

DISCUSSION PAPER

Risk Allocation in Public-Private Partnerships: Maximizing value for money

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August 2015

1. Risk allocation is a key feature of public-private partnerships

Public-private partnerships (PPPs) are an increasingly common model for delivering infrastructure projects globally. One of the key motivations for governments to procure and deliver infrastructure projects via PPP models is the assumption that PPPs deliver greater value for money (VFM)¹ than conventional delivery methods.

Optimal risk allocation is one of the key VFM drivers in a PPP delivery model.² In a conventional delivery model, most long-term risks are borne by the public agency. A PPP model, on the other hand, allows the public agency to transfer risks to the private party, relieving it of bearing the cost of risks that it cannot manage—such as cost overruns

¹ A PPP approach should be pursued when involving the private sector allows an infrastructure project to generate greater VFM—or a greater positive net gain to society—than if the project were to be procured via a conventional approach. VFM is achieved when a PPP project is able to generate (i) cost efficiencies, through lower construction, operational and/or maintenance costs; (ii) time savings, through an earlier completion of the project; and/or (iii) quality enhancements, through enhanced service provision. Definitions of VFM vary depending on the jurisdiction. The United Kingdom’s HM Treasury, for example, defines VFM as “the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user’s requirements” (HM Treasury, 2006). Similarly, the European Investment Bank states that a “PPP project yields value for money if it results in a net positive gain to society which is greater than that which could be achieved through any alternative procurement route” (European Investment Bank, 2015).

² One oft-cited study of 17 PPP projects found that optimal risk allocation accounted for 60 per cent of the cost savings under a PPP model (Arthur Andersen, 2000).

during the construction phase, construction delays and long-term maintenance of the asset. For the public agency, efficient risk allocation is, therefore, key to creating a “good deal” for society. For the private party, efficient risk allocation is key to ensuring that the project is financeable and has an attractive risk-return ratio.

Allocating risks in PPPs, however, is inherently challenging. Risk transfer to the private sector comes at a price, and transferring risks that the public agency is better able to manage is likely to erode VFM. In addition, project risks expected to occur 30 or 40 years into the future cannot be predicted with certainty, because risks are dynamic and change throughout the life of the project. This paper will aim to offer some guiding principles to improve the effectiveness of risk allocation and maximize VFM from a PPP deal.

2. Risks should be allocated to the party best able to manage them at the lowest cost

The concept of risk allocation in PPPs is relatively straightforward: risks should be allocated to the party best able to manage them. In other words, the party that is best able to understand a risk, control the likelihood of the risk occurring and/or minimize the impact of the risk should also be responsible for managing it. When the party that manages the risk also bears its financial cost, it will face incentives



Text Box 1: Questions to maximize VFM in risk allocation

- ✓ Which party is best able to control or manage the occurrence of the risk?
- ✓ Which party is best able to control or manage the impact of the risk?
- ✓ For a particular risk, which party has a greater incentive to develop risk mitigation strategies, either to control the occurrence of the risk or its impact?
- ✓ For risks that are typically allocated to the public party, might there be innovative opportunities to reduce whole-of-life costs by allocating (even if only partially) the risk to the private party?
- ✓ Which risk allocation would result in the lowest whole-of-life costs?
- ✓ Which risk allocation incentivizes preventative risk management, as opposed to reactive risk management?

to mitigate the risk. Risk allocation based on these principles is, therefore, assumed to generate the most efficient risk allocation, the lowest costs to the project and the greatest VFM. This risk allocation principle is deployed as a best practice across mature PPP markets from the United Kingdom's HM Treasury³ to Australia's Infrastructure Australia.⁴

Although risk allocation is straightforward in principle, it is more challenging to implement. Generic applications of the risk allocation principle by PPP practitioners globally have often undermined potential VFM.⁵ Frequently, risks are allocated according to simplified assumptions of which party is best able to bear certain categories of risks.

There are, of course, benefits associated with not reinventing the wheel for each PPP project. Standardizing risk allocation may reduce the transaction time and costs during the tendering and negotiation stages. Nevertheless, in most cases, the additional cost associated with customizing risk allocation during the early stages of the project is easily offset by the greater VFM achieved throughout the life of the project. Although market precedents and risk allocation checklists can be used as a starting point, the most effective risk

allocation stems from creative and innovative thinking as well as customization to unique project characteristics.

In this paper we use the following set of questions to guide the development of an effective and efficient risk allocation, focusing on elements including incentives, preventative management and whole-of-life costs.

3. Risk allocation should be about managing not only occurrence, but also impact

Risk assessments are typically guided by two questions: (1) which party is better able to control the occurrence of the risk (risk frequency)? and (2) which party is better positioned to manage the outcome of the risk, or control its ultimate cost (consequence severity)?⁶

Although PPP practitioners are usually aware of the distinction between occurrence and impact, in practice, risks are often allocated along the principle of occurrence. For example, because the private sector has no influence over a change in law, this risk is usually fully retained by the public agency. Or, because the public agency has no control over cost overruns during construction, this risk is typically fully borne by the private party. Maximizing VFM, however, requires that PPP practitioners also consider the extent to which parties may face incentives to influence the total impact of the risk. Even if a party is not able to prevent a risk from materializing, it may still assume the risk if it has control over the ultimate cost.

⁶ For more information on calculating the potential impact of a risk, see Molenaar, Anderson, and Schexnayder (2010).

³ The United Kingdom's HM Treasury Private Finance 2 program emphasizes the importance of VFM, stating that "risks will be allocated so as to optimize value for money rather than to maximize risk transfer" (HM Treasury, 2012).

⁴ For example, Infrastructure Australia's *National PPP Guidelines* state that in order to "achieve value for money, risks are allocated to the party best able to manage them. This ensures that the cost of managing risk is minimized on a whole-of-life and whole-of-project basis" (Infrastructure Australia, 2008).

⁵ One study by the Australian government found that risks were often not allocated to the party best able to manage the risk, and that significant cost savings could have been achieved had risks been more efficiently allocated (Yates, Athol, & Sashegyi, 2001).



Text Box 2: Managing occurrence versus impact in risk allocation

The government can best manage occurrence, but the private party can best manage impact

A light rail PPP project suffers from vandalism, in particular at the locations that are close to sports stadiums. After sports games, riots typically result in graffiti and damage to railcar infrastructure.

The public agency may be in a better position to control the *occurrence* of the risk, by providing additional security in the form of police or patrols during sports games. However, the private party may be in a better position to manage the *impact* of the risk—the cost of the damages to railcar infrastructure—by designing the railcars with vandalism-resistant materials. Although installing vandalism-resistant elements in railcars results in higher upfront costs, it may reduce whole-of-life costs compared to providing additional security after every sports game.

In this example, allowing the private party to share in the financial consequences of the risk incentivizes it to take risk mitigation measures that reduce the potential damage and repair costs. These measures may reduce whole-of-life costs and increase value for money compared to the public agency trying to manage the occurrence of the risk.

4. Partial risk allocation may create greater incentives for the private party

Although a PPP delivery model allows certain project risks to be transferred to the private party, many risks are still retained by the public agency. Risks for which the public agency is responsible under the PPP contract are often referred to as “supervening events” or “compensation events.” Compensation events consist of special circumstances that are under the control of the public agency or are most efficiently managed by the public agency. Compensation events can also be those that present a risk that still represents VFM when assumed by the public agency, even if the circumstances are not under the control or manageable by the public sector.⁷ Typically, the PPP contract specifies that as a result of the compensation event the private party must be left in a no-better or no-worse position than if the compensation event had not occurred. In other words, the private party will receive financial compensation for costs related to the occurrence of the event. Text box 3 presents a non-exhaustive list of examples of compensation events.

VFM may be maximized by allowing the private party to share in the financial consequences of a compensation event. Although it may seem unreasonable to require the private party to bear a percentage of the risk for events over which it

has no control, it often provides an incentive for the private party to engage in preventative risk mitigation or seek the most cost-efficient solutions. Obviously, this sharing mechanism should be capped, both per occurrence and overall.

The concept of partial risk transfer can be compared to health insurance companies or homeowner insurers, which typically require users to bear a small portion of the risk (the deductible), while insuring them against the large financial losses. Requiring users to bear a small portion of the risk incentivizes them to take preventative action against the risk materializing—for example, by taking care of their health or installing fire alarms in their homes—aligning the incentives between the user and the insurance company.

Text Box 3: Examples of compensation events

- ✓ A breach of the PPP contract by the public agency.
- ✓ The construction or expansion of a competing asset or facility that reduces traffic and/or revenue for the project.
- ✓ A change in a law or regulation that adversely affects the project's operations.
- ✓ Unreasonable delays in issuing permits or obtaining right of way for the project.
- ✓ Incorrect data on ground conditions provided by the public agency or discovery of archeological or cultural resources in the project right of way.
- ✓ Hazardous substances released by the public agency in the project's right of way.

⁷ The HM Treasury defines compensation events as “events which are clearly at the Authority’s risk and in respect of which the Contractor should be compensated” (HM Treasury, 2007).



Text Box 4: Allowing the private party to share in the financial consequences of a compensation event

A private party has been appointed to build, operate and maintain a three-story hospital project as a PPP. As part of the performance requirement to maintain the facility in clean condition, the private party hires window cleaners to clean the outside of the windows on a semi-annual basis. The window cleaners use portable ladders to clean the windows.

Government reports indicate that between two and seven window cleaners are killed each year and about 20 to 30 suffer injuries resulting from falls involving ladders. Two years after the hospital PPP begins operations, the government passes a law requiring that all window cleaning be conducted from the inside in order to eliminate the risk from falls. Buildings with four stories or more are required to use mobile elevating work platforms, whereas buildings with three stories or less may choose whether to use mobile elevating work platforms, scaffolding or brushes on long poles (a water-fed tucker pole cleaning system).

The PPP contract specifies that all changes in laws be considered compensation events, and that the private party be fully compensated for the consequences. As a result, the private party has no incentive to opt for a less expensive solution (for example, the scaffolding) over the most expensive solution (the mobile elevating work platform) and within these solutions the most efficient materials, means and methods. If the private party had shared in the financial consequences of the risk (say, by assuming 15 per cent of the cost), on the other hand, it would have had an incentive to opt for a cheaper solution, generating greater VFM.

Partial risk transfer may also create more effective incentives for the most cost-effective management of revenue risk. Revenue risk (also known as demand risk) is driven by developments that are typically beyond the control of the private party—including demographic trends such as population growth and macroeconomic developments such as the trade of goods or services. Nevertheless, transferring a percentage of the demand risk to the private party may incentivize it to optimize demand. For example, the private party could implement toll collection equipment that facilitates swift and flawless toll collection operations. Or, it could launch a marketing campaign to promote greater use of the facility. Such measures may result in lower life-cycle costs, higher revenues and/or higher quality than if the government retained 100 per cent of the revenue risk.

5. Risk allocation should minimize transaction costs

Although this article has suggested that risk allocation be guided by more sophisticated and creative thinking (with the aim of maximizing VFM), PPP practitioners should be aware that overly complicated risk allocation mechanisms will unnecessarily raise transaction costs (and thereby erode VFM).

High transaction costs resulting from sophisticated risk allocation mechanisms are particularly prevalent in social infrastructure, where user

interfaces result in particularly challenging risks. In social infrastructure PPPs, the facility or equipment may be damaged as a direct result of the behaviour of patients in a hospital, students in a school or inmates in a prison. Managing the risk of user interfaces typically requires more elaborate risk allocation schemes. In a PPP contract, any “regular” wear and tear of the asset is typically the responsibility of the private party, whereas any risks associated with vandalism or misbehaviour by facility users is the responsibility of the public agency. However, this type of risk allocation can create very high transaction costs, as each single incident must be monitored and separately negotiated (e.g., was the broken door handle a result of regular wear and tear or vandalism? Was the broken medical equipment a result of regular wear or vandalism?). Monitoring and negotiating every event can be costly and can erode value for money.

Parties should strive to find risk management solutions that will minimize monitoring, negotiation and management costs. For example, rather than allocating regular wear and tear to the private agency and vandalism incidents to the public agency—requiring negotiations after every single incident—a much simpler solution would allocate all risks to the concessionaire up to a certain threshold. For example, any damage for a single incident under \$500 could be allocated to the private party, and above this amount the principles of optimal risk allocation would apply (of course,



the exposure of the public and private sectors should be capped). The simpler the mechanism, the less costly it will be to manage the system and the greater the opportunity to maximize VFM.

6. Risk transfer should be informed by market conditions

In allocating risks to the private party, it is important to understand the extent to which the private party is willing to accept risk, which is limited by 1) its structuring and organization, and 2) the extent to which risks—both “regular” and “extraordinary”⁸—are accepted in regular markets.

The private party is typically structured as a specially created project vehicle (a special purpose vehicle or SPV) that has contractual arrangements with the public agency (resulting in revenue streams) and with subcontractors (resulting in expenses). The SPV is a company with no previous business and no projects aside from the PPP project on its balance sheet. As a result of high upfront costs and delayed revenue streams, a PPP project is typically structured via project finance. The project finance structure is typically limited or non-recourse to the sponsors of the project, meaning that the sponsors are only liable to the extent of their shareholdings. Non-recourse also implies that the debt financiers have no other security than the contract itself (or the project assets). This structure is used in PPPs because the project sponsors are hesitant to accept liabilities on their balance sheets.

The ability of the private party to accept liabilities is limited by its structure. The SPV is typically willing to accept risks that it can transfer to design-build and operations and maintenance subcontractors—such as the risks associated with design, construction and timely completion. However, subcontractors are not willing to accept extraordinary risks. As a result, these risks remain within the SPV. Typically, these are risks related to the long-term nature of PPP contracts: systematic

risks (including inflation, revenue and interest rate), long-term performance risks (including uncertainty in timing and level of maintenance costs) and coordination risks (including interface issues between subcontractors of the SPV and potential underperformance or bankruptcy of subcontractors). Because of the limited operations of the SPV and its limited balance sheet, the only way to absorb these risks is by insuring against them or by financiers and investors accepting them.

Insurance companies are increasingly able to offer insurance against risks in PPP projects—insofar as they are defined and standardized in regular insurance packages. Different types of insurance used for PPP projects may include third-party liability insurance for the project company or its subcontractors; contractors’ all risks insurance covering the construction phase; insurance for consequential losses incurred by the project company; automobile liability insurance for vehicles used during construction and operations; or political risk insurance (in the case of emerging markets) for risks such as terrorism, war, expropriation or nationalization of assets, and currency inconvertibility (Public Private Partnership in Infrastructure Resource Center, 2014). Often, the project company will simply obtain a comprehensive insurance policy for the entire project, avoiding any overlaps or gaps in insurance coverage. Nevertheless, when it comes to risks that are outside of regular packages, insurance may become difficult or very expensive to obtain.

Financiers are typically risk-averse, which means that they are not willing to accept much risk in a typical non-recourse PPP project finance structure. In allocating risks between government and a private party, it is therefore important to understand how the private party is organized—including its legal structure and its contractual arrangements with the subcontractors—and to what extent risks are accepted in the regular markets of subcontractors, insurers and financiers.

⁸ “Regular” risks can be thought of as relatively typical risks that the market is willing to accept or insure against. An example of a regular risk would be a problem with the asset due to design or construction errors within two years of its completion—issues that are typically included in a warranty. Any risks that go beyond what the insurance industry or subcontractors are willing to accept can be thought of as “extraordinary” risks. These may include *force majeure*, certain political risks, or simply “uncapped” versions of regular risks, such as design problems beyond the period covered by the warranty.



Text Box 5: New risks

A private party is in its tenth year of operating a toll road PPP project. The toll road currently uses a manual toll collection system, which includes toll plazas or booths, toll collectors, and cash handling systems.

The public agency wants to upgrade to an electronic tolling system, which it expects will improve the user experience and result in cost savings in the long run. It requests a “change order” as specified in the PPP contract for the private party to upgrade the tolling system. Although the private party will be compensated for the costs of installing the system, the electronic tolling system will present new risks, including ones related to the installation and operation of the technology, which did not exist with the manual toll collection system. Not only will the public and private parties need to agree upon an appropriate risk allocation, but they will also need to devise new risk mitigation strategies in order to mitigate the impact of the new risks.

7. Flexibility and “rules of the game” will help deal with changes in risks

The risk matrix that is developed in the early stages of project preparation includes all of the risks that are known to the parties at that point in time. These “known unknowns” are general uncertainties and uncertain events that can be identified and, to a large extent, quantified. However, risks that were not part of the original risk register (“unknown unknowns”) will inevitably occur. New risks may be particularly prevalent for innovative or novel projects in new sectors or geographies, or with new technologies.

In order to address the variability in risks, risk allocation schemes should be sufficiently flexible. Devising general guidelines (or “rules of the game”) for dealing with unexpected or new risks may be one way to achieve this flexibility, while simultaneously ensuring predictability for both parties.

8. Conclusion

Risk allocation in PPPs is straightforward in principle—risks must be allocated to the party best able to manage them (at the lowest cost)—but challenging in implementation. Generic applications of this principle have resulted in more or less standardized notions of how risks should be allocated between public and private parties, which have reduced VFM.

Effective risk allocation requires creative and innovative thinking, customized to the unique characteristics of the project. It also requires additional guiding principles, including considering which party has the greatest incentives to undertake preventative risk management and to minimize the financial consequences of a risk. Partially transferring risks that are typically fully retained by the public sector may also create incentives for the private party to opt for more cost-efficient solutions. Because risks are continually evolving throughout the life of the project, general guiding principles or “rules of the game” should be devised in order to create predictability in the management of unexpected or new risks. Finally, throughout the risk allocation process, parties should avoid pursuing overly sophisticated risk management strategies that result in high monitoring, transaction and management costs, which can erode VFM.



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