

# Discussion

---

## 1. Frédéric Blanc-Brude

### Key points of the paper

This rich paper makes numerous points about public-private partnerships (PPPs). Here I focus on its most significant contribution, the argument that private infrastructure finance is welfare-neutral.

The authors write:

Our main point is that whether a PPP makes sense depends almost exclusively on the economic characteristics of the infrastructure, not on the way it is funded or financed. (p 205)

Borrowing from existing results, in particular Hart (2003), the authors argue that the benefits of PPPs to society lie only in efficiency gains in production (e.g. bundling and cost-cutting incentives) and allocation (e.g. improvements in the quality and quantity of infrastructure). They conclude that risk transfer to the private sector is most justified when the risk is endogenous (i.e. it is affected by firms' own actions). When this is the case, welfare can be improved using availability payments or variable-term present-value-of-revenue (PVR) contracts. In contrast, fixed-term, real and shadow-toll contracts will be inefficient under these circumstances. The authors also note that if market imperfections mean that there is a cost of capital 'premium' in PPPs, this is not an argument against such contracts as long as it is at least compensated by improved operational efficiency.

Thus, the authors argue, if PPPs are costly for society it is because they do not allocate risks efficiently (i.e. because public tendering is not well designed). This would be a case of government failure.

The paper makes a number of important points:

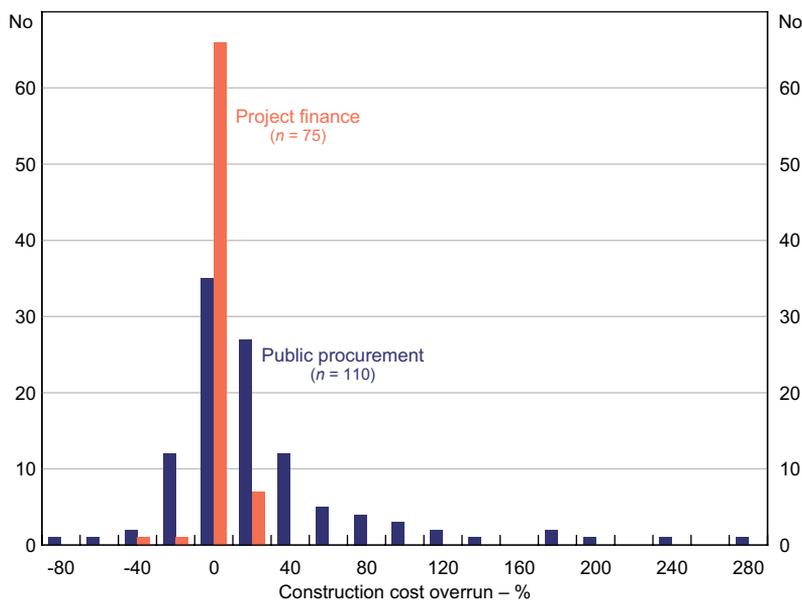
1. The benefits of PPPs should be measured at the level of total public outlays, that is, as a part of a portfolio rather than as a project-specific 'value for money' proposition.
2. The least risk-averse party should bear most of the risks, consistent with standard insights of welfare economics (see, for example, Dewatripont, Legros and Matthews (2003) and Gollier (2004)).
3. Transferring exogenous risks only increases the cost of capital without creating new benefits. Most PPP failures are a consequence of exogenous risks, such as traffic demand risk (for a review, see Blanc-Brude (2013b)).
4. The existence of endogenous risks is the only reason to transfer risks (at a premium) from a less risk-averse to a more risk-averse agent: residual claims create incentives to reduce risks through diversification, hedging or insurance.

My remaining comments focus on the value of long-term commitment mechanisms for ensuring that risk transfer is as efficient as possible and that any remaining inefficiencies are mitigated effectively. I also consider whether it is true that the source of funding is irrelevant.

## Risk transfer and long-term contracts

The evidence suggests that the risks faced in public infrastructure projects can change ‘shape’ once transferred to the private sector. The transfer of construction risk is a case in point. Construction risk in project finance, measured as the size of cost overruns, can be shown to be almost nil from the perspective of the project company if there are large construction firms that can diversify construction risk and sell insurance to the special purpose vehicle (SPV) that defines the PPP (Figure 1; Table 1; see Blanc-Brude and Makovsek (2013)). In comparison, construction risk is systematic and significant for the public equity holder in standard procurement, as documented by Flyvbjerg, Bruzelius and Rothengatter (2003). This suggests that it is very important for the success of a PPP for the contracting arrangements to be implemented carefully.

**Figure 1: Distribution of Construction Cost Overruns in Infrastructure Projects**



Sources: Blanc-Brude and Makovsek (2013); Flyvbjerg *et al* (2003)

**Table 1: Construction Cost Overruns in Infrastructure Projects – Summary Statistics**

	Public procurement	Project finance
<i>n</i>	110	74 <sup>(a)</sup>
Mean – %	26.7	3.3
Median – %	20.0	0.0
Min – %	–80.0	–23.0
Max – %	280.0	36.4
Std dev – %	55.0	9.6
Skewness	2.17	1.58
Kurtosis	6.24	3.91

Note: (a) Excludes one outlier observation

Source: Blanc-Brude and Makovsek (2013)

Indeed, PPPs are pure financial contracts. In the majority of PPPs, the private sector and the SPV do not actually own any tangible asset, just a contract with the public sector that makes the investor the residual claimant to a (risky) stream of cash flows. This may be the most overlooked fact in the literature on PPPs and infrastructure financing.

As a result, PPPs are better understood as ways to create credible commitment mechanisms to swap expected cash flows between the public and private sectors. Project finance is the evolutionary response to the long-term investment problem of enforcing time-consistency, and makes stand-alone infrastructure asset financing possible. PPPs can be described as a series of long-term promises. This is not unlike a total rate of return swap, which is a portfolio of bonds and options. For example, in a classic PPP with availability payments, the public sector receives a pre-agreed stream of infrastructure services and pays a fixed price (the fixed leg of the swap), while the firm receives a fixed income and faces stochastic costs (variable leg). Hence, in order to have PPPs we need to have counterparties for such contracts swapping long-term cash flows.

## The cost of long-term finance

Hence, there may be reasons to question the authors' conclusions about the irrelevance of the source of finance to deliver the benefits of PPPs. In particular, it is likely that delivering the benefits of PPPs is conditional on the possibility of long-term private investors being involved in the project at a future date. Long-term investors will only participate if their cost of capital is not so high that it more than offsets their rate of return, which, as the authors argue, will be related to the size of potential efficiency gains. But long-term finance can be costly for a number of reasons:

- transaction costs, which can be high because project financing is difficult to do
- liquidity premia, which can be high because repayment periods span decades

- regulatory capital charges for long-term lending (Basel III, Solvency II, etc)<sup>1</sup>
- rents are likely to be persistent even with competitive bidding (Blanc-Brude, Goldsmith and Vällilä 2009; Blanc-Brude 2013a).

If long-term private finance is costly then efficiency gains from contracting have to be substantial to create public benefits. Thus, the source of private finance may matter if some financing structures can lower capital costs by more than others. While the paper is about the difference between public and private finance, finance still matters insofar as we have to think about different sources of private finance available to PPPs.

## Who supplies long-term finance and why?

The public sector provides long-term finance for infrastructure because it has to. That is, society values the real benefits of long-term capital investment. Investors provide long-term finance because they want to. That is, they benefit from the long-term nature of these assets (e.g. for duration hedging or the illiquidity yield spread).

The authors write:

The resources saved by the government by not paying the upfront investment under a PPP should be equal, in present value, to user-fee revenue forgone to the concessionaire. That is, from a financial viewpoint, PPPs borrow from the future with no net gain in present discounted terms. (p 206)

However, the authors don't consider the possibility that some investors may value the same stream of cash flows differently than the government because they face different costs of financial distress, duration hedging benefits, etc.

## Further welfare implications of PPPs

Moreover, originating financial assets through PPPs creates other benefits. There are at least two ways by which the existence of PPP contracts may have welfare implications beyond the productivity and efficiency gains created by more efficient contracting.

First, PPPs can provide insurance against government failure. This can be achieved by tying the government's hands (achieving commitment) with PPPs. Under these contracts, governments cannot choose to undersupply society with regard to public infrastructure *ex post* without significant negative consequences. This benefit can be viewed as an insurance premium paid by taxpayers against future government failure and/or time inconsistency (e.g. to fund maintenance).

Second, PPPs can act as robust channels of intergenerational transfers. If pension funds receive the cash flows of infrastructure projects, taxpayers (the current workforce) and the users of infrastructure are transferring funds to retirees via an infrastructure project. In addition, well-designed infrastructure projects should have a positive impact on total factor productivity, which improves the ability to fund such intergenerational transfers. PPPs financed or funded by long-term institutional investors may thus lead to wealth redistribution.

<sup>1</sup> Incidentally, the cost of investing in a variable-length concession contract (PVR) is probably prohibitive for many investors. For example, within a risk-based prudential framework, a variable-length contract that may or may not extend 15 years into the future would be more expensive to invest in than a 15-year fixed-term contract. Moreover, such instruments become unusable for liability matching or hedging purposes. In the authors' framework, the only feasible efficient contract left would be annuity based. Indeed, this type of contract is becoming the norm in the most developed PPP sectors, such as in Europe.

In conclusion, insofar as PPPs are about delivering infrastructure efficiently, their source of finance is irrelevant, but (a) long-term commitment mechanisms through financial instruments are a necessary condition to have PPPs, and (b) society may value the existence of long-term private assets to manage long-term private liabilities like pensions or insurance policies.

## References

**Blanc-Brude F (2013a)**, 'Risk Transfer, Self-Selection and *Ex Post* Efficiency in Public Procurement: An Example from UK Primary and Secondary School Construction Contracts', *Revue d'Economie Industrielle*, 141(1st Quarter), pp 149–180.

**Blanc-Brude F (2013b)**, 'Towards Efficient Benchmarks for Infrastructure Equity Investments', EDHEC-Risk Institute Paper.

**Blanc-Brude F, H Goldsmith and T Väilä (2009)**, 'A Comparison of Construction Contract Prices for Traditionally Procured Roads and Public–Private Partnerships', *Review of Industrial Organization*, 35(1–2), pp 19–40.

**Blanc-Brude F and D Makovsek (2013)**, 'Construction Risk in Infrastructure Project Finance', EDHEC Business School Working Paper, February.

**Dewatripont M, P Legros and SA Matthews (2003)**, 'Moral Hazard and Capital Structure Dynamics', *Journal of the European Economic Association*, 1(4), pp 890–930.

**Flyvbjerg B, N Bruzelius and W Rothengatter (2003)**, *Megaprojects and Risk: An Anatomy of Ambition*, Cambridge University Press, Cambridge, pp 1–5.

**Gollier C (2004)**, *The Economics of Risk and Time*, MIT Press, Cambridge.

**Hart O (2003)**, 'Incomplete Contracts and Public Ownership: Remarks, and an Application to Public-Private Partnerships', *The Economic Journal*, 113(486), pp C69–C76.

## 2. General Discussion

The discussion began with one participant asking whether there was any empirical evidence for the efficiency benefits of PPPs. The participant also questioned whether infrastructure projects possess agglomeration benefits, particularly in the operation phase, despite there being limited economies of scope or scale. Alexander Galetovic admitted that there is very little empirical evidence for the efficiency of PPPs, as they are a relatively new approach to infrastructure provision, having only been used in the last 20–30 years, and the life cycle of infrastructure projects tends to be long. Professor Galetovic proffered his view that, despite the lack of empirical evidence, PPPs can be a valuable method of procuring infrastructure in any situation where some level of government control is desirable but the private sector can be involved in the production process. Professor Galetovic went on to suggest that the implementation of PPPs has been poor, largely reflecting failures in contract design, which results in potential efficiency gains not being fully realised.

Another participant questioned why members of the finance sector had not called attention to the fact that PPPs do not liberate public funds once proper intertemporal accounting is used. In response, Professor Galetovic explained that PPPs, as off-balance sheet vehicles, do allow

## DISCUSSION

governments to spend more on infrastructure by bypassing fiscal spending limits. He pointed out, however, that this is likely to be inefficient and that at some point the cost of the PPP must be realised by the government. Additionally, Professor Galetovic posited that the chance that a future government administration may eventually bear the cost of the PPP may also act as an incentive for their use.

Professor Galetovic also commented further on the relevance of finance to infrastructure provision. He argued that it is unfair to characterise finance as being irrelevant to infrastructure provision, as it can be useful if it strengthens incentives in a way that the public sector cannot. Professor Galetovic opined, however, that the finance sector tends to oversell the value of its services. As a consequence, it is important to remember the Modigliani-Miller theorem – that the value of a project is independent of its capital structure – and that welfare is ultimately determined by a production function, which is a function of real quantities like capital and labour, and not the financing mix.

There was also some discussion about the extent to which PPPs transfer property rights. Picking up on the discussant's remarks about PPPs simply being financial contracts, Professor Galetovic reasoned that appropriately designed long-term contracts should result in the infrastructure manager behaving as if they owned the asset, and that one of the crucial aspects of these contracts is the transfer of the infrastructure asset at the end of the contract period. He also argued that the defining feature of property rights (in terms of their ability to generate incentives) is that they can be sold. Others contended that the defining feature of property rights is that the holder can exercise them in whatever way they wish. However, the nature of infrastructure projects – that is, the intrinsic heavy involvement of government – limits the ability to exercise these rights, so that the value of the assets is entirely determined by contractual features rather than underlying features of the asset itself.

Much of the remaining discussion broadly revolved around the objective of PPPs, particularly the desirability of using PPPs to transfer demand risk. One participant welcomed the paper's conclusion that PPPs should not be used to transfer demand risk from the public to the private sector. The participant opined that, in Australia, the transfer of demand risk to the private sector is the characteristic that differentiates PPPs from other forms of public procurement. He went on to suggest that this fact, in combination with the conclusions of the paper, implies that PPPs should not be used in Australia. The participant also argued that the idea of PPPs being a solution to inefficient government procurement of infrastructure lessens the pressure to reduce the inefficiency of government procurement more generally. The participant contended that there has already been progress in improving the efficiency of public procurement in Australia, with most public procurement making use of fixed-price contracts (so that the contractor bears the costs of cost overruns). Another participant noted that the European experience of transferring demand risk to the private sector using PPPs has also been poor, with a number of PPPs failing due to demand being overestimated. Because of the costs associated with these failed PPPs, there has been a trend toward 'availability payment' PPPs, which is closer to what is recommended in the paper under discussion. The participant speculated that PPP contracts may eventually evolve to only transfer endogenous risks and not demand (or other exogenous) risks. In response to these points, Professor Galetovic argued that the main purpose of a PPP is to procure infrastructure efficiently, and that the transfer of demand risk is subordinate to that goal. He went on to suggest

that demand risk should be transferred to the private sector only if it results in better alignment of incentives.

Further to the topic of the objective of PPPs, another participant disputed the discussant's comments on the potential role of PPPs as insurance against governmental failure or as a channel for intergenerational transfers. The participant argued that using PPPs to address problems other than the efficient procurement of infrastructure is problematic, as PPPs are opaque financial vehicles with a fairly high potential for corruption. Professor Galetovic broadly agreed with this sentiment, reiterating his argument that the objective of PPPs is to procure necessary infrastructure efficiently, and that all other objectives are subordinate to this. He went on to suggest that problems in other sectors, such as the pension fund sector, should be addressed directly.

