POLICY BRIEF | OCTOBER, 2021

Stanford | Institute for Economic Policy Research (SIEPR)

Private investigations: Can institutional investors fill the infrastructure gap?

By Joshua Rauh, Aleksandar Andonov, and Mels de Zeeuw

KEY TAKEAWAYS

- Institutional investors are increasingly financing infrastructure for the sake of stable, long-term returns. The performance of infrastructure investments is underwhelming compared with other asset classes.
- The vehicle most frequently used by institutional infrastructure investors — the closed fund — isn't optimal for long-run stable cash flows. Listed funds, open-ended funds, and direct deals may perform better.
- Public-private partnerships and user-fee financing can improve maintenance, cost-benefit analyses, and the prioritization of projects.
- With the right financing model, there is potential for institutional investors to pay for a larger share of U.S. infrastructure investments, instead of primarily relying on public funding.

Policymakers around the world are concerned about a mismatch between infrastructure investment needs and actual investment. In the U.S., the American Society of Civil Engineers estimates cumulative infrastructure investment needs at $2.6 trillion between 2020 and 2029 (American Society of Civil Engineers 2021).

Current discussions about this "infrastructure gap" have primarily focused on addressing it through federal government expenditures. A bipartisan infrastructure bill currently under negotiation in Congress would appropriate some $1.2 trillion for this purpose. But an alternative approach has gained attention during the past decade: Institutional investors such as pension funds, sovereign wealth funds, and endowments are increasingly active in providing capital for infrastructure projects.

This policy brief examines the most frequently used investment vehicle and makes the case for how user fees and public-private partnerships funded with institutional capital hold promise for funding infrastructure projects.

How — and how well — do institutional investors finance infrastructure?

Institutional investors manage a total of $61 trillion dollars globally. Pension funds, such as those responsible for the retirement benefits of some 30 million U.S. state and local government employees and retirees, need to generate cash for stable, long-term payments. They want low-risk investments that deliver reliable income, even in the face of inflation.

Infrastructure investments seem to provide that opportunity. They hold potential to generate long-term stable cash flows because the underlying assets last a long time and are tangible — e.g., bridges, roads, airports. Infrastructure deals are also frequently backed by concession agreements, in which a government grants the right to own and operate infrastructure assets to private firms or institutional investors over a long period of time. In addition, infrastructure has the sheen of a new asset class, which investors often hope will have a low correlation with existing asset classes.

The value proposition for infrastructure investment certainly sounds appealing. But do institutional investors use investment structures that are conducive to delivering these desired traits when they invest in infrastructure assets? That is the question investigated in a recently published paper co-authored by two of us (Andonov, Kräussl and Rauh 2021).

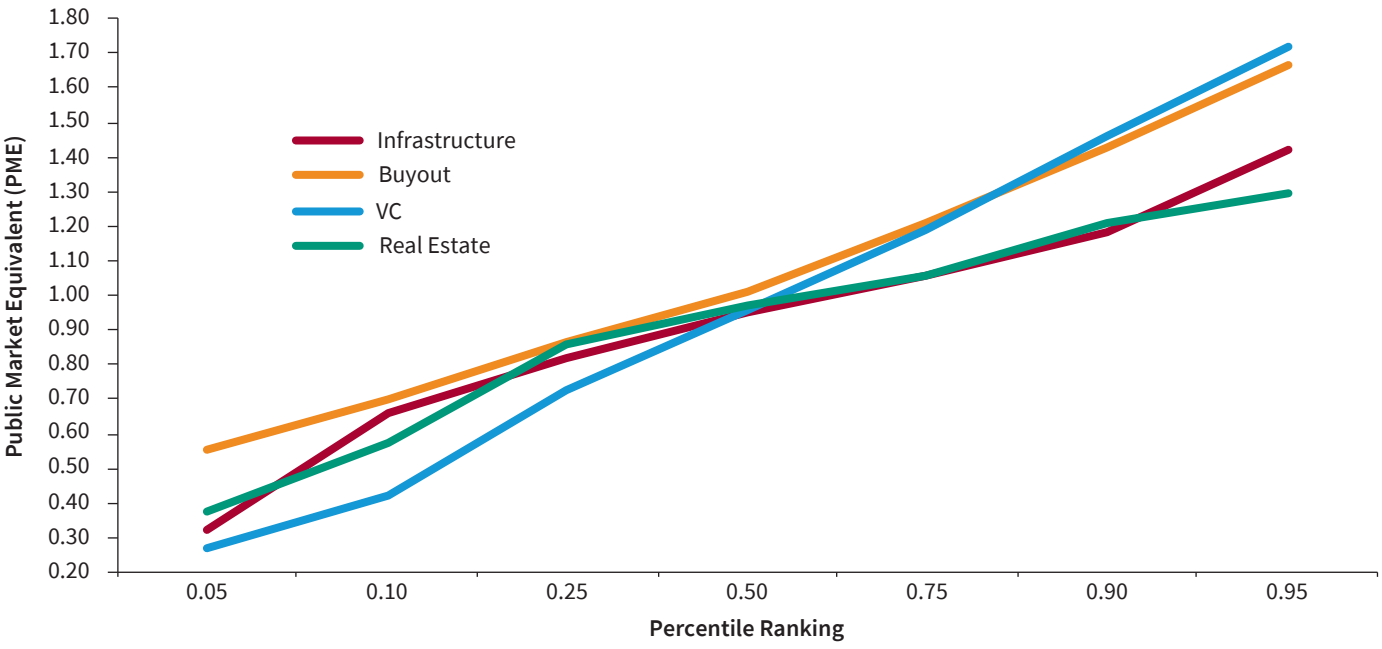
The investment structure for the vast majority of institutional investor commitments in infrastructure is the finite-horizon "closed private fund." These funds totaled about $486 billion of infrastructure assets under management in 2019, up from $59 billion in 2008. Statements by institutional investors in infrastructure make it clear that traits like stable, inflation-protected, diversifying cash flows are indeed the main attraction.

But our research generally rejects the hypothesis that infrastructure investment through closed private funds delivers more stable and diversifying cash flows than other alternative asset classes such as private equity buyout and real estate funds.

This conclusion comes from three main findings.

First, we find that the average performance of private infrastructure funds is lower than that of private equity buyout, venture capital, and real estate funds. Specifically, we find that the public market equivalent (PME) average performance of infrastructure is 0.93, lower than that of these other asset classes.

Figure 1. Fund Type and PME Distribution



This figure shows the distribution of the public market equivalent (PME) measure of private fund performance for four main types of private funds: Infrastructure, buyout, venture capital, and real estate.

PME is a performance measure that compares the cash flows generated by private investments with those of a benchmark asset such as the stock market. PME values greater than 1 indicate outperformance of the stock market benchmark, while values less than 1 indicate underperformance.

Figure 1 shows the distribution of the PME performance of infrastructure funds compared with various other fund types. The slope of the line is one representation of risk. Only venture capital funds appear riskier than infrastructure. Based on these slopes, the returns of buyout and real estate funds seem to have risk similar to infrastructure, while buyout funds achieve higher returns throughout the distribution.

Second, our paper shows that the risk of closed infrastructure funds is similar to that of other private equity funds, because their cash flows and returns also primarily reflect quick asset sales, rather than long-term stable dividend yields.

Closed funds incentivize investors to exit their best performing infrastructure assets quickly instead of collecting long-term stable dividend payments. We find a strong positive relationship between the performance of infrastructure funds and the percentage of quickly exited deals. The incentives of closed funds appear incompatible with investor expectations of stable, long-term income streams.

Third, we show that infrastructure funds move in a similar way to the broader stock market. When markets do well, infrastructure investments generally do well, and vice versa. After adjusting for market risk, the paper finds that infrastructure delivers an abnormal loss of $0.257 per dollar invested, which is comparable to venture capital funds (for the generalized PME technique used, see Korteweg and Nagel 2016).

Positive performance of infrastructure funds therefore typically happens in times of rising stock markets. This differs from the expectations many institutional investors have, namely that infrastructure assets can act like a hedge against the business cycle, performing well even when markets do not. There is in fact no additional reduction in cash flow volatility from investors diversifying into infrastructure assets.

Why the increased popularity of infrastructure investment despite disappointing performance?

There are several hypotheses for why infrastructure investment is becoming increasingly important despite not performing as well as expected. One possibility is that institutional investors may find the potential broader societal benefits of investing in infrastructure — such as sustainable investments and tackling climate change — so appealing that they are willing to accept a smaller payout. While this hypothesis cannot explain the entire story, we find several results that appear consistent with it.

The growth of infrastructure as an asset class has been driven by increased allocations from institutional investors that have a connection to government: public pension funds, government agencies like development banks, and sovereign wealth funds.

Of the $427 billion increase in infrastructure fund assets under management between 2008 and 2019, $255 billion came from commitments made by these “public” institutional investors, who might place more weight on the potential broader societal benefits of investing in infrastructure, even perhaps at the expense of financial returns.

Using a list of United Nations Principles for Responsible Investment (UNPRI) signatories as a proxy for institutional investors that have strong environmental, social, and governance (ESG) preferences, the authors show that UNPRI signatories make 0.39 more investments in infrastructure funds per year than investors that are not signatories. This difference in the number of investments is entirely driven by public institutional investors that are UNPRI signatories — they make 0.76 more infrastructure investments per year compared with investors that are not signatories.

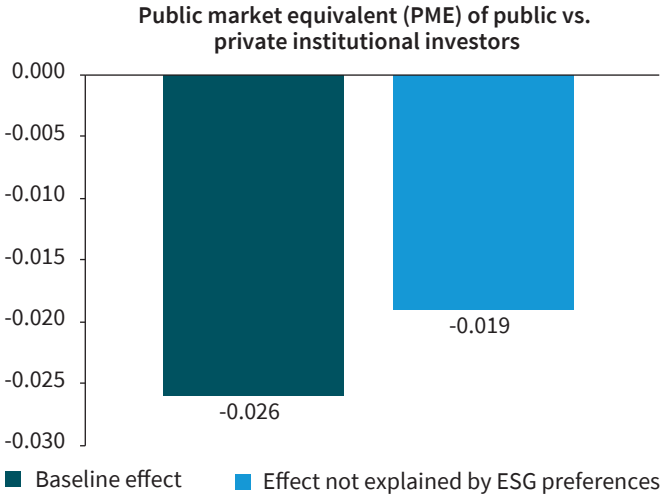
The analysis also uses the UNPRI's regulation database to identify investors that face mandatory or voluntary regulations that either require or nudge them to consider ESG factors in their investment decisions. The authors find that institutional investors respond to ESG-promoting regulation by increasing their allocation to infrastructure, with public pension funds even responding to voluntary regulations.

Overall, an interest in the potential broader social benefits of infrastructure explains 25 percent to 40 percent of the higher number of infrastructure investments. The effect of ESG preferences and regulatory pressure on infrastructure investments is likely to continue in years to come, as an increasing number of investors become signatories to the UNPRI (or similar initiatives). Institutional investors face increasing pressure from regulators to expand their sustainable investments and efforts to combat climate change.

How do public investors perform in infrastructure relative to private institutional investors?

The left bar of Figure 2 shows that public institutional investors experience worse performance (a 0.026 lower PME) compared with private institutional investors. This disparity in performance does not seem to be due to differences in risk taking, as the analysis accounts for underlying deal characteristics such as project stage, region, home (local) deals, concession agreement, and industry (such as whether the investment is in renewable energy, traditional energy, social, transport, and utilities).

Figure 2. The underperformance of public institutional investors



Furthermore, the underperformance of public investors appears at least partially driven by the marginal investment in infrastructure assets with a perceived social benefit. UNPRI signatories invest in infrastructure funds that deliver a 0.028 lower PME. Investments in infrastructure impact funds also underperform by 0.175 PME points.

Figure 2 shows that these ESG preferences explain approximately 30 percent of the underperformance of public institutional investors. Public investors do not necessarily pick impact and ESG-oriented funds that perform particularly badly within that class of investments, but they do engage in more impact and ESG-driven investing, and the class overall underperforms.

Implications for infrastructure investment

These results have several implications for infrastructure as an asset class.

First, while closed funds seem appropriate for newer and early-stage projects that require close monitoring and rapid restructuring, they are less suitable for more mature projects that are operational and generating cash flows. Investment structures such as listed funds, open-

ended funds, and direct deals hold assets longer and may be better designed to provide long-run stable cash flows, as these face fewer incentives to exit deals quickly.

The combination of the failure of closed funds to match investor expectations and the underperformance of public institutional investors could in the long run make infrastructure unable to attract sufficient private capital to cover the financing gap, increasing reliance on public funding. If infrastructure is to further develop as an asset class suitable for private investment, establishing an investment structure that incorporates the specific attributes of the underlying assets and investor objectives — as opposed to copying the traditional private equity model — could help.

As it stands currently, the underperformance of public investors' infrastructure investments represents a cost to taxpayers, pension beneficiaries, or both. This cost acts as a value transfer that flows to the infrastructure assets and to the general partners that manage them through fees.

Public and private sector infrastructure investment in context

One salient area where the U.S. lags behind other developed countries in private infrastructure financing is transportation. In the U.S., only one out of some 500 commercial airports is privately owned and operated, compared with 17 out of 22 major commercial airports in Australia and about 80 percent of British airports (Garrett 2018).

In 2016, across the European Union, 47 percent of airports were fully or partially privatized, up from 23 percent in 2010 (Airports Council International 2016). Indeed, where in Europe 75 percent of passenger traffic passes through airports with private sector ownership, in North America this is just 1 percent (Ibid. 2018).

Such a disparity occurs not just in ownership of existing assets but also in terms of financing new projects.

Between 2006 and 2009, on average, local or national governments in the EU financed 31.2 percent of transportation infrastructure investments and 21.5 percent of utility investments, with private entities funding the remaining 69 percent and 78.5 percent, respectively, over this period (Wagenvoort et al. 2010).

In the United Kingdom, 35 percent of transportation investment originated in the public sector, 7 percent came from private sources, and 58 percent came from public-private partnerships between 2011 and 2015 (Dobbs et al. 2013). All investment in the energy sector originated in the private sector during this timeframe. A more recent analysis of the funding mix of infrastructure projects in the pipeline from 2018 onwards shows about 85 percent of capital for upcoming energy infrastructure projects and 15 percent of transportation investment originated in the U.K.'s private sector (Keep 2021).

In Australia, between 2010 and 2019, 31 percent of the $176 billion invested in roads, highways, and subdivisions and 48 percent of the $104 billion invested in bridges, railways, and harbors came from private capital. Private investments played a larger role in telecommunications, as well as the energy sector (electricity generation, transmission, and pipelines) with 62 percent and 65 percent of capital spending on these sectors originating from private sources during this timeframe (Deloitte 2020).

In contrast, in the U.S., between 2006 and 2009, private investment comprised only 8 percent of total transportation investment, but 86 percent of investment in power infrastructure. Between 2010 and 2019, these shares had increased to 10 percent and 90 percent, respectively.[1]

When breaking down U.S. public sector infrastructure investments, state and local governments are key players. In 2017, 59 percent of public sector capital spending on transportation and water infrastructure, some $102 billion, originated from state and local governments, compared with 41 percent or $72 billion

1 Authors' calculations using Bureau of Economic Analysis Fixed Asset Accounts Tables 7.5 and 2.7: We do not consider equipment as part of infrastructure investments here.

from the federal government (Congressional Budget Office 2018). In contrast to transportation infrastructure, the U.S. private sector plays a comparatively large role in providing capital for energy infrastructure investments.

One factor that impedes the flow of private capital for transportation infrastructure projects in the U.S. is the regulatory burden such projects face, which has increased over time. This includes environmental impact reviews, extensive community consultations, public hearings, and traffic analyses, particularly in high-density urban areas. These have lengthened timelines, increased costs, lessened effectiveness, and have contributed to underinvestment in infrastructure projects (Glaeser 2016 and 2017).

In addition to the models described above, there are other funding structures that combine both government and private sector roles and capital in infrastructure projects. Below, we discuss two such structures: user-fee financing (funding from users' demand for infrastructure) and public-private partnerships (PPPs, private sector financing combined with public sector ownership).

Alternative infrastructure financing models

User-fee financing — where individuals pay for their own use of specific infrastructure — offers a funding approach that avoids some of the downsides of government infrastructure investments, such as politically motivated decisions and wasteful or low-impact spending.

Such financing imposes greater financial discipline, leads to more rigorous cost-benefit analyses, and ensures projects that garner the greatest benefits are prioritized over others with lesser impact. Private businesses that operate infrastructure assets are better incentivized to conduct high-quality maintenance of their assets. In addition to revenues and maintenance, user-fee financing could generate other societal benefits such as reduced pollution and improved travel time for commuters and freight carriers (Dobbs et al. 2013). For instance, congestion-pricing, and the mechanism of imposing the social costs of users' behavior on those same users, can lessen traffic congestion (Glaeser 2016).

One major obstacle to greater use of such financing methods is federal policy, which generally precludes the levying of tolls on interstate highways. Another political obstacle is drivers' unwillingness to accept new tolls on existing roads. Still, user fees could be imposed to pay back the costs of new infrastructure projects, and there are various examples of private roads throughout the U.S. where this approach has been implemented (Ibid.).

A further obstacle to user fees is their political unpopularity among voters before they are put in place, due to uncertainty over the price among existing drivers. Voters' attitudes become more positive after user-fee pricing has been introduced and this uncertainty is resolved. Additionally, voters become more positive about this funding model if toll revenues are used to subsidize public transportation (De Borger and Proost 2012).

The promise of public-private partnerships

Public-private partnerships are hybrid arrangements involving a public sector authority that contracts with a private sector agent to provide a public service, with ownership often remaining in public hands or reverting back to the public actor after a pre-defined period of time and much of the risk transferring to the private partner.

These arrangements have in recent years been more prevalent in Europe than in the U.S. PPP investments in the EU form only a small share of infrastructure investments, totaling some 5.1 percent of funds for transportation and 1.8 percent of utility financing between 2006 and 2009 (Wagenvoort et al. 2010). By comparison, the Congressional Budget Office estimates that U.S. PPP investments have accounted for between 1 percent and 3 percent of highway, transit, and water infrastructure spending between 1990 and 2017 (Musick and Shirley 2020).

Increasing the volume of PPP projects in U.S. infrastructure could lead to more efficient management by improving on-time and on-cost project delivery, innovation, risk sharing, and project performance (Albate et al. 2020). Private agents have greater incentives to reduce costs by increasing construction standards, improving maintenance, or adopting cost-saving technology (Orszag 2008).

While Galetovic et al. caution against viewing PPPs as a source of "free money," as governments relinquish either taxes or user fees for such projects, evidence shows that these arrangements can yield efficiencies in design, construction, and operation that produce returns to taxpayers in the form of increased quality and improved service over the long lifespan of infrastructure projects (Galetovic et al. forthcoming).

In particular, in scenarios where a government is unwilling to impose a user fee, or imposes a smaller user fee than a private actor in a competitive market, the introduction of a PPP arrangement would lead to a more efficient outcome. In contrast, there are scenarios in which PPPs could lead to suboptimal outcomes, including when projects are too small or non-standardized, when there is a lack of transparency and competition, or when governments use them as a vehicle to skirt budget constraints (Woetzel et al. 2016).

One lever to increase the volume of PPP infrastructure investments could be the more widespread adoption of PPP-enabling laws, which provide political and regulatory stability that reduces risk and lowers transaction costs for private investors. As of late 2016, 35 U.S. states and Puerto Rico had implemented a version of these laws. Various legislative provisions that support PPP arrangements (including exemptions from property taxes and extant procurement laws) and the protection of private partners' confidential business information have been found to attract greater private investment (Albate et al. 2020).

Additionally, since PPP contracts are often complicated arrangements, states could benefit from establishing dedicated PPP units — which can act as consolidators of information, coordinate policy, and break government silos. Such teams have been successfully employed in the U.K., Canada, Ireland, and Australia. Greater collaboration between PPP teams in state governments and the federal government can address a lack of technical expertise to deal with complicated PPP deals (Istrate and Puentes 2011).

While infrastructure investment needs appear great, a variety of options exist to increase the attractiveness of providing private capital to U.S. infrastructure. Potential solutions include improving the feasibility of infrastructure as an investment class by adopting different investment structures, greater use of alternative funding mechanisms such as user fees, or supporting public-private partnership investments by expanding beneficial legislative provisions and bolstering state-level technical capacity. The economic and social benefits could be substantial.

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Joshua Rauh is a senior fellow at SIEPR, the Ormond Family Professor of Finance at the Stanford Graduate School of Business, and a senior fellow at the Hoover Institution. He studies corporate investment, business taxation, government pension liabilities, and investment management.

Aleksandar Andonov is an associate professor of finance at the Amsterdam Business School at the University of Amsterdam. His work focuses on empirical studies of institutional investors and the asset management industry.

Mels de Zeeuw is a senior research analyst at the Hoover Institution. His research interests include U.S. fiscal policy and labor markets.