

Pension Fund Investors in Transport Infrastructure: Opportunities and Barriers

ABSTRACT

Policy makers and scholars have increasingly identified pension funds as an important source of private capital to fund the next generation of critical investment in infrastructure. Not only do pension funds hold massive capital reserves; they also favour investments that provide stable, low risk, long-term returns that are aligned with the natural characteristics of infrastructure projects. Despite the potential match, however, to date pension funds globally have not been significant direct investors in infrastructure. This paper examines the opportunities and barriers to pension funds taking on a more significant role in the financing, delivery and operation of transportation infrastructure. This assessment is based on a case study of seven large Canadian pension funds, which stand out from their international counterparts as institutional investors that have become highly active in the infrastructure sector. As I will illustrate, pension funds have their own specific characteristics that direct the types and locations of projects that they will invest in, as well as the models of deal structuring that are appealing.

Introduction

Policy makers and scholars have increasingly identified pension funds as an important source of private capital to fund the next generation of critical investment in infrastructure. Not only do pension funds hold massive capital reserves; they also favour investments that provide stable, low risk, long-term returns which are aligned with the natural characteristics of infrastructure projects (Orr, 2009; Clark et al., 2011; Ottesen, 2011). Despite the potential match, to date pension funds globally have not been significant direct investors in infrastructure.

Canadian pension funds, however, stand out from their international counterparts. Over the past decade, Canada's largest pension funds have become among the most active institutional investors in infrastructure in the world. Indeed, some of the most economically important and iconic transportation facilities globally are now owned or operated by Canadian pension funds. This includes Britain's lone high-speed railway line, airports in Copenhagen, Brussels and Sidney, toll roads in Melbourne, Toronto and Santiago, and seaports in Vancouver, New York and New Jersey.

The purpose of this paper is to examine the opportunities and barriers to pension funds taking on a more significant role in the financing, delivery and operation of transportation infrastructure. Drawing on a case study of Canada's seven most active pension fund investors in infrastructure, I explore how the specific characteristics and investment interests of pension funds direct the types and locations of projects that they will invest in, as well as the types of deal structures that are appealing. Such an analysis is important because as policy makers increasingly turn to pension funds as a possible source of capital for infrastructure, the Canadian experience points to particular possibilities and tensions associated with such a move.

The remainder of the paper proceeds as follows. The first section provides a global overview of pension funds as investors in the infrastructure sector, and explains the institutional characteristics and investment interests of pension funds. Then I document the pattern of direct investments in transportation infrastructure made by Canada's seven most active pension funds in the sector, and explain the rationales for these choices. The paper concludes by reflecting on the types of transportation infrastructure projects that are attractive to pension funds, and the particular possibilities and tensions associated with an expansion of pension funds as infrastructure investors.

The Rise of Pension Fund Investors in Infrastructure

Around the world, many stakeholders involved in the management and provision of public infrastructure have identified large deficits in the funding available to maintain, upgrade and expand critical municipal, provincial/state and federal transport facilities. This includes roads, bridges, tunnels, urban transit lines, inter-city railways, airports and seaports. While there may be debate about the exact size of each country's infrastructure deficit which is typically recorded in the hundreds of billions or even trillions of dollar range, there can be little doubt that the scale of the challenge and the cost of inaction are staggeringly large. Transportation infrastructure is critical to the health, economic prosperity, and quality of life of a country's residents (Canadian Federation of Municipalities, 2007; American Society of Civil Engineers, 2013; Planning Commission of India, 2009; British Association of Consulting Engineers, 2009).

In response to the large infrastructure deficits identified, governments of all ideological stripes have ramped up public spending on infrastructure, including transport facilities. At the same time, there is a growing recognition that in the face of budgetary austerity and political antipathy towards taking on government debt, public funding backed by tax revenues alone will not be sufficient to close the massive public infrastructure deficits. Governments are thus increasingly turning to the private sector as investors in infrastructure.

Against this backdrop, pension funds have been identified as potentially a 'perfect match' for infrastructure projects (Ottensen, 2011; Bain, 2012). Pension funds hold very large pools of capital, valued within the OECD at over \$17 trillion, which could be tapped into to finance the delivery of critical public infrastructure projects. To date, however, pension funds have only had limited involvement as investors in infrastructure. Historically, pension funds have participated in the provision of infrastructure as the purchasers of government issued bonds, and more recently some pensions have participated in pooled funds that make investments in infrastructure. Yet as direct equity investors in infrastructure project finance, less than 1% of all pension fund capital globally is invested in infrastructure (Croce, 2011).

Nevertheless there are national variations in pension fund participation as investors in infrastructure. While European and American pension funds have been slow to embrace infrastructure as an asset class, Canadian pension funds alongside their Australian counterparts have become leaders in investing in the global infrastructure marketplace, and have been recognized as among the most prolific and sophisticated pension fund investors in infrastructure (Torrance, 2008; Croce, 2011). Of the 30 largest institutional investors in infrastructure globally

as identified in a 2012 survey by *Infrastructure Investor Magazine*, 3 of the top 15 and 6 of the top 30 were Canadian pension plans and independent state owned financial institutions that manage pensions as well as other government investment funds, the largest number of pension funds from any country.ⁱ OPTrust is another Canadian pension plan that while smaller and therefore not ranked as one of the world's most prolific institutional infrastructure investors, has invested a significant share of their holdings in infrastructure, and is thus included in this analysis. As shown in Table 1, these seven pensions of public sector workers and public sector funds that include government worker pensions have emerged as significant investors in infrastructure, with nearly \$30 billion directly invested in domestic and international projects. The pension funds of private sector trade unions are typically smaller, but also have cumulative stakes totaling billions of dollars in infrastructure projects. Between 2006 and 2011, Canadian pension and pooled public savings funds have nearly doubled the share of their total assets in infrastructure to almost 5% of their portfolio. This under-represents the importance of infrastructure holdings by the country's largest pension funds, which today hold upwards of 10% of their investment assets in infrastructure.

Examining the recent performance results of Canada's seven pension plans that are the most active infrastructure investors highlights the significance of this asset class to pension funds. At a time when public equity markets have been highly volatile, in 2011 infrastructure assets for most of these large public sector pension funds provided annual returns that have far exceeded the fund's average return (See Table 1). Within the general infrastructure asset class, transportation is the sector that has received the most number of investments. As shown in Figure 1, of the 65 investments in infrastructure made by Canada's most prolific pension fund investors in infrastructure, 37% are in the transport sectorⁱⁱ. It is important to recognize that when investing in transportation infrastructure, pension funds invest in both new 'greenfield' projects and existing 'brownfield' assets. They also participate in a wide variety of models to involve private financing in infrastructure, which include: public-private partnerships (PPPs) to design, build, finance operate and maintain new facilities; long-term leases from government agencies to operate existing highways, parking facilities, airports or seaports; buying an ownership stake in infrastructure building and operations firms that hold existing concessions in the sector; and investments in private regulated or unregulated infrastructure assets, typically seaports, airports and toll roads. The types of assets and deal structures that are most attractive to pension funds will be explored in further detail below.

The Investment Characteristics of Pension Fund Investors

More than just the magnitude of the capital reserves that pension funds hold, policy makers and politicians often see pension funds as an attractive class of investor in infrastructure because their interests are congruent with the characteristics of infrastructure projects. A common challenge in capturing the benefit of private investment in public infrastructure has been a mismatch between the short-term time horizons and profit maximizing actions of some classes of investors and the long-term lifespan of infrastructure assets, which can span over multiple decades. In particular, private equity investors and construction contractors with equity in a project (typically between 5-10% on greenfield projects) frequently intend to sell their initial investments to secondary investors within 3-10 years generating substantial returns of between 10%-22%, but this limits

the extent to which project finance can align the long-term interests between the public and private sector partners (Page et al., 2008). A 2011 report on infrastructure investors by the United Kingdom Parliament's Public Accounts Committee was especially critical of the short time horizon of infrastructure investors, suggesting that some initial contractor and private equity investors were selling their share in public infrastructure projects soon after construction was completed for profits of over 50% (UK Public Accounts Committee, 2011).

Pension fund investors, by contrast, typically look for long-term, stable returns that span over 20-30 years in order to cover the incremental retirement obligations to their plan beneficiaries, rather than shorter term 'super profits'. This is particularly the case for defined benefit pension plans which promise members a predetermined monthly payment based on earned salary and years of service, and are often adjusted for inflation. These pooled pension plans are increasingly being phased out but are still common in the Canadian, British and American public sector, and are centrally administered by a management team that is overseen by a board of trustees. They require assets that can generate long-term, consistent, inflation adjusted revenue streams to cover ongoing disbursement obligations to their growing number of retirees. The large capital reserves and centralization of management also creates the investor clout and level of expertise to engage directly in complex asset classes such as infrastructure (Hebb, 2008).

The needs of large pooled defined benefit pension fund investors may thus be particularly aligned with the common characteristics of infrastructure projects. As shown in Table 1, the benchmark performance objective that the largest Canadian pension funds expect to achieve on their infrastructure holdings is between 6% and 13% returns, which are considerably lower than the goals of other classes of private equity investors. British pension fund investors have reported similar performance objectives to their Canadian counterparts of between 8% and 10% returns on their infrastructure investments (UK Public Accounts Committee, 2011). To meet these investment objectives, the most attractive infrastructure assets are those operating in regulatory environments that limit direct competition or potential substitutability, are inflation protected by steadily rising user charges, and use technologies that are well understood and have minimal risk of replacement (Orr, 2007; Clark et al., 2011; Page et al., 2008). This matches with the common characteristics of many types of infrastructure. Infrastructure projects typically have high barriers to entry: they often require large up-front investments that are not divisible (typically \$100 million or more); the assets may be illiquid in the short term, and the complexity of infrastructure projects can result in high transaction costs to structure and participate in a deal. Such characteristics can limit the range of investors that have the financial size and technical expertise to participate in the asset class.

Overall, many scholars, policymakers, international development agencies like the World Bank and Organization of Economic Cooperation and Development (OECD) and politicians have identified pensions as an institutional investor that could contribute to filling large infrastructure deficits, contributing to realizing what Clark and his colleagues call "the new era of infrastructure investing" (Clark et al., 2011, 1; Orr, 2007; Ottensen, 2011; Shendy et al., 2011). As Orr (2007, 4) asserts, "[i]f pension allocations for infrastructure were to eventually reach 5-10% across the nation current stocks of pension capital would support 15% of America's infrastructure investment needs for the next 25-50 years."

Barriers to increased pension fund investing in infrastructure have been widely identified as technical constraints, emphasizing the limited number of investment opportunities, underdeveloped staff capacity for complex transactions, the high cost of participating in the infrastructure sector through either established funds or an in-house management team, and the lack of data availability and transparency upon which to make investment decisions (Croce, 2011). Pension funds have also been forced to grapple with the seeming contradiction of investing the retirement savings of unionized employees in infrastructure privatizations and public-private partnerships, models of infrastructure finance and delivery that have been strongly opposed by the unions themselves (Calvert, 2006; Loxley, 2008). Taken together, as pension funds are increasingly being identified as key potential investors in infrastructure, it is important to recognize that only certain types of assets and deal structures will conform to their investment interests and institutional characteristics. Understanding which types of infrastructure investments are attractive to pension funds thus has significant implications, and is the topic of the following section.

What Transportation Infrastructure Investments are Attractive to Pension Funds?

This section provides a case study of the investment patterns in transportation assets by Canada's seven most prolific infrastructure investing pension funds, and reflects on the underlying causes and implications of these trends. The analysis that follows is based on a multiple-methodology research approach and a variety of data sources. Key informant interviews were carried out with eleven infrastructure portfolio managers and board trustees at Canada's largest public sector worker pension funds, which are the most active investors in infrastructure. Two interviews with pension fund experts that have academic and advising experience were also conducted. In all cases, interview respondents requested that they not be identified by name or fund affiliation. In addition to the in-depth key informant interviews, I have culled detailed information on the types of infrastructure projects that each of Canada's seven largest pension fund investors in infrastructure participate in, and their financial performance from their annual reports. I have also used publicly available reports to review the policies that pension funds have on socially responsible and ethical investing. Taken together, the array of data analyzed makes it possible to explain the factors that make an infrastructure marketplace or asset class attractive to pension fund investors.

Project Type

Figure 2 and Table 2 show the transportation investments that Canada's most active pension fund investors in infrastructure held as of July 2012, which reflect a decade of accumulated activity since the funds first became interested in infrastructure in the late 1990s and early 2000s. As can be seen, airport and seaports make up half of all direct investments by Canadian pension funds. For surface transportation, toll roads and bridges are the most attractive types of assets. The key characteristic of these facilities that makes them attractive investment opportunities for pension funds is that they each have long-term revenue streams, including road tolls, airplane landing fees, boat docking charges, advertising revenue, parking fees, etc., which can be sufficient to cover operating expenses in addition to a profit, and typically increase alongside inflation. For

instance in their annual report, OP Trust explains the appeal of transportation infrastructure to pension funds in the following way:

“Transportation assets are attractive to pension fund investors like OPTrust because their performance tends to be linked to movements in inflation which, in turn, are a key determinant of the Plan’s pension-related liabilities.” (OPTrust, 2012, 13)

Given that the pension funds are assuming revenue risk on many transportation projects in which they are equity investors, airport, seaport and toll roads are especially attractive assets because they typically benefit from a regulatory environment or urban setting that minimizes the possibilities of future direct competition from a new market entrant. In most countries, the opening of new airports or seaports is tightly restricted, especially in existing urban areas, limiting the potential challenge from a new competitor. The risk of substitutability is particularly present in the airport business where the expansion of high-speed rail can provide a viable alternative to short haul airline flights on certain popular routes, particularly in Europe where Canadian pension funds have ownership shares in numerous major airports (Socorro and Vicens, 2013). Yet in Britain where a number of airports are owned by Canadian pension funds and a new high-speed rail line is being proposed, the immediate substitution risk is low as the high-speed rail project is mired in an unpredictable approval process and will take over a decade to be built, if it gets built at all.

Toll roads also have key characteristics that minimize future competition and make demand for an operational relatively inelastic. In busy urban environments such as Sydney, Toronto and Santiago where the major Canadian pension funds own private toll roads or are stakeholders in long-term operating concessions, there is usually limited space to build new freeway capacity adjacent to the private toll roads. Moreover, private holders of long-term road concessions have sometimes demanded non-competition agreements to eliminate the future construction of new adjacent roadways, expanded lane space on existing highways, or transit projects that could attract users from their facility (Siemiatycki, 2011). Taken together, on existing projects with established demand and revenues, pension funds have assessed the risk as low that traffic volume and revenues will experience a substantial decline.

By comparison, the largest Canadian pension plans have made only limited investments in infrastructure classes that are considered sustainable transportation, particularly urban and interurban rail projects. In over a decade of infrastructure investing, these funds have collectively taken direct equity positions in only two passenger rail projects: the long-term concession to operate the High Speed 1 railway line connecting Britain with France; and the PPP to design, build, finance, operate and maintain the Canada Line light railway in Vancouver. It is notable that beyond making direct investments in one off infrastructure projects, pension funds have been more actively involved in sustainable transport projects by investing in firms like Keolis and GlobalVia that hold concessions to operate a variety of transportation facilities including roads, airports and seaports but also rapid transit systems and urban railways.

Nevertheless, as the experience shows, urban transit projects are particularly complicated for private investors to invest in directly, especially new greenfield projects. They do not typically

have sufficient user fee revenues to cover their operating costs and thus require long-term subsidies. Coordination, funding and approvals are required from multiple levels of government, which can be time consuming and politically unpredictable. Urban transit is deeply integrated into the broader transportation network adding to the complexity of operations. And system success depends on supportive fare structures, transport and land use policy which is often beyond the control of the concessionaire (See Siemiatycki, 2011). For these reasons, pension fund investors have not been significant direct equity investors in rail transit infrastructure projects.

Models of Pension Fund Participation in Infrastructure

The largest Canadian pension funds are typically equity investors in the infrastructure sector. As illustrated in Table 2, the largest Canadian pension funds have made the majority of their equity investments in transportation infrastructure through two types of deal structures: equity investments in operational private transportation assets in regulated or unregulated sectors, particularly airports and seaports; and investments in established firms that hold long-term concessions to operate infrastructure assets. These models of investing in infrastructure are particularly compatible with the long-term investment interests and institutional characteristics of large pension funds.

Direct investing in infrastructure is an expensive endeavour, especially in projects that include revenue risk retained by the private concessionaire and its equity holders. Transaction costs are high as the marketplace is exceedingly globalized, and there is a significant level of due diligence necessary to value and evaluate infrastructure projects because many are unlisted private assets. In order to participate meaningfully as direct infrastructure investors on a global scale, the largest Canadian pension funds have developed highly skilled in-house investment teams that are specialized in the infrastructure sector, differentiating them from smaller pension funds and other institutional investors that more commonly make infrastructure investments through specialized intermediary firms and funds (See Torrance, 2008).

Nevertheless, a common characteristic of large Canadian pension funds is that their internal investment teams dedicated to finding, executing and overseeing infrastructure deals are quite small. The investment teams at CPPIB, OPTrust, Teachers' and Borealis are each comprised of 35 or fewer investment professionals that are specialized in the infrastructure sector and responsible for managing billions of dollars in investments. The high transaction costs associated with directly investing in infrastructure combined with the small in-house management teams have distinctly shaped the types of deals that pension funds are interested in as investors.

First, in order to offset their significant initial financial expenditures to find direct investment opportunities and the opportunity cost of the fund's small in house staff of infrastructure experts not reviewing other alternative deals, pension funds look to take large financial positions of \$100 million or more in infrastructure assets. Indeed, it is common that infrastructure projects make up among the largest single holdings of the large Canadian pension funds, including the CPPIB's \$3.2 billion equity stake in Highway 407. Second, pension funds seek transactions where they can avoid competitive bidding or public auctions for assets. A competitive advantage for

Canada's large pension funds is that they are sophisticated infrastructure investors with large capital pools, and the in house skill to carry out due diligence on private placement deals in the infrastructure sector that may be inaccessible to other investors. For example, in 2012 when the CPPIB closed a \$1.1 billion transaction to purchase a 49.99 share in Chile's largest toll road operator, the lead infrastructure investor for the pension fund explained the importance of the link between the funds investment interests and their in house expertise to making the deal possible:

“With a long-term investment horizon, and the internal expertise to deploy capital in complicated transactions, CPPIB is one of only a few global institutional investors that is able to complete a transaction of this size and complexity.” (Bourbonnaise, 2012)

Third, the relatively small size of the in-house investment teams has created a preference within pension funds for investing in businesses that already have a knowledgeable management team in place, with an existing performance track record. Pension funds are particularly active investors, and staff from the fund works with the management teams of their investments to ensure good governance and create shareholder value. In fact, pension fund managers report that upwards of one third of staff time within their infrastructure investment team is spent actively managing existing investments.

By contrast, Canada's most prolific pension fund investors in infrastructure have made only limited direct investments in one-off public-private partnerships to finance government provided public use facilities, such as roads, bridges, and transit lines. Following an early experimentation by Borealis (OMERS/Teachers) in the Confederation Bridge PPP in Canada around the turn of the 21st century, pension funds have largely avoided direct equity investments in transportation PPPs, especially transit projects. This limited investment activity from the largest Canadian pension funds is brought into sharp relief when contrasted against the scope of the PPP industry: globally upwards of 1,000 transport infrastructure PPPs have been completed; and Canada has been recognized as a particularly active marketplace with 50 transport PPPs realized in the country, and over a dozen more in the pipeline.

The high minimum investment threshold for infrastructure poses a challenge for the attractiveness of government initiated PPPs to large pension funds. Many projects are either considerably smaller or do not lend themselves to substantial equity investments. Canadian PPPs for instance have typically drawn on high levels of debt rather than equity, in order to reduce the financing costs for government. As a senior infrastructure portfolio manager with a large Canadian pension fund explained in an interview, “We're generally an equity investor and so that can be limiting on some of those PPPs” He continued, “whether they're availability based or lower risk the equity check tends to go down versus the debt that capitalizes the project.” As such, with the exception of some very large recent projects like Vancouver's \$2 billion Canada Line Rapid Transit PPP, Canadian pension funds have not seen PPPs as attractive investment opportunities. In recent years, there has been growing activity from private sector Canadian pension funds investing in Canadian transportation PPPs, though these investments have typically been through intermediary firms that aggregate funds from a variety of pension plan investors.

Timing of Investment and Risk Profile

In nearly every case, the major Canadian pension funds have taken equity positions through the secondary markets for infrastructure, in ‘brownfield’ assets that have been in operation for a number of years. Such investments are attractive to pension funds because the risky construction period is completed, and they have income streams bringing in revenue immediately following the completion of the transaction, which can be used to cover the fund’s pension obligations right away. Additionally, brownfield projects are favourable because performance of the asset, demand levels, revenues and the effectiveness of the management team are already widely established. In cases where such conditions are favourable, Canadian pension funds have been willing to invest in projects where the equity holders recover all of their investment through revenues generated by the project rather than from a guaranteed government payment, and therefore assume revenue risk. Investors typically bear all revenue risk for private airport and seaport projects. Toll road projects have been a mix of revenue risk and shadow tolls paid directly by government, and transit projects are typically structured using availability payments so that demand and revenue risks are borne by the government.

Another factor motivating a preference for direct investing in brownfield infrastructure assets is that they are not typically new privatizations, which lowers the political risks associated with the investment. Canadian pension funds have typically avoided investing in new privatization initiatives in a country or asset class. New privatizations are especially prone to becoming politically contentious and stoke backlash from stakeholders and users, ultimately leading to conflicts between the government and concessionaire and even concession nationalization.

By contrast, the key challenge with direct investing in greenfield transport projects is the lengthy and uncertain planning, competitive bidding, and construction period of such initiatives, especially for PPPs. Entering into such projects at their outset can tie up limited pension fund capital and staff for many years before returns are achieved during the operations phase of the project, returns that are critical for the fund to cover their ongoing pension liabilities. The limitation of investing in greenfield PPPs is explained by a pension fund manager in our interview:

what’s lead us to avoid the PPP space, is to take the Canadian example, the projects that you have to enter into early on in their life so you have 2, 3, 4 year gestation period before you even hit construction wherein you try to make something happen,

However, the division between greenfield and brownfield investments in the infrastructure sector can be blurred. Pension funds are often recruited to be investors by firms in the transportation sector that are looking for long-term capital and investment partners to fund expansion initiatives. Sophisticated pension funds have invested in firms such as Keolis and Imperial Parking Corporation, which hold multiple operational transportation concessions that are generating revenues, and are also undertaking capital expansion projects. Pension funds have also invested in major transportation development contractors such as GlobalVia that build and operate infrastructure projects. This enables the pension funds to invest in greenfield PPP

projects that the firm participates in, while ensuring that a revenue stream from operational projects is in place, and risk is spread across multiple projects. The key in most cases is that the firm being invested in has assets that are already generating revenues and an existing management team with a performance track record that can be scrutinized.

Leverage and Control

Pension funds have sought to avoid participating in projects where risky short-term strategies are being applied by other investors to derive very large windfall profits, and in particular the ramping up of excessive leveraging or risky debt refinancing initiatives. In addition to taking on substantial equity stakes on their own, Canadian pension funds have also often partnered with other institutional investors, state owned enterprises, and pension funds. This strategy is meant to ensure that the investment objectives and long-term interests are aligned between the main shareholders in the company that owns an infrastructure asset. When the Ontario Teachers' Pension Plan and OMERS purchased Britain's high profile high speed Channel Tunnel rail link, for instance, each fund purchased 50% equity in the project for a combined \$3.2 billion. Similarly, OP Trust invested upwards of \$200 million in the European and Latin American road and rail assets of the Spanish multinational GlobalVia alongside a Dutch pension fund which made a similar sized investment. The Caisse and BCIMC both took a one third ownership stake alongside contractor SNC-Lavalin in the special purpose company established to design, build, finance, operate, and maintain the Canada Line rapid transit project in Vancouver. And the Caisse purchased a 30% ownership share of Keolis, a global transportation services operator that is majority owned by SNCF, the French national railway company. SNCF has articulated their strategic objective of holding a long-term investment stake in Keolis, matching the objective of their pension plan partner.

Alongside their substantial investments, pension funds see themselves as active investors in infrastructure. They commonly take on strategic governance roles such as positions on the board of directors of the companies they invest in, to manage the project and political risks associated with being providers of highly public infrastructure. The active governance role of pension fund investors has the potential to be beneficial from a public sector management perspective as well, as pension funds are long-term stable investors whose interests in the project succeeding over the long-run tend to be aligned with those of their government partners. Given their large pools of capital, long-term investment interests, relatively moderate return expectations and active role in project and corporate governance, pension funds have become a favoured class of institutional investors that politicians and policy makers globally are increasingly trying to attract to the infrastructure sector.

Geography of Investments

When selecting which national markets to invest in, pension funds are sensitive to a variety of technical factors. This includes the types of assets and deal structures that are available for private operation and whether they match the long-term interests of the pension funds, the strength of the legal regime to protect the sanctity of contracts and private property rights, and the quality of the government's experience regulating private infrastructure operators. Business

climate and political risk is also important for pension funds. Given their interest in projects that are relatively low risk and long-term, pension fund investors favour politically stable countries where there is a reasonable level of transparency and accountability in government decision-making, and where corruption is not an ingrained element of the business culture.

Based on these criteria, the largest Canadian pension funds have geographically focused their direct infrastructure investments on North America and Western Europe. Of the 24 direct equity investments that Canada's largest six funds have made to date, 44% are in North America and 40% are in Europe. In Western Europe, airports and seaports have been widely privatized across the continent, and these are attractive assets for pension funds because of their long-term inflation adjusted revenue streams and limited substitutability. Many toll roads and transit lines have also been unbundled from the wider transportation system and are operated under concession to private firms, which either have sufficient revenues to cover their costs, or are backed by government guaranteed availability payments or shadow tolls. In North America, private transportation assets in the shipping and freight movement sector make up the majority of pension owned transportation properties, with urban surface transportation comprising only a small number of pension fund holdings.

Chile stands out as the lone developing country to attract considerable direct equity investment in transportation infrastructure by the largest Canadian pension funds. Since 2010, CPPIB and AIMco have both invested around \$1 billion in brownfield toll roads in Santiago, the country's capital city. The interest in investing in Chile stems from the fact that it has a long and deep history of private participation in its transportation infrastructure sector, has many brownfield assets in the marketplace that are attractive investment opportunities to pension funds, is considered to have strong laws protecting contracts and the interests of private investors, and the risk of political intervention in private deals is considered low.

However, AIMco's Chilean toll-road deal in particular, brings into sharp relief the challenges that pension funds can have when appraising the value of brownfield transportation assets globally. In 2010, AIMco purchased a 50% share in the remaining 21-year concession to operate Santiago's Autopastia Central motorway from Skanska, the Swedish contractor, for \$850 million. Yet Skanska reported that its share of the construction costs on the 60-kilometer highway, which opened in 2007, was just \$250 million, making the AIMco transaction its most profitable and "most successful ever." Skanska netted a gain of \$730 million after taxes (The Local, 2012; Mittelstaedt, 2012). This transaction thus highlights the potential to realize super profits by construction contractors selling assets on the secondary infrastructure market, a critique of private finance style concessions that has been raised by policy makers worldwide. It also illustrates the challenges that infrastructure investors have in setting a value on global transportation assets, which can vary between the book value based on construction costs and the facility's long-term potential profitability once traffic volumes are established and the potential to raise tolls in the future becomes clearer. In this case, despite the high price that AIMco paid for their share in the Autopastia Central, in 2013 Moody's credit service reported that traffic volumes and revenues on the facility had increased ahead of projections, suggesting that AIMco would be receiving their stable revenue stream as expected when they made the transaction.

While Canadian pension funds have been among the most active investors in infrastructure worldwide, one surprising finding is the limited amount of investment that Canadian pension funds have made in their home jurisdiction. Less than a third of all investments in transportation infrastructure by Canada's largest pension funds have been made within Canada. Moreover, only three investments made by provincially based pension funds were in projects located in the home province in which their plan members live. The primary reason for the lack of domestic investment is that Canada has few transportation infrastructure assets on the market that are attractive to pension fund investors. Canada's 25 largest airports are all owned by the federal government and leased to locally controlled not-for-profit airport authorities, excluding a transportation asset class that has been attractive to pension fund investors in Europe (Canadian Airports Council, 2013). Similarly, there has been little unbundling of Canada's existing urban road networks and transit systems, which are mostly owned and operated directly by public sector departments or agencies.

In recent years, PPPs have become an increasingly common approach in Canada to engage private financing in the provision of surface transportation infrastructure, including new bridges, roads and transit lines. However, as outlined above, with the exception of the largest capital projects, Canadian transportation PPPs are not particularly attractive investment opportunities to the nation's major pension funds. Typically Canadian PPPs do not involve sufficient equity opportunities for pension fund investors, and they can take many years to move through the delivery process to operations when a stable revenue stream is available. Increasingly, Canadian governments are expressing an interest in attracting pension fund investment within the country. It remains unclear whether there is political appetite to privatize existing transportation assets that would be more attractive to pension funds, given that such efforts have faced strong public opposition.

Pension funds and Public Sector Unions

Another barrier that is sometimes identified to Canada's largest pension funds investing in domestic infrastructure projects is tensions with the interests of the public sector unions, which make up a significant segment of the membership in some plans. As illustrated in Table 1, some of the largest Canadian pension funds that invest in infrastructure hold the retirement savings of unionized public sector employees whose unions vigorously oppose privatization and PPPs in the infrastructure sector. The Canadian Labour Congress, the umbrella organization that represents labour unions in Canada, articulates this position:

“The labour movement is opposed to privatization, including public-private partnerships, because it undermines both the values and ethos of the public sector, and the goal of enhancing the public good.” (Canadian Labour Congress, 2011)

Given their opposition to private infrastructure provision, public sector unions see it as an unfortunate irony that their pension funds are ramping up their investments in infrastructure assets, and have taken explicit action to discourage such investment choices. Unions have successfully lobbied governments to obtain joint trusteeship control over the management of some of the country's largest public sector pension plans including OMERS, OPTrust and

BCIMC pension funds. And numerous unions have subsequently passed policy resolutions opposing investment in infrastructure that involves privatization of existing public services (See OPSEU, 2012).

Despite the opposition that many labour unions have had to their pension funds investing in infrastructure, none of the Canadian pension fund managers or trustees interviewed as part of this research stated that union opposition to infrastructure privatization or PPPs specifically guided their investment allocation decisions. All pension fund managers stated that their primary objective was a fiduciary responsibility to invest in assets that deliver the greatest risk adjusted returns for their plan members, provided that they do not violate broad investment guidelines established by the pension fund's board of trustees. And to date, no board of trustees has approved an explicit policy restricting investment in privatized infrastructure or PPPs. As such while pension funds take a reputational risk by investing in domestic infrastructure projects that are unpopular with their public sector union members, this is not a significant explanation for the relatively limited activity to date in Canadian transport projects. Rather, limited market opportunity for attractive investments is the primary reason provided by pension fund managers to explain the minimal participation by Canadian pension funds in domestic transportation infrastructure.

Pension funds as Promoters of Socially Responsible Infrastructure?

A final question emerging from the experience of large Canadian pension funds investing directly in infrastructure is whether pension funds are a class of investor that is most likely to promote sustainable or socially responsible transportation projects. Over the past two decades, there has been extensive legal, scholarly, and public policy debate about the fiduciary responsibility of pension fund trustees and managers. A growing body of literature argues that fund managers should be permitted to consider value and values in their investment decisions. From this perspective, investment policies instituted by pension fund trustees should encourage fund managers to include screens that consider economically targeted investment or socially responsible investing criteria alongside financial returns (Hylton, 1992; Carmichael, 2005; Yaron, 2005; Hebb, 2001; Quarter et al., 2008).

In recent years, leading public sector pension plans have taken steps to insert social responsibility and ethical criteria into their statements of investment policy. All but one of the largest Canadian public sector pension and pooled savings funds included in this study are signatories of the United Nations endorsed Principles of Responsible Investment, which call for fund managers to incorporate social, environmental and corporate governance considerations into their investment decisions. Nevertheless, these funds tend to interpret responsible investing protocols as a tool to further their fiduciary responsibilities of maximizing risk adjusted returns. As one example, the British Columbia Investment Management Corporation reports on their website,

bcIMC's fiduciary duty is to act honestly, in good faith and in the best interests of our clients. Therefore, the primary aim of our corporate governance and environmental and

social responsibility activities is to improve the risk and return profile of our clients' funds (bcIMC, 2001).

In this context, managers at the largest public sector pension funds report that in practice the responsible investment policies that their plans have adopted are primarily focused at the project scale, and aim to ensure that projects follow sound corporate governance, labour, and environmental standards. The responsible investor policies adopted by the major pension funds do not meaningfully preclude investments in specific transportation infrastructure asset classes, even if they do not qualify by the broad definition of socially responsible or sustainable transportation. As highlighted above, the overwhelming majority of the direct equity investments that Canadian pension funds have made in the transportation sector are in air, sea freight (including a coal shipping terminal in Australia) and highways, asset classes that produce disproportionately high levels of emission. Proportionately fewer direct investments have been made in sustainable transportation infrastructure such as urban and interurban railways. Likewise, the Canadian funds have made relatively few investments in transportation projects in the home jurisdiction of their plan members because the deal structures are not attractive, despite the significant demand for economically targeted investments in transportation infrastructure to improve local competitiveness, create jobs, and enhance quality of life (Canadian Federation of Municipalities, 2007).

To this end, investment managers of large Canadian public sector pension plans have avoided conceptualizing infrastructure PPPs as a form of socially responsible or economically targeted investment, which when focused on publicly beneficial assets in the fund's home jurisdiction can deliver what Hebb (2001: 10) calls "rich collateral benefits." Moreover, they have tended to avoid conceiving of pension funds as an inherently ethical class of investor that will deliver project outcomes that are intrinsically better than other private sector investor. This point is relevant because politicians, policy makers and scholars have often contended that pension funds may be a class of 'buy-and-hold' institutional investor that are better suited partners for investing in critical public infrastructure than more active private investors like private equity firms and hedge funds. As a senior executive responsible for infrastructure at a major Canadian pension fund explains in our interview:

"I don't know that you necessarily get a better result, because there are plenty of other fully private investors who act in a similar way who might have different business plans and different ways of approaching it. But if you look, if you're a politician or a civil servant and you look at it from a policy outcome as opposed to the headline outcome, you get your policy outcome not just from pension funds but from lots of different sources, but we have a friendlier face and some of that is to do with the fact that we will tend to stay with an asset for a very long time, that's the intent."

Conclusions

Over the past decade, Canada's seven most active pension funds in the infrastructure sector have emerged as among the world's leading institutional investors in transportation assets. Infrastructure is an attractive asset class to pension funds because of the long-term, stable, inflation adjusted returns that can be generated. This return profile matches the investment

interests of large defined benefit pension plans such as those in Canada, which must generate steady returns over a period of decades in order to cover the pension promise of a prescribed monthly payment that has been made to the plan's beneficiaries. Indeed, pension fund managers responsible for infrastructure assets narrowly define their fiduciary responsibility as making investments that deliver risk adjusted returns in order to meet their pension promise, rather than a broader social mandate that includes 'doing well by doing good'.

In this context, an important conclusion from this research is that while pension funds have demonstrated an interest in investing in the transportation sector, not all types of types of projects are attractive. At a time when policy makers, politicians and academics are increasingly identifying pension funds as a source of capital to augment investments by cash strapped governments, it must be recognized that some types of assets, deal structures and locations are more likely to attract investment from pension funds than others. As such, the profile of preferred pension fund investments developed in this paper highlights the possibilities and tensions associated with pension funds becoming more meaningful equity holders in transportation infrastructure.

In particular, the largest defined benefit pension funds are more likely to invest in the operations of existing assets than providing money to build new ones. They have not widely participated in government initiated PPPs to deliver strategic infrastructure projects, instead favouring investments in assets that are either entirely privately owned or existing infrastructure firms. The interest of large pension funds to invest in sustainable urban transit and interurban passenger rail projects has been limited, and instead they have favoured investments in more polluting airport, sea shipping and toll road assets. And pension funds have not demonstrated a special proclivity to invest in economically targeted or socially responsible investments in their home jurisdiction if assets are not available which meet their particular investment interests. Nor have they widely invested in transportation assets in developing countries, where there is a vast demand for infrastructure upgrades and expansion.

In sum, pension funds clearly have the potential to become a major force shaping global transportation networks if, as anticipated, international pension funds follow the lead of their Canadian counterparts, and elevate the share of their portfolio invested in infrastructure. However, based on the experience to date, there is limited evidence that an expansion in pension fund participation in the infrastructure sector will meaningfully contribute to the development of transportation systems that are more environmentally sustainable, socially responsible, and evenly spread throughout the world.

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Figure 1: Canadian Pension Fund Investments in Infrastructure By Sector

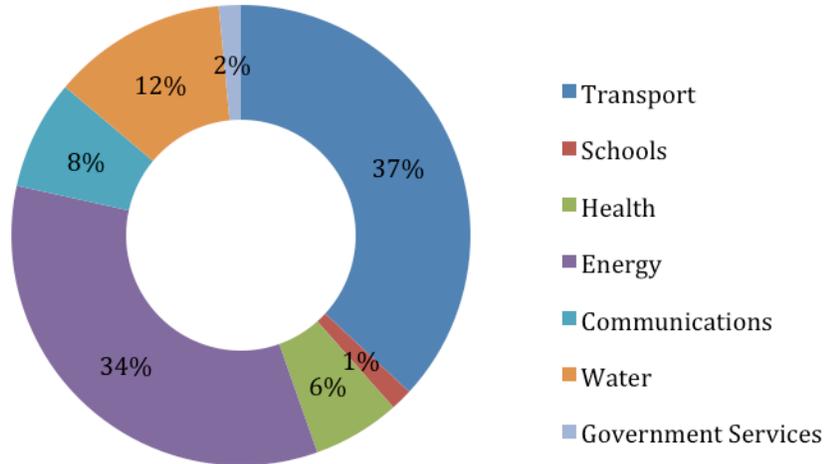
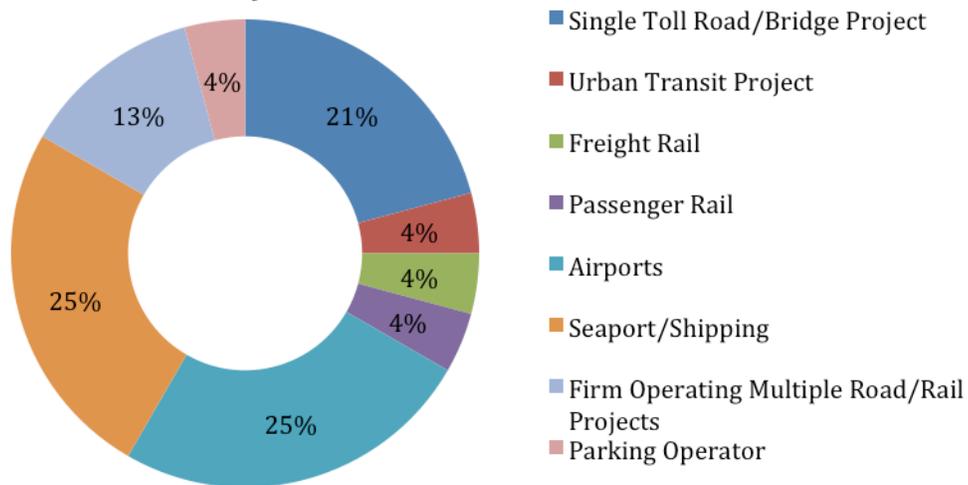


Figure 2: Types of Transportation Infrastructure Invested in by Canadian Pension Funds



ⁱ In Canada, some state run financial institutions manage investment funds for a variety of purposes, including pensions of public and private sector workers, sovereign wealth funds, and state run insurance policies. This includes the British Columbia Investment Management Corporation; Alberta Investment Management Corporation; Caisse de dépôt et placement du Québec; Canadian Pension Plan and Investment Board.

ⁱⁱ In their annual reports, pension funds only report which infrastructure projects they hold investments in, and not the financial value of each individual investment. As such it is only possible to report on the infrastructure sectors that have received the most investment activity, rather than the most money invested or highest returns.

Table 1: Investment Performance by Pension funds most Active in Infrastructure Asset Class

Pension Plan/Pooled Public Sector Savings Fund	Total Fund Value (\$ billions) - 2011	Value of Holding in Infrastructure (\$ Billions)	% of Total Pension Holding in Infrastructure	Rate of Return for Total Plan (2011)	Rate of Return for Infrastructure Holdings (2011)	Benchmark Returns for Infrastructure (%)	Exceeds Benchmark	% of Total fund Comprised of Pensions	Estimated % of Unionized Employees in Fund	Signatory the UN Principles Responsible Investing
Manitoba Pension Plan Investment Board	148.2	9.5	6.4	11.9	13.3	N/A	N/A	N/A	N/A	Yes
Corealis Infrastructure - MERS	55.7	8.49	15.3	3.17	8.4	8	Yes	100	67	No
PTTrust	13.8	0.978	7.1	5.5	29.6	7.4	Yes	100	100	Yes
CIMC	86.9	4.1	4.1	N/A	10.6	8	Yes	80	N/A	Yes
Ontario Teachers Pension Plan	116.3	8.7	7.5	11.2	7.7	6.1	Yes	100	100	Yes
Caisse de depot et placement du Quebec	159	5.8	3.6	4	23.3	12.7	Yes	61	27	Yes
Alberta Investment Management Co	68.8	1.7	2.4	8.2	8.2	10.1	No	56	44	Yes
Total	648.7	39.2	6.6	7.3	14.4	8.7				

(Source: All data derived from each pension plan's annual reports and official web pages)

Table 2: Transportation Assets Held by Canadian Pension funds most Active in Infrastructure Asset Class

	Direct equity investment in a PPP Project	Equity investment in firm holding long-term operating lease of public asset	Equity investment in private infrastructure (either ownership of a single asset or firm that owns multiple private infrastructure facilities)	Equity Investment in Infrastructure Development and Operations Firms
Greenfield	Confederation Bridge (Borealis) Canada Line, Vancouver (BCIMC/Caisse)			
Brownfield		Part owner of concession to operate Highway 407 in Toronto and M7 in Sydney (CPPIB) High Speed 1 Limited - (Borealis/Teachers)	Detroit River Rail Tunnel (Borealis) Autopastia Central (Santiago Chile Private Highway) - (AIMco) Grupo Costanera (Owner of 4 urban toll roads in Santiago, Chile + 1 coastal road) - (CPPIB) British Airport Authority (Caisse) HOCHTIEF AirPort (Owner of Athens, Dusseldorf, Hamburg, Sidney Airports) -(Caisse) Birmingham Airport (Teachers) Bristol Airport (Teachers) Copenhagen Airport (Teachers) Brussels Airport (Teachers) Delta and Vanterm Container Port, Vancouver (Teachers) New York Container Terminal (Teachers) Global Terminal, New Jersey (Teachers) Dalrymple Bay Coal Terminal (Australia) - (BCIMC) Associated British Ports (owns and operates 21 UK ports) - (Borealis)	Imperial Parking Corporation (Teachers) Globalvia (Rail and road concessions in Western Europe and Latin America) - OPTrust Keolis (Rail and road operator in Western Europe and North America) - (Caisse) Oceanex (Canada Shipping) - (OP Trust)

