints and maintaining a competitive bid market, incomplete contracts and long service intervals and questions about the suitability of PPPs in some sectors of the economy. These are challenges for future improvement of the model and wider use of derivative forms for specialist procurement applications.

PPPs are also a method of procurement capable of being applied across a wide range of diverse industries. The model has been successfully trialled with multi-billion dollar tollway projects, public buildings and applied to a number of smaller bundled projects delivering non-core services and more specialised applications such as the

Southbank Institute in Queensland, the Southern Cross Station, Royal Children's Hospital and the Convention Centre projects in Victoria.

Given the available evidence from over 10 years of applications, the question we no longer need to ask is whether PPPs are a good or a bad thing. The question we should now be asking is how we can improve the model to achieve better public services in the future.

NOTE

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

APPENDIX 2

MIRVAC SCHOOL OF SUSTAINABLE DEVELOPMENT
BOND UNIVERSITY

RESEARCH PAPER

**A NEW APPROACH: COMPARATIVE
PROCUREMENT METHODOLOGY
ANALYSIS**

EXECUTIVE SUMMARY

RP 130 27 October 2008

Michael Regan

This is a draft research paper that is work-in-progress.
Comments, suggestions, criticism and contributions are welcome
and will be acknowledged. Responsibility for errors and omissions
remains with the author.

Mirvac School of Sustainable Development
Faculty of Business, Technology and Sustainable Development
Bond University 4229 Gold Coast, Australia

www.bond.edu.au

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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.

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.

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.

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

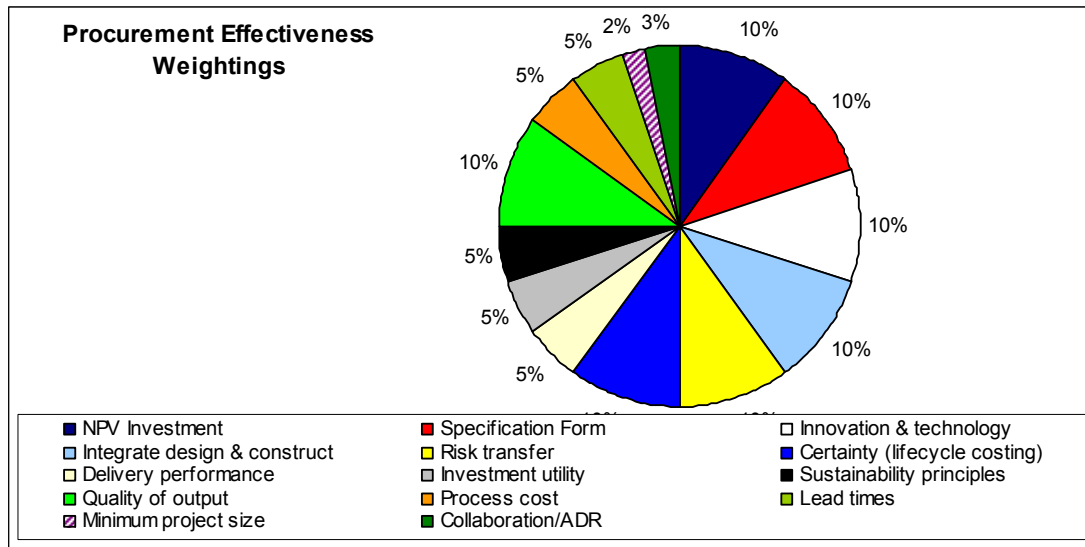
Identifying a systematic procurement evaluation tool requires identification, measurement and weighting of each of these procurement characteristics. In the final analysis, this process is a matter of judgement and the selected weightings will be influenced by subjective views about what is important 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 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

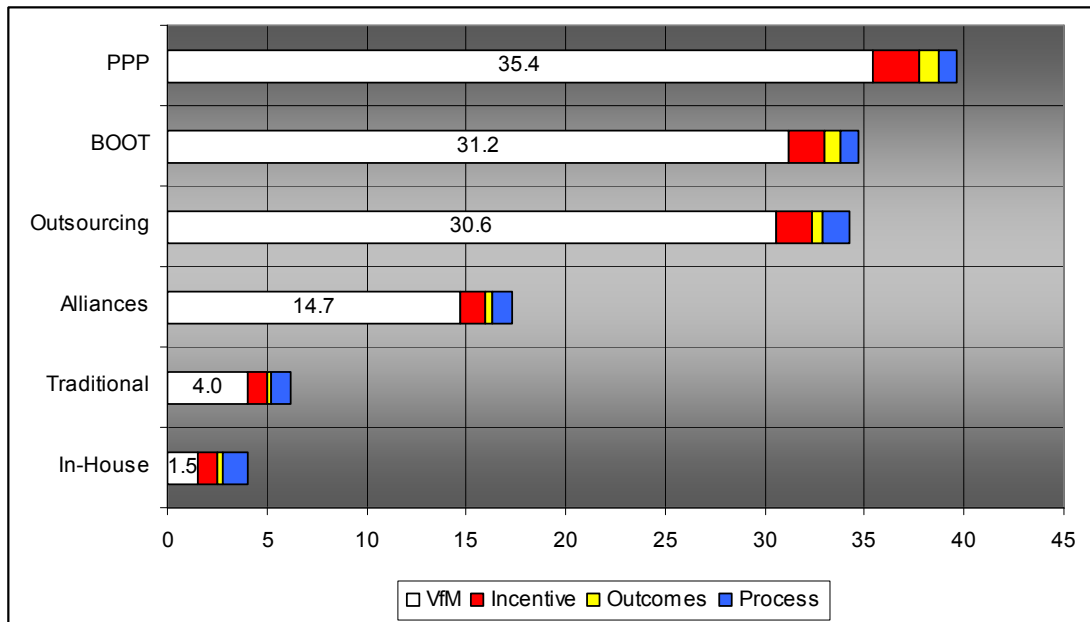


Findings

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.

Attachment

Table 1 Procurement Efficiency Weightings

1655v1	PROCUREMENT EFFECTIVENESS INDEX						
	Weight	In-House	Nominal Ratings			BOOT	PPP
Traditional			Alliances	Outsourcing			
NPV Investment	10	0.0	1.0	0.0	7.5	10.0	9.0
Specification Form	10	0.0	1.0	5.0	10.0	7.5	10.0
Innovation & technology	10	0.0	2.0	5.0	8.0	6.5	10.0
Integrate design & construct	10	0.0	0.0	7.5	7.5	10.0	10.0
Risk transfer	10	2.5	2.5	5.0	10.0	10.0	10.0
Certainty (lifecycle costing)	10	0.0	0.0	2.0	8.0	8.0	10.0
Value for Money	60	2.5	6.6	24.5	51.0	52.0	59.0
Delivery performance	5	1.5	1.5	4.0	5.0	5.0	5.0
Investment utility	5	0.0	0.0	1.0	5.0	5.0	5.0
Sustainability principles	5	5.0	5.0	4.0	2.0	2.0	4.0
Incentive	15	6.5	6.5	9.0	12.0	12.0	14.0
Quality services	10	3.0	2.5	2.5	5.0	7.5	10.0
Outcomes	10	3.0	2.5	2.5	5.0	7.5	10.0
Cost	5	3.0	3.0	1.5	4.0	2.5	1.5
Time	5	3.0	3.0	2.0	2.5	2.5	1.5
Project size	2	2.0	1.0	0.0	2.0	1.0	0.0
Collaboration/ADR	3	0.0	0.0	3.0	0.0	0.0	3.0
Process	15	8.0	7.0	6.5	8.5	6.0	6.0
Total Rating	100	20.0	22.5	42.5	76.5	77.5	89.0

Source: Bond University 2008

Appendix C

CAPITAL MARKET SURVEY 25 October to 5 November, 2008

Telephone discussions with 18 senior executives selected from the financial services community including leading firms engaged in equity investment, project finance, credit ratings, funds management, financial intermediation, State Treasury and Finance Departments, banking and, the PPP bid market. The survey was informal at the request of respondents for the reason that responses may influence capital markets or transactions. The following is a summary of views and the personal experience of senior executives within the surveyed organisations.

1. Debt Markets

Transactions are harder to get up at the moment. It would be impossible to get a bond issue up in present market conditions. Liquidity is tight and pricing will be volatile in the short-term. PPPs will be financed through the banks and both NAB and Commonwealth have expressed interest in this sector but not unequivocally. Lenders are applying greater protection in their lending arrangements including wide use of draw stops, increased covenants, extension of minor default triggers to cover a wide range of events (and higher margins), greater push-back of risk (including state risk transfer). International banks have been aggressively looking for default triggers to precipitate refinancing or higher spreads.

Present market instability is largely the result of a loss of confidence and low levels of trust at the institutional level.

2. Availability of Capital

Generally harder to source but private infrastructure remains an attractive asset class for equity and debt providers. Some uncertainty hangs over market players – ABN AMRO has changed hands, Babcock and Brown are restructuring, Plenary & Macquarie are still conducting business although there has been reductions in employee numbers.

3. Cost of Debt

The reduction in the real cost of debt will put pressure on spreads with the expectation that as markets stabilise and debt becomes more readily available, the cost will increase.

4. Toll Roads

The class of projects that will experience difficulty raising capital are toll roads that carry patronage risk – traffic forecasts are a concern (with or without adverse capital market conditions) and there are two implications:

- The IPO option is not a feasible method of raising equity at present
- The IPO model is flawed (regardless of other factors) because it focuses investors on short-term pricing risk rather than the long-term return characteristics of this asset class and requires asset churn to meet short-term market expectations
- Lenders will not support toll road projects with patronage risk unless the overall transactional risk profile is lowered – leverage is reduced, coverage ratios are robust and the state shares patronage risk.

5. Credit Insurance

The credit insurance market has lost several participants and this method of reducing overall debt costs will not be as readily available in the future. Several respondents believe that this market is flawed in any case with the risk premiums charged by the credit insurers not an accurate reflection of the risks that they had cumulatively absorbed, especially toll road patronage risk. The result has been balance sheets with a high level of exposure to under-performing assets. Another didn't believe that credit insurers had absorbed unmanageable risks but considered the underlying instability of debt markets stemmed from low real returns and distortions introduced by government intervention in recent weeks. This had affected the yield curve and spreads between AAA and BBB- corporate debt. It was also suggested that another two toll roads were performing well below targeted patronage levels and in the case of one, the servicing of debt was supported by the credit insurer. The future of the credit insurers had more to do with the strength of their provisioning than their appetite for new business.

6. Unlisted PPPs

The present market conditions favour smaller scale unlisted PPPs featuring a state availability-based payment stream. Nevertheless, credit terms will tighten and lenders will insist on lower risk and greater levels of equity participation.

7. General Market Conditions

Financial services executives informally surveyed pointed to continued uncertainty in debt and equity markets in the medium term. This reflects underlying instability in the international outlook, lack of confidence and a lack of trust particularly at the institutional level. This will take time to sort out and there may well be impacts that affect our economy as a whole or private investment in infrastructure specifically. A colleague in Treasury suggested that caution is necessary and we will have difficult conditions in debt markets for a year or two yet. Further, stock markets may not have bottomed yet and volatility can be expected into the foreseeable future.

It was a prevailing view that equity markets would probably not “bottom out” until mid 2009 and debt markets would remain “tight” in the medium term.

