

Highway networks and PPPs: An alternative to traditional public provision?

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PPP's can be valuable contributors to the transport infrastructure. In this paper, we describe the main risks and benefits of PPPs, specially in the highway sector, the sector most naturally suited to PPPs.

I. Introduction

Highway networks are essential to transportation of goods and people in modern economies. In developed countries, the networks are mature but often require upgrading or increased capacity; whereas in developing countries this infrastructure is usually still in its growth stage, requiring additional trunk roads apart from the need for increased capacity and improved standards. In both sets of countries, though for different reasons –perceived budgetary constraints in the first case, the fear of the size of the needed investment to increase the size of the network in the second– governments have looked at alternatives to develop their transportation networks.

These perceived budgetary constraints have created an interest on alternative sources of financing improvements or expansions of highway networks. One possibility would be to sell outright new highways, but governments have preferred –for political, image and long-range planning purposes– the option of time-limited contracts with private firms in which the infrastructure project eventually returns to government ownership.

Public Private Partnerships (PPP's) represent an alternative in which transfer of the highway is for a limited time, and at the end of the contract, the infrastructure project returns to government control. The difference between PPP's and the traditional approach to highway (or other infrastructure finance) is that a PPP integrates (or bundles) construction and service provision into a single contract. During this long term contract, the private firm operates and controls the highway, in exchange for user fee revenue, government transfers or a combination of both sources of revenue. The tight bundling of construc-

tion and service provision implies that the private partner has an interest in reducing costs –including maintenance and operations– over the lifetime of the contract.

In this short note we show that the financial motivation (saving public funds) for PPP's is erroneous (see Engel, Fischer, and Galetovic [2013a] for the formal arguments), and that the advantages of PPP's are to be found in increased efficiency and maintenance¹.

However, we point out that these advantages are coupled to serious risks that may lead to adverse results in a PPP program. The main problems are renegotiations and its counterpart, the inflexibility of contracts, as well as the use of inappropriate contractual forms. These problems are compounded by political economy issues, because PPP's add long lived contractual relations with the public sector to the already existing problems in public provision of infrastructure. [Williamson, 1976]

In the following sections we describe the importance of PPP's around the world, the irrelevance of the finance argument for PPP's, the problems of renegotiation and flexibility, and the political economy problems associated to PPP's.

II. Use of PPP's

PPP's were common in several European countries, specially the UK and Portugal, from the 1990's to 2008, until activity fell as a consequence of the financial crisis (figure 1, left). Similarly, investment in the developing

¹ Even though we do not examine them, PPP's have been used for other infrastructure such as schools, jails, hospitals, airports and seaports. Other types of infrastructure, such as telecoms, electric sector, water and sanitation, etc., can be provided through regulated utilities or by competing private firms, as in the case of mobile communication services.

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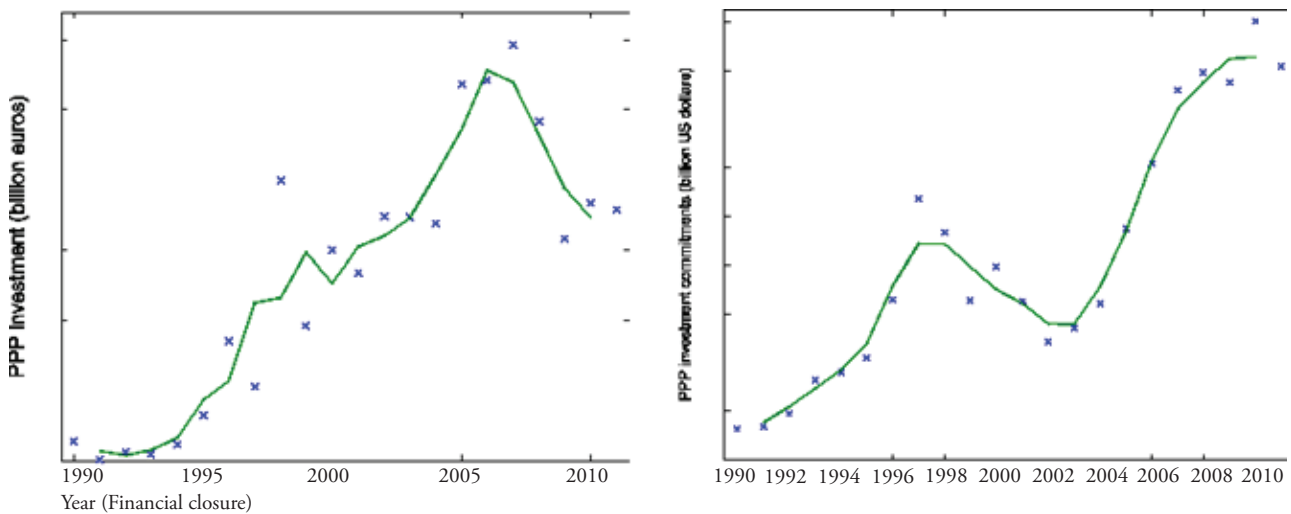


Figure 1: Investment in PPPs: Europe and in Low-and Middle Income Countries 1990-2011

countries grew quickly until the Asian crisis of 1998, but after a short hiatus, has been growing at very fast rates (Engel et al. [2013b]), reaching more than US\$ 150 billion in 2008, see figure 1, right.

The data reflect a massive use of PPPs in many countries, but with much variation among countries. For example, the US, with an economy that is many times larger than Canada, has similar levels of transportation PPPs. In Europe, the leading users have been the UK and Portugal. Investment in PPPs during the period 2001-2006 represented 32.5% and 23% of total public investment in the UK and Portugal, respectively [Blanc-Brude, Goldsmith, and Vålilä, 2007]. In Latin America, the main users have been Argentina, Brazil, Chile, Colombia, Mexico and Peru, mainly on highways.

The results have not been homogeneous: in Mexico, Colombia and Portugal, the projects have been more expensive than governments expected. In Europe, Portugal and Spain are hobbled by the large obligations associated to PPPs. The UK regrets the inability to modify the terms of PFI contracts at a time when fiscal resources are tight². On the other hand, Chile has been successful in using PPPs to renew its outdated highway infrastructure. However, now it is facing congestion in PPP projects awarded more than ten years ago, and the prospect of expensive contract renegotiations to increase capacity. Finally, Argentina expropriated its PPPs.

2 See John Kay, "Public projects obscured by private finance", Financial Times, February 15, 2011.

III. Finance³

Originally, PPPs appealed to governments as a source of increased investment in public works without an impact on the public balance sheet of the government. Some governments managed to improve their highway systems in a short period, without facing the increase in officially recognized public debt. However, believing PPPs should not be considered as debt can be a costly conceptual mistake.

The UK has discovered that the 717 projects in the PFI Initiative, including many schools and hospitals, will require a fiscal outlay of £9-10 billion annually until 2030 to pay capital costs⁴. Portugal, which invested heavily in a highway system without a cost-benefit analysis of the projects, must divert almost 1% of its GDP to pay for its PPP commitments until 2015, and more than €1.6 Billion annually until 2025, just when its public finances are stretched⁵.

A more favourable case is Chile, which upgraded its main highways in the decade 1995-2005. A prudent management of its obligations means that its maximum possible exposure is around 4% of GDP, and a contingent analysis shows that its expected value is only 0.2% of GDP⁶.

Even in this case, the financial benefits of PPPs are small or non-existent. To see this, consider that, as men-

3 For a formal treatment, see Engel, Fischer, and Galetovic [2013a].

4 HM Treasury: UK Private Finance Initiative Projects: Summary data as at March 2012.

5 Ministério Das Finanças, Direcção-Geral do Tesouro e Finanças, Parcerias Público-Privadas e Concessões Relatório 2011, Agosto 2011.

6 Ministerio de Hacienda, Dirección de Presupuesto, Informe de Pasivos Contingentes 2011, December 2011.

tioned above, there are three ways to reward the PPP investor: either through capital payments over time, or with user fees, or by a combination of these two. In the first case, the capital payments are public debt under another name. In the second case, these user fees could have been collected by the government, if it had developed the project, so the lack of outlays is balanced by foregone revenue.

Being slightly subtler, it is possible to find a public finance advantage for PPPs under some conditions. Assume the government is inefficient in making transfers from tax revenues to pay for services (due to corruption or excessive bureaucracy). Then it may be more convenient that a private firm collect tolls as compensation without the intervention of the government. Alternatively, it may be that the government is sensitive to populist complaints about tolls, while a private firm will be less willing to accept reductions in revenue to appease voters. In the US, when the City of Chicago owned the Chicago Skyway, it had to be ordered by the Courts to raise tolls in order to pay bondholders. Even when a toll road is leased, however, the government may intervene to keep low tolls. In the leased Indiana Toll Road, the state government intervened to freeze tolls, but it had to pay compensation to the private firm, and this tends to discourage populist interventions.

IV. Contract renegotiation

In any long term contract there will be changes in conditions that eventually require the adjustment of the contract. For example, a highway may need to be expanded when there is an unforeseen expansion in demand and congestion becomes excessive. While many future conditions can be included in the original contract, it is impossible to foresee all possible future outcomes, so there are always cases in which the contract needs to be modified.

Now, in general, the initial award of the PPP is made under competitive conditions, so rents for the private party are dissipated by competition. As Williamson [1976] observed, when a long term contract is signed, the initial competitive situation becomes a bilateral monopoly, in which rents reappear when it is necessary to adapt the contract to new conditions. The number of contract renegotiations is very high, as Guasch [2004] has documented in a study of Latin American PPP projects previous to the year 2000. The fiscal cost of renegotiations as a percentage of initial investment value reached 20.3% for Chile and 26.5% for Peru⁷.

These renegotiations can corrupt the political system, since the outcome is decided by the relative bargaining

capability of the parties and there is no obvious standard to guide the results. While all infrastructure contracts are subject to renegotiations, PPPs provide more opportunities to do so, since they are long lived.

Renegotiations can also be used to modify a project during construction so as to satisfy interest groups or for political considerations. A particularly galling case occurred in Chile where the contract for a large urban PPP (Américo Vespucio Sur) was increased after adjudication to include a large mains collector for rainwater after winter flooding.

In addition, the fact that rents can be obtained in the renegotiation process means that firms that are specially good at negotiation have an advantage in a competitive bidding process. They can bid low for the project, being confident in their ability to compensate their low bid by future renegotiations. Since there is no reason to believe that firms that have this ability are the best firms in the technical/engineering sense, and may discourage participation of technically able firms that do not take advantage of renegotiations. One remedy is to have good institutions. In the UK, renegotiations during construction have been limited: only 35% of the projects had increases in their contracted price, and the increases were relatively small⁸.

Thus the problem lies in devising a mechanism for fair renegotiations of PPP contracts. A good approach is when the government is allowed to repurchase the contract at a fair price. Then, whenever important and unforeseen modifications of the contract are needed (a major change in the highway standards, for example), the government can buy back the PPP contract, and initiate a new PPP process under the changed rules. The question is how to determine this fair price. In a PPP contract with no user fees, where the private party is remunerated by government payments (as in the case of the UK's PFI), the fair price corresponds to the discounted value of the remaining periodic payments stipulated in the contract, minus maintenance costs. The private discount rate to use should be set in the original contract and resemble the rate used by the private sector.

IV. a - Present Value of Revenue approach⁹

When the remuneration is obtained from user fees, i.e., highway tolls, the fair value corresponds to the discounted value of future user fee revenues, net of costs. The difficulty is that this value depends on the future growth in demand, whose value is uncertain, making it hard to reach an agreement on a fair value. This is a reason to use

⁷ Eduardo Bitrán, personal communication. In Colombia, the fiscal cost to initial investment ratio is 223%.

⁸ National Audit Office, Performance of PFI Construction, October 2009, UK.

⁹ Engel, Fischer, and Galetovic [2001].

the Present Value of Revenue (PVR) to assign PPPs. The firm requests the discounted value of user fee revenues that it requires to build, operate and provide maintenance for the project, using a predetermined discount rate as above. Thus, the public sector can always buy back the project at a value given by the difference between the contracted PVR and the discounted user fees that have been collected. The resources required to buy out the original franchise holder can be obtained when offering the project as a PPP, including the modifications.

In addition, the PVR approach has the advantage of reducing the risk to the private party, since the uncertainty associated to demand is much lower. In the case of highways there is little that the private party can do to affect demand for the highway, so demand risk does not provide incentives for efficiency. Risk should be assigned to the party that can act to reduce it or, failing this, to the party that can bear it best Irwin [2007]. Since revenue risk affects a large fraction of the revenues of the concessionaire, but a small fraction of users income, it should be assigned to them. The decreased risk in user fee revenue associated to PVR leads to reductions in the risk premium required by bidders. In Engel et al. [2001] we estimate a reduction of 30% in the cost of a PPP highway.

V. Conclusions

PPPs can be valuable contributors to the transport infrastructure. We describe the main risks and benefits of PPPs, specially in the highway sector, the sector most naturally suited to PPPs. The main benefits of PPPs lie in the improved maintenance and the reduction in life cycle costs of highways. These benefits must be balanced against

the risks attached to PPPs. These include unrecognized fiscal debt, inappropriate contracts, costly renegotiations, and lack of flexibility in response to exogenous changes. Embarking in a PPP program should not be taken lightly, and requires careful attention to institutional design and legislation.

VI. References

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