Indian Streams Research Journal

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CRITICAL REVIEW OF VALUE FOR MONEY (VFM) IN PROJECT FINANCE UNDER PPP MODEL

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INTRODUCTION

Due to the lack of budgetary sources and substantial public sector indebtedness, governments have to decide whether to implement or postpone required public service developments. This decision must be taken with the understanding that in case of deferred implementation the public and social benefits will be deferred as long as the required project finance is not raised.

In the case that the development cannot be delayed any longer public resources may have to be reallocated, or increased by raising private finance (Muranyi 1998: 1-2). The resource reallocation mentioned here includes borrowings that may be made by the public sector, as these are included in the governments' balance sheet.

Due to their inability to match the demand for public utility spending, governments are increasingly looking to the private sector to finance projects. Such ventures are termed Public Private Partnerships (PPP' s). The financing of projects within the private sector is a complex task and involves established financial institutions and experts. In the U.K it has resulted in the establishment of the Private Finance Initiative (PFI) and more recently, Private Enterprise Partnerships (PEP) and Partnerships UK (PUK) , all classed as Public Private Partnerships.

Round the world other mechanisms have been set up to smooth, encourage and regulate private financing not just for the construction industry but in all major service and facility providing sectors (Carlile (1994: 53).

PUBLIC-PRIVATE PARTNERSHIPS

The term, public-private partnerships (PPPs or P3s) has been used since the 1990s (Davies & Eustice, 2005). According to the UK Government officials, (HM Treasury, 2000, 2003b; House of Commons Library/UK, 2001), the term PPP is used to describe three types of scenarios:
1. The selling of government assets and services into wider markets;
2. The PPP procurement arrangements (including concessions);
3. The introduction of private sector ownership into state-owned businesses.

However, there is no single definition or model for a public-private partnership (Abadie & Howcroft, 2004; Davies & Eustice, 2005). "If a narrow definition is taken, this can result in legislation which only applies to a narrow range of project types or structures, which may be of limited practical value.(Abadie & Howcroft)"

Some widely used descriptions are:

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• "The PPPs constitute an approach to introducing private management into public service by means of a long-term contractual bond between an operator and a public authority. Fundamentally, it secures all or part of the public service, so delegated by private funding and calls upon private sector know-how (United Nations, 2002)."

• "The term public-private partnership (PPP) is not defined at Community level. In general, the term refers to forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service (Office of the Deputy Prime Minister/UK, 2002)."

• "Public-private partnerships bring public and private sectors together in long term partnership for mutual benefit. The PPP label covers a wide range of different types of partnership including the Private Finance Initiative, the introduction of private sector ownership into state-owned businesses and selling Government services into wider markets and other partnership arrangements where private sector expertise and finance are used to exploit the commercial potential of Government assets (HM Treasury, 2000)."

• "A public-private partnership is a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility (The National Council/USA, 2006)."

• "A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards (Canadian Council, 2006)."

• "Instead of the public sector procuring a capital asset by paying for it in full up front, the effect of a typical PPP structure is usually to create a single, standalone business, financed and operated by the private sector. The purpose is to create the asset and then deliver a service to the community, in return for payment commensurate with the service levels provided over the life of the asset. (Australian Council, 2004)."

• "It means a commercial transaction between an Institution and a private Party in terms of which the Private Party
(a) performs an Institutional function on behalf of the Institution; and/or
(b) acquires the use of state property for its own commercial purposes; and
(c) assumes substantial financial, technical and operational risk in connection with the performance of the institutional function and/or use of state property; and
(d) receives a benefit for performing the Institutional function or from utilizing the state property, either by way of
(i) consideration to be paid by the Institution which derives from a revenue fund or, where the Institution is a national government business enterprise, from the revenues of such Institution; or
(ii) charges or fees to be collected by the Private Party from users or customers of a service provided to them; or
(iii) a combination of such consideration and such charges or fees (National Treasury/South Africa, 2004)."

Public-private partnerships may undertake one or more combination of the following functions: design (D); build (B); finance (F); operate (O); maintain (M);own (O); transfer (T); lease (L);develop (D); buy (B), or refurbish (R) (World Bank, 2006). According to officials of the US Department of Transportation's Public Works Financing Projects (PWF), the major options for PPP procurement in transport projects worldwide are O&M (operations and maintenance contracts), DB (design, build), LDO (lease, Develop, operate), DBOM (design, build, operate, maintain), BOT (build, operate, transfer), DBFO (design, build, finance, operate), and BOO (build, own, operate) (AECOM

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Consult, 2005). The PPP functions as a bridge between traditional public procurement and full Privatization.

VALUE FOR MONEY

Value for money (VFM) is defined as the optimal combination of whole life costs and benefits (quality or fitness for purpose) for the project (Allan, 2001; HM Treasury, 2004c) to meet user requirements. VFM does not simply mean the lowest costs or lowest price (HM Treasury, 2004c; United Nations, 2002). Researchers in current literature commonly describe the VFM as a core objective of PPP (Allan, 2001; Dinesen & Thompson, 2003; HM Treasury, 2003b; Infrastructure Australia, 2008a; United Nation, 2002). Allan stated that the PPP projects demonstrate the VFM concept from the perspective of the taxpayer as the client. The United Kingdom government officials stated that, "the Government only uses PPP where it can be shown to deliver value for money and does not come at the expense of employees' terms and conditions" (HM Treasury/UK, 2006a)

The VFM is indicated by the comparison of the project net present value (NPV) with both the PPP procurement options and the traditional public procurement options (Allan, 2001; Shaoul, 2002, 2005). The latter is called the public-sector comparator (PSC) which means that the net present value is based on the in-house skills, capability and public funding of public sector (Davies & Eustice, 2005). For example, in the PSC option, officials may allow for a design and build contract to construct an asset, and then procure annual operating and maintenance contracts for the ongoing maintenance of that asset (HM Treasury, 2004b). The PSC is a benchmark for quantitative analysis in VFM comparisons between PPP and traditional procurement (Grimsey & Lewis, 2005), particularly in the United Kingdom, the Netherlands, Canada, Australia, and New Zealand (Regan, 2005). The NPV difference between the PSC and PPP options is considered the VFM. Allan (2001) stated there are two critical questions to be asked when determining PPP superiority over traditional models.

First, does the project possess a positive NPV long-term?

Secondly, is the NPV of PPP better than that of PSC? If so, the use of the PPP option then demonstrates superior VFM and the decision by officials is warranted.

In other words, officials have indicated that the prerequisite for implementing PPP is evidence that whole life benefits of the project outweigh the risk costs of PPP procurement at a recognizable level. If PPP does not demonstrate superior VFM, then officials should use traditional procurement.

VFM Assessment Approaches

The general critics on the risk analysis approaches and tools state the following issues relative to the VFM assessment approach:

• CBA vs. CEA?

Cost benefit analysis (CBA) is an important tool for socio-economic assessment. Traditionally, proponents of this tool have focused on economic efficiency, particularly by providing policy makers with an indication of net benefits associated with a government project or policy. Economic efficiency is a measure of net contribution of an activity or project to overall social welfare (Huang, 2001). As for PPP procurement, objective is to assess whether a given project or bid proposal is value for money (Stahr, 2006). Applying the whole-life cycle costing with the discounted cash-flow analysis and risk analysis to calculate PSC for NPV is the major tasks of CBA. However, in CBA parties relies on the ability to measure costs and benefits in monetary terms which creates problems for projects in which the majority of benefits cannot be readily monetized (Huang; Mackie, Nellthorpe & Laird, 2003).

By using the CBA approach, officials attempt to quantify benefits and costs in money terms to a large extent, whereas the cost-effectiveness analysis (CEA) approach is a cost-minimization

technique (Watson, 2005). The CEA approach is a useful tool officials use for project screening or ranking which often incorporates multi-criteria decision making (MCDA) to weigh multiple outcomes in obtaining a single composite measure. However, when officials use this tool they rely on a subjective decision which is not inherently superior to CBA. Furthermore, this method has a shortcoming in that it is unlikely to produce consistent comparisons from project to project by different groups or experts (Lebo & Schelling, 2001). The CEA approach is widely used by officials to appraise investments in the social sector, such as health and education projects, and has rarely been used in the transport sector. This is due to the hypothesis that transport investments are generally economic in nature and should therefore be economically measured (Mackie et al., 2003).

Need of the PSC

The PSC is a benchmark to measure whether bids represent value for money for the public sector and whether risk transfer generally improves VFM. However, the opponents of PPP procurement have criticized the design of the PSC process indicating that it encourages project managers to use PSC to pass PPP project rather than monitor VFM for the taxpayer (Turner, 2002).

Many studies have demonstrated that "the lowest-price wins bid" in the traditional public procurement, sacrificing the quality of project performance (Holt, 1998; Holt et al., 1995; Wong, Proverbs & Holt, 2002). "The central proposition should always be that PPP should only be pursued where it delivers value for money (VFM), where VFM is the optimum combination of whole life cost and quality (or fitness for purpose) to meet the user's requirement, and does not always mean choosing the lowest cost bid" (HM Treasury, 2004c). Practical experience in very large infrastructure transactions in Australia has shown officials that the cost of private sector service delivery may sometimes be even lower than the raw PSC. For completeness and quality assurance, the full PSC should always be the quantitative benchmark (Partnerships Victoria, 2001b). As described in the current theory of *Engineering Economics* (Park & Sharp-Bette, 1990), PSC acts as a baseline, base case or correct criterion to compare multiple project alternatives and diagnose whether they are VFM. "The PSC provides a consistent benchmark and evaluation tool to ensures that all projects are tested in a like for like way and are subjected to a broadly similar and systematic test for protecting VFM (Grimsey & Lewis, 2005)."

Use of PSC as benchmark by officials saves costs and time in efforts to estimate broader social benefits which are the same between PPP and traditional public procurements. Therefore, the PSC approach may not be the best first approach, but a cost-effective compromise between a full cost benefit analysis of all project options, as in Germany, and simply selecting the best private bid, as in France (Grimsey & Lewis, 2005).

Secondly, objective assessment depends on the data availability and the quality of historical records. The history of PPP schemes is still young, and the life cycle of PPP projects is usually more than 20 to 30 years in length, so such data has not been accumulated. In addition, the PPP projects are usually unique with specific risks (Bloomfield et al., 1998; Dey & Ogunlana, 2004; Gerrard, 2001; Li & Zou, 2008). Therefore, some form of subjective assessment is necessary to some extent. Subjective judgment is also needed by officials to transform existing information into available forms for a specific PPP project (Dey & Ogunlana, 2004).

In the event of computing with imperfect information, the likelihood and impact of risk can be assessed subjectively, but in a systematic manner, by incorporating the approaches such as group expert judgment and statistic techniques. Furthermore, undertaking sensitivity analysis to estimate PSC is a useful way of understanding the impact of changes in these variables on the overall project NPV (Guikema & Milke, 2003; Reilly, 2005; Tanczos & Kong, 2001).

Some researchers (Demirag, Dubnick, & Khadaroo, 2004; Pollock et al., 2005; Shaoul, 2002; Turner, 2002) argued using the PSC for VFM tests to focus on PPP projects in health sector, especially in the UK. In the PPP health and school projects in the UK, officials seem to achieve less reasonable efficiency gains than those for road and prison projects. Grimsey and Lewis (2005) drew conclusions

from Allen (2001) for two reasons. First, unlike road projects, the core and ancillary for the PPP health projects in the UK remain segmented, perhaps reducing some of the potential for innovation. Second, for road projects there is a single government agency handling the contracting however in the health industry the private sectors must contact a number of bodies such as National Health Services (NHS) trusts and other governing councils.

However, there is no evidence to conclude the PSC for VFM testing will have bad effects on PPP health project performance. Actually, an updated statistics report (HM Treasury/UK, 2006a) by UK HM Treasury officials associated with UK Partnerships and 4PS companies has indicated that the various types of PPP projects, including health projects, can effectively meet VFM. This also shows that PSC is an important tool to ensure VFM, but ongoing improvement for the PSC and VFM tests is necessary.

Uncertainty and Optimism Bias:

There are two components of uncertainty included in the risk distribution: the inherent uncertainty in the risk variable itself, and the uncertainty arising from the expert's lack of knowledge of the risk variable (Partnerships Victoria, 2003a). This uncertainty is more important than risk, especially for risk transfer that is key element in VFM tests for the PPP-PSC bid comparison (Grimsey & Lewis, 2004, 2005; Shaoul, 2005). "Not only is uncertainty a palpable tension but turbulent events burst out and interact."(Miller & Lessard, 2000) This means the longer the project life cycle, the higher the probability that the project will be affected by emergent events. The VFM is projected at the point of PSC comparison, and actual outturn costs may differ from those projected by the PSC. When these costs fall well below the level of projections, then VFM will not be maintained. Most large-scale PPP contracts span 20 to 30 years minimum. Over a long period, the impact of cost projections on the public sector could be significant (Grimsey & Lewis, 2005). Significant uncertainties of risk impacts should be defined (Reilly, 2005).

Shaoul (2005) stated that the measurement and methodology of risk transfer for PPP-PSC bid comparison is problematic because all possible outcomes cannot be predicted and weighted. Grimsey and Lewis (2005) maintained that at a practical level governments officials traditionally do not budget well for systematic risks or uncertainty, and consequently PSC calculations only contain project specific risks, never accounting for error. The public sector might be able to ignore uncertainty across a uncertainties.

A study conducted by officials of the Washington Department of Transportation (WSDOT) found that recognition of a future cost estimate to involve substantial uncertainty was almost never realized. This will cause significant cost overrun if the uncertainty is ignored in the cost estimating process (Reilly, 2005; Reilly & Brown, 2004; Reilly et al., 2004). There are substantial and costly biases in many cases. For example, the Boston, Massachusetts's artery/tunnel project in the US had 196% of cost overrun; the Great Belt rail tunnel in Denmark had 110% cost overrun; the Channel tunnel in the UK and France had 80% cost overrun; the Oresund link, in Denmark had 70% cost overruns (Flyvbjerg et al., 2003a; Flyvbjerg et al., 2003b; Flyvbjerg et al., 2004). Among the largescale projects, the Apollo Aerospace program in the United Stated was successful in that there was only 5% cost overrun based on USD $21 billion budgeted. This is because the cost estimates by officials were based on the realism of risks, costs, and contingencies. Officials' original budget estimate included $8 billion of contingencies (Flyvbjerg et al., 2003a).

CONCLUSION

Due to the impacts of financial difficulties, technical inefficiency, incorrect pricing, and poor quality of services under traditional public procurement, large-scale infrastructure project procurement officials began turning to the private sector in the 1980s. Officials of public sector engaging the private sector infrastructure financing and operations are expected to mitigate risks, save costs, improve innovation and services and enhance revenues, employment and economic

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growth (The World Bank, 1999b).This approach is called public-private partnership (PPP) and is defined as "a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards" (Kernaghan, 1993). Value for Money (VFM) is a core objective of the PPP projects. The VFM concept refers to the optimal combination of whole life costs and benefits of the project under consideration to meet the users requirement; it does not simply mean the lowest costs or cheapest price (HM Treasury, 2004; United Nations, 2002). By PPP arrangement, risks are transferred and allocated to the party who is the most capable of managing them in a cost effective manner. This requires the optimization of risk allocation between public and private sector in order to achieve the best VFM. Many researchers have revealed in previous studies that a critical contributor to the success of a PPP project is the selection of the right private-sector partner, the concessionaire, who would provide the best overall performance and value throughout the PPP development process (Aziz, 2007; Chan et al., 2001; Zhang, 2005). However, many common issues concerning the current contractor selection methods for PPP projects are learned from literature survey below:

1. The current concessionaire-selection methods are not based on risk assessment. The PPP infrastructure projects, such as build-operate-transfer (BOT) transportation projects, are usually very complex with highly dynamic and interdependent risks and uncertainties over a long-term project life cycle (Reilly, 2005). Based on this fact, the risk assessment is critical for the PPP project procurement (Dey & Ogunlana, 2004) in order to select a proper project partner and examine the project VFM performance.

2. The current concessionaire-selection methods usually lack the global perspective of project life cycle. The risk problems of cost, schedule, quality, and the like dynamically reflect over the whole project life cycle. For example, many evaluators focus on the construction stage only, excluding the project design and operation phase. They are therefore unable to supply data on the project performance over the whole project life cycle (The Scottish Government, 2005).

3. The current concessionaire-selection methods usually do not address interdependently dynamic and non-linear risk interactions. In reality, the risks of a mega PPP project are interdependent on each other with nonlinear relationships over the long-term project life cycle (Williams, 2002). However, based on current practices evaluators assume risk factors are independent. "Ignoring or underestimating correlations between variables will tend to understate the variance of outcome" (Balcombe & Smith, 1999) so that this could eventually lead to wrong judgments on the overall project risk estimates.

4. The concessionaire-selection methods are normally unable to deal with semi-structured or unstructured real world problems. The domain problems for a large-scale infrastructure concern finance, technology, economy, contract management, organization, politics, regulation, and the like which are heterogeneous, structured, and also unstructured. For example, current methods incorporating the cost-benefit analysis (CBA) were criticized by experts that these methods were difficult in nature to quantify non-monetary terms (Mackie et al., 2003).

5. Officials using the current concessionaire-selection methods usually ignore the uncertainty of outcomes. In the current practices for bids comparison officials also ignore the dispersion of outcomes and depend on deterministic outcomes only. Minor changes in the underlying assumption will cause the model to yield completely different results (Grimsey & Lewis, 2002, 2005; Ye & Tiong, 2000). Therefore, the PSC in terms of risk cost estimates is intended to be so subjective that it can be easily manipulated (Blyth, 2002; Shaoul, 2005;Turner, 2003). It is necessary to move from single value estimates to range values estimates for PPP infrastructure projects (Grimsey & Lewis, 2005; Reilly, 2005; Reilly & Brown, 2004;).

Although the researcher has established that the theoretical approach has proved to be valid in building a decision support model for PPP project concessionaire selection, this theory still requires further research to assure its realistic representation. A field investigation with PPP project

managers for an overview evaluation on usability in terms of technical view, economic view, organisational view, and legal view to examine whether the proposed approach is practical in concessionaire selection for the public sector would be necessary. The technical view refers to evaluate the ease to use methods and tools of the proposed theoretical approach to build a decision support model for PPP project concessionaire selection. For example, the public sectors will need to examine if they have sufficient knowledge and skills to apply system dynamics modelling, risk analysis, statistic techniques, and decision-making methods used in the proposed theoretical approach. The economic view refers to evaluate the cost efficiency to apply the proposed approach. For example, the public sector will need to examine how much and how long they can train the staff to apply the proposed approach if they don't have sufficient knowledge and skills. The organizational view refers to the organizational commitment to apply the proposed approach. For example, the public sector will need to examine if the staff at operational level accept the new approach which is different from the approaches they used to apply and the staff at the management level support to use the proposed approach. The legal view refers to the legality to use the proposed approach. For example, the public sector will need to examine if the proposed approach is allowed by the current regulations or laws.

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