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Do Public-Private Partnerships Deliver Value for Money in Infrastructure Projects? A Critical Literature Review

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Abstract:

A growing number of governments are using Public-Private Partnerships (PPPs) to deliver infrastructure projects as the needs for infrastructure often outpace the public sector's financing capabilities. Questions have been raised as to the effectiveness of PPPs in delivering value for money for infrastructure that would guarantee high performance. This study sought to interrogate existing literature on whether PPPs deliver value for money in infrastructure projects. The study was guided by three objectives, namely: to establish the criteria for evaluating Value for Money (VfM) in PPP implemented infrastructure projects; to assess to what extent PPP implemented infrastructure projects have delivered value for money; and to identify the key determinants for providing value for money among PPP-implemented infrastructure projects. The study approach adopted was review of existing literature with view of collaborating empirical evidence as well as identifying divergent results. The findings of the study were mixed with some of the studies reviewed revealing significant value for money achieved through PPP among infrastructure projects, others casting doubt as to the effectiveness of PPP arrangements thus opting to take a cautious middle ground and yet others were outright critical of PPP models of procurement and provided a litany of failed PPPs project examples. The study concludes the question as to whether PPPs provide value for money in infrastructure projects still remains debateable and can only be well understood in the context of case-by-case because of differential contextual and environmental factors. The study recommends that for PPPs to deliver value for money in infrastructure projects, proper regulatory frameworks and enabling environments should be put in place. Further, the assessment of value for money for PPPs projects should move beyond financial considerations to other important aspects of project management such as values sustainability.

Keywords: public-private partnerships, value for money, infrastructure projects.

1. Background Information

Faced with increasing needs for infrastructure and budgetary constraints, a growing number of governments are using Public-Private Partnerships (PPPs). The drive to use PPPs is increasingly premised on the pursuit for value of money (OECD, 2008). The UK Treasury, as cited by WBI and PPIAF (2012), defines Value for Money (VfM) as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user's requirements. In PPPs, best value emphasizes quality, efficiency/effectiveness and performance standards (Akintoye, Hardcastle, Beck, Chinyio and Asenova, 2003).

Burger and Hawkesworth (2011) define value for money as what government judges to be optimal combination of quantity, quality, features and price (cost) expected (sometimes, but not always, calculated) over the whole of the project's lifetime. Value for money therefore includes both qualitative and quantitative aspects and typically involves an element of judgement on the part of procuring entity, hence it precise measure does not exist (Burger and Hawkesworth, 2011). Value for PPPs is guided by the belief that governments and firms working in a meaningful collaboration will deliver major infrastructure projects that have better outcomes than any one party could deliver on their own (Huxman and Vangen, 2000; McQuaid, 2000).

Any project, whether it is a PPP or a traditionally procured project, should be undertaken only if it creates value for money (WBI and PPIAF, 2012). Therefore, as a matter of principle the choice between using a PPP or traditional procurement should be simple: public entities should prefer the method that creates the most value. It is widely recognized that the PPP principles can provide value for money among infrastructure projects (Kilaka and Omwega, 2015), as compared to traditional procurement models if the advantages of risk transfer combined with private sector incentives, experience and innovation—in improved service delivery or efficiencies over the project life-time—outweigh the increased costs of contracting and financing (WBI and PPIAF, 2012).

Value for Money is assessed at various stages throughout the life of a project. Furthermore, assessing the value for money is a relative concept that often requires comparisons of the options and their expected outcomes to be identified, defined, estimated and compared to alternatives (HM Treasury, 2012). In the early stages of a project appraisal, there will be a high degree of estimation as the likely

cost and performance outturn of alternative delivery options (HM Treasury, 2012). It therefore requires use of historical evidence in drawing on outcomes and outturn data from similar projects.

Questions have been raised as to the effectiveness of PPPs in delivering value for money for infrastructure that would guarantee high performance. This is compounded by lack of comprehensive financial data in PPPs making it difficult to carry out a systematic analysis of value for money or affordability (Hodge, 2004; Garvin and Bosso, 2008). Furthermore, the value-for-money objective is very often blurred, and the choice between using a PPP and traditional infrastructure procurement may be skewed by factors other than value for money (Burger and Hawkesworth, 2011). This has led Hodge and Greve (2010) to postulate that VfM is a purposely vague concept and one designed to reorient the language debate away from traditional concerns such as choosing the “cheapest” winning construction bid which meets the public interest, towards discussion of the whole of life project cost, risk transfers and risk adjusted discount rates.

Despite the growing adoption of PPPs in infrastructure projects development, evidence shows that infrastructure projects still report poor performance (Leirenger, 2003). Numerous studies have been conducted on this topical issue. This article will review extant literature with a view of identifying areas of convergence and divergence among various studies conducted in this area.

This paper is outlined into the following sections problem statement, objectives of the study, justification, literature review, presentation and discussion of findings, and conclusion and recommendations.

1.1. The Problem Statement

As noted in the background section of this article, questions have been raised as to the effectiveness of PPPs in delivering value for money promise among infrastructure projects. Additionally, infrastructure projects still report poor performance despite growing adoption of PPPs (Leirenger, 2003; Yuan et al., 2009; Fay and Toman, 2010; World Bank, 2013). The premise that PPPs may provide value for money in infrastructure projects has thus excited global debates and extensive studies have been carried out.

Numerous studies have been conducted in relation to value for money incentive of public-private partnerships (Siemiatycki, 2010; Hall, 1998; Shepherd, 2000; Garvin and Bosso, 2008; Polloc, Shaoul and Vickers, 2002; Monbiot, 2002; WBI and PPIAF (2012). However, there are still divergent views as to whether PPP provide value for money in infrastructure projects. For instance, there are studies that have advanced the argument that PPPs provide value for money in infrastructure projects while others are very critical of this model of procurement. The evidence of mixed findings regarding the effectiveness of PPPs in delivering value for money calls for extensive review of existing literature on this topical area. Value for money (VfM) assessments have also become a common part of the ex ante evaluation of PPP projects (Siemiatycki, 2010) further making this study an important one. This study was conducted therefore to ascertain the extent to which PPPs deliver value for money in infrastructure projects or otherwise through review of extant literature and identify knowledge gaps for future studies.

1.2. Objectives of the Study

The study sought to find out whether PPPs deliver value for money in infrastructure projects through critical literature review.

The specific objectives of this study included:

1. To establish the criteria for evaluating Value for Money (VfM) in PPP implemented infrastructure projects;
2. To identify the key determinants for providing value for money among PPP-implemented infrastructure projects; and
3. To assess to what extent PPPs have delivered value for money among infrastructure projects.

1.3. Justification

Infrastructure is important for economic growth and poverty reduction particularly among developing countries. It is also notable that significant increases in infrastructure require very large, often lumpy, upfront investments (Fay and Toman, 2010). Thus PPP commitments often involve huge financial commitments. It is therefore important to know whether governments and indeed public sector derive value for money from such commitments. This makes this study an important one.

The findings of the study will offer valuable contributions from both a theoretical and practical standpoint. From a theoretical standpoint, it contributes to the general understanding of whether PPPs deliver on their promise of value for money in infrastructure projects. It will broaden the understanding of PPP form of procurement and contribute to the body of knowledge by filling existing research gaps. From a practical standpoint, it is expected that the findings will provide vital information that will assist public entities particularly in making decisions as to best ways of enhancing value for money in PPP arrangements.

2. Literature Review

Infrastructure is the foundation for social and economic development; thus, investments in infrastructure are particularly important in developing countries. In developing countries, infrastructure needs often outpace the public sector's financing capabilities (Hill, 2011). The vast urbanization and industrialization is putting enormous pressure on the existing infrastructure, which in turn lead to the widening of demand-supply gap of infrastructure (Dailami and Leipziger, 1998; Fay and Yepes, 2003; Yang, 2008). At the same time, delays in the realization of infrastructure projects pose potentially large economic and social costs (Ehlers, 2014). Governments have increasingly turned to the private sector to provide financing and expertise for construction and management of critical infrastructure projects.

The drive to use PPPs is increasingly premised on the pursuit of value for money (OECD, 2008). Any project, whether it is a PPP or a traditionally procured project, should be undertaken only if it creates value for money (WBI and PPIAF, 2012). Therefore, as a matter

of principle the choice between using a PPP or traditional procurement should be simple: public entities should prefer the method that creates the most value.

In the following sections, the theories applicable to this study are reviewed, followed definitions of basic concepts used in this study including PPPs and Value for Money (VfM) and a review empirical literature.

2.1. Theoretical Review

This study was guided by Principal-Agent (PAT) and X-efficiency theories given the specific nature of risks existing in most PPP projects. Most of the risks involved in PPPs are uninsurable. Indeed, the probability of risk materialization directly depends on the PPP partners' behaviour. This study will therefore be based on these two theories which are most applicable in PPP related studies.

PAT addresses the relationship where in a contract one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent (Jensen and Meckling, 1976). The theory relates to allocation of risks between the principal (public entity) and the agent (private partner). The theory espouses risk allocation criteria of total cost minimization and maximizing the Principal's utility. This is done subject to the Agent's participation and incentive constraints. The respect of these two constraints must permit both partners to improve their situation, compared to a situation in which only one constraint would have been taken into account. As Laffont & Martimort (2002) point out that incentive and participation constraints define the set of incentive feasible allocations. Both risk allocation criteria enounced by the PAT come from these two constraints.

Theory of x-efficiency developed by Harvey Leibenstein (1966) postulates that public institutions or enterprises cannot fail as long as official financial and monetary policies are expansionary enough to bail them out or to limit their probability of failure. The theory hence identifies the inefficiencies that exist in the public sector and point out that public-private partnerships are necessary to reduce the sources of x-efficiency in public organizations and to allow them to respond to market forces and become more competitive (Henckel and McKibbin, 2010).

These two theories will form the cornerstone of this study in connecting theory with empirical review.

2.2. Defining PPP Concept

There is no universally agreed definition of PPPs. Marin (2009) illustrates this point: "there is no single definition of PPP. Greve and Hodge (2007) further support this view point in their statement: "even with this wide adoption, the term PPP is still not clearly defined". Auriol and Picard (2008) posits that there is confusing lack of common terminology for PPP due to the fact that private sector participates in some way in almost all public infrastructure projects. Proponents and critics of PPPs agree on a loose concept of PPPs, namely a public and private interaction to deliver a service. The term is a sort of 'umbrella notion' covering a broad range of agreements between public institutions and the private sector, aimed at operating public infrastructures or delivering public services (Centre for European Studies, 2006; Organization for European Community Development (OECD), 2005).

PPP's range from management contracts with no investment obligations to concessions contracts with significant investment obligations in addition to operational and management obligations" (Marin, 2009). Based on definitions from key development partner's institutions (such as OECD, 2008; World Bank, 2012; and IMF, 2004) and the analysis of Da Rosa *et. al* (2012), five key criteria of PPPs can be derived: a cooperation between the public and private sector with a common goal; a clear agreement between public and private party on the goal(s) of the PPP; a combination of public and private funding; a clear agreement regarding the sharing of resources and tasks; and distribution of risks between the public and the private sector.

Other scholars have viewed the use of the term PPP as language game (Teisman and Klijn, 2002; Linder, 1999; Savas, 2000; Hodge and Greve, 2007) used by governments trying to avoid the terms "privatization" and "contracting out" in favour of speaking about partnerships. Hodge and Greve (2007) conclude that perhaps PPP reflects the practice of advancing the same policy but under a different and more 'catchy' name.

2.2.1. Why Public-Private Partnerships

PPP's arise out of the realization that although the public sector is responsible for the delivery of infrastructure projects, it often encounters financial, technical and institutional limitations in availing such projects. A well planned and adequately structured Public-Private-Partnership arrangement should efficiently and effectively achieve superior results than the traditional public sector infrastructure financing approaches. This is because the Public-Private-Partnership approach strives to harness a wide range of managerial, commercial and technical skills of the private sector while benefiting from the low risk, socio-political goodwill and the lower cost of capital of the public sector. This combination is expected to enhance time, quality and cost efficiency of resultant projects (Dima, 2004).

Public-private partnership (PPP) has been practiced for quite some time around the world and there is numerous infrastructure, construction, and building projects which are employing the concepts. Indeed, the rise of PPPs has been among the most important trends shaping public service delivery (Sagalyn, 2007) at a time when governments around the world are increasingly turning to high quality urban infrastructure as a strategy to stimulate economic growth and create jobs, ameliorate environmental problems, and promote social equity. As PPPs gain in popularity around the world, their merits have been intensely scrutinized and debated in dozens of scholarly articles from a multi-disciplinary perspective.

Proponents suggest that using PPPs to introduce private financing, competition, and market forces into the procurement of public infrastructure can lead to projects being built sooner than they would be if entirely paid for by governments, reduce project lifecycle costs through greater innovation, introduce more accountable decision making, and reduce the potential for construction cost

escalations that have consistently plagued infrastructure mega-projects (Deloitte Research, 2006; Government Accountability Office, 2008; Levy, 1996).

If properly formulated and managed, a PPP can provide a number of benefits to the public sector such as: alleviating the financial burden on the public sector due to rising infrastructure development costs; allowing risks to be transferred from the public to the private sector; and increasing the “value for money” spent for infrastructure services by providing more efficient, lower cost, and reliable services (Shepherd, 2000). Most recently, the bundling of facility design, building, financing, and operation into a single long-term concession (known by the acronym DBFO) has become a favoured partnership model for delivering large projects in the transportation sector (Federal Highway Administration, 2009).

2.3. Defining PPP's Value for Money in Infrastructure Projects

There is no unified definition of Value for Money (VfM) because each procuring entity specifies the quality and quantity of the service it requires from the private partner(s) (Burger and Hawkesworth, 2011). However, a few identifiable definitions from literature are given here. The UK's Her Majesty's Treasury (2012) defines VfM as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user's requirement. Burger and Hawkesworth (2011) define VfM as what government judges to be optimal combination of quantity, quality, features and price expected over the whole of project's lifetime. Siemiatycki and Farooqi (2012) see VfM as constituting the measure of the extent to which cost savings are achieved when delivering public infrastructure projects through a PPP relative to a traditional government-led procurement approach.

Diamond (2005) identifies three elements typical of value for money for PPP infrastructure projects: economy, efficiency and effectiveness. Economy is the minimization of cost of inputs, while efficiency is the minimization of inputs for a given set of outputs, or the maximization of outputs for a given set of inputs. He identifies two types of efficiency: technical and economic. Technical efficiency refers to when resources are not technically employed in the best way while economic results from the combination of inputs that is not optimal given the relative prices of inputs. Effectiveness refers to the impact of policy, i.e. whether or not the outputs reached deliver the desired outcomes (Diamond, 2005).

2.3.1. Criteria for Evaluating Value for Money in PPP Infrastructure Projects

Value for money (VfM) assessments have become a common part of the ex ante evaluation of PPP projects (Siemiatycki, 2010). Assessing the value for money is a relative concept, requiring a comparison of options and their expected outcomes identified, defined, estimated and compared to alternatives (HM Treasury, 2012).

Value for Money is assessed at various stages throughout the life of a project. In the early stages of a project appraisal, there will be a high degree of estimation as to the likely cost and performance outturn of alternative delivery options. The use of historical evidence is therefore important, drawing on outcomes and outturn data from similar projects (HM Treasury, 2012). Due to the fact that value for money includes both qualitative and quantitative aspects and typically involves an element of judgement on the part of procuring entity, the precise measure of VfM do not exist (Burger and Hawkesworth, 2011).

For example, UK's VfM suitability criteria for Private Finance Initiative (PFI- UK's model of PPP) include long-term, predictable need for service; the ability to allocate risk effectively; presence of adequate policy institutions and competitive bidding market. In France, the criteria for value-for-money are based on three factors: relevance, commercial attractiveness and potential for optimal risk allocation. In USA, the criteria include whether a project is sufficiently complex to benefit from the private sector innovation, achieve appropriate risk transfer and the degree of stakeholder support (WBI and PPIAF, 2012).

In their study of OECD countries on the criteria used for evaluating PPPs and Traditional Infrastructure Projects (TIP), Burger and Hawkesworth (2011) found that in 17 of 20 countries, a public sector comparator was used, while one country used public sector guidelines and ex ante value-for-money test. Other studies reviewed indicated that some countries have clearly defined criteria for VfM analysis. Burger and Hawkesworth (2011) used survey and case study methods in their study and the respondents were senior PPP and ministry officials. This presents a difficult since their collection of data VfM focused on the supply side, yet VfM should be delivered for the recipient of the service/taxpayer.

2.3.2. Determinants of Value for Money in PPP Infrastructure Projects

Morallos (2008) identifies six determinants of VfM including: risk transfer, long-term nature of contracts, competition, performance measurement and the use of an output specification, performance measurement and incentives, private party's management skills. Most VfM analyses use a public sector comparator (PSC), a “hypothetical constructed benchmark to assess the value-for-money of conventionally financed procurement in comparison with a privately financed scheme for delivering a publicly funded service” (Grimsey, 2004). This can be essential to providing the quantitative justification for engaging in a PPP.

Value for money is said to be achieved if the PPP has lower lifecycle costs than the comparator when differential costs of construction, operation, public sector oversight, financing and risk are considered (Grimsey & Lewis, 2005; Quiggin, 2004). However, as Hodge and Greve (2010) point out VfM is a purposely vague concept and one designed to reorient the language debate away from traditional concerns such as choosing the “cheapest” winning construction bid which meets the public interest, towards discussion of the whole of life project cost, risk transfers and risk adjusted discount rates.

The requisites identified in OECD (2008) for PPPs to deliver value for money for infrastructure projects include risk transfer and competition. For PPP to deliver value for money, sufficient risk must be transferred to the private partner. The Federal Highway Department (2012) identifies project's characteristics that influence value for money through PPP approach to include sufficient scale and long term nature, complex risk profile and opportunity for risk transfer, competitive bidding process, private sector skills, among

others. From the foregoing of the above discussions, proper risk transfer and competition becomes important determinants of value for money in PPP infrastructure projects.

2.3.3. Extent to Which PPPs Have Delivered Value for Money among Infrastructure Projects

Coulson (2008) provides three objectives of PPP implementation in the UK, one of them being for the public sector to enjoy value for money. According to Hurst and Reeves (2004), PPP projects enable the private sector to create innovative solutions and this may end up by realizing value for money and increasing the efficiency of public service delivery. But questions have been raised as to the effectiveness of PPPs in delivering value for money for infrastructure that would guarantee high performance. This is compounded by lack of comprehensive financial data in PPPs making it difficult to carry out a systematic analysis of value for money or affordability (Hodge, 2004; Garvin and Bosso, 2008; Phibbs, 2008; Vining and Boardman, 2008).

There is mixed evidence of PPPs effectiveness in delivering value for money for infrastructure projects. Early work by Hall (1999) presented evidence of PFI deals in the UK that achieved significant savings overall for road projects and two prison contracts that generated about 10% savings compared to publicly financed prisons. In their analyses of 29 business cases, Anderson and LSE Enterprise (2000) estimated efficiency gained through PPPs to include a 17% cost savings figure. The UK National Audit Office gave a 10-20% figure based on seven empirical cases, while Shepherd (2000) suggested cost savings of between 10-30%. Pollit (2002), in summarizing the findings of the National Audit Office, showed that in a sample of 10 major PFI case evaluations, the best deal was probably obtained in every case, and good value for money was probably achieved in eight of the 10 cases.

Coverson and Perera (2012) analyzed five PPP projects using case study method. They caution public authorities to be aware that PPPs do not automatically achieve efficiencies and it is necessary to track the extent to which PPPs are being delivered in accordance with the contracted timeframe and budget. For an example of a study in PFI projects in UK between 2003 and 2008 that showed that 31% of projects were delivered late and 35% over budget (Lord Economic Affairs Committee, 2008). It is for this fact that UK's Treasury felt that financial models used in project assessment, such as value for money, are subject to manipulation and should never be used alone as pass or fail test.

Other studies have produced varied findings. For instance, DBFO public partners were found to pay high transaction costs associated with structuring and monitoring partnership arrangements (Garvin and Bosso, 2008; Vining and Boardman, 2008), significant cost premiums to ensure projects are delivered on time and on budget (Stapleton et al., 2004), large cost escalations during project planning (Siemiatycki, 2007), borrowing costs that significantly exceed those available to governments (Quiggin, 2004), and excessively high rates of return to the private investors (Shaoul et al., 2006). Polloc, Shaoul and Vickers (2002) and Shaoul (2004) have been highly critical of PFI arrangements across a wide range of services.

Monbiot (2002) famously labelled PPPs as "public fraud and false accounting ... commissioned and directed by the Treasury" in a stinging attack accusing the UK government of failing to represent the public interest. Greve (2003) characterized the Farum PPP case study as "the most spectacular scandal" in the history of Danish Public Administration, resulting in higher taxes for the citizens and more public debt for that local government. Shaoul (2005) in her review of the UK experience presented a litany of failed PFI examples, where she noted that value for money appraisal methodology is biased in favour of policy expansion. She further observed that the value for money in most projects rested almost entirely on risk transfer which strangely, the amount of risk transferred is almost exactly what was needed to tip the balance in favour of undertaking the PFI mechanism. She concludes that at best PFI turned to very expensive.

3. Approach of the Study

The aim of the study was to examine the extent to which the PPP procurement delivers for money. An extensive literature review was conducted to gain comprehensive understanding of PPP's value for money motive particularly in infrastructure projects. The review covered articles obtained in peer-reviewed journals, study reports in research repository websites and databases and other relevant publications on the subject area. The study discussed key constructs, variables and perspectives value for money as promise through PPP arrangements for infrastructure projects. The study also sought to identify controversies, key methodological weaknesses and knowledge gaps emerging from existing empirical studies on PPP's value for money motive.

3.1. Findings and Discussion

Literature reviewed has provided mixed findings. A variety of studies have provided evidence to the fact that some countries have clearly-defined criteria for value for money assessments. Quite a number of countries, on the other hand, do not have documented criteria value for money in PPP procured projects. As Shaoul (2005) noted that even for countries that have documented the criteria for value for money assessments, VfM in most projects rested almost entirely on risk transfer which strangely, the amount of risk transferred is almost exactly what was needed to tip the balance in favour of undertaking the PFI mechanism.

Risk transfer and competitive bidding processes have identified as some of the important determinants of value for money in PPP procured infrastructure projects. As to whether PPP delivers value for money in infrastructure projects still remains doubtful. Quite a number of scholars have provided empirical evidence of projects that PPPs have delivered value for money (Pollit, 2002; Anderson and LSE Enterprise, 2000; Shepherd, 2000). However, several scholars have cast doubt as to the effectiveness of using financial models, such as value for money in assessing projects (HM Treasury, 2011; Coverson and Perera, 2012; Hodge and Greve, 2010).

3.2. Conclusion and Recommendations

The study also sought to find out whether PPP deliver value for money in infrastructure projects. From the onset it was notable that value for money concept was vague. Whatever value for money constitutes remains debateable. The findings were mixed. There was some empirical evidence as to the fact that indeed PPP contributed to better valued infrastructure projects, with most of the studies highlighting cost savings as constituent of value for money. However, other studies came up with findings on the inverse with several scholars questioning the effectiveness of PPPs. Some were, in fact, highly critical of PPP arrangements and presented a litany of failed PPP/PFI projects examples. Most of the critics found the PPP driven infrastructure projects to have incurred higher costs than would otherwise if implemented under traditional procurement.

Whether or not PPPs deliver value for money for infrastructure projects is case-by-case dependent. This study concludes that PPPs can indeed deliver value for money among infrastructure projects if PPPs are properly executed and proper risk analysis and transfer to the party best suited to handle is undertaken. Enormous benefits can also be realized including cost savings, delivery of project on time and budget and quality service delivery among infrastructure projects.

The study recommends that for PPPs to deliver value for money in infrastructure projects, proper regulatory frameworks and enabling environments should be put in place. Further, the assessment of value for money for PPPs projects should move beyond financial considerations to other important aspects of project management such as values sustainability.

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