A METHODOLOGY TO ASSESS THE PERFORMANCE OF PPPS COMPARED TO OTHER PROCUREMENT METHODS IN AUSTRALIA

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Estimating cost and risks in Australian capital projects is often characterised by optimism bias—the tendency to be overly optimistic about planned actions—and insufficient historical data on which to base decisions. In this situation strategic decision making is hampered by the fact that any historical project data is distributed across Australian states and not readily available to decision makers. The methodology developed here is an attempt to overcome some of these issues and to develop techniques which compare the time and cost performance of diverse projects procured by different methods. This is important in relation to the debates that have surrounded the PPP model in Australia.

These debates are complicated by the fact that across Australia there is currently a plethora of procurement decision methodologies in use by government. Different Australian states use different processes and criteria to assess how best to design, construct, deliver and then operate new projects. The policy documents which guide these processes also differ markedly between these states and different states will have a range of different procurement paths, including Public-Private Partnerships (PPPs) to select from. However, no single database of project outcomes for public infrastructure exists across Australian jurisdictions.

For these reasons this paper sets out a methodology for assessing and comparing different procurement methods including PPPs. This is important because PPPs have attracted a great deal of debate about their worth. The methodology expounded here is based on a consideration of previous studies, time and cost metrics, project size and the relative complexity of different project types. Whilst this methodology could clearly be developed further, it is a significant advance on conclusions about procurement performance solely related to small sample sets and case study approaches.

KEYWORDS: PPPs, Benchmarking methodology, procurement, time and cost outcomes.

INTRODUCTION

Empirical research into PPPs in comparison to other methods of procurement is important because in Australia, State and Commonwealth Infrastructure Plans project spending of over $320 billion over the next decade, which could easily become $400 billion. Estimates of the size of the Australian PPP market vary. In 2004 the National PPP Forum estimated that at that time, over $9 billion in PPP projects were already contracted. This comprised over $4 billion in PPP projects currently in the market and over $5.5 billion of projects being

considered for delivery as PPPs. According to the *Financial Times* the Australian market comprised $9 billion of projects between 2000 and 2006, and is expected to grow to $100 billion in the next ten years (Minder, 2006). However, such levels would not be achieved unless the market share of PPPs rises significantly. In order to achieve the $100 billion level of PPP projects foreshadowed by the *Financial Times,* it would therefore be necessary for Australian PPPs to capture a 25 percent share of the overall infrastructure market, compared with their current share, which lies in the vicinity of 10-15 percent of total government procurement.

The Australian PPP market, whilst not as large as the UK's PFI market, is already among the most sophisticated PPP markets in the world. It is a market which continues to evolve. In its initial phase the project finance techniques and instruments were developed for BOT and BOOT projects and then adapted to build transport infrastructure. Most of these projects were contracted in the market up to 2000, and completed before 2005. As discussed below a number of the evaluations of the efficiency of Australia's PPP market is based on these projects. However, in the second phase and third phases of development in this market social infrastructure projects are beginning to widen their dominance of the market in numerical terms. These projects are diverse and include hospitals and schools involving significant facilities management over the economic life of the asset.

Previous research on performance measurement

Initial Australian research into the PPP market tended to endorse enthusiastically the PPP model, which was seen as a development of the BOT and BOOT infrastructure projects of the 1980s. The project finance techniques used to quarantine risk in these projects are now seen as precursors to the current cohort of PPP projects (Gann, 2005, p.572). Global growth in PPP markets has been matched by a corresponding rise in PPP research across a number of fields, including public policy and governance, construction management and economics, innovation theory and project management. In the present study we limit consideration to the UK, whose Public Finance Initiative (PFI) has had a considerable influence on the Australian PPP market, and on Australian research

UK performance outcome research

In the UK, which has been at the forefront of development of the PPP procurement framework, there has been a large body of research on PPPs. The research that is most relevant to the methodology applied in the present study is that carried out by Mott MacDonald (Mott MacDonald, 2002). The study focussed on measuring the relative degree of 'optimism bias' associated with Traditional procurement. 'Optimism bias' was defined as the percentage differential between the estimated works duration or capex cost at the 'Strategic Outline Case' (SOC) or 'Outline Business Case' (OBC) and Works Completion (WC). Given that the UK's PPP projects had relatively neutral 'optimism bias', the table shows that for 'non-standard buildings, for example, the capex estimate for Traditionally procured projects suffered between 4 percent and 51 percent 'optimism bias'.

Another study that appeared in the UK soon after the Mott MacDonald study was by the UK National Audit Office (2003). The NAO compared the results of its 2002 Census on PFI Projects with the 1996 Procurement Survey for Traditionally procured projects. The NAO found that 76% of PFI projects were completed on time, and 78% were completed on budget. By contrast, for Traditional procurement only 30% of projects were completed on time and only 27% were completed on budget. Evidence of value for money (VFM) calculations

undertaken by the NAO was summarised by Allen (2001, p.30-33). There have also been a number of UK reports and academic studies that have looked at satisfaction levels and performance of PPPs. Cambridge Economic Policy Associates (2005) reported to the Scottish Executive that Scottish PPPs were generally performing well. An academic study by Kakabadse et al (2007, p.61) concluded that the 'emerging evidence is favourably inclined towards PFI' in the UK schools sector. However, a study sponsored by the UK Association of Chartered Certified Accountants (ACCA, 2004) provided a negative view of PFI projects in the roads and hospitals sectors.

Arguably, the UK PFI seems to have been generally successful relative to what might have happened under conventional public procurement. Projects are delivered on time and on budget a significantly higher percentage of the time. Pollitt (2005, p. 226) raised the prospect that the full benefits of PPPs were not confined to PPP projects, but extended to Traditional procurement as a 'vehicle for learning'. Pollitt (2005, p. 227) also felt it was important that the benefits of the PFI were not disproportionately captured by the private sector, but was confident that financial windfalls to private investors could be addressed via 'appropriately specified contracts'. The relatively higher bid costs of PPPs have often been commented on. Allen (2001 p.34) reported on the Adam Smith Institute's (1996) study, which concluded that tender costs expressed as a percentage of total costs were in the region of 3 percent for PPPs, and just under 1 percent for Traditional procurement. For the purposes of making value for money assessments, the results of the Mott MacDonald study have been interpreted as requiring that an addition to cost estimates under the Traditional procurement alternative (the Public Sector Comparator, or PSC) be made in the range given by the table.

In a critique of the Mott MacDonald (MM) and UK NAO results, Unison (2005) outlined a number of methodological problems that it considered were biasing the empirical findings in favour of PPPs. These methodological issues were as follows: Transparency – The Mott MacDonald and NAO sampling methodology was not described. Population analysis – The populations from which the PPP and Traditional samples were not described. Representative ness of samples – There was no detailed description of how representative the samples were of the PPP and traditional populations. Consistency and relevance of time period - Some Mott MacDonald traditional projects were drawn from an earlier period, which pre-dated the procurement reforms of 1999. Relative complexity selection bias – A greater proportion of Traditional projects were 'non-standard', and therefore involved a higher degree of complexity than PFI (PPP) projects.

Another criticism of both Mott MacDonald concerned the issue of measurement bias. According to Unison, Mott MacDonald measured PFI (PPP) projects from the later time of the full business case (FBC), and traditional projects from the strategic outline case (SOC) or outline business case (OBC), which came earlier, and were therefore likely to involve greater time and cost uncertainty. We have outlined these methodological issues here because the present study's methodology has undertaken to address each of them. Whilst not intending to provide a defence of the Mott MacDonald and UK NAO methodologies, we would note that the Mott MacDonald study did point out that its results showed an improvement (i.e. considerable lessening of optimism bias) over time, and that is why it provided a significant range for its estimate of the relative optimism bias of Traditional projects.

Australian research on PPP performance

The empirical research agenda on PPPs has been dominated by researchers who have generally tackled specific issues and employed case study approaches. For example, there

have been several case studies or sectoral analyses of PPPs, including: English (2005) – case study of the Latrobe Hospital; Brown (2005) - analysis of a number of toll road agreements; and Hodge (2005, p.319-323) - review of the Melbourne City Link and Sydney's M2 Road. More comprehensive empirical analysis of PPPs has been confined to studies undertaken or commissioned by governments, most notably the UK Government. In Australia, this absence of empirical data has been linked to transparency and accountability issues. For example, Hodge (2005, p.327) considered that "The absence of any rigorous and transparent evaluations of Australasian PPPs represents a significant accountability shortfall, and we are left relying on only a few pieces of empirical evidence when attempting to make up the accountability jigsaw." Because of the lack of empirical evidence this has allowed some researchers to argue that PPPs have also been associated with (or seen as a proxy for) privatisation programs (Hodge, 2004) that encourage private providers to supply public services at the expense of public organisations themselves (Hodge, 2007).

The Fitzgerald Report (Fitzgerald, 2004) reviewed the *Partnerships Victoria* process for the Victorian Treasurer. The report investigated 8 case studies of PPP projects that had been undertaken within the ambit of the Partnerships Victoria framework since its inception in 2000. Fitzgerald reported that at the time they were entered into, on a weighted average, and using the then prevailing discount rate, the saving attributed to the PPPs was 9 percent relative to the respective risk adjusted Public Sector Comparators (PSCs). However, it was noted that this *ex ante* estimate of the benefit was sensitive to the discount rate applied and factors such as the valuation of the risk transfer achieved in the contracts. Hence, it was not an analysis of what was actually achieved by PPPs as opposed to other methods of procurement.

In general, it can be said that Australian academic research has tended to focus on non-empirical methods that often discuss case studies in relation to aspects of PPP contracting or operation. Very little research has focused on the linkages between concepts of procurement innovation, public interest, risk and what has actually been delivered to the Australian public. Again, as noted by Hodge (2005, p.323), 'there has been no comprehensive evaluation of Australia's PPPs thus far'. In both Australia and in the British PPP market, much of the research has been framed from either an economic policy perspective, or from a contracting and procurement perspective. Economic policy debates have seen claims and counterclaims emerge between PPP proponents and detractors. In contrast, the procurement-based research has tended to avoid these debates and has focused on understanding PPPs as a new form of procurement.

Proposed methodology

Given the above issues in relation to PPP performance research our focus in this study was to construct a methodology for evaluating the Australian PPP market (and by implication, the Traditional procurement route) using the most up-to-date data available in the public domain. To achieve this we set out to compare the project time and cost outcomes observed in the PPP market, with those projects delivered by governments via Traditional procurement methods. It was our aim to provide an accurate snapshot of Australia's evolving PPP market. Rather than extrapolating from, and generalising the results of a few PPP successes or failures based on a small number of case studies gathered from small populations of selected projects, our aim from the outset was to apply a rigorous methodological approach. Originally, we had the objective of selecting matched pairs of PPP and Traditional projects. However, as the research project progressed we found that each project is a customised solution, and no two projects are exactly alike with respect to such indicators as location, size, type and value. This

ruled out the matched pairs approach, as determining a 'matched pair' would have required the exercise of considerable subjectivity.

In formulating our research methodology to compare the performance of PPPs in other alternative procurement approaches, we kept in mind the recent criticisms levelled at the methodologies applied in the UK studies that have been discussed earlier. In particular, in formulating our detailed research methodology we were mindful that the different project pools we constructed for comparison were not biased by the inclusion of (previously known) overly successful, or underperforming traditional projects. Similarly, we have not sought to bias the selected project pools by excluding unsuccessful PPP projects. We have not selected projects that were atypical and not representative of each procurement method. We have not biased our research findings by comparing different baselines between the two procurement methods. Nor have we biased our research findings by comparing different timelines between the two procurement methods. We have provided a high degree of transparency in relation to the data and sources applied, so that the research could be fully replicated by others.

Cognizant of criticisms that have been levelled at previous studies, we were careful not to build into our research methodology any particular bias. Given the focus of academic research on PPP projects, it was important that a methodology was developed, in the first instance, to represent the current state of the Australian PPP market. For this reason we chose to compare projects that had been contracted into the PPP market, and whose construction had been completed. We did not see any methodological value in excluding or including projects that were seen as either Traditional/PPP successes or failures. The selection criteria that we employed were designed to best reflect Australia's current PPP market alongside a pool of broadly comparable projects procured by other methods. Our particular selection criteria are set out as follows:

Criterion 1

Australian governments have significantly changed and improved their PPP policies since about 20007 and thus it is sensible to focus on PPP projects that have been arranged and procured using the current style of policies. Thus, we have focused the sample projects to be those primarily undertaken since 2000.

Criterion 2

Largely completed projects which allow realistic comparisons to be made between forms of delivery for the capital component of projects (capex) of all, or a majority, of the associated costs needed to be brought to account. This includes preliminary works, detailed design, project management, procurement (possibly including construction) and completion costs such as settlement of any contractual disputes. We concentrated on completed or largely completed projects so that all or the majority of costs would be brought to account in most projects. All projects included data for at least one of the project stages 1 and 2 (denoted 'partial data' in Appendix C) with a majority of projects having 'full data' (i.e. data for all stages and the 'Full Period').

Criterion 3

Projects with a significant capex budget. PPP projects are generally only appropriate for large and significant projects due to the added requirement of arranging private finance as a part of the project. It is therefore appropriate to adopt a minimum project budget for projects

included in the sample to ensure comparisons between Traditional and PPP procurements are meaningful. We envisage that we will select projects with a capex $20 million or greater.

Criterion 4

Similar number of PPP projects to other projects in each pool. The total number of PPP projects that have been completed using current policies is relatively small. A full sample of these PPP projects was sought, and a similar number of traditionally procured projects was chosen to broadly match this sample.

Criterion 5

Projects of similar complexity. There can be a wide differential between the relative complexities of particular projects, for example 'iconic' buildings versus 'normal' office facilities and new developments on clear sites ('greenfields') versus refurbishments and/or upgrade projects ('brownfields'). Having prioritised projects using criteria 1 to 3, Traditional projects were selected on the basis of criteria 4 and 5, where the number of potential Traditional projects was large (e.g. road).

Project milestones

Various periods (stages 1, 2 and 3, and the Full Period) have been calculated in order to provide alternative perspectives on the procurement process, which might be defined differently by different parties. Our interest has also been to examine whether consistent trends can be seen irrespective of the definition of milestones and stages. In order to address alternative views, cost and time data were obtained at four different milestones in a project, and four different periods were identified. The time and cost data were normalised in order to yield percentage performance relative to the target at each successive milestone or stage. It may be expected that as these stages progressed closer to the final outcome, more information will be known about a project, and outcomes will be closer to those anticipated.

In order to measure normalised performance, we define four milestones in a typical procurement project, which are as follows:

1. Original Approval – original approval of the project.

2. Budget Approval – approval of final budget prior to going to contract.

3. Contractual Commitment – situation on signing of contracts.

4. Actual Final – actual outcome of the project.

Project stages

Using the four project milestones identified above, we defined the Full Project and three periods in the project lifecycle for analysis, i.e. four different periods over which the relative performance of PPPs and Traditional procurement approaches could be measured and compared.

These four periods were:

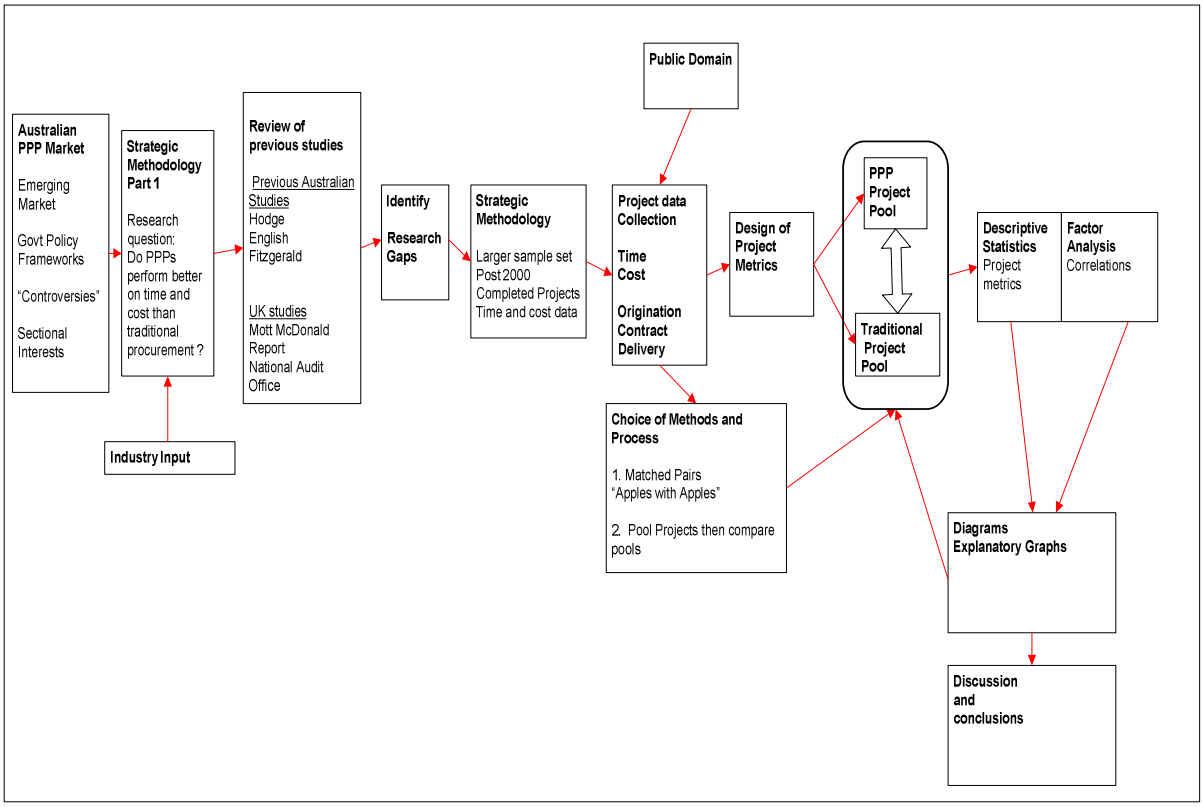
1. Full Project Original Approval to Actual Final;

2. Stage 1 Original Approval to Contractual Commitment;

3. Stage 2 Budget Approval to Actual Final; and

4. Stage 3 Contractual Commitment to Actual Final.

Figure 1: Diagram of the Methodology



Discussion: beyond time and cost performance measures

Whilst the above methodology goes some way to begin to assess the performance of PPPs against other procurement methods there is still a range of issues that require addressing in PPP research in Australia.

Benchmarking Issues

Public infrastructure projects may be either economic infrastructure such as roads or social infrastructure such as courts, hospitals or schools. Often data for individual projects may include both qualitative measures such as critical success factors and quantitative measures such as time and cost data for each project. For these reasons benchmarking data between projects is difficult.

Risk identification and allocation

Risk components between different projects differ and for decision makers risk identification and allocation at the inception of a project is often an art rather than a science. These risks include design, construction and commissioning risk, operating risks, market risks, integration and co-ordination risks, force majeure risks and political risks such as those

related to industrial relations and changes in government policies. Often the identification of these risks may only emerge during a project's construction. For example, projects currently under way may not fully take into account policy approaches, currently under development. For example, any new Australian Government policies focused on national emissions accounting leading to a carbon trading scheme.

Value for Money issues

VfM is by no means an exact science. If VfM is defined as "the optimum combination of whole-life costs and fitness for purpose to meet user requirement" (HM Treasury 2003) then decision making is complex because of the need to consider whole-of-life costs, design issues and user requirements. Again different states in Australia have different methods and policies for assessing VfM. Both NSW and Victoria use a Public Sector Comparator (PSC). The PSC is a decision tool which compares the cost of undertaking a project between the public and private sectors. However, the 2006 NSW government report into Public Private Partnerships stated that "NSW operates with a less detailed policy on its PSC than other jurisdictions." (NSW, 2006).

Financing decisions

Unravelling financial market risks from other project risks such as design and construction risks is important if strategic decision making is to be improved. Clearly Governments can borrow to provide public infrastructure at a lower cost of capital than the private sector. This is because there is no weighted cost of equity in government financed projects. Because of this governments have been seen to deliver public infrastructure at a cheaper or "risk free" rate of capital. This has sometimes been mistakenly associated with the idea that governments manage projects free of all other project risks. This has prompted a public debate whether these other risks can be better managed by the private sector or not. However, without firm data on outcomes, project risks and the value added by private sector involvement in public projects, this debate will continue.

Service Delivery choices

Governments must now enter into complex contractual agreements including facilities management agreements. Contractors are often required to manage and deliver services and integrated solutions under these arrangements which they did not traditionally deliver (Gann, 2005). Often in these arrangements it is not clear how commercial risks are allocated between the parties to these contracts. Designing these contracts and performance monitoring is important if ongoing service delivery is to be adequate but this is difficult to forecast until a project becomes operational.

CONCLUSION

Empirical research into PPPs in comparison to other methods of procurement is important because in Australia State and Commonwealth Infrastructure Plans plan spending of over $320 billion over the next decade, which could easily become $400 billion. In general, it can be said that Australian academic research has tended to focus on non-empirical methods that often discuss case studies in relation to aspects of PPP contracting or operation. In both Australia and in the British PPP market, much of the research has been framed from either an economic policy perspective, or from a contracting and procurement perspective.

Consequently, economic policy debates have seen claims and counterclaims emerge between PPP proponents and detractors.

Much of the previous work evaluating the PPP model in both Australia and internationally is now dated, as the maturity and sophistication of the market has evolved. This is also true of the UK results obtained by Mott MacDonald and the UK National Audit Office. In Australia most research, even some of the most current research, relates to PPP projects that were completed prior to 2004, and has concentrated on physical infrastructure such as toll roads, rather than social infrastructure, and were often based on a limited sample of case studies.

What is forgotten in criticisms of the PPP model is that if there has been an accountability shortfall, it has been disproportionately shared by Traditional procurement. In Australia there is no transparent research that investigates the efficacy and VFM credentials of Traditional procurement, and no sense of whether performance has been improving over time, as has been suggested in the UK by the Mott MacDonald and other studies.

Nonetheless, we expect this market to continue to develop, and for PPPs also to continue to engage in the ongoing operation of water and energy infrastructure related to Australia's future sustainability needs. In this paper we provide a review of the evolution of the market and a snapshot of its current state. More importantly we suggest a methodology that will enable an assessment of the performance outcomes for assessing the more recent social infrastructure projects that have come to dominate this market.

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