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Transportation Finance

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A. U.S. Transportation Infrastructure Finance Overview

Nearly all U.S. surface transportation is funded on a cash basis; i.e., governments have an annual budget derived from various tax sources, and each year they allocate those funds among capital costs (construction, reconstruction, etc.) and operating and maintenance costs. By contrast, in the private sector, infrastructure providers typically *finance* major capital expenditures—such as a new railroad line, a new electric power plant, or new cell phone towers. To finance means to assemble the capital needed for a major investment up-front, and repay those who provide that capital over time, generally out of revenues generated by the new or improved facility. Airports—whether government-owned or privatized—generally finance new runways, terminals and other major projects. So do most water and wastewater systems, whether government-owned or investor-owned.

In the public sector, financing generally means issuing tax-exempt municipal bonds, which are purchased by investors. Investor-owned utilities, railroads and other private-sector infrastructure providers finance projects by using a mix of equity and debt, with the latter typically in the form of taxable revenue bonds backed by the increased revenues that they expect the new/improved facility to generate.

The last two decades have seen the development of long-term public-private partnerships (PPPs) for U.S. infrastructure improvements. In surface transportation, such projects are generally financed by a mix of equity (provided by the private-sector partner), revenue bonds issued on behalf of the project, and in some cases an investment by the government agency sponsoring the project. For highway, bridge and tunnel projects, the revenue source to service the debt and provide a hoped-for return to the PPP firm and the government is generally tolls paid by customers of the new or replacement project. For transit projects, the revenue source is generally proceeds from a dedicated tax (e.g., a transportation sales tax).

In recent years many studies have identified under-investment in U.S. infrastructure of many kinds, including surface transportation. The principal problem cited is that transportation taxes have not kept pace with investment needs. But in fact there is nowhere near the shortage of investment capital that is implied by such studies. While there is a shortage of annual cash in transportation budgets, ever-growing sums are being assembled to *finance* well-justified transportation infrastructure projects. The providers of such capital are the rapidly expanding global infrastructure investment funds, as well as large pension funds and insurance companies. Pension funds and insurance companies see a good match between infrastructure assets that provide reasonably steady long-term income flows and pension funds' and insurance companies' long-term liabilities. All three categories have been investing in infrastructure projects worldwide in recent decades, and most would love to invest more in the safe and growing U.S. economy. Their problem has been finding enough projects to invest in, because too few state and local governments have embraced PPP infrastructure to date.

B. Infrastructure Investment Funds

An infrastructure investment fund is an entity that enables large investors (such as insurance companies, investment banks and pension funds) to pool their resources and use experienced managers to seek out opportunities to invest equity into infrastructure. Since governments in the United States do not offer shares of ownership in their highways, airports or seaports to investors, in the U.S. these funds seek to invest in infrastructure that has either (a) always been in the private sector, (b) has been privatized, or (c) is operated and managed by a special purpose entity (SPE) as part of a long-term public-private partnership (PPP). In the latter situation, the fund is investing in the SPE and its concession, not in the infrastructure asset itself.

Over the decade ending in 2015, infrastructure equity funds have raised approximately $350 billion, which could support global projects worth $1.4 trillion (based on equity plus debt). This suggests that substantial capital resources are available for badly needed U.S. transportation projects, providing an alternative to unpopular options, such as raising fuel and other taxes.

When major infrastructure investment funds reported their year-end results for 2015, the total raised was $48.1 billion, according to a bulletin from *Infrastructure Investor*.[1] The largest single amount came from Arclight Energy Partners, which raised $5.75 billion in 2015. Other major 2015 totals included $4 billion by Blackstone and $3.1 billion by Kohlberg Kravis Roberts.

A mid-2015 survey by Probitas Partners found that energy and power remained the most popular sector for fund investment, with 72% citing that sector, the same as in 2014.[2] Transportation increased to a close second place, at 69%, up from 64% in 2014. Water and waste management was in third place, at 66%. In terms of the types of deal structures that funds were actively targeting, the ranking was as follows:

- Value-added brownfield (existing asset that needs refurbishment) 59%
- Core brownfield (existing asset without large improvement need) 36%
- Greenfield (new infrastructure to build and operate) 27%
- Opportunistic (open to all types) 25%
- Infrastructure debt 17%

As of the beginning of the fourth quarter 2015, there were 155 infrastructure investment funds in the global market, seeking to raise a total of $96 billion, according to Prequin. Both figures are slightly higher than those of the comparable period of 2014, which were 148 funds seeking $95 billion.

In its November 2015 issue, *Infrastructure Investor* released its sixth annual ranking of global infrastructure funds: the "Infrastructure Investor 30." Over the most recent five-year period, these 30 large funds alone have raised a total of $181 billion (see Table 1). There is no definitive estimate of the total raised by all such funds during this period, but that sum likely exceeds $225 billion (since the next 20 funds raised $33.7 billion over the same five-year period). Equity funds such as these typically provide between 20% and 33% of an infrastructure project's cost, with the balance raised as various forms of debt (bank loans, revenue bonds, etc.). At a conservative leverage multiple of four times the equity amount, the equity available from the top-30 funds alone would finance $724 billion worth of projects. Others have estimated that over the full decade ending in 2015, infrastructure equity funds have raised something like $350 billion, which could support projects worth $1.4 trillion.

Table 1: The 30 Largest Infrastructure Equity Funds, 2015

Rank	Name of Investor	Headquarters	Five-Year Total Raised ($B)
1	Macquarie Infrastructure and Real Assets	Australia	$28.85
2	Brookfield Asset Management	Canada	15.79
3	Energy Capital Partners	United States	10.43
4	ArcLight Capital Partners	United States	9.59
5	IFM Investors	Australia	8.44
6	Global Infrastructure Partners	United States	8.25
7	Borealis Infrastructure	Canada	7.25
8	The Blackstone Group	United States	7.08
9	Kohlberg Kravis Roberts	United States	6.49
10	Colonial First State	Australia	5.78
11	Ardian	France	5.27
12	Goldman Sachs Infrastructure	United States	4.99
13	InfraRed Capital Partners	United Kingdom	4.99
14	KDB Infrastructure Investments	South Korea	4.70
15	JP Morgan Asset Management	United States	4.43
16	Antin Infrastructure Partners	France	4.16
17	Alinda Capital Partners	United States	4.10
18	EnerVest	United States	4.09
19	First Reserve Corporation	United States	3.77
20	BTG Pactual*	Brazil	3.60
21	Hastings Funds Management	Australia	3.35
22	Equis Fund Group*	Singapore	3.23
23	I Squared Capital*	United States	3.20
24	Copenhagen Infrastructure Partners*	Denmark	3.12
25	Ridgewood Energy Corp.*	United States	3.00
26	Partners Group	Switzerland	2.73
27	Meridiam Infrastructure	France	2.66
28	Equitix*	United Kingdom	2.48
29	DIF	Netherlands	2.47
30	Highstar Capital/Oaktree Capital	United States	2.43

Source: *Infrastructure Investor*, November 2015

*indicates a fund new to the top-30 list in 2015

In the United States, populist concerns about "foreign takeovers" of infrastructure can still be heard. Table 2 is based on the 30 largest funds in *Infrastructure Investor*'s 2015 ranking. As can be seen, nearly 40% of the capital comes from U.S.-based institutions, with Australia's share at over 25%. When you add Canada to the U.S. share, the total of North American investors is 52.5%. European institutions constitute 15% of the capital, while Asia (4%) and South America (2%) account for the balance.

Table 2: Nationality of Top 30 Infrastructure Funds, 2015

Country or Region	Capital Raised ($B)	Percentage of Capital
United States	$71.9	39.8%
Australia	$46.4	25.7%
Europe	$27.9	15.4%
Canada	$23.0	12.7%
Asia	$ 7.9	4.4%
South America	$ 3.6	2.0%

Source: *Infrastructure Investor*, November 2015

C. Transportation Infrastructure Companies

Statistics on global PPP infrastructure projects have been maintained in a database since 1991 by *Public Works Financing*, the newsletter of record in this industry. The *PWF* database also includes figures on the world's leading PPP transportation companies as of 2015, ranked by the number of projects under construction or in operation, as well as active proposals. For these data, shown in Table 3, the project types include airports, highways, ports, and rail infrastructure.

As Table 3 demonstrates, the large majority of project experience is European, which should not be surprising given the long history of PPP concessions in France, Italy and Spain in particular. Of the top 10 companies, eight are from Europe, one from Australia, and one from China. Of the top 20 companies, 14 are from Europe, two from Australia, and one each from Brazil, Canada, China and India. A U.S. firm does not show up until position 34. By comparing Tables 2 and 3, we can see that while the large majority of infrastructure development and operational expertise currently resides with European firms, the majority of the *capital* is coming from North American and Australian investment funds. Those who raise political concerns about foreigners "buying our toll roads" seem to have missed the difference between those who are building and operating these infrastructure projects and those who are financing them. The fact is that more than half of all the equity investment is coming from North American funds.

Table 3: Top 35 PPP Transportation Infrastructure Companies, 2015

Rank	Company	HQ Country	# Projects in Construction or Operation	Active Prospects
1	ACS Group/Hochtief	Spain	60	59
2	Globalvia/FCC	Spain	43	20
3	Macquarie	Australia	43	8
4	Vinci/Cofiroute	France	42	10
5	Abertis	Spain	41	2
6	Ferrovial/Cintra	Spain	40	47
7	Sacyr	Spain	29	6
8	Bouygues	France	27	6
9	NWS Holdings	China	26	n/a
10	Egis Projects	France	26	13
11	John Laing	United Kingdom	24	6
12	Meridiam	France	24	7
13	OHL	Spain	22	11
14	Odebrecht	Brazil	22	2
15	Atlantia	Italy	19	1
16	IL&FS	India	18	10
17	Acciona	Spain	17	23
18	SNC-Lavalin	Canada	17	3
19	Transurban	Australia	15	n/a
20	Balfour Beatty	United Kingdom	14	2
21	Reliance	India	13	0
22	Empresas ICA	Mexico	13	n/a
23	Strabag	Austria	13	8
24	IRB Infrastructure	India	12	4
25	InfraRed	United Kingdom	12	5
26	Eiffage	France	11	3
27	Road King	China	9	n/a
28	Skanska	Sweden	9	7
29	Isolux Corsan	Spain	9	6
30	BBGI	Luxembourg	9	2
31	Plenary	Australia	9	6
32	Impregilo	Italy	8	n/a
33	Ideal	Mexico	8	0
34	Fluor	United States	6	4
35	Brisa	Portugal	6	n/a

Source: *Public Works Finance* 2015 Survey of Public-Private Partnerships, October 2015

Note: n/a means the data were not available.

While Table 3 ranked firms by numbers of projects, Table 4 lists the 10 largest transportation PPP firms by *total global investment* in projects since 1985. Except for Australia-based Macquarie, all the rest of the top 10 are based in Europe. In aggregate, these 10 firms have financed transportation projects worth $473.5 billion since 1985.

Table 4: Top 10 PPP Transportation Firms by Invested Capital

Company	Country	Transportation P3 Investment ($B)
ACS (Iridium+Hochtief)	Spain	$91.0 billion
Ferrovial/Cintra	Spain	$78.7
Vinci/Cofiroute	France	$76.0
Macquarie	Australia	$50.9
Bouygues	France	$40.2
John Laing	United Kingdom	$33.5
Egis Projects	France	$27.7
Globalvia	Spain	$27.3
Sacyr	Spain	$27.2
OHL	Spain	$21.0

Source: *Public Works Financing* 2015 Survey of Public-Private Partnerships, October 2015

In March 2015, *Infrastructure Investor* announced its choice of the best performers in a number of categories. Proclaimed as the Global Fund Manager of the Year was Macquarie Infrastructure and Real Assets. Not only did it rank first in size (as listed in Table 1), but it reached its fund-raising targets for several additional funds and "replenished its coffers" by selling several holdings (such as Bristol Airport) to other institutional investors. And the Global Institutional Investor of the Year was Canada Pension Plan Investment Board. It was cited for a flurry of investment activity and for moving into several new sectors and new markets, including the purchase of a stake in L&T Infrastructure Development Projects Limited, which holds a portfolio that includes 19 important toll roads in India.

D. The Continued Growth of Pension Fund Investment in Infrastructure

Several of the top 30 infrastructure funds in Table 1 are pension funds, which are increasingly important players in infrastructure finance. This trend began two decades ago with pension funds in Australia and Canada, and two of the largest funds in Table 1 are Canada's Borealis Infrastructure (owned by the Ontario Municipal Employees Retirement System—OMERS) and Australia's IFM (Industry Funds Management), which is owned by 30 Australian public-sector pension funds.

Very large public pension funds (or groups of funds in the case of IFM) that have developed expertise in infrastructure generally make direct investments, assembling a portfolio of infrastructure projects, both brownfield and greenfield. Smaller pension funds (and large ones just getting into this category of investment) generally take the less risky approach of investing via one or more of the infrastructure investment funds, such as those in Table 1.

The pioneering role of Australian and Canadian pension fund investments in infrastructure was the subject of a study by the Organization for Economic Cooperation and Development (OECD). It identified similarities and differences in the evolution of their pension funds' investment.[3] In both cases, the pension funds allocate about 5% of their portfolios to infrastructure, the highest in the world. And while about 50% of Australian investment has been domestic, in Canada the majority of such investment has been overseas. Both tend to be direct investors, in contrast with the large reliance on infrastructure investment funds in Europe and the United States. A 2013 OECD survey of large pension funds worldwide found that, over all, such funds were investing only 0.9% of their portfolios in infrastructure (excluding their traditional investments in publicly traded utilities such as electricity and water companies). That is a sharp contrast with the typical 5% of portfolio in infrastructure by large Australian and Canadian pension funds.

Pension funds in Europe stepped up their game during 2015. The National Association of Pensions in the UK created the Pensions Infrastructure Platform (PIP) to enable individual public-sector and private-sector pension funds to pool their infrastructure capital under professional management, with an initial target of a bit over $3 billion. One of its first investments was in the new Thames Tideway Tunnel, a $6.6 billion, 25 km sewer and storm-water discharge system for London. The Greater Manchester Pensions Fund Authority and the London Pension Funds Authority announced a partnership aiming to invest up to $800 million in infrastructure. Similar ventures are under way in Sweden and Switzerland.

The initial hesitation of U.S. public employee pension funds to invest in privatized infrastructure overseas or PPP infrastructure in the United States is rapidly fading. The large majority of such pension funds are seriously under-funded and need to find additional asset classes to increase their overall returns. The success of overseas pension funds in doing this via infrastructure investments is leading to bolder investments of this sort by major U.S. public-sector pension funds.

Two landmark transactions in 2015 serve as good illustrations. Both the Chicago Skyway and the Indiana Toll Road were long-term leased by their owners about a decade ago—the Skyway for 99 years by the city of Chicago and the Toll Road for 75 years by the state of Indiana. Both were competently managed and improved, but had been aggressively financed. In 2014 the Indiana Toll Road Concession Company filed for bankruptcy, unable to meet its debt service due to the highly leveraged financing of its $3.85 billion acquisition price, in the face of somewhat lower than projected traffic and revenue due to the Great Recession. In May 2015, IFM Global Investors won the bidding for the remaining 66 years of the concession with an offer of $5.725 billion. But unlike the original highly leveraged deal, IFM's financing is very conservative: 57% equity and only 43% debt. Accordingly, IFM expects a steady return of 8% to 9% over the 66 years of the lease. About 70 U.S. pension funds participated in the IFM buyout, including the California State Teachers' Retirement System (CalSTRS), the New York City Employees' Retirement

System, the State Board of Administration of Florida, the Arizona State Retirement System, and the Illinois State Board of Investments.

Although the Chicago Skyway was not in financial trouble, its concession company owners decided after 10 years that they wanted to cash out. With the city's consent, they put the remaining 89 years of the concession up for bid, and the winner was a consortium of Canadian public-sector pension funds, offering $2.836 billion (compared with the initial acquisition price of $1.83 billion). The funds are the Canadian Pension Plan Investment Board, the Ontario Municipal Employees Retirement System, and the Ontario Teachers' Pension Plan, each investing one-third of the total. As with the Indiana buyout, this deal was also conservatively financed, with each pension fund putting in $512 million in equity, for a split of 54% equity/46% debt.

With their 66-year and 89-year terms, both toll roads will need major reconstruction during the life of the concession agreements. That makes each of them a hybrid brownfield/greenfield concession. The fact that major pension funds and lenders were willing to pay such large sums for these toll roads, conservatively financed, suggests that non-tolled Interstate highways might also be able to attract such financing, which in many cases would be needed for relatively near-term reconstruction and widening. With over 40,000 route-miles of non-tolled Interstate highways needing reconstruction, and many hundreds of U.S. public-sector pension funds needing to diversify into infrastructure, there could be many such deals in the decades ahead.

In a commentary in Nossaman's *Infra Insight* (Feb. 23, 2015), Elizabeth Cousins asked the question, "Will we see a trend for direct pension fund investment in U.S. greenfield infrastructure?" She cited the Canada Pension Plan Investment Board's investment of A$525 million into the greenfield NorthConnex project in Sydney, Australia and the Public Sector Pension Board's investment in Indiana's I-69 new-highway project as possible leading indicators. She pointed out that equity investments in greenfield projects, while higher-risk than brownfield projects, offer the potential of higher returns. And she also noted that the NorthConnex project is actually a hybrid brownfield/greenfield project, since it is an extension of the already tolled M7 expressway concession. She suggested that such investments could be reasonable as a portion of a diversified portfolio of pension-fund infrastructure investments.

Another large U.S. institutional investor that has been an early mover into PPP infrastructure is Teachers' Insurance & Annuity Association (TIAA), which provides retirement plans and life insurance primarily for faculties at colleges and universities. In 2011 it purchased half of ACS Infrastructure's equity investment in the company's 35-year concession for the $1.6 billion reconstructed I-595 project near Ft. Lauderdale, Florida (after the risky construction phase was completed). And in November 2015, ACS and TIAA announced a $665 million joint venture to invest further in North American infrastructure.

Another pension fund that made an initial commitment to infrastructure investment in 2015 was the Illinois Teachers' Retirement System. In June it announced the placement of $150 million with Goldman Sachs' third infrastructure fund, West Street Infrastructure Partners Fund III. The fund will invest primarily in transport and regulated utilities in North America and western Europe. Its fund-raising target is $3 billion.

About the Author

Robert Poole is director of transportation policy and the Searle Freedom Trust Transportation Fellow at Reason Foundation. He co-founded Reason Foundation with Manny Klausner and Tibor Machan in 1978, and served as its president and CEO from then until the end of 2000. He was a member of the Bush-Cheney transition team in 2000. Over the years, he has advised the Reagan, George H.W. Bush, Clinton and George W. Bush administrations on privatization and transportation policy.

Poole is credited as the first person to use the term "privatization" to refer to the contracting-out of public services and is the author of the first-ever book on privatization, *Cutting Back City Hall*, published by Universe Books in 1980. He is also editor of the books *Instead of Regulation: Alternatives to Federal Regulatory Agencies* (Lexington Books, 1981), *Defending a Free Society* (Lexington Books, 1984), and *Unnatural Monopolies* (Lexington Books, 1985). He also co-edited the book *Free Minds & Free Markets: 25 Years of Reason* (Pacific Research Institute, 1993).

Poole has written hundreds of articles, papers and policy studies on privatization and transportation issues. His popular writings have appeared in national newspapers, including *The New York Times, The Wall Street Journal, USA Today, Forbes* and numerous other publications. He has also been a guest on network television programs such as Good Morning America, NBC's Nightly News, ABC's World News Tonight, and the CBS Evening News. Poole writes a monthly column on transportation issues for *Public Works Financing*.

Endnotes

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