

Bond University
Research Repository



Public private Partnerships: What does the future hold?

Regan, Michael; Smith, Jim; Love, Peter

Published in:

COBRA 2009 - Construction and Building Research Conference of the Royal Institution of Chartered Surveyors

Published: 01/01/2009

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication in Bond University research repository.](#)

Recommended citation(APA):

Regan, M., Smith, J., & Love, P. (2009). Public private Partnerships: What does the future hold? In *COBRA 2009 - Construction and Building Research Conference of the Royal Institution of Chartered Surveyors* (pp. 462-474). Royal Institute of Chartered Surveyors (RICS).

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

9-11-2009

Public private partnerships: What does the future hold?

Michael Regan

Bond University, michael_regan@bond.edu.au

Jim Smith

Bond University, jim_smith@bond.edu.au

Peter Love

Follow this and additional works at: http://epublications.bond.edu.au/business_pubs



Part of the [Business Commons](#), and the [Construction Engineering Commons](#)

Recommended Citation

Michael Regan, Jim Smith, and Peter Love. (2009) "Public private partnerships: What does the future hold?" *The Construction and Building Research Conference (COBRA 2009) of the Royal Institution of Chartered Surveyors (RICS)*, 462-474.

http://epublications.bond.edu.au/business_pubs/299



RICS



COBRA 2009

**The Construction and Building Research Conference of the
Royal Institution of Chartered Surveyors**

Held at the University of Cape Town, 10-11 September 2009

ISBN 978-1-84219-519-2

© RICS

12 Great George Street
London SW1P 3AD
United Kingdom

www.rics.org/cobra

September 2009

COBRA 2009

The construction and building research conference of the Royal Institution of Chartered Surveyors held at the University of Cape Town, 10-11 September 2009

The RICS COBRA Conference is held annually. The aim of COBRA is to provide a platform for the dissemination of original research and new developments within the specific disciplines, sub-disciplines or field of study of:

Management of the construction process

- Cost and value management
- Building technology
- Legal aspects of construction and procurement
- Public private partnerships
- Health and safety
- Procurement
- Risk management
- Project management

The built asset

- Property investment theory and practice
- Indirect property investment
- Property market forecasting
- Property pricing and appraisal
- Law of property, housing and land use planning
- Urban development
- Planning and property markets
- Financial analysis of the property market and property assets
- The dynamics of residential property markets
- Global comparative analysis of property markets
- Building occupation
- Sustainability and real estate
- Sustainability and environmental law
- Building performance

The property industry

- Information technology
- Innovation in education and training
- Human and organisational aspects of the industry
- Alternative dispute resolution and conflict management
- Professional education and training

Organising Committee

The Organising Committee for the RICS COBRA 2009 Conference consisted of:

Paul Bowen (Chair)	University of Cape Town
Ian Jay	University of Cape Town
Keith Cattell	University of Cape Town
Kathy Michell	University of Cape Town
Stephen Brown	RICS

The doctoral students' session was arranged and conducted by:

Monty Sutrisna	University of Salford, UK
Les Ruddock	University of Salford, UK

The CIB W113 Law and dispute resolution session was arranged and conducted by Paul Chynoweth of the University of Salford, UK

Peer review process

All papers submitted to COBRA were subjected to a double-blind (peer review) refereeing process. Referees were drawn from an expert panel, representing respected academics from the construction and building research community. The conference organisers wish to extend their appreciation to the following members of the panel for their work, which is invaluable to the success of COBRA.

Rifat Akbiyikli	Sakarya University, Turkey
John Boon	UNITEC, New Zealand
Richard Burt	Auburn University, USA
Kate Carter	Heriot-Watt University, UK
Keith Cattell	University of Cape Town, South Africa
Sai On Cheung	City University of Hong Kong
Grace Ding	University of Technology Sydney, Australia
Peter Edwards	RMIT, Australia
Charles Egbu	University of Salford, UK
Hemanta Doloi	University of Melbourne, Australia
Peter Fenn	University of Manchester, UK
Peter Fisher	University of Northumbria, UK
Chris Fortune	University of Salford, UK
Rod Gameson	University of Wolverhampton, UK
Theo Haupt	Cape Peninsula University of Technology, South Africa
Godfaurd John	University of Central Lancashire, UK
Keith Jones	University of Greenwich, UK
Mohammed Kishk	Robert Gordon's University, UK
Andrew Knight	Nottingham Trent University, UK
Esra Kurul	Oxford Brookes University, UK
John Littlewood	University of Wales Institute, Cardiff, UK
Champika Liyanage	University of Central Lancashire, UK
Greg Lloyd	University of Ulster, UK
S M Lo	City University of Hong Kong
Martin Loosemore	University of New South Wales, Australia
Tinus Maritz	University of Pretoria, South Africa
Steven McCabe	Birmingham City University, UK
Andrew McCoy	Virginia Tech, USA
Kathy Michell	University of Cape Town, South Africa
Henry Odeyinka	University of Ulster, UK
Robert Pearl	University of KwaZulu-Natal, South Africa
Keith Potts	University of Wolverhampton, UK
Matthijs Prins	Delft University of Technology, The Netherlands
Richard Reed	Deakin University, Australia
Herbert Robinson	London South Bank University, UK
David Root	University of Cape Town, South Africa

Kathy Roper	Georgia Institute of Technology, USA
Steve Rowlinson	University of Hong Kong
Winston Shakantu	Nelson Mandela Metropolitan University, South Africa
Melanie Smith	Leeds Metropolitan University, UK
Suresh Subashini	University of Wolverhampton, UK
Ming Sun	University of the West of England, UK
Joe Tah	Oxford Brookes University, UK
Derek Thomson	Heriot-Watt University, UK
Basie Verster	University of the Free State, South Africa
John Wall	Waterford Institute of Technology, Ireland
Sara Wilkinson	Deakin University, Australia
Francis Wong	Hong Kong Polytechnic University
Ing Liang Wong	Glasgow Caledonian University, UK
Andrew Wright	De Montfort University, UK
George Zillante	University of South Australia
Sam Zulu	Leeds Metropolitan University, UK

In addition to this, the following specialist panel of peer-review experts assessed papers for the COBRA session arranged by CIB W113, Law and dispute resolution:

John Adriaanse	London South Bank University, UK
Julie Adshead	University of Salford, UK
Rachelle Alterman	Technion, Israel
Jane Ball	University of Sheffield, UK
Michael Brand	University of New South Wales, Australia
Penny Brooker	University of Wolverhampton, UK
Alice Christudason	National University of Singapore
Paul Chynoweth	University of Salford, UK
Philip Chan	National University of Singapore
Sai On Cheung	City University of Hong Kong
Ron Craig	Loughborough University, UK
Asanga Gunawansa	National University of Singapore
Rob Home	Anglia Ruskin University, UK
Peter Kennedy	Glasgow Caledonian University, UK
Anthony Lavers	Keating Chambers, UK
Tim McLernon	University of Ulster, UK
Wayne Lord	Loughborough University, UK
Frits Meijer	Delft University of Technology, The Netherlands
Jim Mason	University of the West of England, UK
Brodie McAdam	University of Salford, UK
Tinus Maritz	University of Pretoria, South Africa
Mark Massyn	University of Cape Town, South Africa
Issaka Ndekugri	University of Wolverhampton, UK
Robert Pearl	University of KwaZulu-Natal, South Africa
Linda Thomas-Mobley	Georgia Tech, USA
Yvonne Scannell	Trinity College Dublin, Ireland
Cathy Sherry	University of New South Wales, Australia
Henk Visscher	Delft University of Technology, The Netherlands

Public private partnerships: What does the future hold?

Michael Regan¹, Jim Smith¹ and Peter Love²

¹School of Sustainable Development,
Bond University, Gold Coast, Queensland 4229,
Australia

²Department of Construction Management
Curtin University of Technology, Perth, WA 6845
Australia

Email: mregan@bond.edu.au ; jismith@bond.edu.au; p.love@curtin.edu.au

Abstract:

Internationally, Public and private Partnerships (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.

This paper considers the prospects of PPPs from the perspective of government clients and their promoters of PPPs and whether current volatility and uncertainty in the capital markets in Australia will affect the feasibility of privately financed infrastructure, and specifically, the PPP method of procurement. A survey of financial advisers and lenders indicates that present market conditions will be placing PPPs under pressure. 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/government 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.

The characteristics of PPPs will be reviewed in this paper using national and international sources in order to identify those features that will be essential in this new economic climate. From the literature and views of experts gained from its survey, the authors suggest that 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 scientifically costed approach to risk allocation, state guarantee support, improved underlying credit credentials and a rethinking of patronage risk. It is a shared responsibility. It is also likely to be a further step in the continuing evolution of alternative major project procurement mechanisms.

Keywords: Procurement, Public and Private Partnerships, Risk

1. Introduction

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 (Grimsey and Lewis, 2004).

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 (Savas, 2000). 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.

Infrastructure describes the structural framework, systems and networks that facilitate economic and social activity in an economy (Rutherford, 2000 and Regan, 2008b). 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 (Australian Bureau of Statistics - ABS, 2007). 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).

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. 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.

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 (Mott McDonald, 2002). 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.

2. The Research Aims and Methodology

2.1 Research Aims

The purpose of this study was to examine the present and future use of public private partnerships (PPPs) in Queensland and Australia generally 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 also examined 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?

2.2 Research Methodology

The research consisted of a comprehensive literature review and a detailed analysis and review of these works is contained in Regan (2008d). This literature review of more recent national and international experience informed this work at a critical time in the evolution of PPPs and included a significant number of industry and government reports, which abound in this subject (Infrastructure Australia, 2008a, 2008b, 2008c; Department of Treasury and Finance Victoria, 2009).

To give views and focus to assessing present condition a capital market survey was conducted in late 2008. Interviews and discussions were conducted over a two-month period 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 and confidential at the request of respondents for the reason that responses may influence capital markets or transactions. The interviews with these senior managers/executives were designed to elicit their views on the debt markets, availability of capital, cost of debt, toll roads, credit insurance, unlisted PPPs and general market conditions. These views and opinions have informed the later sections on present market conditions, the medium term outlook for PPPs, market opportunities and the conclusion.

3. Public and Private Partnerships

A significant body of evidence (Mott McDonald 2002, Fitzgerald 2004, Allen Consulting 2007; National Audit Office 2005) 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

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.

PPPs also offer a rigorous project selection and evaluation process using a risk-weighted analytical framework that features both qualitative and quantitative measurement techniques (Flyvbjerg, *et al*, 2003). This process is now being applied to traditional procurement processes and is achieving similar value for money improvements (Infrastructure Australia, 2008c).

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 (Regan, 2008c).
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 (Clark and Evans, 1998; Mott McDonald, 2002).
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 (Wolf, 1993).

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 initial public offerings (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.

3. 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.

3.1 Equity capital

Australian PPP projects draw their equity capital from the Australian Stock Exchange (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.

3.2 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.

3.3 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.

3.4 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.

3.5 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.

4. 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 of Australia, 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.

5. 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 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 and the rest of Australia. 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, 2007a)
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).

6. 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 (conducted by Regan, 2008a). 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 (Melbourne's Royal Children's Hospital, Royal Women's Hospital) and education (schools projects in NSW, Victoria and Queensland).

7. 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, 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.

8. Conclusion

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.

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.

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.

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.

2. Acknowledgements

A research report was prepared for the Infrastructure Association of Queensland as a joint undertaking of the Association and the Mirvac School of Sustainable Development at Bond University and the support of the Association is kindly acknowledged.

The authors also wish to thank the anonymous reviewers whose constructive comments and suggestions contributed to the final form and content of this paper.

3. References

- Allen Consulting Group 2007, *Performance of PPPs and Traditional Procurement in Australia*, Final Report to Infrastructure Partnerships Australia, Melbourne.
- Australian Bureau of Statistics 2007, *Australian National Accounts*, Cat. No. 5204.0, Canberra.
- Clark, G.C. Evans, J. 1998, The Private Provision of Urban Infrastructure: Financial Intermediation through Long-Term Contracts, *Urban Studies*, vol. 35, no. 2, pp. 301-319.
- Department of Treasury and Finance, Victoria (2009) *National Public and Private Partnerships Guidelines: Partnerships Victoria Requirements*, Government of Victoria, Melbourne.
- Fitzgerald, P. 2004, *Review of Partnerships Victoria Provided Infrastructure*, Final Report to the Treasurer, Growth Solutions Group, Melbourne.
- Flyvbjerg, B. Bruzelius, N. Rothengatter, W. 2003, *Megaprojects and Risk, An Anatomy of Ambition*, Cambridge University Press.
- Grimsey, D. and Lewis, M. K. 2004, *Public Private Partnerships, The Worldwide Revolution in Infrastructure Provision and Project Finance*, Edward Elgar, Cheltenham.
- Infrastructure Australia (2008a) *National Public and Private Partnerships: Policy Framework*, Commonwealth of Australia, Canberra.
- Infrastructure Australia (2008b) *National Public and Private Partnership Guidelines: Overview*, Commonwealth of Australia, Canberra.
- Infrastructure Australia (2008c) *National Public and Private Partnerships Guidelines: Volume 1 – Procurement Options Analysis*, Commonwealth of Australia, Canberra.
- Infrastructure Australia (2008c) *National Public and Private Partnerships Guidelines: Volume 2 – Practitioners' Guide*, Commonwealth of Australia, Canberra.
- Mott McDonald 2002, *Review of Large Project Procurement in the United Kingdom*, Report for H.M. Treasury, July, Croydon.
- National Audit Office 2005, *Improving Public Services Through Better Construction*, Volumes 1 and 2, Report by the Comptroller and Auditor General, Case Studies, HC 354-1, Session 2004-05, 15 March.
- Regan, M. 2008a, *Market Solutions to Public Failure*, Public Infrastructure Bulletin, Edition 6, Bond University, November.

- Regan, M. 2008b, *Glossary of Terms, Project Finance, Sustainable Development and Project Procurement*, Working Paper WP114, Mirvac School of Sustainable Development, Bond University, Gold Coast.
- Regan, M. 2008c, *A New Approach: Comparative Procurement Methodology Analysis*, Working Paper 130, Mirvac School of Sustainable Development, Bond University, Gold Coast, Queensland, Australia.
- Regan, M. 2008d, *What Impact will Current Capital markets Conditions have on Public Private Partnerships?*, Working Paper 121, Mirvac School of Sustainable Development, Bond University, Gold Coast, Queensland, Australia.
- Regan, M.E. 2007a, *The Economics of the South East Queensland Infrastructure Plan and Program 2007-2026*, a report prepared for the Department of Infrastructure and Planning, Queensland Government, September.
- Regan, M.E. 2007b, Australia's Hybrid Approach to Project Finance, *Public Infrastructure Bulletin*, Edition 6, pp. 21-24.
- Regan, M.E. 2006, *PPPs: Adding Value to Public Procurement*, Research Paper 0432, Australian Centre for Public Infrastructure, the University of Melbourne, Hawthorn.
- Regan, M.E. 2004, *Infrastructure, A New Asset Class in Australia*, Research Paper 2/04, Australian Centre for Public Infrastructure, School of Enterprise, Melbourne University Private, Hawthorn.
- Reserve Bank of Australia 2008, *Bulletin*, August.
- Rutherford, D 2008, *Routledge Dictionary of Economics*, 2nd edition, London.
- Savas, E.S. 2000, *Privatisation and Public Private Partnerships*, Chatham House Publishers, New York and London.
- Standard and Poor's 2008, *To Meet Growing Infrastructure Needs, Asia Must Develop A Credit Culture*, Ratings Direct, Newsletter October 2008, McGraw-Hill, Sydney.
- Wolf, C. 1993, *Markets or Governments, Choosing between Imperfect Alternatives*, 2nd edn. The MIT Press, Cambridge and London.