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Aidan R. Vining [a]; Anthony E. Boardman [b]; Finn Poschmann [c]
[a] Simon Fraser University. Vancouver. Canada
[b] University of British Columbia. Vancouver. Canada
[c] C.D. Howe Institute. Toronto. Canada

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Public–Private Partnerships in the US and Canada: "There Are No Free Lunches"[1]

AIDAN R. VINING,* ANTHONY E. BOARDMAN** and FINN POSCHMANN†
*Simon Fraser University, Vancouver, Canada; **University of British Columbia, Vancouver, Canada; †C.D. Howe Institute, Toronto, Canada

ABSTRACT *Governments in many industrialized nations have made concerted efforts to reduce their immediate expenditures and to reduce the cost of major infrastructure projects. Public–private partnerships (P3s) are one emerging method that might do so. Despite the increased use of P3s, there is little independent research on the effectiveness of P3s as a public policy instrument. This article considers the major rationales for P3s, including cost savings and keeping project financing off government budgets. It then presents a transaction cost model that suggests that P3s can often be prone to conflict, high contracting costs, opportunism and failure. Evidence from six major infrastructure projects and a summary analysis of US prisons is then presented. These cases confirm that contracting costs have been high, as predicted by the model. Specifically, high contracting costs reflect the presence of complexity/uncertainty, asset specificity, the potential for ex post bilateral opportunism and a lack of contract management skills by governments. Given these circumstances, the private sector can behave opportunistically at the expense of the public sector as there has sometimes been a political imperative to prevent projects from terminating. Public partners have also behaved opportunistically after projects are in place. Unless public sector managers recognize that they must design contracts that both compensate private sector partners for risk and then ensure that they actually bear it, P3s have little chance of being efficient or effective service delivery mechanisms.*

KEY WORDS: Public–private partnerships, transaction costs, US, Canada, opportunism, asset specificity, complexity, uncertainty

Introduction

Governments in many industrialized nations, and at all levels, have made a concerted effort to reduce their budgets and their budget deficits (Grout and Stevens 2003: 220). Because public-private partnerships (P3s) reduce direct government expenditures (at least in the short run) without necessarily reducing services, they

Aidan Vining is the CNABS Professor of Business and Government Relations in the Faculty of Business Administration, Simon Fraser University, Vancouver. His research interests focus on public policy analysis and business strategy. Anthony Boardman is the Van Dusen Professor of Business Administration in the Strategy and Business Economics Division at the University of British Columbia. His research interests include privatization, contracting out and cost-benefit analysis. Finn Poschmann is Associate Director of Research, C.D. Howe Institute. His research interests include finance and intergovernmental fiscal relations.
Correspondence Address: Aidan R. Vining, Faculty of Business Administration, Simon Fraser University, Vancouver, BC, Canada, Email: vining@sfu.ca; Anthony E. Boardman, Email: Anthony.Boardman@Sauder.ubc.ca; Finn Poschmann, Email: fposch@cdhowe.org

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have attracted growing interest from governments. Budgetary savings, however, are not the only reason for this increasing interest. P3s are "part of a wider trend to decentralization and autonomization" (Pollitt *et al*. 2001: 275) that aims to improve public procurement as well as other aspects of government performance (Gruening 2001). This article reviews the emerging experience regarding the implementation and operation of P3s in the US and Canada, focusing primarily on cases of major infrastructure projects. While projects with partnership characteristics began to emerge in the 1980s, it was not until the mid-1990s that P3s really began to take hold. Since then, P3 projects have taken root in many jurisdictions. How effective have these initial P3s been? What lessons can be learned?

A wide range of relationships between the public sector and for-profit private firms could potentially be labeled as P3s.[2] The critical feature of P3s is that they involve an *ongoing* relationship between a public sector entity and a private sector entity *with some degree of joint decision making and financial risk sharing*. In contrast, contracting out involves a "purchase" from the private sector by the public sector (Globerman and Vining 1996). However, there is no "bright line" that distinguishes these or other forms of government procurement (Warner and Hebdon 2001). In practice, one organizational form merges into the other. We argue that P3s and contracting out can share many of the same features that can raise costs, result in conflict between the participants and lead to poor performance outcomes.

Infrastructure P3s are typically structured by an explicit contract – between a government entity and one or more private sector firms – where the private sector entity agrees to finance, build and operate some facility for a specific period of time, after which ownership is transferred to the public sector.[3] These projects are frequently referred to as Build–Operate–Transfer projects or BOTs. The governmental entity is sometimes the (intermediate) customer for the project's output and is sometimes responsible for the payment of the user fees. In other cases, toll roads, for example, the public sector party negotiates the contract and sometimes specifies unit prices, but road users pay the private entity directly.

The paper proceeds as follows. It first considers government rationales for P3s. Second, it considers a "positive" model of P3s based on the fact that P3s have similar characteristics to two other contracting relationships between government and private sector entities – contracting out by governments and "mixed" enterprises (enterprise owned by government and private shareholders). These relationships "partner" participants with conflicting goals; as a result contracting costs (a form of transaction cost) are likely to be high. Third, a number of P3 examples are then considered in light of this positive model. They suggest that the prognosis for future P3s is somewhat pessimistic under current practice in North America. As discussed in the conclusion, these findings are similar to those emerging from the scholarly literature in Europe. In sum, governments have generally found it difficult to *effectively* reduce their financial and budgetary exposure through the use of P3s. Furthermore, in some cases, governments have faced significant increased political risk, rather than reduced risk as they had hoped. At the same time, the for-profit private sector partners have had difficulty making adequate rates of return, although this is a tentative conclusion as they have usually had incentives to publicly emphasize losses and to be secretive about profits. One common outcome is the dissolution of the P3 more quickly than envisioned in the original contract, whether through a government buy-out, private

entity bankruptcy or otherwise. Another common outcome is protracted conflict, with high contracting costs borne by one party or both.

Can these problems be solved, or at least mitigated? The fundamental goal conflict is not going to disappear. Clearly, if decision-making authority and financial risk bearing are not carefully matched, incentives will be misaligned and effective outcomes are unlikely. Unless there is government learning (both across and within levels), governments will be doomed to constantly repeat both the high contracting costs and the poor outcomes. In the conclusion, we discuss some ways that governments might start to control these high contracting costs.

Government Rationales for P3s

There is a history of private franchising in the United States (see Boardman *et al.* 2005). In Canada, there has been a long history of public subsidies for large-scale private infrastructure, such as railroads (Hardin 1974, Mylvaganam and Borins 2004). Close linkages between the public and private sectors re-emerged in the US and Canada in the mid-1990s in the form of P3s. North American governments, like those in Europe and Australia, have been most attracted to P3s in capital-intensive areas, such as transportation, water and wastewater, to minimize the expenditure of large amounts of public capital (Norment 2002).

Why do governments argue that it makes sense to utilize P3s rather than more direct means of public provision? While there may well be an element of faddism in the move to P3s (Pollitt *et al.* 2001), governments have presented five specific reasons. As mentioned in the introduction, a major reason for P3s is to keep public sector budgets, and especially budget deficits, down. Indeed, most US states have constitutional or legislative requirements to balance budgets. Even in the absence of constitutional constraints, most governments perceive that there are political benefits from keeping large capital projects "off-budget" (Li *et al.* 2005). Second, governments usually argue that P3s can provide both infrastructure and on-going services at a lower cost, resulting primarily from superior private sector scale efficiencies and technical efficiency, also called X-efficiency (Frantz 1992). A third reason is financial risk reduction. This pertains to both the cost of the project and the future revenue stream. Various agencies of the UK government have generally argued that this risk transfer should be the primary benefit flowing from the use of infrastructure P3s (usually called Private Finance Initiatives, or PFIs in the UK) (UKNAO 1999, NHS 1999, HM Treasury 2000). Relevant to both rationale two and three, large government infrastructure projects in a wide variety of jurisdictions have often cost far more than anticipated or budgeted (Boardman *et al.* 1994, Flyvbjerg *et al.* 2002, USGAO 2003, UKNAO 2003). Furthermore, revenue streams from these projects have often turned out to be much lower, higher or more volatile than expected. If revenues do not meet expectations, a public project would have to be cross-subsidized out of general revenue. A fourth reason is governments' desire to avoid up-front capital costs – it is easier to raise private capital than additional tax revenues or government loans. Bond issues in the US are often subject to voter referendum. But, voters may simultaneously demand more services and vote against bond proposals (Pozen 2003: 264). While this rationale is obviously closely related to the desire to avoid on-budget commitments, it is distinct. Fifth, governments may

believe (or at least want to believe) that private sector provision of financing means that it is easier for a private entity to impose user fees, resulting in less political cost to government. The reasoning is that voters will accept that the private sector needs to raise revenue to make a profit and repay its debt, but they are less willing to accept the argument that the public sector needs to do so. This rationale is best assessed after the implementation of P3s; we briefly consider the evidence on this later.

Are the first four rationales well-founded? Concerning the first rationale for P3s – keeping the project off the public balance sheet – the government will normally account for the project in accordance with public sector accounting principles. However, it is important to recognize that, regardless of the accounting conventions used, the underlying economic reality is not altered. For example, a government or health care provider that constructs a new hospital using a P3 will have to pay for it at some point in time either via a rent charge or a user charge. This charge will normally have to recompense the private entity for all the construction risk it bore. This reflects the fact that no matter who finances the project, whether in the public or private sector, ''the overall cost of capital ... is determined wholly by the underlying risks associated with the activity'' (Jenkinson 2003: 325). Thus, the present value of this payment is likely to be *at least* equivalent to the real risk-adjusted cost of constructing the hospital. This risk charge might actually be lower for many governments because of their ability to spread construction risk over a large number of similar projects, that is, from their superior risk-pooling capacity (see Perold 2004: 6–12). However, it is possible to postulate that global firms would have superior risk-pooling capacity for highly specialized projects. In these situations, provided that the project is not globally unique, the firm would be able to avail itself of economies of scale and learning that are not available to governments. Thus, while there may be a political benefit in keeping the debt off-budget, this is normally not a fundamental economic rationale for P3s.

The next three rationales for P3s relate to the relative (non-financing) costs of the public sector versus the private sector. There are certainly a number of theoretical reasons to expect that P3 delivery could lower costs that are not related to financing. There are a number of related strands to this cost superiority argument. The major argument for cost superiority is that private sector firms may be able to utilize superior scale, scope or learning economies. Private sector firms often enjoy project-specific economies of scale and scope advantages compared to most governments. Their advantage is particularly strong in comparison to sub-national governments, which by definition are limited in the geographic scope of their operations – unless they can engage in (costly) contracting with adjacent governments (Globerman and Vining 1996). Large multinational firms may engage in many similar projects and be global in scope. In contrast, many governments at the sub-state level cannot realistically achieve minimum efficient scale. Large firms not only benefit from these scale effects directly, but they also allow them to utilize learning economies – specialized knowledge accumulated through learning and experience (Lapre and Van Wassenhove 2003). These cost advantages are likely to be most important during the construction phase of projects, but they can also be important in reducing the cost of raising equity and debt capital (in other words, before construction).

Another cost superiority argument is that the private sector normally has superior incentives to minimize costs, holding constant any scale, scope or learning effects.

Put another way, the private sector has lower agency costs (Jensen and Meckling 1976), as is clearly illustrated in the recent privatization literature (Megginson and Netter 2001). Nonetheless, as we discuss below, specific incentive structures can negate or reverse these normal incentives. Because of the cost-reduction profit incentives, they may have more cost-efficient operations, including procurement policies, and better project management skills. These technical efficiency cost advantages are likely to be relatively most important during the operational and management phases of projects. They may also have lower wage costs, possibly due to hiring non-union labor (Hundley 1991, Gregory and Borland 1999). It is often argued that these superior incentives show up most clearly over time in cost-reducing innovation, or *dynamic* technical efficiency (Dosi 1988).

Second, critics argue that the cost of financing may be lower for the public sector. US tax policy generally favors the public sector because state and local governments may issue bonds that are exempt from state and federal taxes. Canadian tax policy does not provide such tax benefits, but provincial bonds generally carry a lower interest rate than corporate bonds. After a comprehensive review of the issues, de Bettignies and Ross (2004: 146–147) conclude that it is not at all clear that governments are generally able to borrow at a lower cost than the private sector.[4] Additionally, there is a trend for some governments to provide equivalent tax-exempt status to P3 projects, further leveling the playing field.

Although the cost rationales for using P3s have some prima facie merit, some critics would not accept them and have directly rejected P3s on more fundamental normative grounds (Rosenau 1999, Teisman and Klijn 2002). While these debates are important, they are not the major focus of this article. Rather, in the next section, we explicitly focus on a positive theory analysis (Vining and Weimer 2001).

A Positive Theory Perspective: Incorporating Contracting Costs

The public and private participants in a P3 inevitably have conflicting interests (Teisman and Klijn 2002, Reeves 2003, Trailer *et al*. 2004). Studies have shown that in other interorganizational contexts with similar conflicting interests, the result can be high bargaining costs, opportunism, failure to achieve goals and partnership dissolution. For example, mixed enterprises that are jointly owned by private shareholders and government can result in ''the worst of both worlds'', achieving neither high profitability nor worthwhile social goals (Eckel and Vining 1985, Boardman and Vining 1989, Sueyoshi 1998). Contracting out by government in relatively unfavorable circumstances has also been shown to be prone to high bargaining costs (Globerman and Vining 1996, Brown and Potoski 2003, Boardman and Hewitt 2004). Even private sector joint ventures where the participants both have profit goals experience conflict, opportunism and have high failure rates (Geringer and Herbert 1991, Inkpen and Beamish 1997, Shenkar and Yan 2002).

The likelihood that a P3 will provide a project at lower cost to government or the rest of society depends not only the private sector partner having the appropriate incentives to minimize costs, but also the incentives to pass some of these cost savings on to the public sector partner. But, firms are interested in profit maximization, rather than cost minimization. If they are remunerated on a ''cost-plus'' basis, whether deliberately or because of a lack of foresight, then they will have

an incentive to raise, rather than lower, costs (McAfee and McMillan 1988). If they can achieve lower costs, they have no intrinsic desire to pass on these lower costs as lower prices. Sophisticated private sector equity investors are especially wary of engaging in contracts with prices that do not fully compensate them for all the risks they assume. Additionally they can strategically minimize their risk in (at least) two ways: (1) by forming a stand-alone corporation that is isolated from their other corporate activities, thereby reducing the costs of bankruptcy if it becomes necessary; (2) by limiting their equity participation through the utilization of extensive third-party debt financing (Roll and Verbeke 1998). As we discuss below, both strategies are consistent with either a transaction cost theory or agency theory perspective with respect to the P3 relationship (Jensen and Meckling 1976, Trailer *et al*. 2004).

The critical issue in evaluating the success of a P3 is whether the total cost of the P3 is lower than the total cost of the counterfactual of government provision. Transaction cost economics provides a useful framework because it emphasizes that in interorganizational contexts total contract cost equals production cost plus transaction costs (Williamson 1975).[5] Transaction costs include the cost of negotiating, monitoring and, if necessary, re-negotiating contracts with profit-maximizing firms.[6] Many of these transaction costs, however, are not included as a cost of the project in the project budget. Some of these contracting costs may be captured in other government budgets, for example, in government legal and procurement departments. But, they are frequently not allocated to the P3. From a social perspective, all costs, including the private sector's transactions costs, should be included when evaluating the "success" of P3s (Globerman and Vining 1996).

As discussed earlier, proponents of P3s have tended to focus on the potential ability of P3s to deliver projects more promptly and at lower construction costs than can governments. There is some evidence to support this argument (UKNAO 2003). While these two measures do represent some degree of success, and are dimensions where traditional public sector projects are weakest, they are too narrow as they do not include transaction costs. In sum, they are not equivalent to a social benefit-cost analysis. Independent studies of P3 performance that use comprehensive measures of performance are rare and admittedly difficult.

Transaction costs are substantively important because many P3 infrastructure projects present complex contracting situations. Indeed, one way of thinking of P3s is simply government contracting out under relatively unfavorable conditions. Transaction cost theory suggests that contracting costs are likely to be high when the infrastructure has the following characteristics: high asset specificity, high degrees of complexity/uncertainty and low *ex ante* competitiveness (Williamson 1975, Globerman and Vining 1996, Broadbent *et al*. 2003). The difficulty in managing these issues is greater if the government initiating the P3 has poor contract management skills (Boardman and Hewitt 2004, Leiblein and Miller 2003). After the P3 contract has been signed, contestability is low and the risk of holdup is high. Thus, aggregate contracting costs are likely to be high. Governments with weak contracting ability and experience will not have the skill to anticipate these contracting problems and contract for them *before* the contract is finalized. Many P3s, especially infrastructure projects, are likely to have some or most of these characteristics.

Six P3 Project Reviews

We provide reviews of six specific projects. They were selected because of the availability of information, the size and profile of the projects and the lessons they offer for P3 contract theory, design and implementation. Three are in the US: the Dulles Greenway in Virginia, Route 91 in Orange County and the Tampa Bay Seawater Desalination Plant in Florida, and three in Canada: the Alberta Special Waste Management System, Highway 407 in metropolitan Toronto and the Confederation Bridge linking Price Edward Island with the Canadian mainland.

Dulles Greenway

US federal law essentially banned private toll roads until 1991 (USCBO 1997). In that year the passage of the Intermodal Surface Transportation Efficiency Act explicitly authorized their use. In spite of this, the United States General Accounting Office (USGAO) recently concluded that "[a]ctive private sector sponsorship and investment has been used to a limited extent in the United States to fund, construct, and operate major highway and transit projects; as a consequence, the nation's experience with active private sector sponsorship and investment has been limited" (USGAO 2004: 3). The USGAO identified only two major recent highway projects that included for-profit private partners (USGAO 2004: 11). These are the Dulles Greenway toll road in Virginia and Orange County State Route 91 Express Lanes in southern California.

The Dulles Greenway (formerly the Dulles Toll Road extension) is a fourteen and a half mile toll road that runs from Dulles International Airport to Leesburg in Virginia. Apart from $3.5 million in state funds, its owner, the Toll Road Investors Partnership II (a partnership of local interests, the Italian toll road operator Autostrade SPA and Kellogg, Brown and Root), raised $360 million in private capital to finance the startup. However, the project only involved approximately $40 million in equity financing (USGAO 2004: 14). At the time it was raised, none of the financing qualified as a tax-exempt bond (Taliaferro 1997).

Construction was originally scheduled to start in 1989 and to be completed by 1992, but financing and environmental concerns postponed the start of construction until September 1993. The highway opened in September 1995, six months ahead of schedule. However, early ridership was lower than projected, and the project went into default in July 1996 – within a year of its opening.

Demand forecasts were based on an independent consultant's report conducted in the late 1980s, prior to the economic downturn in the early 1990s. This report assumed demand would be approximately 20,000 vehicles per day at a toll of $1.50 for the first year, rising to 34,000 per day at the same toll rate by 1995 (Wooldridge *et al*. 2002). The delay in opening the road was ignored and ridership was forecast at 34,000 per day (Pae 1995).

To increase ridership, tolls were lowered from an initial $1.75 to $1.00. While trips increased, this had a marginal impact on revenues due to the lower tolls. In 1998/99, debt was restructured and did qualify for tax-favorable treatment, thus lowering carrying costs.[7] Usage has increased over the six-year period since the highway's completion from about 10,000 per weekday to about 60,000 (Brumback 2003).

Nevertheless, the partnership's losses have been about $30 million per year, and future profitability will depend on the ability of future revenue growth to cover capital and operating costs.

The Dulles Greenway P3 illustrates a "vicious cycle" that seems to afflict quite a few highway projects: tolls are set high in an attempt to cover financing and operating costs, demand is overestimated at that toll, the toll discourages usage and thus total revenues are not high enough to cover financing and operating costs. Tolls are lowered, as a result demand increases, but total revenues do not increase substantially and still do not cover financing and operating costs; the builder/operator requests some form of bailout by government and if it does not get it the firm slides into technical default.

The potential for this cycle is not as common in more incremental reforms to highway procurement contracting that introduce some greater degree of incentive compatibility between government and highway construction firms. Various forms of performance-based contracting do seem to improve highway procurement (Batelle 2003).

SR 91, Orange County

State Route (SR) 91 was authorized by the California legislature in 1991.[8] A ten-mile stretch of the California freeway opened in 1995 with the median lanes of the highway dedicated as the SR 91 Express Lanes. These lanes were operated as a P3. Access to these lanes was restricted and operated as an electronic toll road. Toll rates were not regulated, but the operator could not earn a return in excess of 17 per cent. The agreement included a non-compete clause which restricted improvements to the freeway or nearby roads except for safety reasons (Poole 2000).

The developer and operator of the project was the California Private Transportation Company (CPTC). CPTC was a limited partnership that included Peter Kiewit Sons (a large construction firm), Cofiroute (a French toll road company) and Granite Construction (a local Californian firm). The public sector partners were the California Department of Transportation (Caltrans) and the Orange County Transportation Authority. Upon completion in 1995, the state owned the lanes, but CPTC was to operate, maintain and police the road for 35 years. After the 35-year period, roadway management would revert to the government. Initial private financing raised approximately $125 million, although only $20 million was CPTC's equity (USGAO 2004: 14).

Volume on SR 91 increased steadily from 7.3 million trips in 1999 to 9.5 million trips in 2002, while over the same period annual revenue grew from $19.5 million to $29 million (USGAO 2004: 43). In 1999, there was an attempt to sell CPTC to a newly created non-profit entity for $260 million. There was a public outcry over the perception that this was a non-arms-length "sweetheart" deal and the sale was cancelled. Over this period, the Orange County government came under increasing political pressure because of the contract conditions. The manifest focus of conflict was the non-compete clause, but CPTC's profitability also seems to have been a latent issue. Caltrans essentially decided to ignore the non-compete clause and tried to expand capacity in 1999, claiming that safety was an issue. However, CPTC sued and Caltrans was forced to settle after the discovery process revealed Caltrans

internal documents admitting there was no significant safety issue (Poole 2000). There were other lawsuits filed by Riverside County as well as two unsuccessful legislative attempts to void the non-compete clause and acquire the tolls lanes via condemnation. In 2002, the Orange County Transportation Authority finally reached an agreement with CPTC to purchase SR 91 for $207.5 million. The road continued to be managed by a successor corporation to CPTC named Cofiroute Mobility.

It could be argued that SR 91 was successful – the lanes were built quickly and at projected cost. Riders use the lanes every day. The ultimate sale back to government was certainly portrayed as a "win–win" situation by both sides. Looked at from a broader public policy perspective, however, it is hardly a model example of partnership between the public and private sectors. Both parties exhibited opportunistic behavior and the transaction costs, including legal costs and negotiation costs, were enormous.

Tampa Bay Seawater Desalination Plant

The Tampa Bay region decided in the mid-1990s to solve a looming water shortage by constructing a major water desalination plant. The plant was projected to process 25 million gallons a day, or approximately 10 per cent of the volume that West Coast Regional Water Supply (now Tampa Bay Water), the region's water supplier, provided to the cities of Tampa Bay, St. Petersburg and New Port Richey, as well as surrounding counties. At the time, the desalination process was still an emerging technology and was expected to be considerably more expensive than incremental conventional groundwater sources (Johnson 2003). However, the Southwest Florida Water Management District was putting pressure on jurisdictions to reduce groundwater pumping and was prepared to provide subsidies for desalination. No other utility in the United States provided water by desalination on a regular basis.

The water utility wished to proceed with a P3 that protected it from financial risk. The project was divided into two separate components: an engineering–procurement–construction project and a 30-year operations and maintenance contract. Initial bids offered to provide water at $2 to $3 per 1,000 gallons. These price quotes were considerably below the price that the water utility expected to pay because contractors appear to have hoped to gain an early lead in the desalination market. Covanta Tampa Construction was selected for both the construction contract and a 30-year operations-maintenance contract.

The relationship between the utility and the contractor appears to have been fraught with mistrust, partly brought about by constant delays in completing the plant. Eventually, Covanta filed for bankruptcy in October 2003 with the operations and management contract (worth approximately $350 million) as its only asset. One reason for the bankruptcy filing was to prevent Tampa Bay Water from terminating Covanta's contract and replacing it with another firm.

Construction of the plant was completed in 2003. Although the plant has begun producing water, Tampa Bay Water refused to approve the plant during a 14-day acceptance test, claiming major deficiencies (Wright 2003). The main problem appeared to be that the purification membranes clogged easily and needed replacement much more frequently than forecast. Without this approval, Covanta

was blocked from beginning the operations and management contract. In 2003, a US Court ordered the parties into mediation, but by 2004 the partnership had terminated with Tampa Water paying Covanta $4.4 million of the $7.9 million it had retained from the construction contract.

At the time of writing, the plant was producing 22.4 million gallons a day, not far off its projected volume of 25 million gallons, albeit at higher than projected costs. Tampa Bay Water is negotiating with a number of firms concerning repairs to the filters and other problems. These repairs are forecast to cost somewhere between $8 million and $20 million (Pittman 2004). The *St. Petersburg Times* concludes: ''The dumbfounding part of the troubled odyssey in opening this important desalination plant is that the contract arrangement was designed to limit the public's financial liability'' (*St. Petersburg Times* 2003: 14A).

The Alberta Special Waste Management System

The Alberta Special Waste Management System (ASWMS) was created in 1987. It was jointly owned by a provincial corporation (40 per cent) and BOVAR Inc., a private firm (60 per cent). ASWMS built an integrated hazardous waste-treatment facility at Swan Hills, Alberta. BOVAR was to collect 60 per cent of the profits and all of the net earnings of the operator (Chem-Security). Under the agreement, BOVAR also received a guaranteed minimum return on capital linked to the current prime rate regardless of the profitability of the venture (Mintz 1995). Furthermore, the provincial government provided debt guarantees for BOVAR, as well as indemnity against any future remediation or insurance liabilities in excess of $1 million. This arrangement followed from the Alberta government's belief that a private sector entity could build and operate the plant more efficiently than the public sector, although it recognized that the plant would not be commercially viable without subsidies.

The parties later modified the agreement to permit a large capacity expansion. Partly as a result of this expansion, the subsidy turned out to be considerably larger than expected – approximately $445 million in total between 1986 and 1995 (Mintz 1995: 17). Importantly, the additional capacity turned out to be excessive.[9] The plant has operated at about 50 per cent of its capacity through most of its life. In 1995, the Alberta government bought out BOVAR's ownership interest for $150 million. The contract's return-on-capital provisions provided a clear incentive for overcapitalization. BOVAR's profits did not depend on revenue exceeding costs: earnings were a function of capital investment, rather than efficiency or profitability.[10] BOVAR also had no incentive to encourage cost reductions by the plant operator. As a result, BOVAR received a high guaranteed rate of return although it was exposed to little risk.[11]

Because there was no useful sharing of risk and reward, it is hard to classify Swan Hills as a successful P3. The result was a waste treatment facility with capacity that exceeded Alberta's needs, having been built and operated under terms very costly to provincial taxpayers.

The Highway 407 Express Toll Route[12]

Highway 407 is a controlled-access 108-kilometer highway that crosses the north side of metropolitan Toronto. The request for proposals (RFP) was announced in

the fall of 1993, when the Province of Ontario was emerging from a recession which had left it in an extremely weak financial position (Mylvaganam and Borins 2004). The recession and the province's high debt load made a toll road politically viable. The 407 project was managed through the Ontario Transport Capital Corporation, a special-purpose entity created by the Ontario government. The original RFP proposed that the province would be responsible for land assembly and related costs. The private partner would provide financing, guarantee a maximum construction price and operate the highway. It would be remunerated from toll revenues, but neither traffic levels nor toll revenues were guaranteed. Under this original RFP, the private partner would have been financially exposed to the operating risk. The RFP specified few characteristics of the highway, in an attempt to encourage private sector innovation.

In the responses to the RFP, it became clear that credible private partners were unwilling to assume the financing risks in addition to construction and operating risks. Indeed, both of the two qualified consortia sought extensive provincial backing for the project debt. Without a toll-revenue guarantee, a private firm would have had to pay at least 75 basis points more for debt financing than would the province (Hambros 1999). These realities were used to rationalize the province's assumption of the financing of the project.[13] Subsequently, one consortium was allocated the contract for construction and highway maintenance, while the other was contracted to manage the toll system. This removal of financial risk fundamentally transformed the nature of the project. Once the bulk of the capital cost and financial risk shifted to the province, the project necessarily lost much of its P3 quality. The private partner was now tendering a fixed-price construction project.

The province also retained the operational risk during the first 18 months of operation. The risk to the province was reduced only when it sold the highway's operating concession to a Canadian–Spanish–Australian consortium for $3.1 billion (Mendoza *et al.* 1999). The concession term was for 99 years, after which ownership of the asset reverts to the government. The operating consortium appeared to negotiate a unilateral right to set tolls. In 2004, the consortium announced that it intended to raise tolls, claiming it was losing money (Mackie 2004). In the meantime, the province had gone through a change of government and the new government decided to fight the toll increase. The dispute is now before the courts (Mylvaganam and Borins 2004).

The 407 project has been successful to the extent that the highway was built quickly and without major cost overruns. The highway generates 300,000 daily vehicle trips, and it shifts nearly 200 million kilometers in travel per month from untolled public highways.[14] Given that each vehicle kilometer is billed to users and that no part of the highway exercises an effective monopoly, these figures suggest there is significant demand for the road. The 407 design process appears to have saved substantial provincial money in the initial construction phase, perhaps in the order of $300 million (Hambros 1999). Some of these savings were not realized, however, because design changes were needed before the highway opened. These changes were charged to the province because the parties agreed they were not part of the initial price-guaranteed contract. The full extent of savings is therefore unclear. Innovative design features such as short entrances and narrow radius ramps certainly reduced land assembly and construction costs. While there were some claims that these

changes might jeopardize safety, these fears appear not to have materialized (Mylvaganam and Borins 2004).

Overall, the 407 does not stand out as an exemplary P3 owing to the failure of the government to effectively transfer financing risks; the construction phase turned into a conventional develop, design and build contract. However, the Canadian Council for Public–Private Partnerships certainly regarded it as a success and awarded it a gold medal. Those who focus on the lack of risk transfer, such as Boase (1999), regard it as a P3 failure. Mylvaganam and Borins (2004) present a mixed assessment.

The Confederation Bridge

Prince Edward Island (Canada's smallest province) joined the Canadian federation under a constitutional agreement that guaranteed ship service to the island in perpetuity.[15] Beginning in the 1980s, there was ongoing debate over whether to substitute a fixed link for a weather-dependent ferry. In early 1988, a plebiscite approved such a link. Later in that year, the federal government selected three bids out of seven proposals for further development. Strait Crossing Development Inc. (SCDI), a consortium of Canadian, Dutch, French and American interests, submitted the winning bid.

The selected bid was essentially a BOT agreement. The contract specified a $41.9 million (1992 Canadian dollars) annual payment from the federal government to the operator, notionally representing the avoided cost of ferry operation. SCDI was entitled to all toll revenues for 35 years, after which bridge operation and ownership of its revenue (and cost) stream would revert to the federal government. The government provided an annual $13.9 million revenue guarantee. SCDI initially took on most of the construction and operational risk, as well as toll revenue risk beyond the $13.9 million level. The federal government agreed to bear a number of the residual risks from enemy attack, nuclear catastrophe, earthquake and environmental injunctions, and regulatory risk. The federal payment to SCDI was to begin whether or not the bridge was in service in 1997, but if the bridge was not substantially completed, SCDI was required to pay the ferry subsidy. SCDI was required to post performance bonds and guarantees for specific contingencies.

Principal financing was secured in 1993 through the sale of $640 million of real return bonds by Strait Crossing Finance Inc (SCFI). SCFI was established as a special purpose Crown Corporation of the province of New Brunswick. Its bonds were guaranteed by the federal government and received high credit ratings, providing a financial structure sufficiently durable to survive the 1996 pullout of the American private partner, Morrison Knudsen. Fabrication began in late 1993 and the bridge opened in 1997. Initial tolls were set at the ferry price for comparable vehicles and passengers. Annual increases were, and are, permitted at 75 per cent of the rate of consumer price inflation. The Canadian government estimated its incremental costs for project management to be $46 million.

This P3 is clearly a success to the extent that it delivered a functioning bridge on schedule. While there have been weather closures and some unexpected repairs, the bridge itself is functioning as expected, entirely supplanting the prior ferry service. The Canadian government claims that the Confederation Bridge entailed no incremental cost to government and required no direct funding from government.

The basis for the claim is the argument that the guaranteed payments to the SDCI are the same as the avoided cost of ferry provision, which the government was constitutionally required to pay anyway. The accuracy of this particular argument depends on the cost of (hypothetical) future ferry service provision.

Because SCFI's bonds are guaranteed by the Canadian government, financial risk has remained largely with government. The bonds were sold at a 4.5 per cent interest rate, at a time when similar federal issues were priced at 4.1 per cent. Moreover, SCFI paid a sales commission of 1.75 per cent, compared to a typical rate of 0.6 per cent for federal real return bonds. SCFI's higher rate and fees would not be an issue if the Canadian government had eliminated equivalent risk (in other words, if the federal government had acquired a put option against the risk of project default) or if the consortium's capital requirement had imposed on the private partners an incentive to minimize project capital. However, because the money was raised by a special purpose government agency and was guaranteed by government, there was no net reduction in risk exposure. It is difficult to escape the conclusion that the structure was primarily chosen in an effort to achieve off-balance-sheet financing.[16]

The project was completed and put in service very quickly. Again, however, it is not clear that the Canadian government laid-off risks that matched its financial exposure.

US Prison P3s

This section briefly reviews the evidence concerning P3s in the US prison system based on a number of sources. Admittedly, this evidence is at a highly aggregated level, rather than individual case studies of prison P3s. Some of the earliest private prison arrangements concerned only the delivery of imprisonment services in facilities that were built and owned by government, in other words, standard contracting out. In the 1980s, however, US federal and state governments undertook a large prison building program with private sector participation. This expansion was largely a result of a need to reduce overcrowding: in mid-1991, 40 states were operating prisons in violation of the Constitution's prohibition on "cruel and unusual punishment" (McDonald 1994, Pozen 2003). A number of private corporations financed, constructed and operated the new prisons. In some cases, there were also lease-buyback arrangements. As a result of this building expansion, the number of prisoners in private facilities grew from 0.5 per cent of all prisoners 8.5 per cent of all prisoners between 1985 and 1997 (Schneider 1999: 196). By the end of 2002, 6.5 per cent of all prisoners (approximately 94,000 in total) were being held in private facilities – 12.4 per cent of federal prisoners and 5.8 per cent of state prisoners (Harrison and Beck 2003: 8).

Pozen (2003: 72) concludes that "private prisons have a decent if patchy record in the United States." Rates of escape are similar at public and private prisons. Although attempts at cost comparison have been fraught with methodological problems, most empirical studies conclude that the cost of private prisons has been lower than, or similar to, the cost of public prisons: "these studies show a slight advantage to the private prisons and illustrate (in Texas, at least) that a state may realize a reduction in per inmate cost, over time" (Schneider 1999: 201). Many states, including Florida, require private firms to provide services at a cost savings of some

specific amount (usually 5–10 per cent).[17] The data on quality as measured on a number of dimensions (administrative compliance, escapes, assaults on staff, vocational programs, etc.) suggest that private prisons are better than, or equal to, publicly operated prisons. Interestingly, Lanza-Kaduce, Parker and Thomas (1999) find lower recidivism rates in private prisons, which they attribute to higher completion of rehabilitation programs. McDonald *et al.*'s (1998: 56) survey suggests that prison contract administrators thought that they were generally "getting what they ask for in privately operated prisons." Finally, the presence of private prisons has been credited with helping to improve the cost and quality of public prisons.

Lessons from the US and Canadian Cases

Individual P3 Lessons

There is one note of caution concerning P3 lessons from these six examples. Our analysis is based on the availability of public information, whether in journals, newspapers or on the web. Conflict and problems are inherently more newsworthy than co-operation and everyday delivery of services. Therefore, we would not claim that this is an unbiased sample of P3s. However, these six examples clearly illustrate many of the difficulties of implementing effective or "successful" P3s that deliver services at lower risk-adjusted total costs than direct government provision or traditional contracting out. As described in the introduction, a major expected benefit of P3s is the private sector's ability to have lower production costs due to economies of scale, more experience, better incentives and better ability to innovate. However, as we also pointed out, the critical test from a social perspective is whether P3s have lower total costs, including production costs *and* all of the transaction costs associated with managing external suppliers of services.

These P3s illustrate that contracting difficulties make it difficult for the public sector to actually realize lower *total* costs, that is, including all transaction costs. It is useful to consider the factors that are likely to have raised contracting costs in these case studies. First, we consider the issue of complexity/uncertainty. (Complexity and uncertainty are conceptually different, although in practice they are often treated as a single variable.) Many highway projects are relatively predictable from a construction cost perspective, but are highly uncertain from a usage perspective. For example, there was relatively little problem in constructing the Dulles highway on schedule. However, use levels on the toll road were significantly lower than anticipated (10,000 per day during the initial month versus 34,000 per day projected). This P3 essentially involved bundling a relatively standard highway construction project with a much more uncertain (and complex) operating project that involved demand estimation and pricing expertise. Bundling of these two very different kinds of "projects" resulted in a relatively complex project. SR 91 also illustrates this kind of bundling problem. Neither party had experience with variable price electronic tolling in the United States. Revenues and demand were highly uncertain. The feasibility and cost of electronic tolling was also uncertain, although this uncertainty has gone down quickly as a dominant design has emerged. The Tampa Bay water project again illustrates the bundling problem, although in this case it was the construction of the Tampa Bay water project that was complex (because large-scale

desalination is an emerging technology), while usage demand and price were guaranteed. The intrinsic complexity of the construction phase resulted in costs that were far higher than expected.

It is generally argued that it is preferable to specify contracts in terms of outcomes or outputs rather than inputs, as it minimizes the potential for opportunism and other problems (Milgrom and Roberts 1992: 125–247). However, in the presence of high complexity and uncertainty, this is essentially impossible. P3s potentially have special merit in infrastructure provision because imperfect information makes it difficult to specify *ex ante* the best design, construction techniques, or even the optimal investment in physical plant as opposed to later operational and servicing costs. In these circumstances, leaving design and investment decisions to private agents with expertise can be optimal (in providing incentives for innovation and efficient allocation of capital) – provided the public partner can adequately specify the desired service level. However, the Highway 407 example illustrates how complexity can actually be increased by specifying performance in terms of outcomes, rather than inputs. The lack of specification on the "how" in the RFP was presumably intended to draw out private sector innovation, but it increased complexity substantially. In turn, it had the effect of reducing *ex ante* competitiveness, as indicated by the fact that there were only two qualified bidders (even though each of the two consortia included quite a few firms).

Second, we consider asset specificity. Many infrastructure P3s are likely to have high asset specificity as such facilities have a high degree of "sunkness" – their value in any other use is low or zero. A related critical issue is whether the specific government that has initiated the contract is effectively the sole potential purchaser. The Tampa Bay desalination plant was characterized by locational asset specificity and the government was the only possible buyer. Government could also use its wider powers to strengthen its bargaining position. The city would not approve the plant and the private sector contractor could not sell the water to any other customer due to its location. Thus, the contractor was subject to government opportunism or holdup.

Highways, similarly, involve a high degree of locational asset specificity as they cannot be used for anything else of value other than a highway in that location. Transaction cost theory would predict that this would lead to a potential problem and, indeed, it has often turned out to be a problem during the construction phase. Here, either side can face the risk of holdup. The government partner can be held up because it is generally a lot cheaper for the initial contractor to finish the job than to bring in a new contractor. The existing contractor has a great deal of specific knowledge about the particular project, i.e., there is considerable human capital asset specificity. However, once the infrastructure has been constructed (and approved), this aspect of the asset specificity problem is reduced because there are many users. However, as in the desalination example, the government has a high degree of potentially opportunistic bargaining power once construction is complete because the private partner cannot remove a highway. Even the threat of opportunistic behavior can be opportunistic! These kinds of problems appear to be a major reason why US turnpike companies in the nineteenth century were generally quite unprofitable (Klein 1990, Klein and Yin 1996).

Third, we consider contract management skills. A lack of contract management effectiveness may relate either to the lack of general contracting expertise or to more specific subject-matter expertise. A lack of contracting expertise is a common problem for governments with limited P3 experience. Many public agencies cannot achieve relevant economies of scale and are, therefore, "learning-by-doing" on a steeper part of the learning curve; the result is higher unit cost. This lack of experience tends to encourage opportunism by private sector firms. In the Alberta Special Waste Management System project, BOVAR received a very high guaranteed return on capital. Taxpayers essentially paid twice for the project. Furthermore, the project capacity was too large, having operated at about 50 per cent of capacity most of the time. Here, lack of government contract skills led to a contract where the private partner had inappropriate cost incentives.

Opportunism can impact contract management effectiveness in many other ways. If governments are under a political and media microscope, they will be unlikely to "pull the plug" on projects, even if they are failing. Indeed, there may be an escalation of commitment (that is, a tendency to throw good money after bad). It is very hard politically for governments to stop P3 infrastructure projects in the middle – the bigger the project, the harder it is to stop (Ross and Staw 1993). Of course, this is also true for pure public sector projects (Boardman *et al.* 1993). If the private sector firm knows the public sector is committed to continuing the project regardless of escalating cost, it has an opportunity to behave opportunistically. But the SR 91 case suggests that governments can also be tempted to behave opportunistically when the private partner is too successful. Government is vulnerable to political charges of having made a "sweetheart deal" with, or being duped by, the private partners. These political costs tempt politicians to renege on contracts, no matter what the financial cost.

In summary, the risk of holdup is high when uncertainty/complexity and asset specificity are high and contract management effectiveness is low. This appears to be more likely to happen during the construction phase of P3s, than during the operating phase. While there may be uncertainty during the operating phase, this factor alone may not be too bad. Contestability is often reasonably high and the risk of holdup quite low. If one private sector operator fails, government can bring in another.

Prison P3 Lessons

The evidence suggests that P3 prisons are as cost-effective, or more so, than public prisons. The main reasons appear to be that economies of scale and better cost-containment incentives allow the private sector to operate with lower costs. These advantages do not appear to be offset by the transaction costs that have bedeviled other forms of P3. Contracting costs are reasonably low. There are a number of reasons: the core tasks are not very complex (both in terms of construction and operations), uncertainty is low, asset specificity is low and competition, or at least contestability, is quite high. Complexity is low because the tasks can be specified clearly. Uncertainty is reasonably low because demand is reasonably easy to forecast. This also reduces asset specificity and increases competition. In fact, competition is quite high, as evidenced by the number of private prison firms that are

traded on the stock exchange (Schneider 1999: 196). As a result, P3s in prisons generally appear to have worked reasonably well. Of course, there have been some problems in private prisons, including several riots, but these problems also occur in some public prisons.

Conclusion: No Free Lunches

Since the mid-1990s most infrastructure P3s in the US and Canada have occurred most frequently in the areas of transportation (roads, airports and bridges), water and wastewater, power and energy, and for hospital and other facilities. Some of the reasons why governments are drawn to P3s – especially lower cost provision – clearly have some validity. But, even if valid, it is important to emphasize that from a social perspective the key issue is whether the total cost of the P3 is lower than the total cost of government provision, including production costs and all contracting costs. To investigate this issue we examined six North American infrastructure P3s (all those we could gather reasonable information on from secondary sources). The evidence suggests that these potential benefits are often overwhelmed by contracting costs and opportunism. The reality that "there are no free lunches" applies to P3s as much as it does to anything else.

This case evidence should not be surprising. Profit-making private sector entities, whether they are construction firms, operating entities or whatever, are adept at ensuring that they are fully compensated for risk taking. Thus, in practice, there has been considerable variation in the degree to which financial risk has been shifted to the private sector. In some cases, in spite of the initial intentions of the public partner, projects have ended up largely or completely financed with the public sector bearing the risk. Private sector participants frequently go to considerable lengths to *avoid* risk, especially those associated with usage, even when that was the primary motivation for the public sector to utilize the P3 form. At the extreme, this means that private sector actors tend to establish "stand-alone" operating firms when carrying out P3 contracts that entail large risks from technological or demand uncertainty. These stand-alone private sector entities can avoid large losses when things go badly wrong by declaring bankruptcy or by *threatening* to go bankrupt. The evidence suggests that the public sector has difficulty in anticipating this form of opportunism (perhaps because it is something the public sector – with its taxing power – rarely has to deal with). However, the case studies illustrate that governments can also succumb to opportunism, especially when a P3 becomes a high-profile political issue.

Although our findings are based on a limited number of case studies in the US and Canada, the fragmentary evidence from other P3s in North America appears to be similar (e.g. Bartelme 2004). The findings are also quite similar to the emerging case study evidence in the United Kingdom (Broadbent and Laughlin 2004, Grout and Stevens 2003: 230), Ireland (Reeves 2003), the Netherlands (Klijn and Teisman 2003) and Denmark (Greve and Ejersbo 2003). One particularly significant international finding from both the UK (Asenova and Beck 2003, Edwards and Shaoul 2003) and Australia (English and Guthrie 2003) is that governments have not been particularly successful at shifting risk to private sector partners. Additionally, Li (2003) found that in the UK that contract negotiations associated with attempts to shift risk were

extremely costly. Thus, the evidence, in total, suggests that our findings in North America are similar to those from Europe. This raises the question of whether governments can learn, individually or collectively, to adequately specify contract conditions and institutional conflict resolution mechanisms *ex ante* so that the past is not prologue.

How Can Government Do Better?

Unless public sector managers can design contracts that both compensate private sector partners for risk and *then ensure that they actually bear it*, P3s will not improve allocative efficiency and make society better off (Globerman and Vining 1996). To do so, governments need to be much more honest. If they are going to encourage agencies to use P3s, they must be honest on the transaction costs. The most senior level of government with authority is best able to do this.

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Notes

1. This article builds on five cases that are forthcoming in Boardman, Poschmann and Vining (2005). A sixth case has been added as well as the US prison study. The theoretical framework is largely new.
2. For example, the US General Accounting Office includes conventional contracting out of government services and even privatization – the complete withdrawal of government provision and financing – as P3s (USGAO 1999). Additionally, the USGAO has treated non-profit entities as being "private" sector entities in P3s (USGAO 2004).
3. Specifically, we do not include the following relationships as P3s: (1) service contracts or other forms of contracting out by the public sector; (2) privatization in the form of the sale of public assets; (3) regulation (including franchise contracting) by public sector entities of privately owned natural monopoly facilities; or (4) the construction of facilities by the private sector and the leasing or sale of those facilities to the public sector based upon fixed, certain terms (including lease/purchase or turnkey agreements).
4. Governments cannot borrow infinite amounts of capital without affecting their credit rating. Raising funds for a P3 project may raise the cost borrowing for subsequent projects. Such costs should be included in the "full" cost of the P3.
5. The transaction cost language is more appropriate than agency language because P3s have the character of a relationship between independent organizational entities. Agency, or principal–agent theory, language is appropriate for intraorganizational hierarchical contexts.
6. Vining and Weimer (2005) distinguish between *ex ante* transaction costs, which can be called governance costs, and *ex post* transaction costs, which can be called opportunism costs or holdup costs.
7. Hall (1998) quotes the Chief Financial Officer of the private firm that operated the road as saying: "We haven't made any debt payments in so long I've forgotten how much we owe now."
8. Assembly Bill 680. This section primarily draws on USCBO (1997) and USGAO (2004).
9. Chem-Security said the reasons for this included generators' pursuit of lower-cost options for waste disposal (NRCB 1994: 6–8).
10. If Chem-Security and BOVAR could have earned profits higher than the guaranteed rate of return, they would have had an incentive to control costs. However, Mintz (1995: 33 and Appendix) shows that even with some positive probability of profit, they have an incentive to over-invest.
11. Mintz (1995) estimates a weighted return on equity of 15.9 per cent for the period 1989 to 1994, far above the risk-free return.

12. This section draws on Poschmann (2003).
13. Note that the logic is flawed. The province's taking on of the financing necessarily brought risks and costs not featured in the government's analysis (de Bettignies and Ross 2004).
14. Per http://www.407etr.com (accessed August 28, 2004).
15. This discussion follows Loxley (1999).
16. This was the Auditor General of Canada's conclusion, and the government did not ultimately succeed in keeping the financing off-book (Receiver General for Canada 1995).
17. Nonetheless, the USGAO (1996) concluded that the evidence on cost savings was "inconclusive."

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