

## Achieving Value for Money: An Analytic Review of Studies on Public Private Partnerships

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### ABSTRACT

Over the past two decades, governments around the world have been embracing Public Private Partnerships (PPPs) as an alternative approach in the provision of infrastructure. PPPs have their merits in remedying financial shortages in public sectors and improving infrastructure performance, but they must be carefully selected on the basis of value for money when compared to conventional procurement. While Value for Money analysis as an evaluation method has been widely used to ensure feasibility, accountability, and transparency in PPPs, little is known with respect to its effectiveness and appropriate theoretical foundations. By mapping theoretical foundations and practical analysis methods, this paper reports the weakness and inadequacy of current value for money analysis. The study especially explores existing theoretical foundations and empirical evidence for PPP value for money and highlights paths for future research.

### INTRODUCTION

Since the use of Public Private Partnerships (PPP) has increased in global popularity, countries such as the United Kingdom have spent approximately 12% of their total annual capital expenditure in PPPs, with other countries following suit. The paramount objective in choosing PPPs is achieving improved value for money, or improved services for the same amount of money, as the public sector would spend to deliver a similar project (Grimsey and Lewis 2005).

Public agencies often conduct Value for Money (VfM) analysis to ensure the VfM result. VfM is often regarded as a monetary value savings produced by selecting the PPP option versus a traditional procurement option. The calculation of such saving is the concept behind the VfM analysis (Morillos and Amekudzi 2008a). If the

cost of the traditional procurement is higher than the PPP, the difference between the two costs is the VfM that can be achieved through the PPP procurement option (Morallos and Amekudzi 2008b). However, the VfM is under criticism from both academics and practitioners. Current VfM analysis mainly deals with the economic aspect of ensuring VfM in PPP projects. Nevertheless, the economy is just one dimension of the VfM objectives. Other non-financial costs and benefits of a project are neglected in the quantitative assessment. In addition, practical experiences are limited to justify the use of PPP. It still needs more compelling evidence to determine whether the PPP has delivered value for money.

Although studies on VfM have been published frequently in academic literature, to date little attention has been paid to the need for a systematic review of existing studies. Given that, our paper tries to present a review of state of the art value for money. This paper uses the meta-analysis method to discuss the theoretical and empirical evidence of VfM. In the second section, it provides an overview of VfM procedures. The third section presents criticisms of VfM assessment and extant rationale and evidence for PPPs, followed by future studies, where opportunities of research agenda will be given. The final section summarizes the research findings.

## **BACKGROUND OF VFM**

Although the specific workings of VfM may differ between agencies, the one that referenced in this paper is derived from the UK's HM Treasury. Value for money is defined as the "optimum combination of whole-of-life costs and quality (or fitness for purpose) of the goods or service to meet the user's requirement" (Her Majesty's Treasury 2006). VfM analysis procedures have been utilized in many countries to help government officials determine if they are likely to obtain a better deal with the PPP agreement. The VfM analysis generally involves: (1) quantitative assessment to compare the financial impacts of procurement alternatives for a project; (2) financial analysis; (3) the impact on balance sheet of the procuring agency; and (4) other user benefits considered in qualitative assessment.

The quantitative assessment, as a major consideration in determining of whether to pursue PPP or not, compares the present value of conventional procurement's baseline cost-public sector comparator (PSC)-against the present cost of P3 option (e.g. shadow bid). The PSC estimates the hypothetical risk-adjusted costs of public procurement which mainly includes four elements, the raw PSC, competitive neutrality, transferable risks, and retained risks. These elements incurred in the project's delivery are discounted as net present cost terms by using the nominal discount rate. Both probability valuation technique and sensitivity analysis were used to evaluate the risk adjusted PSC and the received PPP bids. Additionally, the qualitative assessment deals with factors that cannot be quantified, such as bidder

qualification, differences in deliverable services, the user benefit from accelerated delivery, and social benefits. If VfM is demonstrated in the analysis result, then a public agency can set up to pursue the project as a PPP. If not, then alternative procurement routes would be considered.

## STUDIES OF VALUE FOR MONEY ON PPP

The study reviewed papers relevant to value for money in construction, public management, and accounting journals in order to compose a comprehensive knowledge base of VfM literature. According to the relevance and citation rate, 58 articles were selected for further analysis. Of these, 40 papers (69%) were published from 2006 to 2012. This study also counted these papers by the methodology they used. It indicates that case study has been used the most (=25). Additionally, literature review and survey ranked second and third with 20 and 14 papers, respectively, followed by interview (=7). The latter two methods (survey and interview) facilitate collecting comments from industry and academic circles. There are also 10 papers using other methods like game theory, optimization, and document analysis, etc. After examining the content of these studies, the literature was categorized into two themes under the headings “VfM analysis” and “does PPP deliver value for money”. The next section describes their research contributions in detail.

### VfM analysis

The central element of VfM analysis is the standard investment appraisal technique based on the comparison of the discounted cash flows of different options. In the comparison, it aims to select the one that offers the greatest financial benefit, although affordability and public service obligations should also be considered (Shaoul 2005). Adopting appropriate methods to determine value for money for a PPP is not an easy work.

### *Criticisms of VfM assessment*

Many researchers found fault with PSC assumption (Grimsey and Lewis 2005), affordability (Akintoye et al. 2003; Froud and Shaoul 2001), accountability (Khadaroo 2008), and unreliability of assessment (Burger and Hawkesworth 2011; Reeves 2011). For instance, the VfM analysis normally requires development of PSC, which is a hypothetical case considering the public sector fully developing the project. The PSC value can be altered by the assumptions made, especially about risk transfer to the private sector, which is the crucial element in establishing expected VfM of a PPP transaction over the PSC. In addition, the real PPP project and the PPP format initially assumed by the PSC are not the same. And the final cost data for traditional procurement approach is unavailable at the time of the analysis. Thus, the comparison

of PSC with the PPP alternative may lead to an unreliable result. Grimsey and Lewis (2005) argued the discount rate methodology is faulty. It does not provide a social time preference. Due to the discounting mechanism inherent in calculating the NPVs, even small changes in the discount rate can create the different outcomes as to which scheme is the best VfM. In terms of VfM and affordability, Froud and Shaoul (2001) analyzed the value for money appraisal process in a different sense, and concluded that it was not clear that the appraisal process promoted better decisions. Akintoye et al. (2003) thought that the affordability criterion works like a two-edged sword towards the achievement of best value in PFI; on the one hand, it means a higher price for projects, and on the other hand, it encourages an innovation solution that would impress the client. By examining the value for money financial mythology, Shaoul (2005) challenged the claim that the introduction of appraisal would allocate resources rationally and proposed that, regardless of the merits of any particular appraisal technique, the use of appraisal at a narrow project level does not ensure rationality at the national or regional level. Khadaroo (2008) used three cases of PFI school bids to illustrate how the PFI contract is actually evaluated, and believed that the assessment of VfM in PFI contracts maybe hindered by the lack of transparency and public accountability. Using a P3 procurement structure can accelerate project completion and project benefits such as reduced vehicle hours of delay, early achievement of improved travel times. Some of these benefits may not ever be realized if P3 procurement is not chosen. However, these benefits are typically ignored by VfM analysis.

#### *Making improvement to VfM assessment*

Against the faultiness and deficiencies of the appraisal approach, researchers have also tried to make improvements in life cycle costing, the design of evaluation approach (Leung and Hui 2005), and post-evaluation (Tsamboulas et al. 2013) etc. Specifically, Leung and Hui (2005) proposed a method to integrate Cost-Benefit Analysis (CBA) and Option Pricing concepts (OP) into urban renewal projects. This model is more appropriate to realizing social benefits and costs yielded to the local residents in the appraisal process. Since the current VfM evaluation practice focuses purely on financial aspects, Tsamboulas et al. (2013) designed three steps in the evaluation frame, including: Cost-Benefit Analysis (CBA), Value for Money estimation, and Application of Multi Criteria Analysis. This assessment frame adds a further step by taking social and public non-quantifiable factors into account. Furthermore, other research like (Henjewe et al. 2011) developed VfM optimization and sustainability models to address the specific gaps in improving the consistency result of VfM assessment. The model focus on the variation in the VfM parameters: cost, time, and stakeholder satisfaction in different stages which helps to review the

achieved VfM goals and to detect the VfM losses. In terms of public bias in VfM evaluation process, other researchers argued that it can be controlled through techniques such as standardized procurement procedures, general agreement on economic asset life, and discount rates tied to commonly accepted indices.

### **Does PPP deliver value for money?**

VfM is defined as “the optimum combination of whole-life costs and quality to meet the user requirement” (HM Treasury 2006). However, its meaning in the real context of PFI is no more precise. VfM is assumed to be measured using the concept of net present costs, a variant of the net present value technique. Unfortunately, the net present value technique will neither ascertain whether or not the private finance provider will deliver the project on time and within the budget, nor will it be able to measure the quality of the bid. Thus the exploration of whether or not PPP has indeed delivered VfM should be considered in broad view.

#### *The rationale and evidence of PPP benefit*

Many researchers have done research to analyze the theoretical rationale and demonstrate the potentiality of efficiency from the PPP. For example, based on a critical analysis of the economic rationale for PPPs, Fourie and Burger (2000) concluded that PPPs do have the potential to improve the efficiency and effectiveness of delivery of certain government services. At the same time, a number of critical conditions, like the requirement of sufficient risk transfer and the presence of sufficient performance incentives and discipline, etc. are needed for a successful PPP design and implementation. Hart (2003) suggested that the choice between PPPs and conventional provisions depends on whether it is easier to write contracts on service provision than building provision. PPP is good if the quality of the service can be well specified in the initial contract or, more generally, there are good performance measures that can be used to reward or penalize the service provider. Hart (2003) argued that prisons and schools are fit for the traditional procurement option, while hospitals may fall into the PPP category. Additionally, Murphy (2008) summarized key arguments of P3s delivery model and gave the corresponding analysis and proof.

Nonetheless, Pitt et al. (2006) noted that unless there is a definitive legal definition of VfM in the context of PFI, there does not appear to be anyone willing to confirm PFI offers VfM from an objective stance. Thus, a number of studies continually strive to explore empirical evidence to prove the value for money. From the value proposition, many researchers (Aziz 2007; Grimsey and Lewis 2005; McKee et al. 2006; Raisbeck et al. 2010) most likely tried to use the cost and time evidence to certify the success of PFI. The authors collected some evidence that the PPP outperformed over tradition procurement in Table 1.

**Table 1. Outperformed evidences of PPP**

Publication	Sample	Cost	Time	Satisfaction
Grimsey Lewis (2005)	PFI infrastructure projects in UK.	75% projects on budget	75% projects on time	Interviewee feel PFI good
McKee et al.(2006)	PFI projects	79% projects within budget	76% projects on time	
	Conventional projects	27% projects within budget	30% projects on time	
Aziz (2007)	10 PFI transportation projects in UK	Average of 15% cost savings.		
Kakabadse et al.(2007)	PFI schools			
Raisbeck et al.(2010)	21 PPPs projects in AU	11.4% to 30.8%. lower cost than traditional projects	3.4% ahead of time on average	
	33 Traditional projects in AU		23.5% project delivery delayed	

#### *The disadvantageous evidences and cases against PPP*

Other researchers presented some contrasting results about PPP benefits. From (Edwards and Shaoul 2003), the ex-ante value for money case rests upon risk transfer, while the analysis showed that the practice risk was not transferred in ways that the public agencies had anticipated. Pollock et al (2007) found that there existed a selection bias, small sample size problems, and fundamental flaws in U.K. Treasury's evidence of its VfM policy and appraisal. Thus, there was no solid evidence to support HM Treasury's cost and time overruns claims of improved efficiency in PFI.

It concluded that the Treasury appraisal guidance which compares PFI with other methods of procurement, is not evidence based but biased to favor PFI. Consistent with that conclusion, Hodge and Greve (2007) used historical outcomes to examine two promises of PPPs: reducing the pressure on government and better value for money in the provision of public infrastructure. As a result, the early claim of private financing reducing public budget turns out to be largely false. The government just turns a once-off capital expenditure into a series of smaller annualized expenditures. A review of the literature highlights the fact that some attention has been given to examining specific cases where PPP hardly achieves the



value for money objective. Thus, we list the related studies that provide issues and cases against PPP in its utilization in Table 2.

**Table 2. Cases against PPP**

<b>Publication</b>	<b>Focus</b>	<b>Cases against PPP</b>
Grimsey Lewis (2005)	PPP practice (Global)	The PPPs or PFI projects are too complex, and costly, for many small projects, in which beyond the capacity of the public sector agency to implement and manage.
Kakabadse et al.(2007)	PFI schools (UK)	Political pressure, complexity in determining preferred bidder, size of bid, contract alterations, working relationships, affordability gaps, risks apportionment, profit incentives, shareholder involvement etc.
Murphy (2008)	PPP Practice (CA)	1) The real costs of PPPs are possibly higher 2) Lower quality design and service 3) Less accountable to the public good 4) Threat to the rights of workers and to jobs 5) Loss of public policy flexibility

## **FUTURE STUDIES**

### **Uncertainty**

PPP schemes are particularly vulnerable to uncertainty. Existing studies have shown the criticality of uncertainty in Value for Money of PPP projects. Actually, the VfM framework may not produce a consistent result because the uncertain circumstance potentially affects VfM through progress of project. Future research should be focused on managing uncertainty of whole life cycle VfM especially embodies the uncertainty of the planned parameters (budget, delivery schedule and service quality) and propose effective models to scrutinize the variation of these parameters.

### **Flexibility**

Previous studies have recommended the VfM methodology should consider the flexibility to adapt to potential changes in the different project scenario, risk outcomes or stages. One of the improvement areas for the government is to use option analysis when perform VfM tests to assess the economic merit of the PPP model. By identifying and simulating the several types of flexibility (physical and contract flexibility, etc.), it is possible to find a contractual structure that will maximize the value for money in PPP agreement.

### **Benefits and costs**

Current case studies show that there are a large number of potential costs, benefits, and dis-benefit of P3 procurement. Several benefits and cost of P3s, for instance, lower life-cycle cost, accelerated delivery, enhanced service and quality etc., and increased transaction costs, limited government flexibility have been identified. In most cases, VfM analysis has little to no discussion of such non-financial benefits and costs that may arise from different procurement methods. A quantitative approach such as Benefit and Cost Analysis (BCA) for evaluating the benefits and dis-benefits gained from procurement alternative would complement VfM analysis. In fact, it is a promising field to develop BCA tool to assess different P3 options.

### **Post evaluation**

More research show the need to the ex post evaluation practice with PPP schemes. Only through systematic long term evaluation would it be possible to draw definitive conclusions on the implication of VfM merits of the PPP policy. An appropriate evaluation technique incorporating social benefit and costs, partnership criteria should be employed, which helps to execute public accountability and provide a treasurable experience for future policy design. Moreover, it might also be useful to explore how different types of stakeholders in a partnership perceived the VfM and get involved in the design of robust post project evaluation process.

### **Performance**

Previous research identified PPP project performance, mainly through questionnaire surveys, interviews, and case studies rather than empirical analysis. However, debates of the performance and effectiveness of PPP cannot be based on limited samples and case studies that may make it hard to present the true results. More research is needed to show a good empirical study of whether or not PPP projects have indeed delivered value for money according to their jurisdictions and sectors. In addition, under which condition the PPP would be the preferred approach to public service and whether the different procurement pathways take a significant difference to the performance of the PPP could also be explored.

### **CONCLUSIONS**

With respect to VfM, it is founded that it has several shortfalls: its preoccupation with cost control rather than value delivery or maximization of benefit, difficult risk pricing, the hypothetical PSC assumptions, and not being able to predict or limit the aggressive strategy adopt by the private agency. Therefore, the current assessment framework requires adequate modifications to analyze the projects where the project is expected to be financed through private funds.



Nevertheless, VfM analysis is useful because it provide an exploratory and predictive tool rather than a definitive answer. It is illustrated that the value for money of a major infrastructure project is not assured simply by the decision to deliver it using a PPP. Instead, a successful PPP project is determined by the quality of planned and delivered processes, the allocation of key project risks between the partnership, and the ways that contracts structured etc.

Furthermore, the evidence on PPP (PFI) effectiveness is not all one way. The global empirical evidences on PPP performance including the United Kingdom, Australia and the United States shows that P3 procurements inevitably produce neither negative nor positive impacts. Some P3 projects have produced expected positive outcomes, while others have failed. Thus, the common costs, benefits, and disbenefit of PPP scenario are still subject to evaluate especially to specific project.

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