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Banking on Infrastructure: How the Canada Infrastructure Bank can Build Infrastructure Better for Canadians

The Canada Infrastructure Bank holds great promise as a way to bring much-needed private investment into infrastructure projects. As the government sets up the bank, getting governance right will be critical to properly balance public accountability and project execution.

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THE STUDY IN BRIEF

The federal government tabled legislation as part of Budget 2017 to create the Canada Infrastructure Bank. The legislation sets the bank's purpose as attracting private investment in Canadian infrastructure projects that generate revenue and are in the public interest.

If done right, delivering large infrastructure projects through the proposed bank has the potential to significantly improve the effectiveness of infrastructure investment in Canada.

It could accelerate the pace of infrastructure development by encouraging the adoption of new funding sources – projects that are self-funding through user fees can proceed to construction faster. And charging users the true cost of the infrastructure they use reduces demand and lowers Canada's overall investment needs.

The bank can also reduce the risk to taxpayers. Governments around the world have great difficulty in accurately forecasting usage for new infrastructure. Canada is no exception. For eight Canadian transit and transportation projects, actual usage was one-third lower than forecast. Inaccurate usage forecasts lead to costly overinvestment in projects or expansions Canadians don't need. Working with the private sector can improve these forecasts – and avoid the cost for taxpayers of getting them wrong.

Finally, the bank could rigorously adopt international best practice in project evaluation. With rigorous project evaluation, if the bank commits to financing a project, Canadians would know that the project is the right investment on their behalf.

The bank will need to operate in Canada's federal system – where provinces and municipalities deliver the vast majority of infrastructure. However, the information generated by engaging the private sector through the bank will benefit decisionmakers at all levels. When market feedback suggests the project may have higher costs or lower usage than expected – it provides a signal to decisionmakers to reconsider. At that point, those promoting the project would need to decide whether the project should still be prioritized over other competing proposals as the likely net cost rises.

To accomplish this, the bank needs the right kinds of independence through both governing legislation and its operating practices. It needs political involvement on political questions of how much to spend and where to spend it to ensure democratic accountability. But once those decisions are made the bank needs strong independence to implement those decisions in the most effective way.

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In its 2016 Fall Economic Statement, the federal government announced a \$186 billion infrastructure investment program over the next 12 years. Additionally, Ontario, Quebec, Alberta and British Columbia have committed to \$298 billion in spending.¹ This represents one of the largest commitments to public infrastructure development in Canadian history, even before considering contributions from municipalities and from other provinces.

Infrastructure investment is meant to increase our living standards in the future: more time with family through shorter commutes; increased economic activity from better linking our businesses to customers at home and around the world; better access to hospitals, schools and other communities; a greener society. While estimates about the return on infrastructure investments vary widely, one suggests that every dollar invested in infrastructure returns 20 percent in annual long-run GDP (McKinsey 2016). However, returns on specific projects vary. A critical project in a high-demand area might have very high returns, while a bridge to nowhere represents a substantial outlay of our resources without substantial return.

With governments embarking on such ambitious infrastructure programs, it's important that they proceed with projects prioritized for their ability to generate higher living standards for Canadians. Prioritizing for political reasons or expediency could leave Canadians with costly bills and little to show for them.

The federal government has tabled legislation to create the Canada Infrastructure Bank (CIB). The CIB is meant to both invest in, and attract private-sector investment in, Canadian infrastructure projects that will generate revenue. If properly structured, the CIB has the potential to increase the effectiveness of our investment in public infrastructure.

The CIB is just one component of the federal government's infrastructure investment plan, representing \$15 billion in public capital against a \$182 billion investment plan. The CIB is therefore best thought of as an incremental tool to augment other approaches the federal government already pursues, catalyzing new ways of infrastructure development and funding that can bring benefits to Canadians.

In order to assess the potential effectiveness of the CIB, it is critical to accurately identify the opportunities at hand. In this *Commentary*, I explore four key opportunities for the CIB to improve the performance of infrastructure delivery by involving

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1 Since most federal infrastructure spending comes in the form of grants to other forms of government, a significant portion of the \$186 billion is likely included as provincial revenue to fund these spending commitments.

the scrutiny and expertise of private investors. The four opportunities are:

- Identifying funding for high-value projects beyond current funding sources;
- Selecting and prioritizing the projects with the highest likely benefits to Canadians;
- Improving the budget and schedule performance of large infrastructure projects; and,
- Building public trust that the investment decisions made on the public's behalf are sound and likely to increase living standards.

Improving performance in these four opportunities will result in Canadians receiving more benefits for every public dollar invested in infrastructure.

The CIB needs to be set up correctly to deliver on these opportunities. This requires more independent governance through regulations and operating practices to supplement the existing legislation; a deep commitment to evidence-based decisionmaking and transparency in both the project-evaluation process and the negotiating process with potential private-sector partners; and an ability to engage much earlier in the project development process than is typical for the federal government.

This *Commentary* explores how the CIB can improve performance against these four opportunities and makes recommendations on how to structure the CIB for maximum effectiveness.

What Do We Know About the Canada Infrastructure Bank?

The federal government made significant efforts to court the largest global and domestic investors to invest in Canadian infrastructure last November (Curry and Nelson 2016). The Canada Infrastructure Bank was positioned as way to solve the “Canadian Paradox,” where Canadian pension plans are major global infrastructure investors – but don't often invest in infrastructure projects at home. This has the potential to attract significant new resources to developing new infrastructure projects.

This was a very positive development from initial visions for the infrastructure bank, which saw it as a means for municipalities to leverage the federal government's better credit rating to reduce the accounting costs of financing new infrastructure projects. In a detailed comparison of municipal and federal borrowing costs, Siemiatycki (2016a) found that financing costs would be slightly lower, “but the creation of an infrastructure bank that provides lending services to municipalities and provinces is not on its own a complete game-changer.”

The government recommitted to launching the CIB in both the Fall Economic Statement 2016 and Budget 2017, with limited additional detail on its future shape. In April, the government tabled Bill C-44, the budget implementation act, which included the *Canada Infrastructure Bank Act*.

Bill C-44 lays out the bank's purpose as “to invest, and seek to attract investment from private-sector investors and institutional investors, in infrastructure projects in Canada or partly in Canada that will generate revenue and that will be in the public interest.” Attracting private capital, done well, has the potential to improve the scrutiny of project proposals, accelerate the pace of project development and deliver projects more cost-effectively through intelligent risk transfer. The commitment to projects in the public interest, and specifying a function as supporting “infrastructure projects by, among other things, fostering evidence-based decision-making,” with a substantial role for data gathering and analytics, suggest the bank could play a valuable role in ensuring the prioritization of projects with the highest benefits to Canadians.

At the same time, the government has retained tight control over the operations of the bank. Its board can be replaced at the government's discretion, certain transactions require explicit government approval and the government retains approval over the bank's operating and capital budget. In the final section of this *Commentary*, I present recommendations on how to structure the bank's governance to maintain democratic oversight

while better empowering the bank to act as an independent source of advice.

The development of this proposal has brought into clarity a core tension between the interests of government and the interests of large institutional investors. Each would prioritize different projects. Government is looking to leverage private capital to build new projects of varying sizes across the country, while large institutional investors would prefer an opportunity to invest in very large, lower-risk projects that already exist. These existing projects are better suited to the risk-tolerance levels of large pension funds. Private capital raised from other sources that already invest in Canadian infrastructure projects – smaller institutional investors, large construction firms with equity arms etc. – may be better suited to finance new greenfield projects. Private investment in both types of projects could result in better outcomes for Canadians.

This *Commentary* focuses on the opportunity for the CIB to improve delivery of new projects using private capital in Canada. However, new projects are likely to attract different investors, more experienced as infrastructure developers. The federal government must remain focused on structuring projects so that private capital delivers benefits for Canadians, not just investment opportunities for institutional investors.

The Opportunity for Increased Infrastructure Funding

Building new infrastructure comes with opportunity costs – at the simplest level, there are other potential uses for the construction workers and materials that go into such a project. As a society, we need to decide how to pay for infrastructure projects – and which other projects or investments we forego as a result. When

governments are unwilling to proceed with projects with user fees, all of these opportunity costs are borne in the government budget. However, the CIB's commitment to explore projects with revenue-generating potential has the opportunity to unlock new sources of funding for infrastructure projects – allowing us to meet more of our infrastructure needs.

Siemiatycki (2016a, b) and others have drawn attention to the distinction between funding and financing. Funding is the hard decision of what opportunities will be foregone in order to build a project – for a government, the choices could include other projects going unfunded, higher taxes, or spending cuts elsewhere. Financing is the simpler question of how we get the money for a large upfront investment when the benefits are to be received over time. However, financing still comes with the need to raise a source of funding – either taxes or user fees – to pay for the opportunity costs of constructing the project.

Initially, private investment is seen as a solution to the financing challenge – avoiding the need for governments to borrow on their own balance sheets. Seeking off-balance-sheet accounting treatment was a goal of the Confederation Bridge project in the 1990s. However, in recent years, Canadian public-private partnership (PPP) transactions have been accounted for on government balance sheets (Siemiatycki 2015) with value coming from intelligent risk transfer to the private sector instead of accounting treatment.

Approaching the private sector solely for financing is unlikely to lead to better outcomes for Canadians, unless the private sector, incentivized by its financial stake, delivers the project in a superior manner. All three levels of government do not have challenges raising debt financing at very low rates, due to the implicit taxpayer guarantee. On its own,

replacing government debt with private-sector debt just results in higher accounting costs for taxpayers.²

However, Bill C-44 creating the CIB specifies that the bank will focus on projects that will generate revenue. Governments have been unwilling to raise taxes or divert resources from other priorities, meaning that many worthwhile projects go unfunded – projects with benefits far greater than their costs. This unwillingness is partly political and partly due to the fact that funding infrastructure through tax revenue distorts behaviour on two margins.

First, when users do not bear the full cost of using an infrastructure project, they use it more, because part of the cost is shifted to other current or future users. This results in congestion and an inefficient allocation of resources – a driver may choose to take a free bridge, but if instead the bridge was funded through tolls, and the cost of the bridge reallocated to tax reduction, the driver might choose other transportation alternatives. The free bridge results in overconsumption and requires ongoing investment to invest in new capacity. Infrastructure Australia's long-term Australian Infrastructure Plan (2016) highlighted easy-to-implement higher prices at peak periods for using roads and electricity infrastructure as having many times higher returns on investment than building new road and electricity capacity.

Second, raising revenues through taxes distorts behaviour elsewhere in the economy, with reduced incentives to work, save or consume depending on the tax used (Dachis 2017). Canadians are skeptical of tolls – thinking either that the money will be wasted, or that they are just another cash grab – but by avoiding user fees for new infrastructure, we give up a powerful lever for reducing the taxpayer cost of

needed infrastructure, through reducing our overall infrastructure needs.

The CIB's mandate to pursue revenue generating projects is a positive step. It could move forward high-priority projects with benefits far greater than costs that are deprioritized behind other projects by unlocking a new funding source: the willingness to pay of users who would benefit from the projects. This could let us build more needed projects, faster. By sending price signals to users, government will have a clearer picture of actual needs, reducing the overall costs of our infrastructure system.

The Opportunity to Better Select and Prioritize Projects

With every scarce public infrastructure investment dollar, government should seek to invest in the projects that have the highest net benefits to society. We can estimate a project's net benefits by comparing its potential benefits – reduced travel time, reduced carbon emissions, increased safety, more economic activity – against total expected capital and operating costs. When we prioritize projects with the highest cost-benefit ratios, we maximize our future living standards.

This requires conducting rigorous analysis of expected project costs and benefits, submitting those estimates to close scrutiny and then proceeding with the projects that are likely to maximize benefits – analyzing the appropriateness of proceeding with a project before determining how to procure it. My review suggests that governments in Canada may not rigorously follow each step.

While most Canadian infrastructure is delivered by provinces and municipalities, all levels can

2 If financing is obtained competitively, the difference between the private- and public-sector cost of financing should reflect the relative risk of a project, such that over a large number of projects the private-sector cost of financing is equivalent to the public-sector cost of financing plus the cost of risks that occurred.

Box 1: Worrisome Characteristics of Cost-Benefit Analysis

Government and private-sector project promoters are quick to tout the job creation and increased GDP from a project, but citizens should be wary when these are used to justify a project.

A project could create jobs and increase GDP because it reduces transportation costs, allowing business to grow. More often, these estimates come from short-run Keynesian economic multipliers, which estimate the construction and operating jobs and GDP created from the project, and the spinoff benefits as employees spend their wages in the economy.

Citizens should be wary because:

- With unemployment at 6.6 percent in March 2017, job creation on an infrastructure project means that other employers lose workers and other construction projects become harder to complete. This employment has an opportunity cost; and
- The differences in multipliers between spending on any infrastructure project, another government project or returning to consumers is relatively small – so would be similar across all alternatives (including not doing the project).

benefit from better scrutiny of project estimates. When the private sector is asked to invest in a project – and bear the risk of changing costs and revenues – it provides an independent perspective on the accuracy of cost and usage estimates. This would provide decisionmakers at all levels additional information on the likely outcomes. This scrutiny is only valuable if it feeds into decisionmaking processes, helping politicians at all levels prioritize projects.

Bent Flyvbjerg and Cass Sunstein (2016) examined 2,062 global infrastructure projects and found that the cost-benefit ratio was “typically overestimated by 50 to 200 percent, depending on project,” and that this information is “so misleading as to be worse than worthless, because decisionmakers might think they are being informed when in fact they are misinformed.” Flyvbjerg and Bruzelius (2003) found evidence that project promoters have systematic optimism bias in their forecasts – a feeling that in order to get a project approved, it needs to show higher benefits and lower costs. This leads to optimistic estimates instead of re-evaluations of whether projects are worth the money. Their prescriptions include

transparency and independent review of project business cases.

Public transparency and independent review reduce bias in project estimates and are necessary for civil society to hold decisionmakers accountable for their investment decisions. I reviewed the cost-benefit analyses for the 10 largest publicly funded infrastructure projects in Canada in 2017 (Renew Canada 2017). Only seven had publicly released some form of cost-benefit, economic or financial analysis that was conspicuously posted online. Only one was sufficiently robust to fully pass independent peer review: Toronto’s Eglinton Crosstown LRT. The others fell prey to one of four problems:

- Not systematically attempting to monetize the financial and social benefits and costs of each option in order to compare them.
- Not comparing a sufficiently wide range of options for a project, such as the cost of different options to build it, and alternative technologies or demand management to solve the same problem. This suggests the analysis is being done to justify an already-made decision.
- Including job creation and short-run economic growth estimates to justify projects – an easy

way to make estimated benefits higher than they appear (See Box 1 for more detail).

- Publishing only summaries of analyses, leaving the public and independent reviewers unable to evaluate the assumptions within the analysis.

The CIB should conduct an independent review of each project proposed for its involvement. This should include reviewing the credibility of its estimates and methodology and making the results public. The CIB should seek to maintain sensitive commercial information where necessary, but at a minimum, it should publish the necessary evidence to quantify estimated project benefits and costs. This would improve the quality of information that politicians have when making decisions. This would be similar to Infrastructure Australia's process, which provides detailed technical guidance and templates for governments to analyze projects, assesses the analysis and makes a public recommendation on whether to proceed – publishing the results of their analysis (Infrastructure Australia 2017). In the UK, the Department of Transportation created a comprehensive guide for conducting cost-benefit analyses of transportation projects, along with a series of modelling templates and a software package to help guide the evaluation of project proposals (UK Department of Transportation 2016). Independent review and public transparency of the results will let us better evaluate the quality of decisions made on our behalf.

Second, the CIB can improve the quality of our project selection process by subjecting estimated costs and benefits to close scrutiny through private-sector capital. Global transportation projects have shown demand forecasting error greater than +/- 20 percent on between 45 and 85 percent of projects, depending on the study (Table 1). This

means we tend to overinvest in unnecessary capacity, underinvest and require costly later expansions, or proceed with projects that should have been rejected.

My review of 10 large Canadian transportation projects suggests that similar optimism pervades demand forecasts in Canada. On average, demand was 17 percent below forecast, and for the eight projects where government fully bore demand risk, demand averaged 33 percent below forecast (See Table 2). With only 10 projects, this analysis is not as robust as other global studies, but it does suggest a trend. My analysis selects for projects with publicly available, comparable data, which is not readily available for most projects. The Budget 2017 commitment for the infrastructure bank to collect data on demand and usage across the country means we should be hopeful that the bank will conduct this analysis on a larger scale.

Fixing demand forecasts for planned projects would reduce funding requirements for building new infrastructure. With accurate demand forecasts, some projects would see lower or negative benefit-to-cost ratios and be deprioritized, resized or cancelled. At the same time, projects where demand is underestimated could be built to appropriate standards, preventing the need for costlier future investments in additional capacity.

Involving private capital should improve demand forecasting by increasing accountability for the estimates. The two projects where some portion of demand risk were transferred to the private sector, Vancouver's Canada Line rapid-transit project and Quebec's Autoroute 30 project, actually saw demand exceed forecasts.³ A private-sector investor has a substantial investment riding on the accuracy of the demand forecast, and so is incentivized to evaluate the forecast more carefully (Flyvbjerg,

3 For A30, the private partner received a fixed availability payment, all toll revenue up to a threshold and then a share of the remaining toll revenue, split with government (Quebec 2008). The private partner had a more optimistic forecast than the government, forecasting 34,000 daily vehicles. For the Canada Line, the private partner bore 10 percent of the risk of ridership deviating from forecast; the government retained 90 percent (Partnerships BC 2006).

Table 1: Evidence of Revenue Forecasting Error in Global Transportation Megaprojects

Author	# of Projects	Key Findings
UK Department of Transportation	41	<ul style="list-style-type: none"> • 19 of 41 road projects had actual traffic volumes more than +/- 20% from original forecast. • Forecast error ranged from -50 to +105%.
UK National Audit Office	68	<ul style="list-style-type: none"> • Identified 41 road projects where actual traffic was sufficiently lower to permit lower-cost design standards. • Identified 27 road projects where actual traffic meant higher- cost design standards were appropriate.
Aalborg University	210	<ul style="list-style-type: none"> • Average actual rail passenger traffic was 39% lower than forecast, with 85% of projects having more than +/- 20% error and 74% of projects having more than +/- 40% error. • Actual vehicle travel was 9% higher than forecast on road projects, with 50% of cases having +/- 20% error and 25% having +/- 40% error.

Source: Flyvbjerg et. al. 2003.

Bruzelius and Rothengatter 2003). An investment manager who frequently makes bad investment decisions will not remain an investment manager for long. Similar accountability does not exist for publicly managed projects. Without publicly available data on how projects perform against forecasts, it is impossible to hold politicians and public-sector managers accountable for their decisions. If the CIB is unable to attract private-sector investment to a project-revenue forecast, it suggests that government should re-evaluate its estimate of likely usage of the project – and re-evaluate its decision to proceed, accordingly.

There are meaningful challenges in transferring demand risk. First, it can be challenging to accurately measure usage of a transportation project when some users use discounted monthly passes or pay a single fee to use multiple infrastructure assets with different operators. Second, the government remains responsible for network planning, and transferring demand risk – where the government may commit to certain feeder bus routes or agree to prevent competing transportation links – harms the future flexibility of the network operator. Third, the government may be unwilling to allow for

service disruptions on a transit line due to operator financial distress. If the government steps in, it socializes losses while privatizing gains, eliminating the intended risk transfer. Finally, investors may demand increased returns to compensate for the additional risk of uncertain traffic, and fewer bidders may participate due to increased complexity, reducing competitive tension on returns (Siemiatycki and Friedman 2012).

The first three of these challenges can be addressed through effective contract design. Instead of the private partner collecting user fees directly, they can be collected by government and the private partner can be paid a “shadow toll” for each user, regardless of payment format. This approach can be used even when the asset is funded from general tax revenues and is free to the end user.

Second, the government can retain necessary planning flexibility, albeit at an additional cost, by including defined adjustments or renegotiation mechanisms to the payment schedule based on presence of feeder routes or competitive routes. The private sector will demand additional compensation to bear this additional demand risk. Third, the government should negotiate strong, clear rights

Table 2: Actual Demand Versus Forecast for Selected Canadian Infrastructure Projects

Project	Cost (\$M)	Units	Date of Traffic Estimate	Current Traffic	Forecast Traffic	Percent Demand is Under Forecast
Toronto Sheppard Subway	934	Peak Hour Passengers	2015	5,000	14,000	64
Toronto UP Express	456	Revenue \$M	2017	20.8	29.3	29
Vancouver Port Mann Bridge	3,300	Vehicles/Day	2017	112,000	150,000	25
Vancouver Golden Ears Bridge	808	Vehicles/Day	2014	32,055	68,000	53
Vancouver Evergreen Line	1,431	Daily Riders	2017	30,000	50,000	40
Calgary West LRT	1,000	Weekday Ridership	2013	32,400	35,000	7
Montreal Mascouche Line	479	Weekday Ridership	2015	6,400	11,000	42
Mississauga BRT	320	Weekday Ridership	2016	13,600	13,700	1
Vancouver Canada Line	2,000	Weekday Ridership	2015	122,000	100,000	(22)
Montreal Autoroute 30	1,500	Vehicles/Day	2013	20,000	12,000	(67)
Average	1,223					17
Average, Government Retains Demand Risk	1,091					33

Note: UP Express currently has ridership 42 percent above original forecast. However, fares have been reduced more than 50 percent from the original estimate. At current ridership levels, this implies revenue 29 percent below the original forecast. Using revenue is appropriate because pricing is a reasonable estimate for the value riders place on the UP Express compared to its alternatives. Evergreen Line has been operational for three months and is still in ramp-up at the time of estimate. This gap could narrow.

Sources: Author's analysis from government documents and published news articles including: Matlow 2015, Steer Davies Gleave 2013, Metrolinx 2017, TiCorp 2017, Civic Surrey n.d., Translink 2005, Corbett 2015, Partnerships BC 2013, News 1130 2017, Constantineau & Sinsoki 2017, Kline 2012, Calgary Transit 2014, Riga 2014a, AMT 2015, MiWay 2016, Riga 2012, Riga 2014b.

to intervene in case of private-sector financial distress. This would build on the direct agreements between governments and the lenders on existing PPP projects, which give project lenders the right to intervene and operate a PPP project to protect their investment in the event the operator does not meet its obligations. The government could negotiate a similar agreement, allowing immediate step-in rights to maintain continuous operations while the financial consequences are determined between the government and private partners.

Politicians must also have the courage to allow private-sector partners to lose money and potentially go bankrupt. U.S. toll highways in Texas and Indiana have done so, and successfully emerged from orderly bankruptcy proceeding with new investors. The original investors suffered a financial loss when traffic fell short of estimates during the recession, but taxpayers continued to be able to use the road, the original contractual restrictions on tolls remained and the taxpayer was not responsible for losses (Frosch 2016). All parties in these situations have strong financial incentives to keep the road open during financial distress. While these bankruptcies are often considered project failures, they are examples of successful risk transfer to the private sector. If our PPP partners always made attractive returns, it means we are overpaying for the transfer of risk.

The critical question for evaluating the desirability of transferring demand risk is whether the expected costs of demand uncertainty outweigh the price that private capital requires to bear it. If the private sector is better able to manage these risks – if they are bidding under competitive tension and there are no market failures in the capital market – they should be able to bear these risks at a lower cost than the expected cost to the public

sector. The private sector may be able to better manage these risks through design or operational innovation, or through better supervision and oversight from lenders with capital at risk (Flyvbjerg, Bruzelius and Rothengatter 2003).

The CIB should extend the current value-for-money methodology used by Canadian and international PPP agencies to value demand risk transfer.⁴ This requires a much better understanding of the incidence and costs of demand estimation errors to value retained risk, which in turn requires systematic data collection across all infrastructure projects – regardless of deemed success and delivery model. Implementing this data collection effort is discussed in greater detail in the final section of this paper.

Until the data exists to definitively value demand risk transfer, the CIB should seek to transfer a significant portion of the demand risk – at least a third – on any project it is involved in to a private partner without a sovereign guarantee. There are innovative ways for the private sector to price the transfer of new risks, such as the approach taken to geotechnical risk on the Ottawa LRT (Box 2). In this way, the government would benefit from greater scrutiny over demand forecasts and incentivize the private partner to find ways to increase usage, without paying the costs of fully transferring demand risk. If the data demonstrates that this is cost-effective risk transfer, the CIB should take more aggressive stances regarding risk transfer.

The Opportunity to Improve Budget and Schedule Performance

Globally, Flyvbjerg and others have extensively documented persistent, systematic cost overruns on major infrastructure projects ranging from

4 Value-for-money analysis is an analytic tool used in Canada and worldwide that compares the incremental cost of private-sector compared to public-sector financing to the expected value of project risks that are transferred to the private-sector financier.

Box 2: Transferring Geotechnical Risk on the Ottawa LRT

The Ottawa LRT includes a lengthy downtown tunnel. In the final bid stage, the private sector faced an implicit pricing of the geotechnical risk involved in the tunnel and could choose whether to accept the risk or leave it with the government. They would only accept the risk if they could find a way to manage the risk for less than the implicit cost. Motivated by the advantage a competing bidder would get from accepting geotechnical risk, all three bidders decided to accept the risk – even though they initially indicated they would be unable to bear it. This risk transfer proved valuable when a sinkhole occurred in 2014 and the private partner was fully responsible for the incremental costs (Deloitte and The Boxfish Group 2015).

The CIB could take similar approaches to encourage institutional investors to price demand risk under competitive tension.

Table 3: Recent High Profile Cost Overruns

Project	Cost Overrun (\$ millions)	Cost Overrun (percent)	Delay
Toronto Union Station Redevelopment	160	25	2 years
Toronto Spadina Subway Extension	550	21-34	2 years
Newfoundland Muskrat Falls Project	4,000	54	2 years
Manitoba Keeyask Hydro	2,200	25	21 months
Montreal Mascouche Line	371	123	5 years

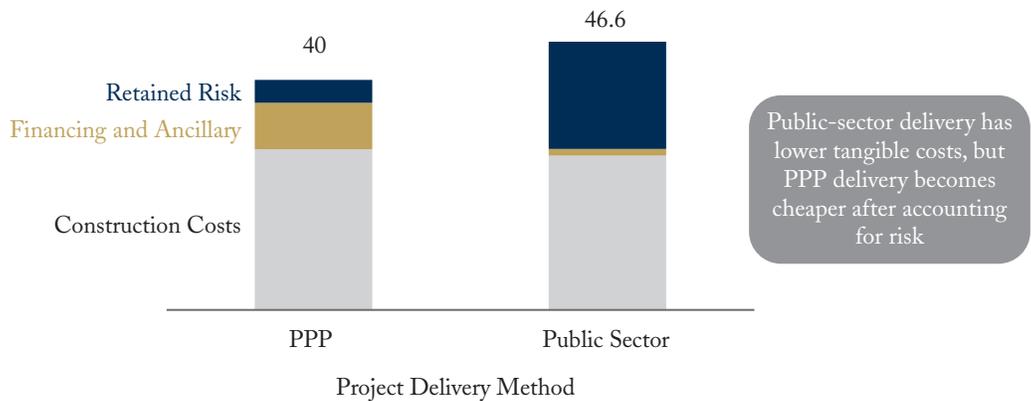
Source: Author's collection from Hui 2015, City News 2016, Roberts 2016, Kavanagh 2017, Riga 2014b.

17 to 86 percent of budgeted capital costs, due to optimism bias in project planning (Flyvbjerg, Bruzelius and Rothengatter 2003). Canadians can similarly point to their favourite examples of cost overruns on major infrastructure projects. Table 3 presents a non-exhaustive list of Canadian projects that have received news coverage recently.

However, the PPP delivery models, which put private financing at risk for cost overruns and

schedule delays, have proven effective at reducing these risks. Infrastructure Ontario's 2016 Track Record Report showed that of the 51 PPP projects completed in Ontario by 2016, 96 percent were completed on time and 73 percent were completed on budget. In aggregate, these projects were completed for 4 percent less than the approved budget for savings of \$1.1 billion (Turner &

Figure 1: Expected Costs of Ontario PPP Delivery vs Public-Sector Delivery (\$ billion)



Source: Auditor General of Ontario 2014.

Townsend 2016).⁵ A Crown review of Partnerships BC found that of the 40-plus projects delivered through PPPs between 2002 and 2014 worth more than \$17 billion, “Every project to date has been delivered on time and on budget” (British Columbia 2014).

PPP project delivery is not without critics. Most notable is the Ontario Auditor General, whose 2014 audit found that PPP projects had tangible costs \$8 billion (29 percent) higher than if those projects had been completed through traditional public-sector delivery (Auditor General of Ontario 2014). However, the Auditor General’s analysis presumed that the public sector would be able to deliver all these projects without incurring any of the risks transferred to the private sector in a PPP – an unlikely assumption. Infrastructure Ontario’s value-for-money (VfM) analysis indicated that the expected value of retained risks under public-sector delivery for these projects would be \$18.6 billion, while the expected value of retained risks under

PPP delivery was \$4 billion – for a taxpayer saving of \$14.6 billion. Netting the saving against the \$8 billion higher tangible cost means that if these risk valuations are accurate, the taxpayer would expect to save \$6.6 billion overall (Figure 1).

The critical question in determining whether PPP delivery is more cost-effective – and therefore reduces funding requirements, making more funding available for other priorities – resides in the accuracy of the valuation of retained risks by delivery models. Under the status quo, the costs of risks are estimated by panels of consultants with experience in the industry, because large data sets on actual cost and frequency of risks do not exist. The study of projects referred to above is the most comprehensive and is still of insufficient detail to use a data-driven approach to value retained risks.

The Auditor General recommended that government collect data on actual cost experience under both delivery models in order to deepen the justification for risk valuation in value-for-money analysis. If Canada collected this data systematically

5 The author of this commentary was employed by Infrastructure Ontario in 2013 and 2014.

for all infrastructure projects, it would be a worldwide first – the Canada Infrastructure Bank should lead this data collection effort.

Regardless, the evidence is strong that adopting PPP models has led to better budgetary and schedule performance, reducing the risk of cost and schedule overruns. PPP delivery has been led by the provinces, with the Ontario government representing 42 percent of projects; and British Columbia, Quebec and Alberta representing another 24 percent. Canadian municipalities, particularly in Ontario, have begun to adopt PPP delivery, while the federal government more recently began adopting PPP models (Figure 2).

The CIB should help catalyze the deployment of PPP project delivery models for projects within federal jurisdiction, as well as for municipalities and other provinces that have not yet adopted PPP procurement. It can do so by requiring an evaluation of PPP delivery of all projects considered for CIB funding for PPP delivery, and providing procurement and transaction support. The financial resources the CIB brings to bear may encourage jurisdictions that have not considered PPP delivery to consider delivery models with more private-sector involvement. This role overlaps heavily with the current role of PPP Canada, and the federal government should consider merging the two organizations.

The Opportunity to Build Public Trust in Investment Decisions

Canadian governments have announced substantial infrastructure investment agendas. Even though they have announced their intention to leverage private capital, these projects will still require substantial public investment proceeds. To build

and maintain public support for this agenda, these investments will need to be made wisely. This requires both selecting the right project designs, to optimize the trade-off between benefits and costs, and prioritizing higher-return projects. The CIB has an important role to play in ensuring Canadians feel confident that the right projects are advanced.

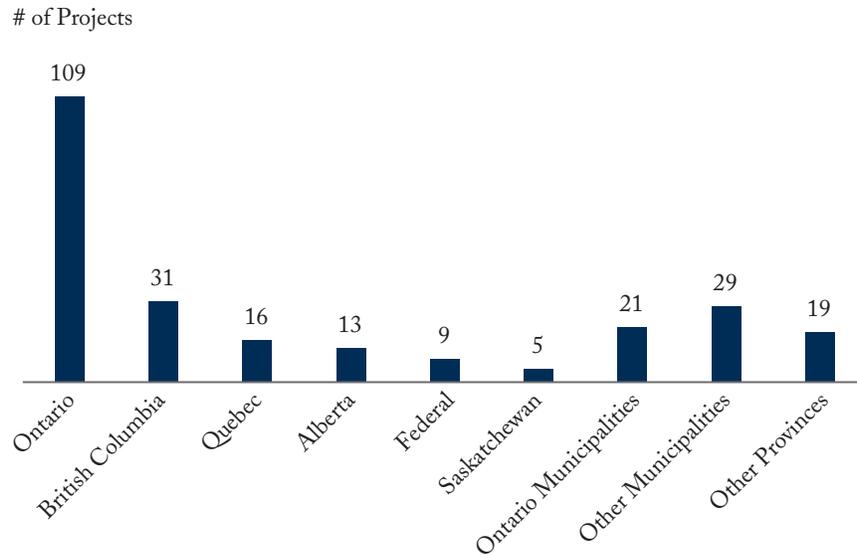
Governments recognize the need for using evidence and public project evaluation in building trust. The Ontario government created the Metrolinx agency in part to help guide transportation planning in the Greater Toronto Area. As part of its mandate, it carries out a public cost-benefit analysis of regional transportation projects. However, the government's track record of listening to Metrolinx's advice is mixed.

I evaluated the 11 projects with a public business case available on the Metrolinx website.⁶ Similar analyses are possible for other projects and project delivery agencies, but this is the single largest public repository of these analyses in Canada. My analysis of these 11 business cases shows that in only four of 11 cases did the Ontario government proceed along the course recommended by their independent planning agency. Four projects with negative net benefits, per the most recent public analysis, are proceeding (meaning that they have higher costs than benefits for society), one project was incorrectly deprioritized and two projects are proceeding along a configuration other than what the analysis indicated was the preferred course (Table 4). Some of these business cases may have been re-prepared as projects proceeded, but they have not been made public, and therefore lack the transparency and accountability of disclosure.

Inconsistent application of evidence-based decisionmaking erodes public trust in our

6 There were several public benefits cases regarding service frequencies, electrification and other service improvements leading up to the RER proposal (subsequently modified into RER/SmartTrack after the most recent Toronto mayoral election). These benefits cases have significant overlap and ultimate implementation is likely to be a hybrid of all analysis. I excluded these business cases from my analysis.

Figure 2: Distribution of Planned and Completed Canadian PPP Projects by Sponsoring Government



Source: CCPPP 2017.

infrastructure investment decisions. The CIB should be able to reject proceeding with projects where the project either has negative net benefits – meaning the project is likely to cost Canadians more than its worth – or where a significantly better alternative project configuration was identified during the development of the project. The federal government, and other levels of government, could still proceed with the project – but the CIB’s rejection of the project would serve as a powerful signal to civil society that the project is proceeding for political or other considerations – not careful considerations of its impact on the economy and living standards.

The CIB should maintain a list of the projects submitted to it for evaluation, categorized by projects where it believes net benefits are likely to be positive and projects where positive net benefits have not been demonstrated. Projects should be prioritized based on the social benefits per dollar of public investment (Box 3). The list should describe the problem, the proposed solution, estimates for

the ratio of benefits to costs of the project, the likely total investment (public and private) and the minimum public investment required for feasibility. It should also evaluate the project’s procurement readiness using a traffic-light system to measure the time to begin procurement for the project. At a glance, a decisionmaker would be able to see the total potential public investment in shovel-ready, shovel-worthy projects – and Canadians would be able to see how well infrastructure dollars are flowing to priority projects.

Both initiatives rely on the bank having significantly greater independence than is contemplated in Bill C-44. Evidence from Australia, where Infrastructure Australia evaluates projects and maintains a priority list, shows that it does not restrict government’s flexibility to deploy resources as they see fit – the Australian government is proceeding to twin a highway that Infrastructure Australia found would generate just eight cents of benefits for every dollar invested

Table 4: Review of Prioritization Decisions for Transit Planning in the Greater Toronto Area

Project	Did Preferred Option Have Positive Net Benefits?	Was the Selected Option Highest Scoring?	Did the Project Proceed?	Did Analysis Lead to the Right Decision?
Eglinton Crosstown	0.9-1.0:1.0 ratio of benefits to costs – if reliability benefits and wider economic benefits are included	Yes	Yes – substantial changes were made to the project as built to reduce cost, however the cost-benefit analysis was not redone	Yes
Brampton Queen St	No	N/A	No	Yes
Dundas St	Yes	Yes	Project no longer appears on Metrolinx project map	No
York Viva	No	Yes	Yes – but Metrolinx flags that the benefits do not account for land-use changes. Unclear whether further changes were made to improve ratio	No
Durham Scarborough	Yes	Yes	Project as built is closest to the least-preferred option, which also had the least cost. This option had negative cost benefits.	No
GO Lakeshore	Yes	Yes	Yes	Yes
Sheppard-Finch	No	Yes	Project is proceeding along less-preferred option from original business case. Construction expected to start in mid-2017.	No
Hurontario Main St Rapid Transit	Yes	Yes	Yes	Yes
Hamilton King-Main	Yes	No	All options had positive net benefits, with BRT as the highest. However, City proceeded toward LRT (currently up for debate)	No
Yonge Subway Extension	No	No	Design work proceeding along less-preferred option with negative net benefits	No
GO Niagara	No	N/A	Yes	No

Source: Author's analysis of Metrolinx 2008, 2009b, 2009c, 2010a, 2010b, 2010c, 2012, 2013a, 2013b.

(Infrastructure Australia 2015) and an independent review of 2016 campaign infrastructure promises found that for a majority of the projects prioritized by each party, Infrastructure Australia was unable to determine that the benefits were likely to exceed the

costs (Terrill 2016). However, with Infrastructure Australia data, civil society was better able to hold government to account, with one news article describing the highway twinning as “a waste of money” (Wright 2016).

Box 3: How to Prioritize Scarce Public Infrastructure Investment Dollars

The CIB will leverage private investment to build projects. The CIB should therefore prioritize projects based on total social benefits created per dollar of the bank’s capital deployed – including user fees charged as both a reduction in social benefits and a reduction in required government investment. This approach modifies traditional cost-benefit analysis to maximize a fixed government budget (Fuguitt and Wilcox 1999).

By example, consider two projects. Both have benefits greater than costs and so should be progressed. Project A might be a freight rail investment, while Project B could be a transit line. Project B has a higher ratio of benefits to costs and so should be prioritized. However, Project A is better able to attract user fee contributions, and so when considering how to prioritize government spending, Project A would be a better investment for the bank – it could fund five similar projects for the same cost as one of Project B.

	Project A	Project B		Project A	Project B
	<i>All figures in present value terms in millions</i>				
Benefits to user (demand based on expected user fee)	1,000	1,500	User fees	400	0
Total capital and operating costs	500	500	User benefits net of fees	600	1,500
			Total costs, net of non-government funding	100	500
Benefit cost-ratio	2:1	3:1	Net benefits-government investment ratio	6:1	3:1

Notes: Hypothetical business case.

Getting Governance Right

The Canada Infrastructure Bank has the potential to dramatically improve the efficacy of infrastructure spending in Canada by smartly transferring risk to the private sector and improving the quality of our project evaluation and prioritization decisions. It could do this by bringing to bear better evidence on the likely outcomes of proposed projects. For its analyses to be viewed as credible, rigorous and fact-based, it must be seen as independent of the political needs of the

government of the day. However, this objective must be balanced against the fact that the bank will be deploying public funding into projects, and the government should be able to exercise democratic oversight over those decisions.

The governance structure of the bank will develop based on its founding legislation, Bill C-44, as well as the corporate plan, board qualifications and nominating process, the ongoing relationship between the bank’s board and the government, and various policies and procedures. The legislation under

consideration provides an outline for the bank's governance structure – but leaves many of the details regarding the bank's governance to be fleshed out in other venues. For example, Minister Morneau has indicated that the government's role in approving projects for the bank is intended to be restricted to the beginning of the transaction process, leaving the bank's board and management to lead negotiations with potential private partners and approve the final agreement – however, the government's ability to intervene at later stages in a transaction process is not restricted in the legislation.

Why is Independence So Important?

We should not evaluate the independence of the bank's governance on a single spectrum, because the bank can have, and requires, different kinds of independence at different times. The bank is receiving \$35 billion in public support – and this expenditure requires government oversight and accountability on how the money is used: allocating resources between regions, selecting projects, and balancing the trade-offs between competing priorities. However, the political process is less well-suited for the detailed negotiations required to negotiate a partnership agreement with the private sector. Otherwise, we would not need arm's-length agencies, like the bank, to take on these roles. The bank should therefore have limited independence on the first question, and significant independence on the second.

The bank, at some point, will face negotiations where it is faced with politically undesirable choices. For example, consider a highway project that was initially predicted to have a certain level of traffic, but through engaging the private sector, we learn they believe traffic is likely to fall far below estimates. At that point, the bank's board has a choice between halting the procurement – or offering to retain additional traffic risk, at a non-readily apparent cost to the taxpayer. Or, consider a project where once the project entered procurement, the rate of return demanded by the private sector

was higher than expected, meaning the project may no longer be in the public interest. In both cases, slowing the process to allow for reconsideration may not be popular but is in the public interest.

For the bank's board to improve the process, it must at some points make different decisions than would be made through traditional government processes. Otherwise we would just get the same outcomes. This requires greater independence than a corporate board. A corporate board is typically viewed as an agent of the shareholders – and so directors should act in their interests.

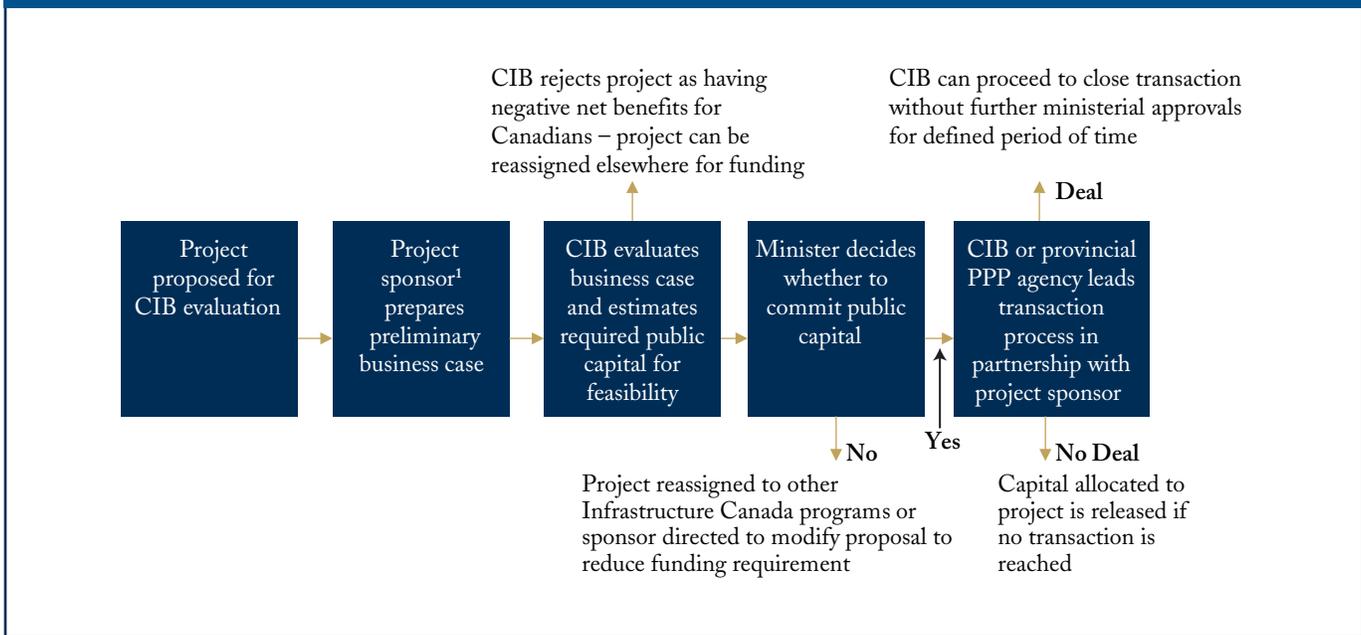
The corporate board serves as a representative of the shareholders – in a large corporation it would be too unwieldy to take all board decisions to a shareholder vote, and similarly an individual shareholder may not have the resources to monitor the decisions taken at each of their investments. However, it is expected that the board members act as the shareholders would have – or they are replaced.

By contrast, an arm's-length government agency's board serves a different purpose. An arm's-length agency is an attempt to drive better public policy decisions by insulating decisionmaking from day-to-day political needs. By design, the board will therefore sometimes act differently than the government of the day, for instance by taking a more technocratic or long-term view. If this did not occur, the agency could be managed within the existing public service structure. This different role for the board therefore requires a higher degree of independence than a corporate director – and is in many ways akin to the role of an independent regulator. Absent greater independence, it is difficult for the board to make a different decision than government – thereby reducing the value of the arm's-length board.

Transaction Governance

Bill C-44 lays out some elements of the transaction governance process, but leaves others to be defined in the corporate plan, and other policies created to

Figure 3: Recommended Transaction Governance for the CIB



Note: Project Sponsor could be a provincial government, municipal government or federal department, or a private party.

govern the bank. It specifies that government will approve the capital budget – meaning they have an opportunity to approve the bank’s spending plans – as well as approving the specifics of any loan guarantees. However, it does not restrict the government from intervening at other points in the transaction process.

This section lays out a transaction governance approach that could be enshrined in the bank’s corporate plan, consistent with the bank’s legislation but providing additional detail on appropriate points in the process where government approvals should be required.

In any given transaction, the governance process should achieve three principles:

- any deployment of public resources should be approved by the minister of infrastructure and communities, together with cabinet where appropriate, to achieve appropriate democratic oversight;
- once the CIB begins to procure a private partner

– or partners with a province or municipality to procure a private partner – the board should have the ability to proceed to close a transaction without further ministerial approvals, to ensure market confidence in the procurement processes. Responding to a CIB procurement will require substantial resources, and if the CIB cancels transactions due to changing political direction, bidders will be less likely to participate, raising costs to taxpayers. This also insulates government from any perceived influence or favouritism in the selection of the winning bidder; and

- the CIB should be able to avoid participating in projects that it views as unlikely to get a fair deal for citizens or where costs are likely to exceed benefits to preserve public perception that CIB projects receive the highest degree of scrutiny to ensure they are in the public interest.

The five-stage process outlined in Figure 3 meets these principles and is compatible with the legislative framework laid out in Bill C-44 – although would be stronger if these principles were

enshrined in the legislation, instead of ongoing definition by the responsible minister and the board. The ability of the bank's board to decline to proceed with projects with negative net benefits is critical to maintaining its independence. This ability should be enshrined in the legislation, while the specifics of the transaction process can be left to ongoing discussion between government and the bank.

In the first step, projects should be proposed for CIB evaluation. Given the transaction costs required to involve the private sector successfully – proposed projects should be larger than \$100 million in total cost. The project sponsor – which could be any level of government, a government-affiliated entity or a private party – would prepare a preliminary business case. The CIB would then evaluate the business case, with the power to decline to pursue it as a CIB project if it believes the project will not have net benefits for Canadians. If they decide to continue, the CIB would estimate the public capital required for the project to be feasible, and submit a funding request to the minister. The minister would then have the authority to approve the project or to reject the project and direct it to another funding source, or direct that the project be modified and resubmitted. If the minister approves it, the CIB should have a time-limited mandate – at least two years – to complete a transaction to begin the project. The CIB should have a wide mandate to deploy public capital through whatever securities it sees fit to best make the project work, and be able to close the transaction on the approval of the board without seeking further ministerial approvals. This structure is compatible with existing proposed legislation and effectively ensures the ability of the CIB to prioritize worthy projects while maintaining democratic accountability over spending.

This approach would give the bank independence when it needs it most – determining how a transaction should be executed – while limiting independence when it is inappropriate – determining where public money should be spent.

Creating Institutional Independence

The second challenge is designing the governance structure of the CIB to give the public trust in the independence, credibility and long-term time horizons of their project analyses and investment decisions. It must be able to publish analysis of potential infrastructure projects free of government involvement in the conclusions, even when critical of government. If the bank publishes only analysis that presents favoured projects in a positive light, its analysis will not be seen as credible by other governments or the public.

To deliver on its mandate, the CIB will need to attract talented infrastructure professionals to evaluate projects and negotiate with the private sector. Some of these professionals will need to come from outside government, and the CIB must have the independence to establish compensation structures necessary to attract them.

Our Canadian pension funds have established their credibility and independence from government while investing on behalf of Canadians – or, in the case of public-sector employee plans, their beneficiaries. Recent public opinion polling found that when Canadians are asked “do you trust this organization to represent the public interest,” Canadians answer “a great deal” at the same rate for pensions and provincial/federal governments (Hill + Knowlton Forthcoming). This credibility and independence comes from structural choices made in the design and governance of these organizations that reduce the ability of government to interfere with day-to-day operations.

I reviewed the governance arrangements for three government organizations meant to be established with a degree of institutional independence, but with a mixed track record of success.

- The Canada Pension Plan Investment Board (CPPIB) is widely regarded as completely independent of government in its decision-making, with a strong ability to resist government intervention. Its internal code of conduct lays

out a procedure for all employees to follow in the event of government interference.

- Infrastructure Australia was originally established as an advisory agency on infrastructure policy and evaluation in 2008. It was granted greater independence in 2014. While it has a track record of publishing independent analysis, it has not yet proven its ability to influence government policy. While it does not allocate public funds, it provides valuable lessons.
- Metrolinx was established in 2006 as a co-ordinator and long-range planner for transportation infrastructure in the Greater Toronto Area. It is widely regarded as having limited independence from direct government influence on day-to-day operational and planning considerations.

Three factors stand out as establishing successful governance arrangements that allow organizations to remain at arm's-length from government:

- clarity of mandate on a single objective, which allows government to delegate decisions to the organization's board based on that objective;
- sources of independence enshrined in legislation that allows the organization's board to push back against encroachment of day-to-day political influence; and,
- an independent board with fixed terms.

Clarity of Mandate

Organizations that have successfully established independence have clear, single objective mandates spelled out in their founding documents. The CPPIB investment mandate is clearly spelled out in the *Canada Pension Plan Investment Board Act* Section 5(c): "to invest its assets with a view to achieving a maximum rate of return, without undue risk of loss, having regard to the factors that may affect the funding of the Canada Pension Plan to meet its financial obligations on any given day" (Canada 1997). This a mandate that no longer requires political judgement – all questions regarding values and objectives have been resolved.

It can be carried out solely through managerial discretion, based on a rigorous investment evaluation process, without further political involvement.

By contrast, Metrolinx was created with a conflicted mission: responsibility for co-ordinating transportation planning and transportation systems in the Greater Toronto Area (Fleischer 2014). Developing transit plans involves many trade-offs among cost, ridership and distributional questions. These are inherently political, and as a result, the government of the day has significant influence on Metrolinx's decisionmaking. Giving the bank clear guidance on how to prioritize the trade-offs inherent in pursuing the transactions – through its corporate plan, or other statements of direction – would give the bank's managers and board the ability to exercise their professional judgment in executing these transactions – instead of escalating each transaction for political direction.

Sources of Statutory Independence

The second key success factor is statutory independence. The CPPIB's enabling legislation specifically delegates investment policies and supervision to the CPPIB Board of Directors (Canada 1997). This cannot be amended without the consent of the federal government and two-thirds of participating provinces representing two-thirds of participating population (Denison 2008). This gives the CPPIB significant independence from current governments.

In contrast, Infrastructure Australia's founding legislation specifies that although the infrastructure minister may give directions of a general nature, she "must not give directions about the content of any audit, list, evaluation, plan or advice" (Australia 2014). This gives the analysis that Infrastructure Australia does credibility, and it allows it to publish analysis critical of favoured government projects. This gives it a strong degree of statutory independence, although the ministerial powers and

single-government amendment formula means it is less independent than CPPIB.

These two boards may have greater independence than a typical corporate board, because they cannot be replaced without cause. The CIB does not have similar sources of independence in its enabling legislation, so protections on its independence will need to be established in its corporate plan and other governing documents.

In Metrolinx's case, the minister retains significant power by having the right to appoint the CEO and the power to issue directives that Metrolinx must comply with – even on the content of the regional transportation plan (Ontario 2017b). This removes the ability for Metrolinx to act as an independent advisory body, because it relies on constant support from the minister.

Board Independence

These two factors must be combined with an independent board. The organization cannot rely on ongoing political support over budgets, nor can board members be under constant threat of replacement. CPPIB directors are all appointed as independents and do not represent specific constituencies – selected from a list prepared by a joint federal-provincial nominating committee which has private sector involvement. They cannot be removed without cause (Denison 2008).

Infrastructure Australia was initially established without a board, but in 2014, an independent board with the power to hire the CEO was created and enshrined in legislation, replacing a previous advisory board. One quarter of the board is nominated by agreement with other levels of government and board members can only be removed with cause (Australia 2014). However, it does not have the same degree of appointment independence provided by the joint nominating committee at CPPIB.

By contrast, Metrolinx was initially established with a board constituted of politicians from

individual municipalities. However, in 2009, this board was disbanded and replaced by a fifteen-member board appointed by the minister, without fixed terms (Ontario 2017b). With this combination of direct ministerial oversight, a board with limited independence, and a mandate with conflicting objectives requiring political judgment, it is hard to distinguish the role of Metrolinx from a typical Ministry of Transportation.

Evaluating Proposed Institutional Governance for the Canada Infrastructure Bank

The governance arrangements for the CIB outlined in Bill C-44 do not provide the full picture of how the bank will be governed, as the legislation will likely be supplemented by other governing documents. Within the proposed legislative framework, we know that the bank will have less independence than CPPIB. This is appropriate, given the magnitude of the public spending the bank will carry out. However, there is a wide spectrum of potential governance arrangements possible within the legislative framework. The government could choose to grant the bank significant independence through the board selection process, corporate plan, and other governing documents; or it could choose to maintain tight control over the actions of the bank – for instance by requiring repeated approvals from government as projects move through the transaction process.

The bank will require more guidance on how to navigate the trade-offs inherent in large infrastructure projects. For instance, in the transaction process, the bank may face a trade-off between the level of user fees and the level of risk the bank is required to retain on behalf of the taxpayer. Without additional guidance on these decisions, they will require frequent escalation to government.

Second, the bank does not have provisions like in the *Infrastructure Australia Act* which protect the agency's ability to conduct and publish independent

analyses. The bank would benefit from clear documentation of the types of direction that the government is restricting itself from providing – for instance, on when project approvals are required, the results of bank analysis, and whether government will retain the ability to intervene in the details of any specific negotiation.

Third, the bank would benefit from additional specificity around its board selection and replacement process. While the government has announced an open search for the initial board, both the process for future board nominations and how the government will exercise its right to replace board members remain undefined. Enshrining a clear process in the corporate plan or other governing document would strengthen the bank's independence.

Getting the bank's level of independence right – a level similar to that of Infrastructure Australia – is necessary for the bank to be able to effectively engage the private sector and unlock the benefits outlined in this *Commentary*. While the government can strengthen the independence of the bank in legislation, it also has tools in other governing documents. As it operationalizes the bank in the fall of 2017 it should:

- provide clarity to the bank on how it should prioritize its resources between competing projects – for instance, by establishing clear project prioritization criteria and direction on how to weight the trade-offs inherent in negotiating a complex project agreement in the bank's corporate plan. This would give the board guidance in prioritizing competing proposals, reducing its day-to-day reliance on government for guidance;
- provide independence to the bank through provisions specifying that the minister may not give direction to the bank on the content of any analysis, nor require the bank to proceed with a project it deems to have negative net benefits. Further, the process for the bank to receive approval for the corporate plan and budget should be well-defined and limit the ability for government to adjust; and

- place well-defined guardrails around the ability of the government to replace board members except in specific circumstances – for example on the recommendation of the board, and develop a clear, independent, on-going process for selecting replacements

If establishing these governance arrangements through the corporate plan proves inadequate, Bill C-44 appropriately provides for a five-year review – at which point the government could consider strengthening legislative sources of independence, much like the approach pursued by the Australian government when it reviewed the *Infrastructure Australia Act*.

Committing to Evidence-Based Decisionmaking

The Canada Infrastructure Bank will take on projects involving transferring risk – for construction or demand – to the private sector. This will involve higher tangible costs, as the private sector will demand to be compensated for the risks. For this risk transfer to be in the public interest, these increased costs should be offset by significant savings on some projects where these risks occur, but the cost is borne by the private partner. The CIB must develop the tools to demonstrate that involving private-sector investment is in the public interest.

This risk transfer is theoretically sound, but depends on two premises: first, that risks are transferred to the party best able to manage them, reducing the costs of these risks and overall projects, and second, that the bids are submitted under competitive tension, so that the winner does not receive excess compensation for bearing these risks. There are strong reasons to believe that the private sector is better able to estimate and manage both construction and demand risk, and that CIB projects will attract sufficient bidder interest to be highly competitive.

The CIB should extend the value-for-money analysis tool – used by governments in Canada, the

UK, Australia and New Zealand, among others – to consider the value of transferring revenue risks to the private sector. VfM analysis is a systematic tool to compare the likely costs and benefits of transferring risk to the private sector. It hinges on comparing the expected costs of risks transferred to the private sector against the additional compensation the private sector demands to bear them.

Critics of PPP delivery have rightly identified that the expected costs of risks transferred is not based on historical data covering a wide range of projects, although structured cost performance for traditional project delivery is similarly absent. Lacking a robust data set of project outcomes across delivery models, PPP delivery agencies rely on expert consultants to judge the magnitude and frequency of major project risks. While VfM analysis is our best available tool to make these decisions, it would build public trust if this analysis was made stronger through better data.

Budget 2017's commitment to better data collection in infrastructure is a positive step toward strengthening the robustness of both VfM and project evaluation analyses. If the federal government can successfully collect comparable data across projects it would dramatically improve decision-making for Canadian infrastructure. However, success will be hard if different jurisdictions and project delivery methods have different milestones, requiring common definitions; scope is constantly changing, making it difficult to attribute higher costs and delays to a risk factor; project-specific factors – like soil conditions – may mean similar projects have dramatically different costs; and, there is limited visibility into actual incurred costs by PPP partners, requiring government to rely on costs of risks incurred by government.

To be successful, the federal government will need to create standardized project planning and delivery milestones to compare performance at multiple points in the project pipeline, collect a wide variety of standardized, well-defined cost, benefit and risk metrics at each stage of project,

and mandate the collection of this data for all projects receiving federal funding and having more than \$100 million in capital costs – since this comparative data will be most useful in evaluating project delivery model choices and PPP delivery is only common for projects with more than \$100 million in capital costs.

Making Shovel-Ready Projects Shovel-Worthy

Canadian governments face tight timelines in starting infrastructure projects – both to demonstrate results before the next election, and to act as short-term economic stimulus. There is a temptation, therefore, to move forward with projects that are ready rather than projects that are best. As Minister of Infrastructure and Communities Amarjeet Sohi said, “But how do we invest in the short term in a way that meets our long-term objectives? It’s not enough to be shovel-ready – projects need to be shovel-worthy” (Sohi 2016).

The federal government has had difficulty reaching its planned infrastructure investment targets. Spending moves through three phases with increasing accuracy – the budget process where high-level targets are set, the estimates process where Parliament or provincial legislatures allocate funding to individual ministries and formally authorize spending, and then the actual spending incurred by government.

At both the estimates stage and the actual spending stage, governments seem unable to achieve their original spending targets. Between the budget and estimates stage in 2017-18, the federal government did not request funding appropriations for the full infrastructure spending commitment in the 2016 Fall Economic Statement – missing by 12.5 percent by the government’s calculation and 31 percent by the Parliamentary Budget Officer’s calculation (Parliamentary Budget Officer 2017). The PBO also found that once funding is appropriated, it goes unspent at a rate five times higher than other spending, ranging from 9 to

24 percent of appropriations (Parliamentary Budget Officer 2015).

The PBO identifies two challenges for spending money at the government's planned pace: negotiating intergovernmental agreements and the time required to contract for projects before they begin. Municipal politicians have pointed to the difficulty of negotiating these agreements consistent with the federal government's funding conditions (Canadian Press 2016). However, significant time lags can occur between funding commitments and a government's ability to procure a construction partner to begin the project – exacerbated by the more complex contracting requirements for PPPs or other arrangements to involve private capital. The full scope of the project and timelines need to be specified in advance in order to effectively transfer risk, which takes time. Once a project is fully scoped, it can proceed from procurement to contract signing in less than two years – as evidenced by the Ottawa LRT and Toronto Bridgepoint Hospital projects (Schepers 2014; Infrastructure Ontario 2009).

There is little opportunity to accelerate procurement timelines. Responding to an RFP is costly, involving significant design, engineering and financial structuring. Accelerating RFP response timelines could lead to lower-quality submissions or reduced willingness to participate. Similarly, procurement cannot begin until funding sources are secured, because if procurements were subsequently cancelled due to funding shortfalls, bidding activity would dry up – reducing competitive tension on bids at a cost to taxpayers.

However, on the Ottawa LRT, it took 18 months from council directive to proceeding with the project to beginning procurement. Municipalities, which own and procure 60 percent

of Canadian infrastructure (Federation of Canadian Municipalities 2017), could commence preliminary project preparations so that when federal funds are allocated, projects can proceed to procurement faster – accelerating overall project timelines.

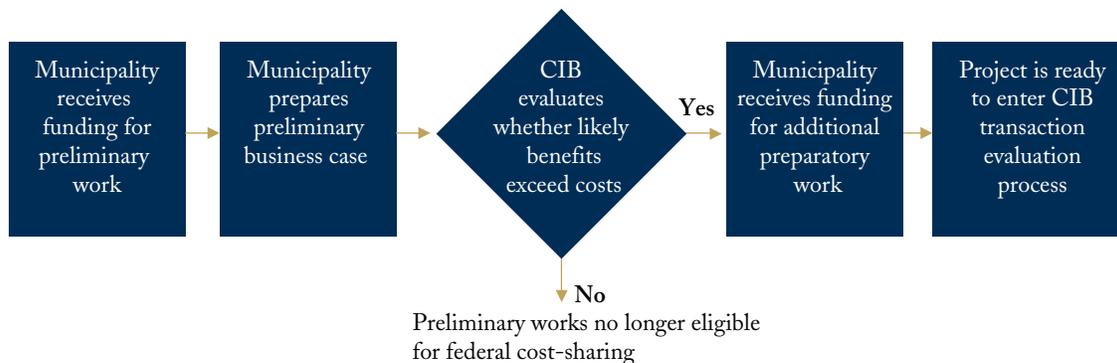
Municipalities currently face strong disincentives to do so. They are responsible for funding preliminary design and engineering work prior to receiving provincial and federal Treasury Board approval of funding, with subsequent costs borne in equal shares (Deloitte and The Boxfish Group 2015). This means when funding is announced, it could be three or more years before construction commences in a PPP delivery model, with similar (albeit shorter) delays for traditional delivery.

The CIB – or Infrastructure Canada – should create small funding grants for municipalities to develop business cases for CIB evaluation, allocated on a per capita basis. Projects that subsequently pass a preliminary screen by the CIB should receive incremental funding to progress the engineering and business case to a procurement-ready stage (Figure 4). Tracking the status of priority projects toward procurement-readiness should be an important component to the CIB's list of national infrastructure priority projects. I estimate that these grants would amount to less than 1.5 percent of total federal government infrastructure spending.⁷

These grants would be a relatively small fraction of overall federal infrastructure spending. The federal government would benefit by dramatically shortening the time between announcing funding and beginning procurement, because it would have multiple project options available with robust business cases already evaluated by the CIB and ready to enter procurement.

7 Infrastructure Ontario's illustrative cost structure suggests that total ancillary project costs are 12.5 percent of total costs, of which pre-procurement costs are certainly less than half. If the federal government covered its typical one-third share, this would amount to 1.5 percent of total federal infrastructure spending.

Figure 4: Recommended Process for Small Preliminary Design and Preparation Grants



Source: Author's recommendation.

Conclusion

Canadian governments are embarking on one of the largest infrastructure investment programs in our history, with committed investments totalling \$484 billion over the next four years from our five largest governments. The establishment of the Canada Infrastructure Bank has the potential to dramatically improve the efficacy of our infrastructure investment decisions, if implemented properly.

While the issues discussed in this commentary are relevant to the bank, they are also important tools for the broader federal infrastructure investment agenda. All of our infrastructure spending would benefit from better analysis of project costs and benefits, more accurate demand forecasts and more independence in evidence-based decisionmaking.

The bank can catalyze the use of user fees as a funding source beyond tax revenues, eliminating the overuse that comes with infrastructure priced below its cost and allowing high-value projects to proceed faster.

The bank can be a centre of excellence in selecting and prioritizing the projects with the highest likely benefits to Canadians. By

adding private-sector scrutiny and risk capital to investment decisions, it will help ensure that projects with overly optimistic demand projections do not proceed, preventing scarce dollars from being wasted.

The bank can broaden the involvement of private-sector risk capital to better manage schedule and budget risk to jurisdictions that have not yet embraced PPP delivery models, including projects in federal jurisdiction plus some municipalities and provinces. Smart risk transfer reduces overall project costs and allows us to build more projects.

Finally, the bank can build trust that the investment decisions made on the public's behalf are sound and likely to increase living standards, by systematically prioritizing projects with the highest net benefits and creating incentives and accountability for governments to apply similar principles to non-CIB projects as well.

But for the CIB to capitalize on these opportunities, it needs substantially greater independence than currently contemplated in its enabling legislation – most importantly, the ability to protect against government involvement in its analysis of projects and ability to publish results,

and greater independence for board members. It also needs to successfully execute on the data-collection efforts proposed in Budget 2017, in order to develop an analytical toolkit to evaluate the value of proposed projects.

By smartly involving private capital in designing, developing and operating our public infrastructure, we can prioritize better projects, deliver them more cost-effectively and build public trust that investment decisions are made wisely. Careful execution is necessary to ensure that the bank lives up to its promise.

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