

- b) 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.
- c) 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.
- d) 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.
- e) 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.

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.

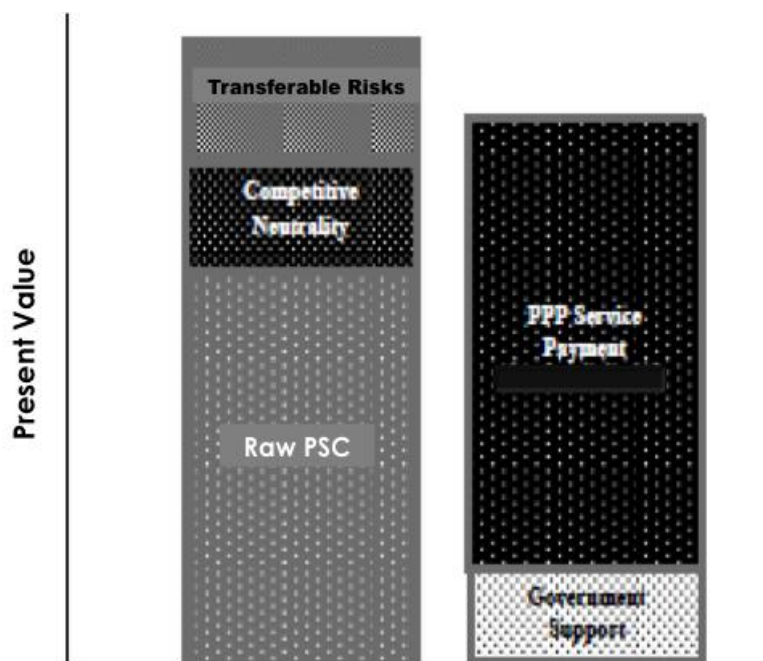


Figure 4. Quantitative Assessment for Procurement Options

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 1 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 1. 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 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.

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.

5. CONCLUSION AND RECOMMENDATION

The recommended methodology may appear to be somewhat 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 recognize that the key enablers have to be put in place first. For this reason, this document should be used as a guidance to plan the work program to develop the required supporting information and skill requirement, especially within the Government's PPP unit.

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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