Public-Private Partnerships: A Principal-Agent View

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Abstract

In Canada, governments use public-private partnerships (PPPs) to finance, design, build, maintain and operate public infrastructure such as roads, bridges, water treatment plants, schools and hospitals. Despite the wide use of PPPs, many have produced poor outcomes, including high transaction costs, extensive renegotiation and project bankruptcy. This paper uses principal-agent theory to explain why PPPs often fail when evaluated using the appropriate criterion of societal welfare maximization, and why, despite frequent failures, PPPs appeal to governments.

Although social welfare is the appropriate normative goal, society must delegate the authority to organize and operate public infrastructure to governments. The government, in turn, chooses the means of provision. The alternatives are: traditional government-financed design-build contracting, followed by government operation and maintenance (traditional procurement or TP); or a finance-design-build-operate-maintain-transfer PPP (or some variant thereof). We consider this choice through the lens of principal-agent theory.

First, we view the government as the principal, and (naïvely) assume that its goals are congruent with those of society – namely, the maximization of social welfare. With TP, the government managers and bureaucrats are the agents who can act in their own self interests. With the PPP, the private sector firms in the PPP are again self-interested agents, albeit with different goals (profit maximization). The paper explains the behaviour and evaluates the performance of PPPs versus TP, considering the divergent goals and incentives of the various agents, relative to the goal of social welfare. We find that the evidence that exists is roughly consistent with our prediction that PPPs are unlikely to achieve superior outcomes to TP, using the appropriate normative criterion. Second, we adopt the more realistic view that government's goal is to maximize its chances of re-election. Revealed preference for PPPs over TP may be explained by consideration of how this choice fulfills the government's political goal of vote maximization.

Keywords: Public Private Partnerships, Principal-Agent Theory, Infrastructure Procurement, Social Welfare

1. Introduction

Public-private partnerships (PPPs) in Canada deliver a wide range of goods and services, including roads, bridges, water treatment plants, schools and hospitals. Federal and provincial governments use PPPs to finance, design, build, maintain and operate public physical infrastructure, usually through consortia of private-sector firms and under long-term contracts. Despite the extensive adoption of PPPs in Canada and elsewhere, neither quantitative empirical nor case study evidence supports the view that PPP performance is superior to traditional methods of government procurement of infrastructure, at least when appropriately evaluated from a social perspective. This leads to the question: why do governments across the political spectrum continue to promote the use of PPPs?

To understand both why PPP performance has been disappointing and why governments, nevertheless, continue to favour this procurement method, we adopt the principal-agent perspective (Sappington and Stiglitz, 1987; Shapiro and Willig, 1990; Laffont and Tirole, 1991; Dewatripont and Legros, 2005; Ross and Yan, 2015; Moore, Boardman and Vining, 2017b). In this view, government is the principal. The decision it faces is whether to contract with private sector agents, or with government procurement managers—in principal-agent language also agents—to obtain infrastructure projects and the services that they provide. To simplify, we examine two generic versions of these alternatives. Under the traditional procurement (TP) alternative, government procurement managers raise funds for the infrastructure (usually by issuing government debt, but ultimately through taxation), then contract out the design and construction to private firms, and finally they operate and maintain the infrastructure over its life cycle. Under the private agent alternative, a PPP is established. A private sector consortium has a

long-term contract that bundles together at least some finance, and two or more of the design, construction, operation and maintenance activities.

Government principals have their own goal(s). These goals may either be congruent with those of society at large, or may represent the self-interested behaviour of the politicians who form the government. There are those who argue that "democratic political markets are organized to promote wealth-maximizing outcomes, that these markets are highly competitive, and that political entrepreneurs are rewarded for efficient behavior" (Wittman, 1989). In other words, there is no difference between these two sets of goals. At least in the context of PPPs, there are good reasons to believe that self-interested political behaviour will lead to outcomes that do not necessarily coincide with the societal interest in efficient behaviour, as we explain in detail later. Agents, whether government procurement managers or the PPP consortia private firm owners, are assumed to have self-interested goals: maximization of their own well-being for managers; profit maximization for the firm owners.[1] The problem for the government is to devise a contract that the agent will accept, and which motivates the agent to achieve the government's goal(s). Of course, in practice, a government principal may face multiple agents or multiple levels of agents.

If the government principal does attempt to reflect the interests of society at large, we argue that the appropriate goal should be the maximization of social welfare, or, more precisely, the achievement of allocative efficiency (Boardman and Vining, 2012; Boardman et al., 2018). We measure social welfare by the summation of the net benefits accruing to consumers (project users), producers (private sector firms), employees (of those firms or of the government) and the

[1] Private-sector firms themselves face principal-agent problems where the firm owners are the principals who seek to maximize their profits and the firms' managers are self-interested agents who wish to maximize their own well-being.

government (as measured by tax revenues net of expenditures).[2] In other words, we initially ignore any principal-agent problems between citizens (the ultimate principals) and the government (now treated as the citizens' agent). Given this (somewhat naïve) perspective, the choice between the alternative procurement methods should depend on that which results in the greatest amount of social welfare, given the various possible agency relationships. We demonstrate why, using this normative perspective, there are good reasons to believe that PPPs are inferior to traditional procurement. We then review the most recent evidence on PPP performance, which is broadly consistent with this prediction. Of course, real (democratic) governments are comprised of politicians, who seek to maximize their political support among the electorate (Downs, 1957). Accordingly, we explain governments' preference for PPPs using the public choice view: that governments seek to maximize the votes that they receive, to maximize the probability that they will be re-elected.

2. Traditional Procurement and Public-Private Partnerships Defined

As outlined above, we define a PPP as a long-term contract between a government agency and a consortium of private sector firms, which bundles together the provision of a range of project services and at least some project finance. The private sector firms usually form a special purpose vehicle (SPV), a distinct legal entity created to deliver the project and to limit the liability of the parent firms. In the classic form of PPP, the consortium contracts to provide the design, construction (i.e., build), financing, operation and maintenance of new physical infrastructure, known as a DBFOM contract.[3] In theory, a feature of a DBFOM contract is that it

[2] In most cost-benefit analyses of government projects and policies, the unweighted aggregate of the net benefits is used as the measure of social welfare; offsetting transfers among the various entities are ignored. This formulation of social welfare accepts the *status quo* distribution of income and wealth as legitimate and ignores any distributional considerations.

[3] In almost all cases, the ownership of the infrastructure reverts to public ownership at the end of the contract (i.e., a transfer) so the classic PPP is sometimes referred to as a DBFOMT contract.

enables the government principal to shift some risks to private sector agents, including the risk of construction cost overruns and delays, the risk that the project does not function as contracted and, sometimes, the risk that the revenue from user fees or user demand does not meet the projected levels. In exchange for (putatively) bearing these risks, the consortium receives either (1) an agreed periodic fee from government (an availability payment); (2) shadow tolls from government, which vary with usage (a usage payment), or (3) tolls paid by users. The consortium earns revenue over the contract life, typically for 20-35 years. In principle, these revenues cover the private sector firms' initial investment in the project (design, construction and borrowing costs) and operating and maintenance costs, plus a profit margin. At the end of the contract, asset ownership usually reverts to the public sector. In a sense the private sector offers the public sector the ability to 'rent to own' – the public sector pays the private sector an annual rental fee for a specified period and then owns the asset at the end of that period.[4]

Under traditional procurement (TP), the public finances the project by purchasing government debt, but ultimately by paying taxes to service that debt. The design and construction of the project is contracted out to private sector firms under either cost-plus or fixed-price contracts. Operation and maintenance of the infrastructure is accomplished by government managers (and employees). Thus, a fixed-price design-build contract is TP, not a PPP according to our definition, even though many governments and government sponsored PPP agencies treat them as such.

3. Public Interest: Social Welfare Maximization by the Government Principal

[4] We do not address other arrangements where governments have entered into joint share ownership with private firms. These entities have traditionally been referred to as mixed enterprises, but they are sometimes now labelled PPPs (although they long predate them). Mixed enterprises also involve complex incentive relationships and the potential for goal conflict (see, for example, Vining, Boardman and Moore, 2014). However, they involve distinct incentives and are beyond the scope of this paper.

If the government principal acts in the public interest and seeks to maximize social welfare, it will choose the procurement method which yields the greatest sum of net benefits to all parties with 'standing'.[5] Under TP, we assume that the government procurement managers will attempt to maximize their own well-being, which increases in pay but decreases in effort and risk. If monitoring of these agents by the principal is costly and so imperfect, and if the agents' pay is not linked to any performance measures, then they will minimize their efforts ('shirk'). Thus, we predict that government operation and maintenance of infrastructure will not be as low-cost as possible; its provision will be 'technically inefficient' relative to the best possible practices. On the other hand, if the PPP consortium owners can reduce costs by reducing technical inefficiency, then their profits will increase. Other things equal, this profit motive implies that PPP provision, at least of operation and maintenance, may be more technically efficient and so lower cost than government provision under TP.[6]

In addition, there may be options to lower the life cycle costs of the infrastructure by investing more resources upfront in the design and build activities, if this can in turn reduce the long-term operation and maintenance costs enough to make the investment worthwhile. Under TP, the design and build are contracted out to private sector firms (agents). With a cost-plus contract, the contracting agent has very weak incentives to hold down design and build costs. Under a fixed-price contract, in contrast, the contracting agent has very strong incentives to minimize these costs. But in neither situation does the contracting agent have any incentives to consider the cost effects of the design or construction decisions on operation and maintenance

[5] This may not include foreign owners of private firms (Whittington and McCrae, 1996).
[6] This assumes that the profit motive gives the private-sector owners in the PPP, as principals, a greater incentive to monitor or motivate their managerial agents than the government principal has to monitor its agents under government ownership and operation (Boardman and Vining, 1989; Vining and Boardman, 1992).

costs. However, with the PPP under a DBFOM contract, the same entity is responsible for all these costs and so has a greater incentive to minimize the (discounted) sum of them (Boardman and Vining 2010a).

Together, these arguments provide the strongest rationale for choosing the PPP over TP. However, they do not consider the relative costs of financing the infrastructure, nor do they consider the relative costs of public versus private-sector risk bearing and how these affect the required rates of return expected by the PPP consortium.

Consider first the cost of financing. In Canada as elsewhere, the interest cost of government debt is much lower than both the interest cost of private debt and the required returns on private-sector equity. *Prima facie*, this would seem to indicate that the TP financing is much cheaper, and there would have to be substantial technical efficiency advantages for the PPP alternative to offset the financing cost advantage of TP (Boardman and Hellowell, 2017). However, the government's apparent lower financing cost may simply reflect the fact that lenders must be compensated for the risk of a private borrower's default, whereas the government can always pass on any unexpected costs to the public in the form of higher taxes, and so can avoid defaulting on its loans (Klein, 1997; Engel, Fischer and Galetovic, 2014). However, even taking unpriced default risk into consideration, there would have to be complete and perfect capital markets for the costs of public and private finance to be equal (Makovšek and Moszoro, 2017). Since there are good reasons in theory and some evidence to support the view that government has a lower social cost of risk bearing, then government financing under TP is arguably less costly than private financing with the PPP (Grant and Quiggin, 2003; Moore, Boardman and Vining, 2017a and 2017b).

Now consider risk. There are two types of risk in infrastructure projects: project-specific or non-systematic risk, and systematic risk.[7] Project-specific risk is the risk that net benefits will be higher or lower than expected due to factors that affect only the specific project. In principle, these risks can be reduced to zero in a large enough portfolio of projects whose returns are not perfectly correlated (Markowitz, 1952). Systematic risk is the risk that net benefits vary around expected values because of fluctuations in the overall economy, as measured by the correlation of project returns with the growth rate of consumption.

With government financing, project-specific risks can be spread over the entire population of tax payers (Arrow and Lind, 1970). Additionally, the public obtains its consumption from a very large, diversified portfolio of government projects as well as from many other sources. The risk spreading and diversification arguments together imply that the government does not bear any costs of project-specific risk. Empirically the systematic risks are likely to be too small to matter (Moore, Boardman and Vining, 2017a). Consequently, the government does not require any premium for risk bearing. On the other hand, the PPP consortium may not be able to quantify risks properly. Nor can it fully diversify away project-specific risk, due to concentrated ownership and less-than-perfect capital markets.[8] In addition, the social costs of bankruptcy due to any unforeseen escalation in costs of the PPP will exceed those for TP, as the infrastructure cannot go into receivership under government ownership. In general, then, the private sector requires substantial risk premia that the public sector should not.[9]

[7] We do not consider the risk of mis-estimating project costs (and benefits). Routine overestimation of benefits and underestimation of costs is known as optimism bias (Flyvbjerg, Bruzelius and Rothengatter, 2003). While these affect the political considerations favouring PPPs, they are not relevant to the discussion of social welfare maximization.

[8] To the extent that the consortium does sell off equity shares to reduce project-specific risk this will fragment ownership. This fragmentation is likely to worsen principal-agent problems within the PPP and so attenuate any potential technical efficiency advantages of this method of infrastructure provision.

[9] These premia may also be required as compensation for the political risk that a future government may

As a result, ignoring any technical efficiency issues, the government should provide all the financing, favouring TP.

With respect to design and build risks, these are borne by the government if TP uses cost-plus contracting. While this minimizes the social cost of risk bearing, it provides very weak incentives for technical efficiency. On the other hand, if TP (or the PPP consortium) employs fixed-price contracting for design and build, then the contractor agent bears all the construction risk, but has the greatest incentives to minimize costs at this stage. In any case, both the government under TP or the PPP consortium would face the same trade-off: creating the greatest incentive for the contractor agent to achieve the maximum possible efficiency gains also imposes all the construction risks on the agent, for which the agent would require extra compensation.

Ownership and maintenance risks will be less costly under TP since the government operator has a cost advantage in risk bearing over the PPP private sector firms. In any case, risks due to demand fluctuations and usage are often avoided by PPP consortia when contracting in Canada (Vining and Boardman, 2008).[10] Again, the profit motive may provide strong incentives to the consortium agent to minimize costs in these activities under a PPP, but at the price of increased social costs of risk bearing. In addition, if the infrastructure is to be transferred back to the public at the end of the contract, the PPP provides very weak incentives for maintenance unless the contract specifically monitors and enforces this adequately. Finally, if externalities or quality/aesthetics concerns are important components of social welfare, the PPP contract would be unlikely to provide any real incentives for the private sector agent to focus on these other components of social welfare (Kwoka, 2005).

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opportunistically try to renegotiate the PPP contract.

[10] The Canada Line in Vancouver, BC, provides an example of a PPP project that was initially sold to the public on the basis of significant risk transfer to the private sector agents. However, the final contract resulted in only 10 percent ridership revenue risk accruing to the private sector consortium.

Two other related considerations favour TP over the PPP: the higher transaction costs of the PPP contract, and the resulting lack of bidders.[11] PPP projects have many of the following characteristics: high asset specificity, high complexity, high uncertainty, high construction or use risk, low *ex ante* competitiveness and poor government contract management skills, all of which will tend to result in high transaction costs (Vining, Boardman and Poschmann, 2005). PPP contracts are much more complex than TP contracting, and require substantial preparation time and effort before signing. This extra complexity and preparation cost in turn discourages bidders, with few bidders likely resulting in excess returns paid to the PPP consortium agent, raising the government's costs of procurement.[12] Our predictions for the relative merits of PPPs versus TP regarding their effects on social welfare are summarized on the left-hand side of Figure 1.

4. PPP Performance Evidence

What do we know about how well PPPs have fared in terms of achieving high levels of social welfare? There are several problems with the existing literature on PPP performance. First, most evaluations of PPP do not use the appropriate evaluative criterion of social welfare. Instead, many try to measure whether projects are on time and within budget, or provide greater 'value for money'. On time and within budget concerns are certainly of political importance, as we discuss below. However, using this criterion biases the evaluation in favour of the PPP, because the extensive extra preparation time required to prepare the PPP contract is typically ignored and

[11] Transaction costs are those paid by the buyer but not received by the seller; they consist of all the costs of arranging, negotiating, monitoring and enforcing the contract, and are borne by all parties (Williamson, 1985). These costs are revenues for some of the entities engaged in these activities, including investment banks and lawyers, among others.

[12] To the extent that these excess returns simply represents a transfer from the government to the PPP agent, there is no net change in social welfare, providing that the private firm owners have 'standing'. However, if the PPP owners are foreign and do not count in Canadian social welfare, or if the lack of *ex ante* competition leads to allocative inefficiency, then there is a social cost.

costs have usually already been inflated before the contract is signed.[13] Value for money only considers the cost to the government principal and ignores other members of society. For example, if the PPP consortium agent replaces union labour with cheaper, non-unionized labour, then the costs of the project may decrease. If these cost savings are passed on in the PPP contract then this will lower the government's costs, but there is an offsetting loss to employees and so no net gain to society.[14] In addition, value for money studies are often performed by the same government agencies that are mandated to promote PPPs, and their methods have been criticized as inappropriate and biased in favour of PPPs (Boardman and Hellowell, 2017).[15] Second, proper evaluation of the effects on social welfare of using a PPP versus TP would require cost data that are often unavailable, either because they are held by the agency tasked with promoting PPPs, or because the PPP consortium deems these data proprietary. It would also require careful construction of the counterfactual case. Despite the shortcomings of the existing studies, we conclude that a review of the literature fails to provide support for the view that PPPs increase social welfare relative to TP.

Edwards et al. (2004) conclude that in the UK, the Highways Agency paid a 25 percent premium on construction cost on its first four PPP road projects. This was to ensure that they were built on time and within budget. Similarly, Blanc-Brude, Goldsmith, and Välilä (2009), in their examination of European road project PPPs undertaken between 1990 and 2005, conclude that *ex ante* construction prices were approximately 24 percent higher than for traditionally

[13] In BC, for example, the Golden Ears Bridge construction cost was $808 million, while the initial cost estimate was $600 million; the Canada Line's initial cost estimate was $1.35 billion, while the PPP contract was signed for $2.1 billion; the William Bennett Bridge in Kelowna was announced as a $100 million project, but the contracted cost was $144 million (Boardman, Siemiatycki and Vining, 2016).
[14] Boardman, Siemiatycki and Vining (2016) cite anecdotal evidence that wages declined at Kelowna General Hospital after a PPP consortium took over the cleaning contracts.
[15] In Canada, these agencies include Partnerships BC, Infrastructure Ontario, and Infrastructure Canada.

procured roads. They find that this is roughly equivalent to the reported *ex post* cost overruns for traditionally procured projects.

Boardman, Siemiatycki and Vining (2016) cite Partnerships BC, which shows that all 40 PPP projects completed since 2002 in British Columbia were on time and within budget, but note that there were often large premia paid to ensure these results. They find that generally there are a sufficient number of bidders for PPP contracts in Canada, but note that the Eglinton Crosstown light rail line in Toronto and a PPP to deliver a bundle of multiple schools in Alberta only received one or two bidders. Often the number of bidders decreases as the PPP bundles more activities. They find no Canadian evidence that PPPs produce lower life cycle costs of infrastructure. They note that while transaction costs are probably under reported, those measured typically average 1-3 percent of project costs. They report that the Ontario Auditor General estimated that Ontario had spent about $1.1 billion on transaction costs for 75 PPP projects, about $400 million more than would have been incurred under TP.

Makovšek and Moszoro (2017) conclude that it is likely that premia for diversifiable risks remain in private sector financing, and so government financing does have a lower social cost. They cite studies that are is consistent with this. These indicate that there are higher construction costs for PPPs due to higher financing costs, with fewer bidders and higher required returns. They find no evidence of offsetting lower operation and maintenance costs. These studies include: National Audit Office (2012), which found that of 118 PPP projects in the UK, 84 yielded higher than expected *ex post* returns to private partners; Vecchi, Hellowell, Gattic (2013), who studied 77 UK availability-based PPP hospital projects and found *ex post* average private firms' returns were 9.3 percent above *ex ante* expected financing costs; Fernandes, Ferreira and Moura (2016), who examined seven shadow toll roads in Portugal and found

financing costs averaging 3.7 percent above public financing costs. Makovšek and Moszoro claim that refinancing is common after the construction phase is complete, indicating that lenders apply a risk premium to this phase of the project, despite the presumed ability of the private sector to eliminate project-specific risks through diversification (see also Blanc-Brude and Ismail, 2013). Finally, Makovšek and Moszoro cite UK evidence that is consistent with very limited PPP contract bidding: on average there are three bidders, but many projects have only one or two. They conclude that there is clear evidence that the construction cost of infrastructure is higher under PPPs than with TP, even after higher *ex post* cost overruns for latter.

O'Shea, Palcic and Reeves (2019) compare Irish schools built using TP and those built using PPPs. They conclude that there is no evidence of faster infrastructure delivery, and little evidence for better value for money with PPPs.

Acerete, Gasca and Stafford (2019) examine PPP road procurement in Spain and the UK and find finance providers and private shareholders benefit at the expense of the public sector.

Petersen (2019) sifts through the available empirical studies on costs, quality and value for money of PPP versus TP for roads, schools, bridges, railways, hospitals and public buildings. This yields 21 studies that satisfy several criteria, such as being published in peer-reviewed journals and having a reasonably constructed counterfactual or comparator. Of these studies, nine find that PPPs cost more, three find that they cost less, two find that they cost the same, three provide mixed evidence and four cannot compare costs. Peterson concludes that the peer-reviewed literature does not support the view that PPPs lower the life cycle costs of long term infrastructure. With respect to quality, only three studies attempt to compare PPPs with TP. One finds lower PPP quality, one finds quality is marginally higher by some measures, and one finds no difference. Only two studies find greater overall value for money for PPPs, whereas two find

less, three find mixed results, 12 lack data and two find no association between the procurement method and value for money. Petersen concludes that "(t)he results of this systematic review suggests that PPPs are on average more costly… (than) conventional procurement (see Petersen, 2019, Table 1).

Thus, as Hodge and Greve (2017) note, while rigorous performance assessments of PPPs in terms of the public interest have been surprisingly limited, those studies that do exist do not provide any convincing evidence to support the view that they consistently deliver greater social welfare than TP. Nor does the evidence support even less compelling claims for their superiority in delivering better quality, greater value for money, faster delivery of infrastructure, lower construction costs, or greater innovation. What evidence does exist supports the predictions that they will have higher financing costs due to greater required risk premia, and that they will incur higher transaction costs and have relatively few bidders, resulting in excess returns to the private sector owners. Despite this, governments tend to view PPPs as successful based on their political and governance strengths, rather than for their ability to maximize social welfare. Accordingly, we now consider the political motivations behind this choice of procurement method.

5. Public Choice: Vote Maximization by the Government Principal

We have argued that using a PPP contract rather than TP to procure infrastructure may not be in the public interest, as evaluated by the normative criterion of social welfare maximization. However, as Hodge and Greve (2017) argue, PPPs must be understood *inter alia* as a governance tool that has the potential to deliver significant political benefits to the political party in power. The public choice perspective is a positive theory of government behaviour that seeks to predict the actions of self-interested politicians. To simplify, we now assume that governments will try to maximize the probability of their re-election by choosing the method of

infrastructure procurement that results in the greatest number of expected votes (Downs, 1957). PPPs have at least five several specific features, in contrast to TP, that make them more likely to attract the approval of potential voters.

First, as discussed above, one key difference between a PPP and TP is the timing of the cash flows. With TP, government incurs large up front costs and relatively low costs over time. In most PPPs, the government has to pay a relatively small share of the total project cost upfront or through the construction phase. Only once the PPP project is operational do governments or users begin to pay significant amounts and, even then, payments are usually spread over many years (often for 30 or more years). Therefore, PPPs allow governments to provide current voters with the benefit of immediately visible infrastructure, earning political credit, while deferring costs to future politicians and future voters and taxpayers. Boardman and Vining (2010b) characterize this government strategy as 'renting the money'.

The shifting of costs (relative to benefits) over time may provide the government with political benefits if voters tend to exhibit 'fiscal illusion' – that is, they do not fully take into account the future costs and the future taxes that must ultimately pay for the infrastructure (Marlow and Joulfaian 1989; Joulfaian and Marlow 1991). The political belief in fiscal illusion is understandable because comparison of alternative possible policies by individual citizens is cognitively difficult and costly in terms of time (Heyndels and Smolders, 1995). This fiscal illusion allows governments to increase votes by obscuring the level of spending and the tax requirements associated with that spending (Dollery and Worthington, 1996; Borcherding, Ferris and Garzini, 2004).

A political benefit of PPPs is thus that they do not increase the current government's spending (much) and, as result, they do not require immediate tax increases, nor do they increase

the government's current deficit or outstanding debt. Indeed, one of the many claims for PPPs is that they allow costly infrastructure to be built when governments are constrained from increasing the level of debt. Sometimes these budget limits are imposed by previous governments in the same country, as in the case of the UK, or they may be imposed by external entities such as the European Union, for example, to meet the Maastricht criteria related to public debt.

These political advantages of PPPs are reinforced by the fact that a current (democratic) government faces some probability that it will not be in power in the future. As a result, it will give less weight to the political cost of future taxes, relative to the political benefit of much more immediate benefits (getting the infrastructure built). From the public interest or social welfare perspective, however, governments do not avoid paying for projects or reduce costs by using a PPP; they just pay later (and sometimes significantly more in terms of net present cost).

A second political benefit of PPPs is that they increase the probability of the government being able to claim 'on time and within budget' project delivery. Using PPPs can reduce political risk, that is, the risk that voters will not vote for a government whose infrastructure projects are perceived as unsuccessful. Major delays and cost overruns on infrastructure projects may signal government mismanagement, which reflects badly on the incumbent political party. Large infrastructure projects often receive extensive media coverage, and may become key issues in elections.

Projects that are procured by PPPs are more likely to be on time and within budget than TP for at least four reasons: First, the construction phase does not begin until the end of an extensive planning and negotiation period, so that the PPP is ready to go immediately upon contract signing. Second, as discussed above, the cost overruns that often occur with TP are

usually 'baked in' to the PPP contract when it is signed. Governments often pay more for a PPP contract, simply to ensure that the project will be on time and within budget. Third, due to the ability to write clear conditions into the PPP contract, the consortium agents have strong incentives to complete on time and within budget. Fourth, a PPP contract is relatively inflexible, diminishing the probability of expensive changes.[16] Of course, the government ultimately retains the residual risk if the private sector consortium is unable to complete the project. There have been several high-profile cases of PPP project bankruptcies. These include Metronet in the UK, the South Bay Expressway in San Diego, and the Cross-City Tunnel in Sydney, Australia. When PPP projects run into trouble, governments sometimes assume all or a large part of the debts. In the Metronet case the government guaranteed 95 percent of the loans (in a project that was 88.3% debt financed; see Vining and Boardman, 2008). But overall, the use of PPPs would seem to reduce the political risks to the current government.

The third political benefit of PPPs is that they provide financial benefits to aligned interest groups, such as law firms, investment banks and large construction firms and consultants. These are concentrated interest groups that have a disproportionate influence on many governments (Olsen, 1965; Wilson, 1989). For example, Hellowell (2010) makes the case that, when initially elected, the Blair-led Labour government in the UK continued with Conservative Party's PPP policy in order to curry favour with the financial industry in London, known as 'the City'. The use of PPPs may produce immediate political benefits such as campaign contributions from aligned groups. Or, it may simply be the case that governments are responding to lobbying by these interest groups when they choose PPPs as a procurement method. The interest groups are motivated to lobby for PPPs because the benefits that they

[16] Makovšek and Moszoro (2017) claim that 'project creep' accounts for most of the cost overruns incurred using TP in the construction phase.

receive are substantial and highly concentrated among a relatively small number of firms and individuals. In contrast, the PPPs' higher transaction costs, excess returns and higher risk premia paid are spread among the general tax paying public. Some of these additional costs are borne by future generations of voters who may not be represented by the current electorate. No single voter has enough incentive, even if they understood these potential extra costs of PPPs, to provide a countervailing lobby (Olsen, 1965).

The fourth attractive PPP feature from the government's perspective is that it may involve tolls and, if so, the tolls may be higher than if government were to provide the infrastructure directly using TP. Non-users perceive tolls as fairer because they do not pay for the infrastructure, while users do. Users do not like paying tolls to anyone. But they do appear to be somewhat less resistant to paying tolls to a private sector operator than to a public one, although systematic evidence is hard to find. The PPP option creates greater distance between toll payers and government. A private sector operator is better able to withstand negative reactions to charging or increasing tolls. Consistent with fiscal illusion, this is likely to reduce the government's political risk associated with tolling and increase its willingness to allow the imposition of some user fees or higher user fees than would otherwise prevail.

A fifth political benefit of PPPs is that they invoke both government legitimacy and private sector efficiency; an unusual and politically pleasing combination. That is, PPPs may appeal to those on the left who favour greater government involvement in the economy while simultaneously appeasing those who believe that the private sector is inherently more efficient. Vining, Boardman and Moore (2014) describe this belief in the simultaneous achievement of both kinds of goals as the hope for 'the best of both worlds.' A number of political science and policy scholars have explained various attempts by incumbent politicians to obfuscate their

policy position in order to achieve support across the political spectrum (see, for example, Campbell, 1983). TP and government operation of infrastructure likely appeal more narrowly to those favouring a larger public sector. In contrast, PPPs may have a broader appeal, as they seemingly allow the government to provide more public infrastructure whilst simultaneously encouraging greater private sector involvement. Our predicted relative political benefits of PPPs versus TP are summarized on the right-hand side of Figure 1.

6. Conclusion

While public-private partnerships have only been in use for about three decades, they have been eagerly embraced by governments in Canada and elsewhere as a means of delivering public infrastructure. However, an understanding of the principal-agent problems inherent in this form of contracting leads to the prediction that PPPs are unlikely to achieve higher levels of social welfare than the use of traditional procurement methods. While there may be those in government who are motivated to try to further the general public interest, many politicians are concerned with the achievement and maintenance of political power through re-election. A consideration of these political motives may explain why, despite the evidence of poor performance of PPPs, many governments across the political spectrum continue to favour them.

We have argued that politicians prefer PPPs because: they change the time profile of costs and benefits of infrastructure; they seemingly result in better on time and within budget outcomes; they channel benefits to aligned interest groups; they make (higher) user fees and tolls more politically palatable; and they provide a wider ideological appeal to voters across the political spectrum. It would be interesting to attempt to measure the degree of popularity of PPPs over TP across jurisdictions, and to relate these to measures of the various political benefits that they produce, in order to test some of these predictions.

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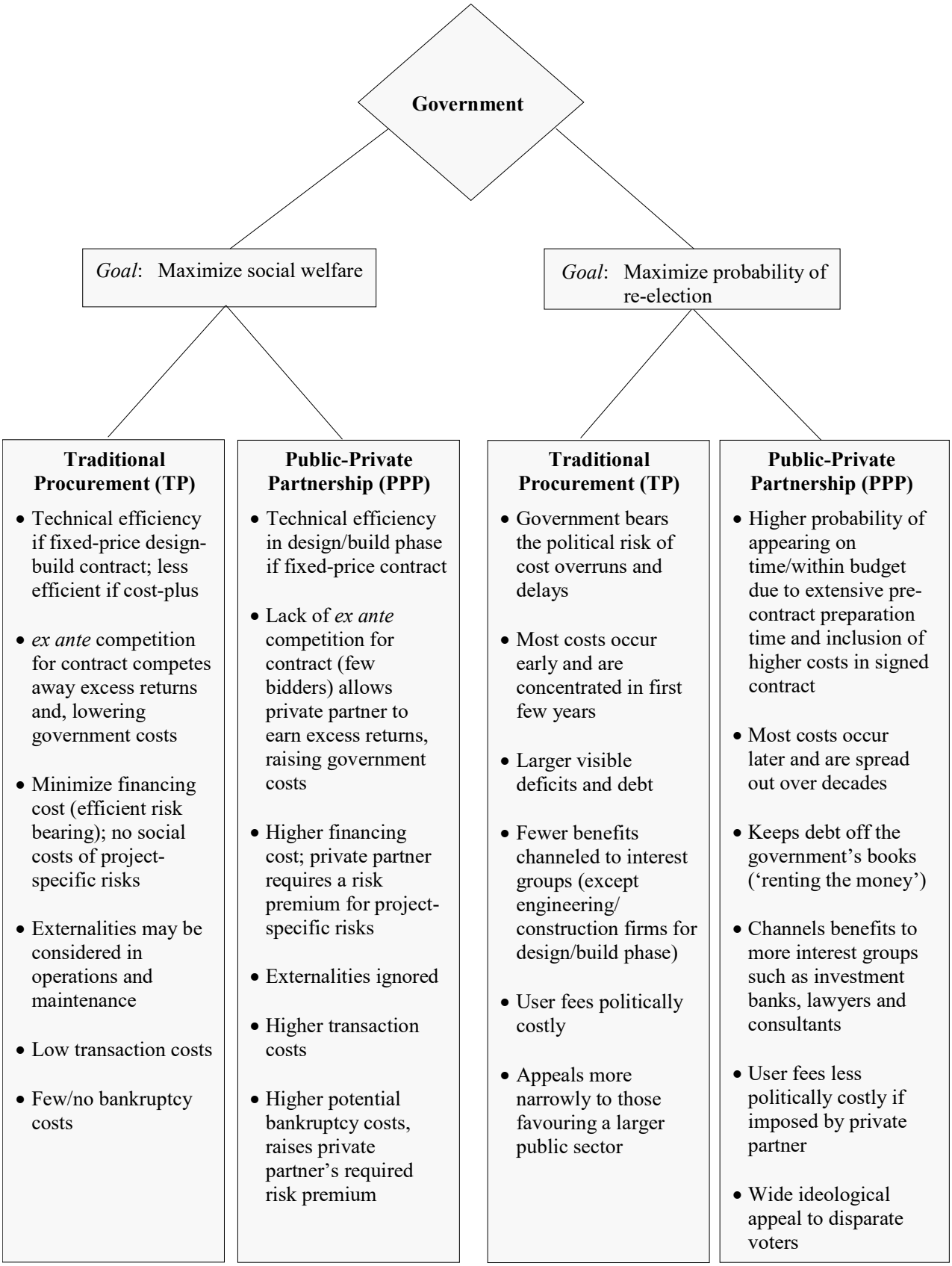
Figure 1


Government
Goal: Maximize social welfare
Goal: Maximize probability of re-election
Traditional Procurement (TP)
• Technical efficiency if fixed-price design-build contract; less efficient if cost-plus
• *ex ante* competition for contract competes away excess returns and, lowering government costs
• Minimize financing cost (efficient risk bearing); no social costs of project-specific risks
• Externalities may be considered in operations and maintenance
• Low transaction costs
• Few/no bankruptcy costs
Public-Private Partnership (PPP)
• Technical efficiency in design/build phase if fixed-price contract
• Lack of *ex ante* competition for contract (few bidders) allows private partner to earn excess returns, raising government costs
• Higher financing cost; private partner requires a risk premium for project-specific risks
• Externalities ignored
• Higher transaction costs
• Higher potential bankruptcy costs, raises private partner's required risk premium
Traditional Procurement (TP)
• Government bears the political risk of cost overruns and delays
• Most costs occur early and are concentrated in first few years
• Larger visible deficits and debt
• Fewer benefits channeled to interest groups (except engineering/ construction firms for design/build phase)
• User fees politically costly
• Appeals more narrowly to those favouring a larger public sector
Public-Private Partnership (PPP)
• Higher probability of appearing on time/within budget due to extensive pre-contract preparation time and inclusion of higher costs in signed contract
• Most costs occur later and are spread out over decades
• Keeps debt off the government's books ('renting the money')
• Channels benefits to more interest groups such as investment banks, lawyers and consultants
• User fees less politically costly if imposed by private partner
• Wide ideological appeal to disparate voters