

Public-Private Partnerships: Capital Market Conditions and Alternative Finance Mechanisms for Australian Infrastructure Projects

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Abstract: The impact of the prevailing capital markets on public-private partnerships and their future use in the medium term in Australia are examined. Alternative finance mechanisms that can be used by Australian state governments to procure infrastructure in the future are also discussed. DOI: [10.1061/\(ASCE\)IS.1943-555X.0000136](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000136). © 2013 American Society of Civil Engineers.

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Introduction

Early research into the economic effects of infrastructure was based on a simple production function using time-series macroeconomic data with a distinct focus on output growth and productivity (Aschauer 1989). Research that followed formulated a link between public infrastructure and the aforementioned variables, although estimates of the effect were excessive and methodologies at the time failed to accurately measure two-way causation (Akintoye et al. 2003; Bult-Spering and Dewulf 2006; Akintoye and Beck 2008). Subsequent research established a correlation between infrastructure investment and various measures of growth, productivity, employment, incomes, private transaction costs, and regional development was clearly established for both developed and developing economies (Regan 2004). The question, however, remained whether it was economic growth that stimulated investment or vice versa.

In recent years, research has addressed causation issues with wider use of disaggregated data using measures of financial and physical infrastructure investment. Single nation case studies and a growing body of evidence for regional economies have provided 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 the role of private capital investment are now being explored (Akintoye et al. 2003; Bult-Spering and Dewulf 2006; Akintoye and Beck 2008).

Over the last 25 years, a considerable body of research has examined the relationship between state spending on public

infrastructure and a number of economic indicators, including (e.g., Bennett and Krebs 1991; Renda and Schrefler 2006)

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

Evidence suggests that, as a general rule, economic and social infrastructure contributes to the productive capacity of an economy (Yescombe 2007); it is positively associated with productivity and private transaction costs and is an important driver of output growth (Regan 2004; Department of Treasury 2005). Such evidence points to a positive and causal association between public investment in core or economic infrastructure and the indicators previously identified. Infrastructure is now recognized as an important contributor to Australia's output and is a key driver of national productivity performance, reduction in private transaction costs and returns, employment, and incomes (Fitzgerald 2004). Recent evidence from case studies of urban road and energy projects suggest that life cycle-costed infrastructure investment evaluation using sustainability criteria will improve resource management and operational efficiency in both developed and developing economies (Arce and Gullon 2000; Ogwu et al. 2006).

Empirical evidence has suggested that there are several additional broad conclusions that can be drawn from international and single-country studies, for example:

- The effectiveness with which state infrastructure investment is directed and used is just as important as the amount of investment [Hulten 1996; Organization for Economic Cooperation and Development (OECD) and International Transport Forum (ITF) 2008];
- 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 (Regan 2007a);
- A significant component of state-owned infrastructure services is not priced on the basis of production cost or opportunity cost (Productivity Commission 2008); and
- Infrastructure generates higher returns in urban than regional areas (Regan 2007a).

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In Australia, commonwealth, state, territory, and local governments provide approximately 72% of all economic and social infrastructure [Australian Bureau of Statistics (ABS) 2011]. In most countries that are part of the Organization for Economic Co-operative Development, infrastructure spending has declined over the past 20 years (OECD 2006, 2007). In Australia, state capital spending on infrastructure has declined over a much longer period with most new investment after 2004 being provided by the private sector. 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). In the state of Queensland (QLD), for example, infrastructure spending in the period 1996–2004 declined in both gross state product (GSP) and per capita terms. The major challenges for the Queensland state government and other governments in the Asia-Pacific region are maintaining optimal investment levels, delivering value for money (VFM) outcomes, and commissioning projects on time and within budget. In the period following the financial instability of 2007/08, and increased scrutiny of state fiscal policy management, accessing private capital and ameliorating procurement efficiency are central to achieving these outcomes.

This is a subject of interest to a wide group of stakeholders in the community, project financiers, taxpayers, urban planners, the investment community, the construction industry, engineers, and the services professions. Infrastructure is capital-intensive, long-term, and has high industry and locational specificity. Investment involves long lead times, high leverage, and patient capital. Sustained investment is also necessary to underpin economic recovery, deliver essential public goods, and contribute to growth in both developed and developing economies.

Against this contextual backdrop, this paper examines the impact of the prevailing capital markets on public-private partnerships (PPPs) and their future use in Australia. The paper also discusses alternative finance mechanisms that can be used by Australian state governments to procure infrastructure in the future. For these purposes, the focus of this paper is on PPPs as defined in Australia's national PPP policy and guidelines (Infrastructure Australia 2008). The essential elements of a PPP include a public sector output specification for the service that it wishes to provide, a private contractor or consortium bidding for the contract in a formal and competitive auction, private finance to construct the asset and deliver the service and management of the asset and the services that it delivers over the life of the contract. The contractor may assume market risk which is typical of toll roads or a government agency may pay a unitary charge for the services delivered. PPPs are a departure from traditional procurement contracts in which the government agency meets the cost of providing the services, carries all residual operational and lifecycle cost risk and unless contracted out to private managers, it delivers the service.

Public-Private Partnerships

PPPs in their present form were first employed in developed economies in the late 1990s. They are fundamentally an evolution of build operate own transfer (BOOT) procurement methods that have been used for deliver networked assets. The version of PPPs employed in developing economies from the 1990s accommodated a wide range of procurement methods and the term is frequently applied to outsourcing, alliance contracting, build operate transfer (BOT), and joint venture arrangements. There have been many attempts to define a PPP since the late 1990s. The term is widely used to describe transactions by the state for the delivery of services to, or on its behalf the incorporation of significant transfer of project

risks, finance and management of service delivery over the term of a contract. In some developing countries such as Indonesia, Thailand, and Lithuania, other contracts have been used which separate the construction contracts into build-transfer (BT) and operating contracts (OT). Specifically, these may be adopted when the capital investment is high and as a result the toll price is also high (Soonthonsiripong 1999).

In Australia, PPPs account for approximately 10% of state capital spending in Victoria (VIC), 7% in New South Wales (NSW), and lesser proportions in the other states and the commonwealth. In the Asia-Pacific region, for example, PPPs are used widely to procure infrastructure in countries such as Malaysia, Indonesia, Japan, South Korea, China, The Philippines, Thailand, and the subcontinent (Economist Intelligence Unit 2011). The benefits and associated risks with PPPs have been widely espoused in the normative literature (e.g., Hodge 2000, 2004, 2005; Hodge and Greve 2007). PPPs attract criticism in Australia and other jurisdictions on grounds that private capital is more costly than public capital, that there is no real risk transfer if the government agency carries residual political risk and that a franchised private monopoly for terms of 20 or 30 years limits flexibility and competition. Other concerns include the veracity of the VFM proposition, lack of accountability and governance and inconclusive transactional evidence. A review of the international evidence is canvassed in Hodge and Greve (2007).

The failure rate of PPPs in Australia is around 12% of projects 2001–2011. Nearly all of these projects involved market risk and forecasting errors. The term failure here is arguably inappropriate. If a PPP does not meet the investment objectives of the equity investors, they will seek to renegotiate or seek release from the contract with government. An administrator is appointed who will identify a replacement investor. From the government's perspective, all risk associated with the construction of the asset (including cost and time overruns) and delivery of the service (including service delivery failure) are borne by the contractor. Few financiers have lost money in the troubled PPPs, with limited exception, the government has not been liable for financial loss or further payment, and service delivery was maintained.

PPPs possess a number of advantages over traditional project procurement methods, which include

- The ability to better deliver projects on time and budget (Allen Consulting 2007; National Audit Office 2003);
- Reduced procurement costs and improved VFM outcomes (National Audit Office 2005);
- Improved project management, integration of design and construction processes, and full lifecycle costing (Bult-Spiering and Dewulf 2006; Akintoye and Beck 2008);
- The use of an output specification to encourage design and construction innovation and new technologies; and
- Improved public services and qualitative user outcomes (McDonald 2002; Fitzgerald 2004; National Audit Office 2005; Allen Consulting 2007).

These results are supported by a comparative review of state procurement methods undertaken in Regan (2008) who also identified that the improved performance of PPPs, BOOTs, and, to a lesser extent, alliance contracting methods using ex ante measures of VFM, provide an optimal alignment of incentives and process management. In addition, PPPs can improve government infrastructure performance in the following ways (Savas 2000; Bult-Spiering and Dewulf 2006; Akintoye and Beck 2008):

- Provide an important step in the evolution of the science of major project procurement and studies confirm that the methodology has led to significant innovation and improvement in

traditional procurement practices in areas such as risk identification, measurement, and allocation;

- In conjunction with alliance contracting and the output specification models are driving favorable quantitative and qualitative service outcomes, improved public services, and add diversification to the agency procurement tool box; and
- Provide an alternative source of capital for governments that are hard pressed to meet the high levels of investment needed to deliver new infrastructure and replace ageing assets.

Public-Private Partnerships and Capital Markets

During 2008, international capital markets experienced high levels of instability that were characterized by a sharp fall in stock prices (including listed infrastructure securities, a sudden and acute contraction in structured and project debt markets, and institutional restructuring), which resulted in state bailouts and acquisitions of privately owned financial institutions. These events were swiftly realized in the Asia-Pacific region and as a result sharp falls in security prices, a decline in business and asset-based lending, and a dramatic rise in lender spreads for corporate, project, and structured finance have occurred. Thus, it has been suggested that capital market outlook in the short-term is uncertain, will be subject to rate volatility, and possibly credit rationing, with the medium-term outlook being widely viewed as problematical and subject to resolution of systemic sovereign debt problems in Europe.

In Australia, wide use is not made of conventional project finance or hybrid financing instruments, which are purpose-designed financial instruments designed as either investment or risk management tools. For example, a financial option is a hybrid security. Debt finance is sourced from either medium-term loans refinanced every 6–7 years or bond issues of 10–12 year maturity offered in various interest rate and currency combinations. Interest rate and currency risk is mainly managed with over-the-counter derivatives. However, in the period up to 2007, wide use was made of monoline credit insurance to improve the rating of PPP bond issues and reduce debt costs. A monoline insurer is the issuer of AAA-rated guarantees or credit enhancement. The events of 2007 led to dislocation in asset-backed and corporate bond markets with rating downgrades for monoline bond insurers and calls on guarantees for recently commissioned projects. This affected the availability and pricing of credit insurance and closed the securitization market (Reserve Bank of Australia 2008). Securitization is the monetarization of assets or consolidation of homogenous financial instruments such as mortgages into marketable securities. Nevertheless, Australia and other nations in the region have 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 few years may test this situation (Debelle 2008).

PPP finance is provided by lenders to the contractor or consortium. Australia phased out tax-exempt infrastructure bonds in 2004 although the practice is employed widely in the United States and Europe. In most PPP transactions, the government does not provide direct financial support, loan, or revenue guarantees. For availability payment arrangements the counterparty credit risk is no less than AA-rated government agencies. However, for the market risk arrangements, private lenders rely entirely on cash flows generated by the project. In several transactions including the recent AUD3.5bn desalination project in Victoria, the state government entered into a long-term off-take agreement for the supply of base-load water which assisted the debt raising for this project, the largest PPP in the world at that time.

Infrastructure is a specialized asset class possessing investment characteristics not commonly found in other asset classes. These characteristics include (Peng and Newell 2007; Weber and Alfen 2010)

- Stable, indexed revenue streams;
- Low-variable cost structures;
- Low or negative correlation with other asset classes and leading economic indicators;
- Low correlation with leading market indicators and asset classes;
- High earnings before interest tax and depreciation (EBITDA) margins; and
- Low-demand elasticity.

Nevertheless, companies listed in the infrastructure sector are not immune to market volatility and are vulnerable to mergers and acquisitions, refinancing risk, movement in exchange rates, high credit spreads, and rising domestic interest rates. Listed companies may also be subject to distress premiums that attach to highly leveraged stocks in bear market conditions (Ferguson 2008).

Low price elasticity has also been an inherent feature of infrastructure, although recent evidence from toll roads suggests that this asset group may be the exception. Toll roads 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 initial public offerings (IPO) employed stapled security structures (security with two inseparable components, such as a debt and an equity interest in a corporation or two equity interests in separate investment vehicles in the same group) 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 has been 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.

It has been suggested that 65% of security price contraction for listed infrastructure motorway stocks is attributable 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. The project risks most common with PPP transactions include demand risk in land transport projects, network and access issues, and construction risk (Flyvbjerg et al. 2006). Similarly, overestimation (i.e., optimism bias) of patronage has been identified in airport projects with the average error rate to be 30% (projects on average achieved 70% of forecast revenue in the first three years of operation) (Standard and Poor's 2002, 2004). Flyvbjerg et al. (2006) revealed that

- 25% of projects had an average forecasting error $\pm 40\%$;
- 50% of projects had an average forecasting error $\pm 10\%$; and
- If the error is evident in year 1, it will continue during the revenue ramping-up period.

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.

PPPs are long-term investments and early stage patronage error does not necessarily mean projects are not viable. For example, the recent purchase of the failed Cross City Tunnel in Sydney by Leighton Contractors, financed by ABN Amro, suggests that even at patronage levels around 60% of those originally forecast the investment is viable to the new owners under a different capitalization structure. Few other PPPs are listed on the Australian Stock Exchange (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. In the Asia-Pacific region, private companies provide the majority of equity capital with public companies taking up the difference. Few direct

investments are listed on security markets while there is significant indirect investment by portfolio investors, public fund managers, and institutions (Inderst 2010).

Debt Capital

Infrastructure debt is generally arranged as long-term project finance with many listed and unlisted PPP projects raising debt through the issue of bonds. Listed PPPs in Australia, however, tend to employ medium-term 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 capitalization purposes though a significant component of the subscription price is structured as a loan note and the proceeds applied to intercompany or trust loans within the group.

The composite bond method of financing PPPs is widely used in the United Kingdom (UK) and Canada and is on the basis of 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 and Poor's* survey of unlisted European PPP projects in the period 2004–2006 suggests initial debt capitalization averages 76–82% increasing to 85% at the first refinancing (Standard and Poor's 2004, 2005; National Audit Office 2005).

The pricing of debt is largely determined by credit ratings for the larger Australian projects and by credit evaluation for privately sourced senior, junior [debt facility subordinated in priority to a first-ranking (senior) security], and mezzanine (quasi-equity capital that may take the form of debt securities convertible to equity or subordinated debt) finance. The present tight liquidity in capital markets, higher spreads, and strict 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 capitalization of the ASX All Industrials stood at 64.3% and in June 2010, 48.7% [Reserve Bank of Australia (RBA) 2011]. However, such a figure does not 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. 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 the Australian and United States gross domestic product (GDP), short-, medium-, and long-term bond rates, the labor participation rate or inflation (Peng and Newell 2007; Weber and Alfen 2010). Nonlisted investments are generally more highly leveraged than either listed infrastructure or ASX market averages. Listed infrastructure stocks in June 2011 indicated average leverage around 68% of firm capitalization (Aspect Hartley 2011).

Intermediation and Credit Enhancement

Credit enhancement or credit wrapping is a technique for reducing the investor's cost of debt for a PPP project. The underlying credit

Table 1. Reserve Bank of Australia Capital Market Yields and Spreads

	Nongovernment investments corporate bonds 1–5 year maturity			Spread over commonwealth bonds (bp)		
	Credit rating (%)					
	AA ^a	A ^b	BBB ^c	AA	A	BBB
2008	8.90	9.38	9.45	216	265	267
2009	5.95	8.24	8.08	174	397	385
2010	6.00	6.55	7.01	151	204	253
2011	5.93	6.42	7.13	118	178	218

Note: Data sourced from the RBA (2011), Economic Statistics, Table F3.

^aThe AA credit rating by *Standard and Poor's* indicates very strong capacity to meet financial obligations and differs from AAA only in small degree.

^bThe A rating by *Standard and Poor's* indicates greater susceptibility to adverse effects or change in circumstance other than AA or AAA ratings.

^cThe BBB credit rating exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to meet financial commitments.

rating of most Australian PPP projects is BBB (*Standard and Poor's* 2004, 2005). Yet, credit wrapping is essentially an AAA guarantee (the credit rating by *Standard and Poor's* indicating very strong capacity to meet financial commitments) of the borrowing consortium's debt purchased for a fee that is less than the difference in borrowing costs between the two rating standards. This can be significant over the life of a PPP with the spread of 1–5 year corporate bonds at June 30, 2011 standing at 118 basis points (bp) (AA), 178 bp (A), and 218 bp (BBB) (RBA 2012). Since 2007–2008, spreads have been volatile at 267 bp in 2008, 385 bp in 2009, and 253 bp in 2010 for BBB rated bonds. Volatility has a significant impact on the economics of projects being refinanced during such periods as noted in Table 1. The monoline insurer guarantees against default in the payment of both bond interest and principal.

Most PPP projects in Australia are highly leveraged. Debt is generally raised by loans, and the issue of rated bonds and the project's (underlying) credit rating is calculated by reference to the credit characteristics of the PPP deal, which includes the track record and credit strength of the consortia members and measures to determine the principal contractor's capacity to complete the delivery of the project successfully (Regan et al. 2011a, b). In Australia, there are very few companies that are rated above the investment grade BBB. Contrastingly, in developing economies, underlying credit ratings for international capital raisings are capped by sovereign ratings (credit rating of countries, which provides a proxy for political risk). Borrowing costs are correlated with risk and in 2008, spreads increased and project finance rated investment grade or less attracted premiums up to 600 bp above rates in mid-2007 (Daley 2010).

PPPs Capital Market Dependency

The financial economics of PPPs rely on capital markets to disperse risk using a number of services that include intermediation (debt and equity underwriting), credit enhancement (monoline insurance), credit rating, and financial risk management. The drivers of the PPP bid market are therefore 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.

PPPs benefit from capital market innovations such as the stapled security, short-term bonds that create opportunity for frequent refinancing and revaluation, unit trust structures, and credit enhancement. They are also heavily dependent on capital markets for

- **Equity capital:** The unsecured risk capital of a project that is sourced from private investors, listed portfolio investors, banks, private equity, fund managers, and institutional investors. Three of Australia's largest and most recent toll road projects (Eastlink project in Melbourne in 2004 and the North-South Bypass Tunnel in Brisbane in 2007) 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; and/or
- **Debt capital:** The secured borrowings of the PPP contractor. As PPPs are typically highly leveraged using medium-term bank debt, project finance, or long-term bonds. Such securities are placed in debt markets and with private investors. In addition, consortia make greater use of medium-term corporate debt rather than traditional long-term project finance. As a result, this permits investors to take advantage of short-term revaluation and refinancing thus requiring the consortia to assume refinancing risk and more frequent visits to the debt market than would be the case with conventional project finance.

Credit rating downgrades after 2008 for financial intermediaries including monoline insurers has increased private financing costs, adversely impacted competition in PPP bid markets, weakened VFM outcomes, and affected the fast-tracking of infrastructure projects which are a major attraction of the PPP procurement method. Although PPPs are invariably reliant on capital markets, the level of dependency varies across industry sectors, projects, and the nature of the revenue stream. In present market conditions (as of February 2012), capital will generally be harder to find and more expensive, and subject to stricter credit standards that may require bidders to take a more conservative approach to risk acceptance. This suggests some weaknesses in bid depth, private sector appetite for green-field projects (new projects on undeveloped sites), and those involving market risk. Moreover, a less competitive bid market may have an adverse impact on VFM 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 cautiously optimistic albeit with stricter credit standards. Investment economics for PPP assets require patient equity and high leverage. Change in capital structure will adversely affect that attractiveness of PPPs to private investors.

Impact of Market Conditions on PPPs

It is suggested that the prevailing capital market conditions are expected to have the following impact on PPP bid markets:

- Risk will be repriced because of the instability in the market. This will place sustained short-term pressure on the pricing of debt for PPP projects;
- Reduction in the availability of debt capital in the short to medium term;
- 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; and
- Limited availability and increased cost of credit-enhancement services and tougher credit-rating standards.

There will be a disappearance of the IPO capital-raising model for transportation projects in the short to medium term (1–5 years). The Australian equity market has previously demonstrated a long-standing appetite for infrastructure securities. The many innovations developed to date 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 considering existing market conditions and therefore may unlikely reappear in the new future because of the following circumstances:

- The market is wary of high debt levels and distress premiums are greater now than at any time in the past 15 years;
- The market has demonstrated a reluctance to carry project delivery risk. Promoters may need to revert to quarantining the delivery risks for future large-scale construction projects; and
- The need for promoters to remedy the high incidence of forecasting error with land transport projects. This may include a rethinking of the state practice of allocating full patronage risk to consortia.

A contraction of the PPP bid market has important implications for the future provision of infrastructure. It is suggested that these impacts include a

- Decline in the number of PPPs with the loss of benefits available from this procurement method.
- Slowing of the roll-out of national infrastructure development strategies adopted in many developing nations in recent years with the support of multilateral agencies.
- Greater emphasis on state provision of infrastructure financed through state debt or taxation with associated deadweight costs such as the direct costs of raising debt, the material adverse impact on the state fiscal position, opportunity cost, and the indirect cost of raising and collecting taxes (in aggregate, the welfare cost of state capital) ([Infrastructure Association of Queensland 2009](#)).

Projects (e.g., health, justice, education, and refinancing of mature market risk projects) where the revenue is by way of state availability payments should be easier to finance but risk pricing, leverage, and debt-servicing criteria may require state underwriting of project risk with the likelihood of a reduction in VFM outcomes available from the PPP procurement method.

A further factor influencing the financing of PPP transactions is the relative maturity of the industry and the allocation of risk. Regan (2007a) suggests that some infrastructure industries attract lower lending risk premiums than others. For example, mature toll-way 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 projects ([ACPI 2006](#)).

Alternative PPP Financing Mechanisms

If new infrastructure projects are harder to deliver as PPPs, the options for privately financing state infrastructure services are few. Some of the possibilities are described and discussed.

State and Municipal Bonds

The Australian Government introduced an infrastructure borrowings taxation scheme in 1992 that 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.

Credit Guarantee Finance

Credit guarantee financing (CGF) was introduced in the UK in 2003 to provide a mechanism for using public debt capital to finance project finance initiative (PFI) 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 VFM 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.

Supported Debt Model

The QLD Government introduced a hybrid program for a PPP in the education sector using a variation of CGF described as the supported debt model (SDM). The SDM has several distinguishing characteristics that include the

- State refinancing a predetermined level of project debt when the PPP is commissioned and operational;
- 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;
- Construction and residual (junior) debt finance needs of the project will be met by private financiers. The model preserves traditional ex ante incentives and does not require credit enhancement or supporting private guarantees; and
- Lower cost of state debt reduces lifecycle finance costs which are passed on through an improved VFM outcome.

SDM has parallels with conventional project finance but is somewhat more akin in nature to medium-term corporate finance employed in most Australian PPPs. An implication of the model that may adversely affect improved VFM outcomes is the requirement for higher levels of privately-sourced junior or mezzanine debt or equity capital that carries high-risk premiums.

Recent research suggests that the average state contribution to PPP debt capitalization will be around 70% suggesting a mezzanine/junior debt participation of around 30% in addition to an equity contribution (Regan 2008). 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.

There is a likelihood, however, that the SDM may remove the incentive for the consortium to revalue the contract and refinance. Refinancing has several important advantages for mature projects as it permits: (1) an increase in senior debt (thereby reducing more costly subordinated debt and overall cost of capital), (2) higher leverage, and (3) a withdrawal/return to equity. Any refinancing gains made are shared with the state under Australian PPP guidelines.

The effective removal of capital market discipline from a project is also an area of concern, particularly in terms of governance. This refers to the governance role that the lenders play in PPP transactions whereby the performance of the contractor is monitored, loan covenants are enforced, and compliance sought with both the underlying contractual and finance agreements. The compliance role provided by lenders supports that put in place by the government agency with one important difference, the loan agreements do not provide the cure periods (a period following a breach of contract during which the party in breach has time to remedy the breach without penalty) and mediated dispute resolution procedures employed in the PPP agreement in relation to service delivery performance. Lenders operate within a different risk management framework that includes reserves to meet debt servicing during periods of revenue shortfall and strict prioritization of cash flow distributions. Lenders act quickly and decisively with evidence of financial distress with a number of step-in rights that can be exercised in consultation with the government agency. The governance role assumed by lenders is standard operating procedure and central to loan administration which is not the case with loans and guarantees provided and supervised by state agencies.

Debt Guarantees

An alternative form of state support for PPP projects', which has not been widely used in Australia, is the use of guarantees to support privately-sourced project finance in adverse capital market conditions. In developing countries, for example, debt and interest rate guarantees are widely used to attract bidders to PPP projects and mitigate political risk (Wibowo 2004). 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 social costs of direct state capital contributions. They can also reduce the overall debt funding costs and improve the VFM outcomes for PPP transactions. Other advantages include

- The preservation of traditional incentive frameworks which are important to the effectiveness of the PPP procurement method;
- Flexibility: guarantees may be full or partial and may be withdrawn over time;
- The refinancing option remains available to private investors;
- The cost of a state guarantee is small; and
- Transactional and agency costs are less than under the CGF or SDM.

Research in developing countries points to the relatively low risk of state guarantee support for project senior debt compared with other forms of assistance for PPP projects. A review of state support for Indonesian build own transfer BOT toll roads measured the contingent liability of five forms of support: (1) revenue guarantees, (2) interest subsidies, (3) tariff guarantees, (4) minimum traffic guarantees, and (5) guarantees of debt (Castalia and World Bank 2007). 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 project guarantee by government (Wibowo 2004).

Conclusion

Financiers, advisers, and the credit rating agencies indicate that present market conditions favor PPP projects with strong credit attributes. Many of the characteristics of these projects have been highlighted in this paper. 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:

- Availability-based revenue stream: the state is buying a service;
- Equitable and not wholesale risk allocation by the state;
- 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;
- Well-rated and experienced contractors; and
- Adequate measures exist for project and financial risk management.

Projects meeting these criteria are generally PPPs delivering social infrastructure services in health, education, public buildings, public administration, justice and public security, corrective services, waste management, energy, and water resources. 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 provide 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 VFM outcomes in an environment of higher cost private capital.

It is suggested that 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;
- Unitary payment regimes;
- Strong reserves and debt servicing capability;
- Limited or joint responsibility for market risk; and
- Limited or shared lifecycle servicing obligations.

To maintain a competitive PPP bid market and to ensure a steady flow of transactions in present market conditions, government has several policy options available to it:

- Return to state-funded traditional procurement,
- The issue tax-enhanced state bonds,
- Adoption of credit guarantee finance mechanisms,
- The supported debt model, and
- Direct project guarantees for consortium revenue, tariffs, debt capital, and/or debt servicing obligations.

State debt, taxation, and tax-enhanced state bonds may be used to finance infrastructure procurement. However, fiscal constraints imposed by the GFC and the high deadweight social costs associated with these measures suggest that they may have a limited future role. Evidence from the Asia-Pacific region indicates that state guarantees in support of PPP projects can be problematic especially if they are applied to fully underwrite revenue or tariffs for PPP projects. However, debt guarantees are a low-risk option for the state and, if correctly structured, maintain capital market discipline by creating conditions precedent that require project lenders to monitor and report contractor operational and financial performance

compliance. The credit guarantee and supported debt finance models may lower cost of capital but may also increase transaction and agency costs.

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 adapt and improve the model to the point where it is more appropriate for the new environment. This may involve 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.

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