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STANDARDISED ASSESSMENT METHOD OF PPP INFRASTRUCTURE PROJECTS

A Recommended Assessment Method During The Preparatory Stage

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Abstract

Public Private Partnership (PPP) is known as a cooperative venture between public and private sectors, built on the expertise of each partner that best meets clearly defined public services through appropriate allocation of resources, risks and rewards. Many ASEAN countries are now adopting this approach as it helps to accelerate infrastructure development while at the time minimizes its fiscal impact. However, recent developments in the financial market and the trend towards global convergence in accounting standard are having major impact on PPP implementation. The argument that PPP can address budgetary constraint is now being challenged as Government is expected to commit resources either directly or on contingent basis to ensure project is financially viable. Hence, PPP has to be rationalized on the basis of value for money (VfM). For VfM to be realized project has to begin on a right footing and this requires robust assessment framework. This paper is approaching the issue by proposing a framework of comparing the cost of PPP project against what it would cost the Government if it is implemented through conventional approach. In this manner it can be ascertained that the option chosen fulfils the three VfM criteria of economy, efficiency and effectiveness. For ASEAN countries, there are challenges in adopting this approach and these include institutional capability and other enablers such as information availability. These challenges are not insurmountable. Using the proposed assessment framework as a guide to chart program of work for capability enhancement, ASEAN countries will be in the position to reap the full value of PPP program.

Keywords: Public Private Partnership, Public Sector Comparator, Value for Money, Assessment Method.

JEL Classification: H57

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CHAPTER 1: INTRODUCTION

1.1 Background

Across the world, partnership approach to public infrastructure development continues to assume prominent position. There are various rationales being put forth to justify active participation of the private sector in this area which used to be largely of public domain. There is even philosophical argument that the generation of output and services should rightly be in the private hand with the government only act as facilitator or enabler and regulator. Hence, when growth momentum of the private investment slackens, this approach is looked upon as an answer to generate new growth opportunity for the sector. There is also argument to promote efficiency both from resource utilisation perspective as well as from project management. However, the most popular argument has been to use private capital to accelerate infrastructure development to support economic growth.

Irrespective of the rationales being highlighted for partnership between public and private sectors, in ASEAN countries, the model certainly provides a unique solution to speed up infrastructure development necessary for economic growth. This can be seen in highway, port, utilities and also communication sectors. Malaysia and Singapore in particular are expanding its application to social infrastructure such as government administrative complex or facilities, education, and health sectors as well as waste management. To build upon these past successes, it is important for the model framework to be further strengthened, particularly in the technical aspect of project assessment. The review on the assessment method is necessary not only due to expansion in the coverage of partnership program beyond economic infrastructure but also new development in the financial and capital markets. The latter is changing risk allocation structure and to a large extent raises the issue of fiscal sustainability. It is from this perspective of changing operating environment that this research exercise is initiated.

In order for PPP projects to be successful and to achieve best value for money, a thorough preparatory work is crucial. This will guarantee a good quality of project preparation is made available prior to procurement process. Given the development and a variety of PPP procedures worldwide, a crucial question to be posed is how PPP preparatory stage are best performed and what significantly affects the value for money achieved in any PPP project

This research will report the technical and operational problems faced when adopting PPP assessment methods, both for social and economic infrastructure. Recent progress on PPP policy environment within ASEAN and East Asian countries will be outlined. During the value assessment, various issues which are crucial to assessment parameters will also be outlined. Finally suitable assessment method, process and template for screening eligible private operators are recommended and further research needs are outlined.

1.2 Rationales

Public Private Partnership which has been a well-established means of providing public services in such areas as toll roads and bridges; has risen to greater prominence in recent years as government has increasingly adopted the principle of separating policy direction from ownership and delivery for a wider range of public facilities and services. The principles of partnership is simple: a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public need through the appropriate allocation of resources, risks and rewards. In practice most governments adopt PPP principles as a matter of ideological persuasion; utilizing private sector expertise to lever greater efficiency and change management, then boost economic growth.

Most projects involve investment of substantial private sector finance; in all but the very exceptional cases this finance in itself will be more costly than public sector borrowing. The argument in favour of PPP is that while the underlying risks of the project are the same whether undertaken by public or private enterprise, the private sector is capable of bringing in new skills, more innovation and better management of risk to the implementation of public projects. With these possibilities, the benefits can outweigh the higher costs of PPP and therefore deliver better value. Private sector value is further driven by principles of market led contestability.

As PPP involves a wide range of difficult choices, real policy options should be carefully assessed and the reasons supporting the decisions should be sound, clear and robust. In fact a correct assessment framework will determine the state of preparedness of the authority in implementing the partnership program. Studies have shown that apart from key drivers, such as legal framework and understanding of partnership business model, a technical tool of systematic assessment methodology with well-defined objective is critical prior to project execution. For projects to be implemented via Public-Private Partnership (PPP) approach, the

assessment methodology goes beyond needs analysis and economic viability of the projects. Most importantly, PPP being a public procurement option has to prove that it is capable of optimising value for money (VfM). For most ASEAN countries, while VfM is often cited as one of the justifications for selecting PPP approach, however it is not sufficiently clear how this concept is incorporated in the assessment framework. In particular, projects are mostly decided on the basis of initial development cost and not what it would have cost the authority or the community over the entire duration of the contract-- life cycle assessment.

The recent global economic turbulence and financial crisis has generated challenges to PPP market mainly due to difficulties in financing. PPP closing appears to depend on the availability of low-cost credit, syndicated banks, rating agencies and monoline insurers. The deals rely on mutual trust and a good level of liquidity, which are absent during the financial crisis. We even notice the failure to properly identify and value as well as allocate risks even though actual experience shows that risk, in most cases, is the one that can tilt the decision towards PPP option¹. More seriously, when confronting with an issue of making projects bankable for PPP approach, contingent supports are granted without fully appreciating fiscal risk on the country in the medium term. Suitability of project for PPP is also not fully tested even though the authority does establish and provide well-defined PPP criteria. Apart from attempting to address the above shortcomings, the exercise will also work towards recognizing the new operating and policy environment. In this exercise, it is important to recognise the impact of international convergence in accounting standards and the adoption of Basel III² Capital Requirement for Banking Institutions to PPP business model.

¹ A study by Arthur Andersen and London School of Economics published in January 2000 concluded that on a sample of 29 PFI/PPP projects in the United Kingdom, 60% of cost savings can be attributed to risk transfer.

² BASEL III is a global regulatory standard on bank capital adequacy, stress testing and market liquidity risk agreed upon by the members of the Basel Committee on Banking Supervision in 2010-11. It was developed in response to the deficiencies in financial regulation revealed by the late-2000s financial crisis. Basel III strengthens bank capital requirements and introduces new regulatory requirements on bank liquidity and bank leverage.

PPP still has the essential delivery structure, with innovation being taken forward during project delivery and financing, also when the additional PPP cost is more than offset by the savings achieved through risk transfer and innovation. Although countries in ASEAN are at different stages of PPP development, it is still possible for them to have one standard or common assessment method. If there is any reason to account for the gap in PPP development, it can be accommodated through different timing of adoption by individual country. This approach is more suitable than having several assessment methods as it provides opportunity for countries to chart a program of work to strengthen their institutional capability with the ultimate goal of improving their assessment method and hence optimizing value from PPP projects.

There is also a need to share assessment method with the private sector. In fact, employing similar assessment method will allow negotiation process in executing partnerships to be more focused to key parameters rather than on basic methodology and general assumptions. It is also from this perspective that this research is initiated whereby it forms the basis for common methodological framework for both parties to share.

1.3 Scope of the Study

For the purpose of ensuring a more focused approach to the study and most importantly making the study manageable, it is important that the scope of the study be clearly defined. This can be confined within three dimensions and they are (a) the boundary of Public-Private Partnership; (b) scope of infrastructure and (c) scope of value for money assessment.

One will be able to appreciate this need by observing recent development and the changing features of Public-Private Partnerships (PPP) coverage globally. In fact, one aspect which makes this study to be very challenging is the definition of PPP itself. Across the world, PPP carries different meaning and scope to different countries or bodies. In South Africa, PPP includes the use of public assets by the private sector for its own commercial pursuits. Within ASEAN, Singapore looks at PPP as an avenue for best sourcing public procurement and PPP covers joint venture between public and private sectors. Similarly in Malaysia, PPP coverage is also wide, covering ventures using public assets by the private sector, management and operating contracts, out-sourcing of services and even joint ventures between public sector and Government-linked corporations (GLCs) or State Owned Enterprises (SOEs). The World Bank

is also using a broad definition of PPP, whereby it covers management and operating contracts, lease/affermage, concessions and joint ventures as well as partial divestiture of public assets.

In this study, while it is possible to define or limit the scope of PPP coverage by key characteristics of our choice, the boundary we are setting can be vague and often too judgemental. For instance, if PPP is defined as a relationship involving risk sharing between parties, one still has to decide the sharing proportion threshold. We can certainly incorporate other features, such as contract duration or whole-life approach, to properly define PPP, but we still cannot avoid from having to make difficult judgement. Hence, to make our task more manageable, it may be appropriate to limit the coverage on PPP models that are generally used in public infrastructure projects. Given this, we will confine study to public private partnership contracts structured as management and operating contracts, PFI, leases, affermage, concessions, Build-Operate-Transfer and various forms of Design-Build-Operate model. We distinguish ourselves from World Bank definition by excluding joint venture and partial divestiture of public assets from the PPP coverage.

Another aspect which needs to be clarified is the scope of public infrastructure. By its most general meaning, infrastructure is defined as the basic facilities, services and installations needed for the functioning of a community or society. Infrastructure can be categorised as economic and social infrastructure³. The former covers those that provide key intermediate services to business and industry and its principal function is to enhance productivity and innovation initiatives. Examples of economic infrastructure are highways and bridges; ports and airports; utilities; and communications. As for the latter, it is seen as providing basic services to households. Its main role is to improve the quality of life and welfare in the community. Among notable examples of social infrastructure are hospitals; education and training institutions; social welfare facilities; waste management; prison and correctional facilities. Within each of these categories, it can be further sub-divided into soft and hard infrastructures. While in theory, projects can be grouped into economic and social infrastructure, the distinction between the two is not exactly precise. Quite a number of projects are border-line cases. The case in point is the government administrative complex.

³ Grimsey, D. and Lewis, M.K., (2004), *Public Private Partnerships – The Worldwide Revolution in Infrastructure Provision and Project Finance*. Cheltenham, U.K. Edward Edgar Publishing Ltd.

Some writers extend the coverage of infrastructure to include institutional infrastructure, such as legal system, and personal infrastructure, namely entrepreneurial skills. We have no intention to include these two groups, so the scope of the study is limited to economic and social infrastructures.

Having defined the breadth of our study, it is also important at this juncture to indicate the depth. We would like to emphasise here that the study is not meant to come up with detailed standard operating procedures to assess PPP projects. An exercise of this nature is too ambitious as it has to recognise the peculiarity of each country in the ASEAN, different stages of PPP development, the understanding and coverage of PPP program, variation in project structure or features, as well as differences in legal system and the development philosophy of these countries. The depth and focus should give enough ground to recommend assessment method at the conceptual level, leaving the detailed technical aspects for country specific exercises. Hence, we aim at coming up with templates for PPP project preparation in a generalised form, so as to allow individual country to accommodate local environment. In other words, the outcome of this study will give readers sufficient basic information to understand the approach to PPP assessment method. Furthermore, one can utilise them for developing operational toolkit for specific country in focus. For example, with respect to risk evaluation or government support, we will not go into the technical aspects of how estimation or valuation is done. Similarly, we will not be producing detailed financial models for every type of infrastructure projects. In this regard, the study is limited to making suggestions on alternative approaches to be considered by member countries in ASEAN while preparing PPP projects.

With regards to value management, it is widely accepted that value for money assessment (VfM) is a whole of life concept. Therefore, to cover every phase in the life of project to secure VfM is rather huge effort for our small research exercise. For instance, looking at procurement stage, the study may need to cover the best approach to procurement. Hence, it is more appropriate to limit the coverage to value for money arising during project development and preparation stage.

CHAPTER 2: SURVEY ON ASSESSMENT METHOD

2.1 Introduction

In coming up with the proposed assessment method, we undertook a brief survey on project assessment approach in ten countries⁴ with different stages of PPP development. For these countries, projects are subjected to both qualitative and quantitative assessments⁵. In the state of Victoria, Australia, the assessment framework has one additional component, which is public interest test. The test covers eight assessment areas, namely effectiveness; accountability and transparency; impact on individuals and communities; equity; consumer rights; public access; security and privacy.

For all the countries covered in our survey, the objective of the assessment is to secure value for money (VfM). Interpretation of this objective can clearly be seen in the focus of qualitative assessment and the approach they take in evaluating the project quantitatively. In particular, for the qualitative assessment, attentions are given to the suitability of projects for PPP implementation; innovation in the design, business model and project structure; suitability and reliability of the private promoter as well as service quality. Between countries there is no consensus view on how VfM for PPP should be determined – it varies between systems relying on market competition (including the so-called Swiss challenge model) and the highly structured Public Sector Comparator (PSC) model adopted by the UK and Australia.

Despite small sample size of our survey, we managed to identify four distinctive approaches to quantitative assessment. In decreasing order of complexity, they are outlined below.

2.2 Full cost-benefit analysis

This approach involves estimation of the equivalent money value of the benefits and costs to the community or society to establish whether it is worthwhile to assign project to private operator. As the intention is to evaluate the impact on community and society, or assessing the project from socio-economic perspective the method involves the use of shadow price for cost and benefit items. This is to recognise the imperfection of the prevailing market price in

⁴ The survey covers the United Kingdom, Australia (State of Victoria), France, Germany, South Africa, South Korea, India, Singapore, Malaysia and Indonesia.

⁵ Usually qualitative assessment is conducted as part of pre-feasibility study (pre-FS) in order to gain quick feasibility indicators, while quantitative assessments as part of full feasibility study.

providing economic value to the project. In addition to this, externalities have to be factored in and all the transfer items have to be excluded when evaluating the options.

This method was used in the evaluation of Germany’s PPP program. However, because of the complexity, the evaluation is now done using risk-adjusted public sector comparator (PSC).

2.3 PPP-PSC Comparison Incorporating Risk

Under this approach the net present cost of project implemented through conventional public procurement approach (also known as PSC) is compared against its PPP alternative. As shown in Figure 1 the cost for PSC represents whole-life cost of the project, the value of risks which are to be transferred to private sector as well as those which will be retained. In other words, PSC is a risk-adjusted whole-life cost of the project. Taking into account the principle of time value for money, PSC is expressed in present value term. The cost of the project using PPP approach is represented by the present value of service payment submitted by bidders and risks retained by the public sector. This method is used by the State of Victoria, Australia.

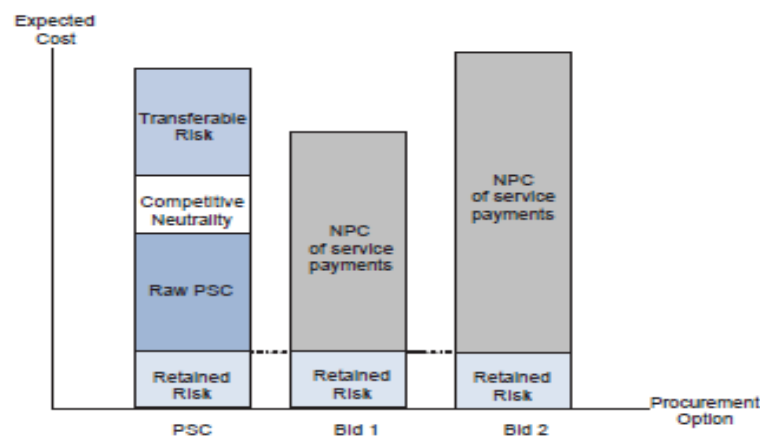


Figure 1: PPP-PSC Comparison Incorporating Risk
(source: Victoria Partnerships)

2.4 Revised UK version of public sector comparator

This approach is a modification or an off-shoot of the method described in section 2.3 above. The PSC following this method is defined as the present value of project whole-life cost, the

estimated cost arising from changes in the scope of project, transaction cost of public project and an adjustment for optimism bias⁶. Unlike the previous approach, the PSC does not incorporate risk estimation. Another distinguishing feature of this method is that the cost of PPP project is not from the actual bids, but a shadow bid which is estimated based on the assumed project internal rate of return. As this method is intended to assist decision making process, it requires sensitivity analysis be undertaken to generate a series of switching values, where the benefit of PSC and PPP approaches are equal. With regard to PSC, the sensitivity analysis relates to changing the value of capital expenditure, whilst for PPP, it is done by varying the internal rate of return. This method was introduced by the PPP authority in the United Kingdom to replace the method described in section 2.3.

2.5 Competitive bidding process

This approach is adopted by France – a country with long history of PPP in the form of concession and a track record of performance. Comparison is made among bids submitted. It is the least complex of the four as it does not involve the estimation of PSC with all the difficulties associated with it.

From our literature review, we identified another method. This method is adopted by some state authorities in the United States. In particular, most contracts for private prisons require that private firms to offer the service at 5 – 10% below what it would have cost the state⁷.

Based on our survey, the choice of methods is influenced by several factors, namely:

- a) **Country's legal requirement:** This can be seen in the case of Germany whereby Federal and state budget laws dictated that an economic analysis be made for the PPP project and this is to be compared with the conventional approach⁸.
- b) **Economic system and philosophy:** The use of PSC approach is common in countries without long history of private participation in public infrastructure development. Furthermore without sufficient performance track record and to appease public concern

⁶ Optimism bias is defined by HM Treasury as a demonstrated, systematic, tendency for project appraisers to be overly optimistic. Estimation of optimism bias is done based on past data,

⁷ Grimsey, D and Lewis, M.K. (2005), "Are Public Partnerships Value for Money? Evaluating Alternative Approaches and Comparing Academic and Practitioner Views", Accounting Forum 29, pp 345-378.

⁸ Freshfields Bruckhaus Deringer LLP(2009), Public Private Partnerships in Germany – An Overview

on the efficient use of public fund, it is necessary and politically correct approach to compare with conventional method. In the case of Singapore, PPP is looked upon in the context of best sourcing approach for public procurement and in this regard open bidding is identified as the approach to follow. Projects are evaluated not only in terms of cost to the Government, but also the design, service quality and innovation. In the case of United Kingdom, PPP is seen as an alternative method to procure services by public agencies. Hence, in the same manner as other public purchases, the provision and cost of services by private operators has to be superior to what they can be provided internally. The PSC approach is therefore a systematic way of assessing the best procurement method.

- c) **History of private participation in public infrastructure development:** For countries with long established tradition of PPP, comparison is no longer with the public sector but other private operators. After all, if ever public agency is to undertake the project, it is no longer considered as a benchmark. We have seen this in the case of France whereby PPP in the form of concession went back to as early as 17th century.
- d) **Objectives, rationales and drivers of PPP program:** This factor is quite common for ASEAN countries. Given the need to accelerate infrastructure development while at the same time there is a budgetary constraint, PPP is seen as an avenue to bridge resource gap. After all, unlike the United Kingdom where service charge is to be paid by the Government, most PPP projects in the region are structured on user pay model. With financial assistance from the Government or public sector guarantee, user charge can be fixed at lower rate, resulting in the net present cost for PPP to be lower than PSC. Hence, using conventional approach as a benchmark for cost is quite meaningless. Even if financial assistance and value of guarantee are to be imputed into PPP costing thus making it to be more expensive, Government with its budget constraint is unlikely to opt for conventional approach. After all, PPP option has the capacity to provide space in its limited budget as substantial part of the project cost will be met from charges imposed on ultimate users. For this reason, PPP projects in ASEAN countries are mostly assessed using competitive bidding process or in some special cases, direct negotiation.

- e) **Institutional Capability:** This is probably one of the reasons why ASEAN countries are unable to use PSC-PPP method of assessment. In particular, being new in PPP field, there is simply insufficient past data or information to make good and robust estimates on the value of risk or optimism bias. The same goes when attempts are made to estimate whole-life cost of the project. For instance, due to technological improvements, the estimation of replacement cost can be a daunting task. This is not to mention that maintenance cost for conventional approach is not based on scheduled maintenance but on the budget availability. Apart from data issue, level of competency is lacking especially with respect to risk identification, valuation and allocation. While skill issue can be addressed by engaging outside consultants, budget seems to be a major constraint. The solution therefore is to opt for open bidding and review the proposals based on the analysis undertaken by bidders.
- f) **PPP business model:** Most PPP projects in ASEAN countries are structured as concession model. Hence, there is a strong inclination to use French approach to evaluate projects. On the other hand, the PSC-PPP method is often used for availability-based project structure, such as accommodation and process plant projects.

CHAPTER 3: DEVELOPING ASSESSMENT METHOD: ISSUES AND CHALLENGE

Developing a standardised assessment method to be applied across ASEAN countries can be a very challenging task. More so when we consider countries within the grouping are at various stages of economic development. Nonetheless, we can still aim for a common assessment method given the push by most countries in the region to accelerate PPP development. While some countries in ASEAN are more advanced than the rest, they cannot claim to have sufficient institutional capability to completely adopt a complex methodology as in the United Kingdom or Australia. Apart from skill availability in PPP project assessment, data availability especially with respect to project risk is not well-documented or readily available.

In coming up with a framework for assessment of PPP project, the following specific issues have been identified and taken note off:

- i. **Objective of PPP:** Most ASEAN countries would look at PPP as an avenue to bridge financing gap in infrastructure development. This is especially so when ultimate users are the one who will substantially pay for the cost of the project. The question as to whether conventional approach can deliver project at lower cost or more superior in terms of advantages is often not fully explored as it normally forces the Government to allocate fund upfront although this can subsequently be recoup through toll charges. It would appear from this argument that assessment method should best be done by letting private bidders to offer best value for money in an open competitive environment. In other words, the present practice should be allowed to continue. As we have learned in the previous section, the method which is adopted in France works in the background of long history of private participation with established track record. In fact, given this background, there is no data to build up estimates for public sector comparator. Most importantly, public has taken the view that it is the role of the private sector with Government only plays the role as regulator and facilitator. ASEAN environment is different. Infrastructure development has always been public domain and if assessment is not properly done or in a more comprehensive manner, it can result in negative political repercussion. Hence, the issue here is to establish rationales that despite difficulties in estimating public comparator, the method is still relevant for ASEAN countries. In this regard strong commitment and political will are required to

push for a more systematic approach to incorporate clear measure of VfM in project assessment.

- ii. **Value for Money Concept:** For countries with established PPP program, assessment on PPP projects is done for the purpose of realising value for money. In the case of the United Kingdom, HM Treasury defines VfM as 'optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good and service to meet the user's requirement. VfM is not the choice of goods and services based on the lowest cost bid.' It is also to be noted that VfM is not defined in absolute term but relative to alternative procurement mode. For the ASEAN countries, greater prominence is given to alternative funding potential when screening projects for PPP. After all, as indicated earlier, PPP is chosen as an avenue to bridge resource gap. Even if VfM is relevant as a focus for the assessment exercise, the costing which is based on whole-of-life approach can be a major problem for most countries in the region. Apart from availability of data and information about replacement cycle, future cost is hard to estimate accurately due to unpredictable technological change as well as inflationary trend. Any estimate beyond 3 years is a pure guess. One may want to note that for projects involving buildings with 30-year life, initial development cost accounts only at most 22% of the of the whole-of-life cost This proportion will come down the longer the life of the asset. As for the balance, it is accounted for by the maintenance and asset replacement cost. In short, it can be said that there is a strong possibility of committing a mistake in the estimation as more than three- quarters of the cost are uncertain.
- iii. **Accounting Treatment:** It is quite common in ASEAN countries that PPP is seen as an avenue to create space in an otherwise tight national budget. Attempts are often made to structure PPP project from the perspective of the Government account as off-balance sheet. Perhaps the most popular approach is to structure the project as operating lease instead of finance lease. This works fine when accounting standard with regard to recognition of asset ownership is based on risk-reward approach. However, the standard is now shifting to control approach. The impact is not only on PPP projects structured as leases but also those in the form of service concession, including toll highway. With the adoption of control approach, many PPP projects will no longer be off-balance sheet and for this Government has to recognise its related liability, if any. While ASEAN

countries may want to defer the adoption of this standard, it cannot therefore take the view that the status quo will remain. The trend towards global convergence in accounting standard is already taking place. The issue related to accounting treatment will have implication on the objective of PPP which is part of project screening process and test for absolute affordability.

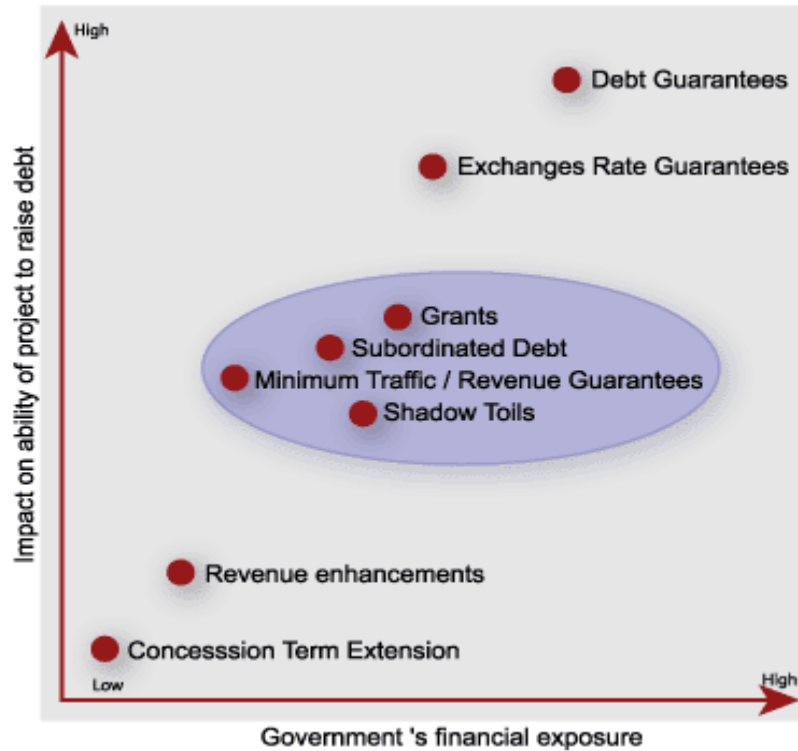
- iv. **Level of Affordability:** PPP normally involves inflexible long term contract with inter-temporal financial obligation. Service payment for PPP is fixed upfront and subject to favourable service performance, it will appear as charged expenditure if Government is the payee entity. Hence, when assessing PPP project, it is not sufficient to only look at relative affordability⁹ of individual project but of prime importance, to verify absolute affordability of the Government having taken into account all PPP projects already and likely to be committed. Failure to do so will pose the country to unmanageable fiscal risk. The challenge in this case is to have institutional capability to monitor and control all PPP projects on timely basis. For many countries, this role is played by central PPP unit with strong political support. It is also important to determine absolute affordability parameter, and preferably this is legally enforced and not a mere planning tool. The European Union, for instance, uses debt ceiling as its absolute affordability parameter while some other countries use certain percentage of Government annual revenue as a ceiling for the total annual PPP service payment.
- v. **Diversity in Business Model of Infrastructure:** As indicated earlier, PPP approach is applied to various types of infrastructure and is structured using many forms of business model. In particular, as PPP program expands to include social infrastructure, it becomes necessary for the evaluation approach to involve the construction of PSC. In this regard, the procurement of such services is looked upon as an extension of government agencies' purchasing activity. Comparison between what can be provided internally and by external party becomes relevant. However, construction of PSC is not an easy task. Even for PPP economic infrastructure, assessment method needs to be differentiated by groups of projects. This is to take note the different business models

⁹ Relative affordability is defined as the financial commitment or cost advantage of one option against the other whereas absolute affordability is the comparison against the approved national budget.

used to make projects bankable. For instance, availability based model need to be assessed differently from usage- based model.

- vi. **Risk Identification, Allocation and Valuation:** Studies on hospital PPP projects in the United Kingdom came up with a finding that risk is almost always the deciding factor for projects to be implemented using PPP approach. This shows how important risk is in the PPP project assessment. However, risk assessment exercise is not an easy exercise. In the case of risk identification, one should be able to differentiate between risk and uncertainty. The differentiation is important as uncertainty is not easily measurable ex-ante and also not an element that can be transferred from one party to another. The general practice is to share the impact of uncertainty. While there are specific definitions to these terms, in practice, there is a thin line dividing them. Even if one can differentiate risk from uncertainty, determining the materiality of risk ex-ante is challenging. When dealing with risk allocation, one is often advised that risk should be allocated to parties best able to manage them and we should always ensure optimal risk allocation. This guidance is vague to be of any help¹⁰. Valuation of risk is another challenging task especially for ASEAN countries. For proper valuation exercise, extensive data is required and need to be identified by types of risk. Otherwise, the value of risk is a pure guess without strong statistical backing.
- vii. **Government Contingent Support:** The practice of Government giving support to private enterprise is not a recent phenomenon but dated back nearly 4,000 years ago during the era of Babylon King, Hammurabi. While it is not wrong to provide guarantee, it is also important that Government is aware and able to estimate the contingent liability from such guarantee. As shown in Figure 2, guarantees can come in many forms and levels of financial exposure to the Government.

¹⁰ Irwin, T.C. suggests that allocation of risk takes into account the party's ability to (a) influence the corresponding risk factor; (b) influence the sensitivity of total project value to the corresponding risk factor; and, (c) absorb the risk. (see Irwin, T.C: Government Guarantees – Allocating and Valuing Risk in Privately Financed Infrastructure Projects, The World Bank).



Source : *Private Financing of toll Roads, Fishbein and Babbar, 1996*

Figure 2: Types of Government Guarantee

There are many examples where Government had to bear disproportionate financial obligation due to guarantee. The Korean case of revenue guarantee for road linking Seoul to airport at Incheon is one such example. Another example is the Sydney Harbour Tunnel. From our survey on assessment methods, we have not seen cost of guarantees is incorporated in the exercise. While to include this in the methodology seems appropriate, valuation of guarantees, particularly those contingent in nature, such as revenue support, guarantee on return, demand guarantee and debt guarantee, is not easily done.

- viii. **Discount Rate:** Choice of discount rate is important in the assessment exercise as project incurs costs and generates benefits at different point of time. Given the public nature of the PPP project, the choice of discount rate has to take into account national objective and not purely private financial objective. From theoretical perspective, there are several choices of discount rate¹¹ and the selection of one over the others should be

¹¹ Zhuang, J, et al, identifies four choices, namely (i) Social Rate of Time Preference (SRTP) which is the rate a society is willing to postpone a unit of current consumption in exchange for more future consumption; (ii) Marginal Social Opportunity Cost of Capital (SOC) defines as the opportunity cost of public investment displaces private investment expressed in terms of rate of return; (iii) Weighted Average Approach of (i) and (ii). In case where foreign borrowing is also a funding source, the average also includes cost of this borrowing; (iv) Shadow Price of Capital.

dictated by specific condition in each country. More specifically is whether project displaces consumption or private investment. However, real situation is not clear cut and more often than not, it is a mixture of both. The issue about discount rate is made more complicated when project is impacting more than one generation (30 to 40 years) and in this regard the issue of intergeneration equity need to be considered. In practice, the choice of social discount rate across the world has been mainly between Social Rate of Time Preference (SRTP), Marginal Social Opportunity Cost of Capital (SOC) and the weighted average of the two. The World Bank is adopting the weighted approach with rates ranging from 10% to 12%. Hence, to resolve this issue on the choice of discount rate, we are recommending that ASEAN countries follow the practice of the World Bank.

- ix. **Competitive Neutrality and Optimism Bias:** These elements are present in the two versions of PPP-PSC assessment method. While there are good reasons for their incorporation, the estimates can be difficult. For competitive neutrality, the problem is due to the extensive presence of State-owned enterprises (SOE) in the bidding process for PPP projects. There are instances that these enterprises are given favourable treatment and even if this practice can be stopped, it is difficult to ensure that their cost of capital is comparable to the true private enterprises. This is for the fact that having Government as equity holder, cost of equity is not that demanding. For this, their investment hurdle rate can be lower and they can bid at lower price vis-à-vis pure private enterprises.
- x. **Balancing Stakeholders' Competing Interest:** The interest of various stakeholders should be considered when making assessment on PPP projects. There are at least four groups of stakeholders, namely the Government which acted both as regulator and stakeholder; private investors and operator; financiers and the public as the ultimate user of the facilities. As a stakeholder, Government will look at value of the project, measured in terms of project's net present value and also the demand on public funding, particularly quantum of financial support and guarantee. To the investors and project operator, the emphasis is always on maximising return and minimising risk of the project. As for the financier, quality of debt instrument is paramount and with the adoption of the new Basel capital adequacy framework for banking institutions,

optimising return on its risk weighted assets is also of equal important. The public as users of the facility will definitely concern with the service level and charges they have to pay. These interests, more often than not, compete with one another and to strike a fine balance between them is a challenge in project assessment.

CHAPTER 4: STANDARDISED ASSESSMENT METHOD - RECOMMENDED METHODOLOGY

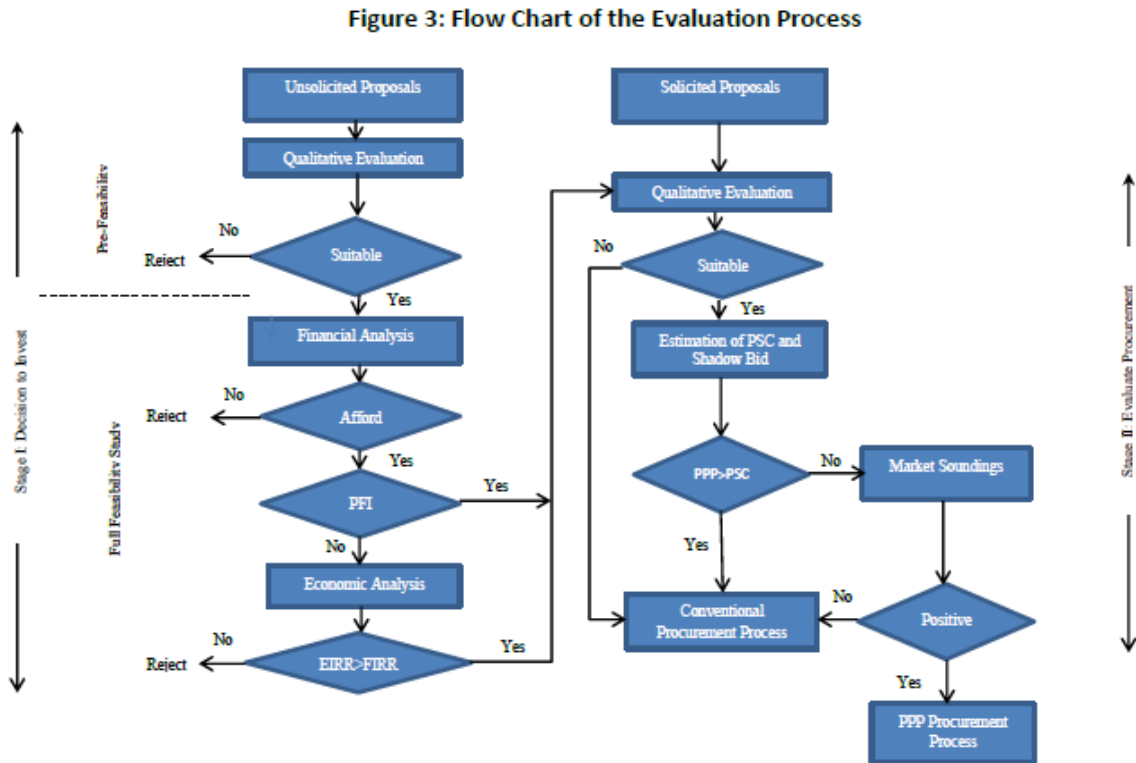
It is to be noted that, at present not all ASEAN countries have the necessary PPP enablers to commit to PPP program. However, even for countries with the necessary enablers, there are issues and challenges for them to implement our recommended methodology. The previous chapter highlighted these issues in greater detail including the likely response to take. Given these challenges, our methodology should be taken as a reference for countries to enhance their institutional capabilities, enablers and address those challenges. In fact, improvements in the assessment methodology should be taken as a journey with realistic time frame for adoption.

In developing the methodology, we take note of two different sources of project origin, namely the solicited and unsolicited proposals. Despite the sensitivity and the difficulty of handling unsolicited proposals, we believe Government should welcome such proposals. In fact, this could be a source of new way of doing Government business. Unlike solicited proposals which have undergone thorough evaluation exercise in terms of needs and affordability, unsolicited proposals have not gone through similar process. For this reason, distinction in terms of process flow is made between the two in our evaluation process.

Another aspect which we need to highlight is the distinction between projects structured along the way of UK Private Finance Initiatives and the rest of the PPP projects. The former are those which Government procures based on the principle of best sourcing and paid for the output or services provided.

While we recognise open competition is the least complex among the choices that we have and hence easily implementable, it may not be suitable for ASEAN countries in general. In the first place, the number of bidders may be limited to ensure sufficient competitive tension among them. Significant involvement of Government-linked corporations or state-owned companies also is an issue especially in terms of ensuring fair competition. Most importantly, public infrastructure has always been in a public domain and there is insufficient information on private sector track record in terms of costing, service level and reliability to gauge fair pricing and to determine key performance indicators. For this reasons, the recommended methodology adopts PSC-PPP comparison approach.

The process flow of proposed framework is shown in Figure 3. Its main feature is the two-stage assessment process, depending on the origination of the projects. The first stage is to provide guidance with regard to decision to invest while the second stage is to evaluate procurement options. This refers to the choice between conventional and PPP approach.



a. Stage I: Decision to Invest

This stage is applicable to unsolicited proposals and hence, it is important to ascertain financial sustainability of the project on stand-alone basis, consistency with national development agenda, need of the country and affordability measured against the Government budget ceiling. As the project is within the scope of public infrastructure, the economic return of the project should exceed its private financial return.

Stage I assessment begins with qualitative evaluation in the nature of pre-feasibility study. It is a high level assessment focussing on the following aspects:

- i. **Investment objective, scope and desired service outcome:** These will be evaluated in terms of its consistency with national development agenda or development thrusts as well as need of the country.
- ii. **Drivers for change:** The project should have the ability to drive changes towards improvement especially in terms of improving the prevailing specific economic and/or social conditions.
- iii. **Option analysis:** High level evaluation should be made on the impact of each of the three options, namely do nothing, undertake with size scaled down and to implement the project in full as proposed. This is to avoid over-investment and wastage from duplication in the provision of public infrastructure.
- iv. **Critical success factors:** The focus is in to evaluate how challenging on the part of project operator to ensure success of the project.
- v. **Government financial obligations, both direct as well as contingent:** The assessment includes the request for direct grant, cost of land acquisition, soft loan or those contingent in nature, such as guarantees.

Aspects highlighted above are policy in nature. Government should determine up-front policy reference for easy comparison. In fact, if the requirements of the project are not in line with pre-determined policy parameters, project should already be declined at this stage without having to go to the next level, which is a full feasibility study.

The next level of assessment involves the construction of financial model identifying monetary income and expenditure, residual value, the timing they occur and sources of financing (including government contribution). The model will go through an iterative process to determine optimal mix of the level of Government payment and/or support, level of user affordability (for usage-based PPP projects), required return of investors and terms of private finance. The assessment also includes varying the output or service specifications so as to give indication on level of affordability, looking from Government and end-user perspective. Based on this, decision has to be made on whether Government is prepared to allocate funding or financial support to the project as well as size of investment which is tenable. There are several parameters normally used to help government gauge level of affordability. These include annual PPP payment as percentage of annual ordinary revenue, size of overall government deficit (measured in relation to the size of the economy) and debt ceiling.

Apart from indicating level of affordability, the model, as we stated above indicates degree of financial sustainability. Financial sustainability is ensured if the accumulated generated cash is positive, or at most, equal to zero for all the years considered. On the contrary, if the is negative even for just one year, the project is not feasible and normally the structure and size has to be modified.

PPP projects are coming in many forms and structures. It is recommended that at this stage, the differentiation be made between those structured as full PFI (Private Finance Initiatives) and other forms of PPP. The former is defined as the provision of public facilities where usage risk cannot be transferred to the private sector. Usually, payment for the services is made by the Government based on availability.

For non-PFI PPP projects, it is recommended that subsequent to evaluation on absolute affordability and financial sustainability, they are subjected to Economic Cost-Benefit Analysis (CBA). This is for a simple reason that the projects have implications on larger audience. There are clear benefits and costs to the society at large. For PFI projects, they are actually an extension of services purchased by the Government in the normal course of business. Instead of those services being procured or generated internally, they are now provided by private companies. Examples of these include school, hospital, prison and administrative complex. Hence, what really matter for these projects is the affordability of the Government to bear the financial commitment and whether PPP can give VfM. This is why having satisfied absolute affordability test it will continue directly to relative affordability test, which is the choice of procurement options.

The first step in economic CBA is to correct for fiscal effects and transfer payment viewed from economic perspective. For example taxes on profits, subsidies, welfare contribution and duties.

Having done this, the next step is to consider externalities. The externalities are social costs or benefits that appear outside project scope but influence the welfare of third parties without any monetary compensation. They are not captured by market mechanisms and not reflected as monetary costs and benefits of the project. Given their influence on the welfare of the community, they have to be quantified and then monetised in order to be included in the analysis as input or output.

The final adjustment is made to address market imperfection which results in market prices not reflecting the opportunity cost of goods. As we are aware, in economic analysis, prices are measured as opportunity cost. In other words, it is the best alternative use of specific resources. To correct for market distortion and hence brings the market prices to be in line with economic concept, adjustments to benefits and costs are made using shadow prices. There are several methods in coming up with shadow prices and it is not the intention of this report to suggest preference to any one of them. It would be best that this task is left to individual countries to decide based on their local conditions. For instance, the practice of estimating shadow price of labour is linked to employment level in the country. For situation with high unemployment rate, the conversion factor to convert financial cost of labour to social cost, will be less than one. If the reverse is true, the factor is greater than one implying that the project diverts labour resources from more productive use. Income multiplier will have to be calculated when capturing positive externalities.

The final step is to derive economic internal rate of return (EIRR). The rule of thumb is that EIRR should be higher than financial internal rate of return. This indicates that the project generates more value to the national economy compared to what it can reward the private investor. Hence, there is strong reason to support the project.

b. Stage II: Choice of Procurement Options

Similar to evaluation method for decision to invest, Stage II also has two components, namely qualitative and quantitative assessment. For the qualitative evaluation, the following aspects are emphasised:

- i. Project characteristics should comply with country's PPP criteria. The criteria in general includes ability to quantify service or output specification, potential of risk sharing, size and scope, stability in terms of underlying technology and other characteristics which can facilitate the realisation of value for money from PPP option.
- ii. Capable and Viable private operators/ contractors: This is crucial as the success of PPP relies heavily on the ability of private operators to provide services over long duration. Hence, it is only about ability to create or develop the underlying assets, but also to maintain and have strong financial standing to support project over long period of time.

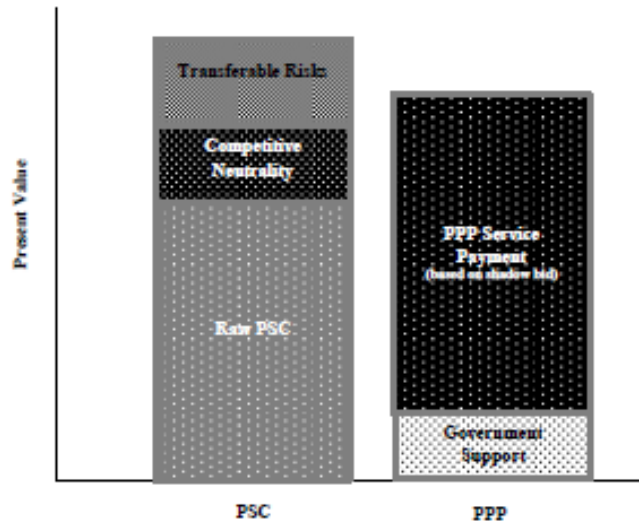
As many components of the contract involves third party service provide, the operator should also prove that it has the managerial capability to manage dependencies.

- iii. Ability of the Government procuring agencies to manage dependency: Unlike privatisation which Government is not answerable to the performance of the operators (except on legal compliance issue), PPP approach does not absolve the Government on its accountability to ultimate user of the services. The accommodation-based PPP project, such as hospital, where Government is still responsible for patient care and other clinical services. The quality of these services depends significantly on the service quality of the PPP components, such as facility management, food and catering or even ambulatory services.
- iv. Bankability of the project. PPP projects involve private funding and in terms of structure and viability, they need to be acceptable to financiers and debt holders. Apart from this, the financial strength of the operators is also critical as much of the risk during asset development stage rest with them.
- v. Public interest. As mentioned earlier, Government is still accountable to the end users in PPP projects. For this reason, project has to start from the right footing especially in serving the public interest. Public interest concerns with effectiveness of the services, accountability of all the parties involved, and transparent process. Other areas which need to be concern with is the consumer rights such as equity, service accessibility, privacy and probity of the parties involved.

Once the projects fulfil the qualitative criteria, they are now ready for quantitative assessment. The recommended methodology adopts the approach of comparing the cost of PPP with what it would have cost the Government if the project is to be implemented via conventional approach. In this regard, it requires the construction of public sector comparator (PSC). The PSC as shown in Figure 4 has three components, namely raw PSC or the base cost, competitive neutrality and transferable risks. We have intentionally excluded retained risk as the item should also appear on the PPP side and as such will be cancelled off in the process of comparison. Furthermore, it reduces the task of collecting data which will not have impact on the comparative analysis. Hence, in actual fact, our PSC is the total cost of the conventional approach less the estimated cost of retained risks. In evaluating procurement approach, the PPP cost is based on the estimates derived earlier by our financial model (as in the decision to invest

section). Since PSC and PPP cost will be expressed in terms of present cost, it requires the use of discount factor. For this purpose we recommend the same discount rate of 10% -12% used by the World Bank and Asian Development Bank be used.

Figure 4: Quantitative Assessment for Procurement Options



Raw PSC or base cost is defined as whole-of-life capital cost (comprising development cost, acquisition of plant and equipment, asset replacement and capital improvement cost) plus maintenance and operating cost less third party revenue. We foresee the difficulty of estimating asset replacement cost item due to embedded technological change and estimates on asset inflation. Nonetheless, one can assume that any estimate on cost of technological change and asset inflation will be the same for both PSC and PPP. Hence, when comparison is made, it will again cancel off.

The second component of our PSC is competitive neutrality. This is defined as the advantages and disadvantages that accrue to a government business which are not equally available to other bidder. In order to simplify the estimates, it excludes effect of performance and efficiencies in a competitive market, cost differences between public and private sectors (including capital cost). Hence, our estimates of competitive neutrality will include taxes, duties and rates imposed by the Government on private companies. As in the case of cost, this will be expressed in present

value term. It is probably neater if Government makes special provision to grant PPP companies exemptions on above items.

The third component is about risk. Although our focus is on transferable risk, we still need to identify all risk associated with the project and to determine its materiality. One approach normally used for this purpose is the cause-effect analysis such as Ishikawa fishbone diagram. The next step is to allocate risks between parties involve in the PPP contract. There is no standard rule or template for optimal risk allocation as it differs between country, market and projects. However, in general PPP operator is expected to bear risks associated with cost overrun, time overrun, upgrade cost (most of the time, it is a shared risk), maintenance performance, operating risk, revenue risk (unless Government finds it necessary to fully or partial bear the risk) and industrial relations risk.

Having identified the risks associated with the project and decides on their allocation, the next step is to value these risks. This can be a complicated process especially given data availability in most ASEAN countries. However, attempt must be made to address this issue as risk transfer is the one that normally tilt the balance towards PPP. Value of risk is estimated individually using the relationship below:

$$\text{Value of Risk} = \text{Consequence} \times \text{Probability of Occurrence}$$

There are several ways to estimate value of risk. It can be a simple deterministic method or an advance method of stochastic risk analysis, such as Monte Carlo or Latin Hypercube simulations. The deterministic method which is single-point estimate approach, is done by examining three main scenarios, namely below base case, base case scenario and above base case scenario. For the above base case, the scenario is further identified into likely, moderate and extreme. Each of these scenarios, a single estimate of consequence and probability of its occurrence are given based on past data. Table I shows how this estimation works.

With regard to Monte Carlo simulation, risk is represented using range of possible values known as probability distributions. Using probability distributions, variables can have different probabilities of different outcomes occurring. Probability distributions are more realistic in describing uncertainty in variables of a risk analysis. As in the case of raw PSC, value of risk will have to be discounted to bring it to present value. Hence, the time profile of its occurrence

has to be determined. It is recommended that the deterministic method be used to value risk which has low impact on the project. For risk which has high impact, valuation be done using Monte Carlo simulation

Table I: Deterministic Approach to Risk Valuation

Scenario	Outcome (\$m)	Consequence (\$m)	Probability	Value of Risk (\$m)
Below base	80	-20	0.02	-0.40
Base (no overruns)	100	0	0.08	0.00
Above base				
Likely	110	10	0.55	5.50
Moderate	130	30	0.30	9.00
Extreme	150	50	0.05	2.50
TOTAL			1.00	16.6

For the estimate on PPP cost, we are recommending that the value of Government financial support be included. However, we would leave to individual country's discretion on the inclusion and estimation of guarantees which are contingent in nature. After all, the general rule is that countries should know and be able to identify the risk they are taking before deciding to grant such guarantees. There are many attempts within academic circle to value governmental support in infrastructure projects¹² and also at the World Bank¹³ which ASEAN countries can use as references.

Once PSC estimate is ascertain, it will be compared with the cost of PPP. Only when PPP is less than PSC, the former is chosen as the procurement option. Otherwise, project will be implemented using conventional approach. The decision to adopt PPP as the procurement option will lead to market soundings. A positive response is a good basis to invite bids, while a

¹² One such example is the study by Charles Y.J., et all entitled 'Valuing Government Support in Infrastructure Projects as Real Options Using Monte Carlo'. The study focuses on Malaysia-Singapore Second Crossing Project as a case study.

¹³ See Irwin, Timothy. Government Guarantee, Allocation and Valuing Risk in Privately Financed Infrastructure Projects. World Bank.

negative response will put the project for conventional procurement. Actual bids are compared with PSC and the most favourable bid, in terms of service charges and quantum or structure of government support will be chosen.

CHAPTER 5: NEXT STEP AND CONCLUSION

The recommended methodology may appear to be complex. Given the institutional capability of most ASEAN countries, adoption of this methodology can be challenging and may involve significant initial cost. However, one has to look at this as one time investment which is important in ensuring value for money from PPP projects. Given cost to be a consideration, it is important that PPP approach is used selectively particularly in relation to size and the source of the proposals. Hence, for project of a large size or scale, the evaluation cost will be insignificant both in relation to the total cost of the projects as well as the value of the benefits they will generate.

The recommended methodology is not for immediate implementation. We recognise that the enablers have to be put in place first. For this reason, this document should be used as a guidance to chart the work program to develop the required supporting information and skill requirement, especially within the Government's PPP unit.

On the part of ERIA, the following research areas are necessary to support activities at the individual countries. The areas recommended are:

- Clustering of PPP maturity in ASEAN countries: This is to provide guidance to countries so that they know their standing and to study and learn from the progress made by others high on the learning curve.
- Risk Identification, valuation and management for PPP projects in ASEAN: ASEAN countries are likely to have different risk profile than those of developed countries. This is to take into account the peculiarity of the local social and economic environment.

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