

Institutional Investors and Infrastructure Investing

Internet Appendix

Aleksandar Andonov
University of Amsterdam and CEPR

Roman Kraussl
University of Luxembourg and Hoover Institution, Stanford University

Joshua Rauh
Stanford Graduate School of Business, Hoover Institution, and NBER

Figure IA.1: Main Reasons for Investing in Alternative Assets

Using the Preqin Investor Outlook surveys, we collect data on investor responses to the question about the “institutional investors main reasons for investing in alternative assets.” When answering this question, institutional investors have seven options and they can select multiple reasons. The options are: high absolute returns, high risk-adjusted returns, diversification, reduce portfolio volatility, low correlation to other asset classes, reliable income stream, and inflation hedge. We collect the answers for three surveys published in 2018, 2019, and 2020 (the survey responses were collected shortly before the publication date of each survey). The figure below presents the average percentage of respondents selecting each of the options during these three years for three alternative asset classes. In this survey, private equity includes both buyout and venture capital investments.

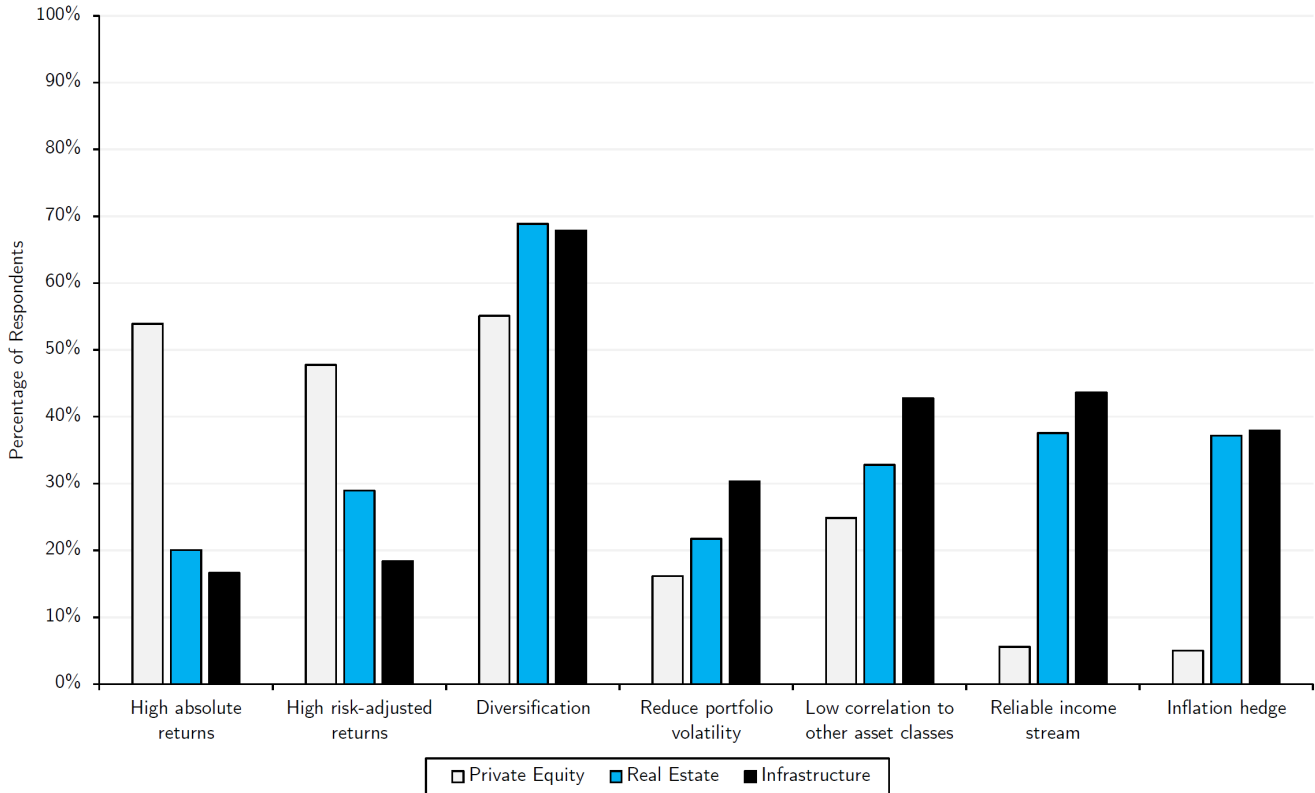


Figure IA.2: Total Commitments of Institutional Investors

This figure shows the aggregate commitments made by U.S. and U.K. public investors to closed and open-ended infrastructure funds in \$ bil. In the bar labels, we present the number of investor-fund observations with reported data on committed amount in Preqin. The data on U.S. dollar commitments to infrastructure funds are nearly complete for U.S. and U.K. public investors, covering 85% of their investments.

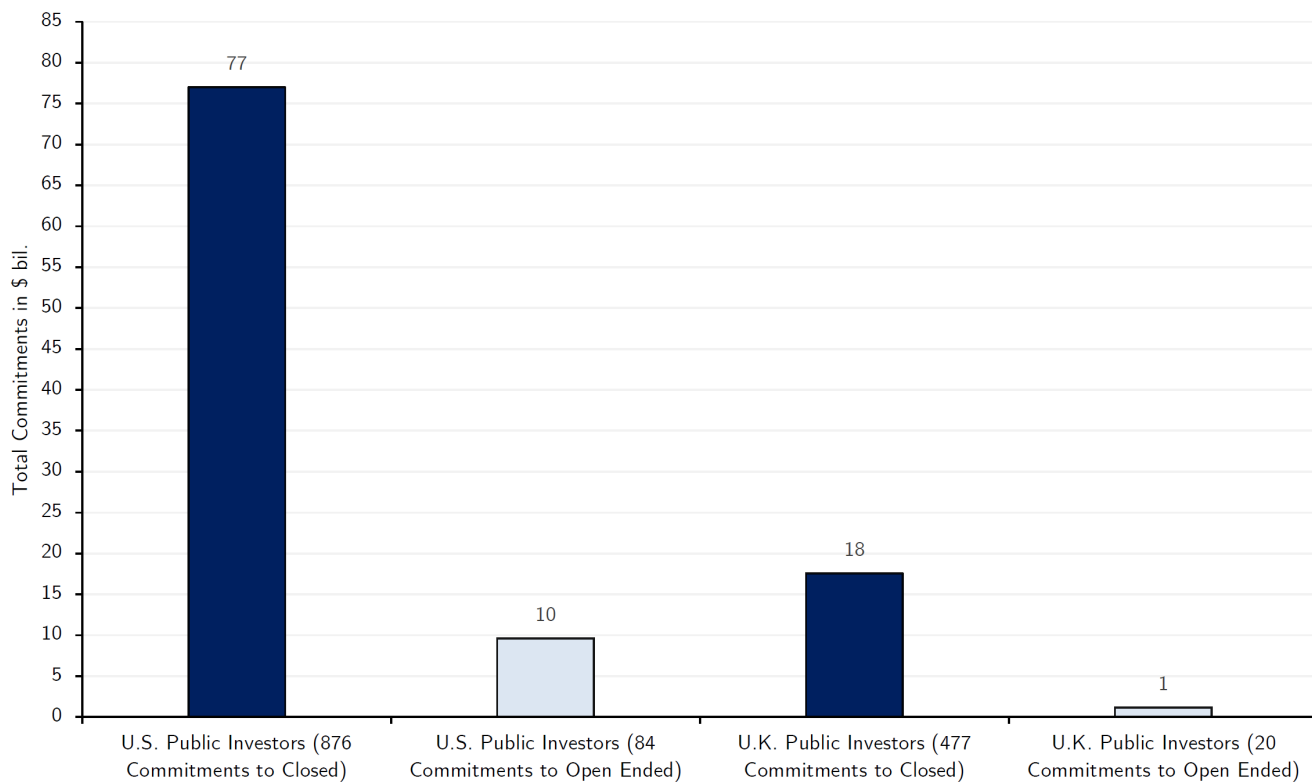


Table IA.1: Statements of U.S. Public Pension Funds about Infrastructure

California Public Employees' Retirement System (CalPERS) website as of August 2018: "Infrastructure targets stable, defensive investments within the water, energy, waste, transportation, technology, and communications sectors." **Commitments** made to 27 closed funds, 1 open-ended fund, and 8 direct investments.

California State Teachers' Retirement System 2017 CAFR: "Short-term results for the Infrastructure Portfolio are not particularly significant, as performance expectations will be better measured over the long term as investments mature and achieve their full cash flow potential. The Infrastructure Portfolio has begun to enter a more mature phase and is beginning to achieve greater cash flow potential." **Commitments** made to 28 closed funds, 1 listed fund, 1 open-ended fund, and 3 direct investments.

New York State Common Retirement Fund 2017 CAFR: "Currently, most of our activity [in real assets] is focused on infrastructure transactions, given the size and risk profile of the opportunity set. Real asset investments offer exposure to varied return sources, including capital appreciation and cash flow from income. The diversified approach reduces realized volatility and allows the portfolio to benefit from long-term growth investment themes. These themes, such as the global growth in protein-based diets, will play out over multiple economic cycles. These investments will have a longer duration and an implicit focus on sustainable practices." **Commitments** made to 16 closed funds, and 2 open-ended funds.

Oregon Public Employees Retirement System 2017 CAFR: "Alternative Equity investments seek to provide diversification and inflation hedging characteristics to the Fund and include investments with a focus on infrastructure and natural resources." **Commitments** made to 20 closed funds.

Pennsylvania State Employees' Retirement System 2017 CAFR: "Natural Resources/Infrastructure differ from real estate in that they focus on other real assets other than real estate, but maintain the characteristics of collateralization by hard assets and income-producing potential." **Commitments** made to 4 closed funds and 1 listed fund.

Employees' Retirement System of the State of Rhode Island 2017 CAFR: "Infrastructure – These four funds provide inflation-protection and current income to the portfolio through investments in facilities and services required for an economy to function including electricity production and distribution, pipelines, sewers and waste management, airports, roads, bridges, ports, railroads, telephone and cable networks, and hospitals." **Commitments** made to 5 closed funds and 1 open-ended fund.

Employees Retirement System of Texas 2017 CAFR: "The System's private infrastructure investments are in large-scale public systems, services and facilities that are necessary for economic activity. These types of relatively illiquid investments are often made in essential services with high barriers to entry and predictable cash flows and have expected life from ten to twelve years, with the option of one to three-year extension." **Commitments** made to 13 closed funds.

Washington State Department of Retirement Systems 2017 CAFR: "Tangible Assets [includes Infrastructure]: This includes 40 limited liability structures and funds. The primary goals of the tangible asset portfolio are to generate a long-term sustainable and stable income stream as well as generate appreciation at least commensurate with inflation." **Commitments** made to 14 closed funds, 3 listed fund, and 2 direct investments.

Table IA.2: Number of Investors by Country and Public/Private Status

Country	Private	Public	Total	Country	Private	Public	Total
Andorra	1	0	1	Latvia	1	0	1
Angola	0	1	1	Lithuania	2	0	2
Australia	71	21	92	Luxembourg	2	0	2
Austria	2	1	3	Macau	0	1	1
Azerbaijan	0	1	1	Malaysia	2	3	5
Bahrain	0	1	1	Malta	1	0	1
Belgium	11	3	14	Mexico	6	4	10
Bermuda	2	0	2	Morocco	5	4	9
Brazil	14	26	40	Netherlands	38	8	46
Brunei	0	1	1	New Zealand	7	2	9
Canada	47	32	79	Nigeria	0	1	1
Chile	5	1	6	Norway	7	8	15
China	4	19	23	Oman	0	2	2
Colombia	6	2	8	Papua New Guinea	0	1	1
Denmark	12	10	22	Peru	3	1	4
Estonia	3	0	3	Philippines	0	1	1
Fiji	0	1	1	Poland	0	2	2
Finland	12	5	17	Portugal	11	1	12
France	18	13	31	Qatar	1	1	2
Gabon	0	1	1	Russia	0	4	4
Germany	45	11	56	Saudi Arabia	1	4	5
Ghana	0	1	1	Senegal	0	1	1
Greece	1	0	1	Singapore	2	3	5
Hong Kong	4	1	5	South Africa	7	8	15
Hungary	0	1	1	South Korea	31	18	49
Iceland	2	4	6	Spain	10	3	13
India	11	24	35	Sweden	17	9	26
International	0	19	19	Switzerland	32	16	48
Ireland	6	2	8	Taiwan	7	0	7
Israel	12	3	15	Thailand	7	3	10
Italy	26	26	52	Togo	0	2	2
Japan	19	5	24	UK	108	81	189
Jersey	0	2	2	US	585	180	765
Kazakhstan	0	5	5	United Arab Emirates	3	7	10
Kuwait	0	6	6	Vietnam	2	1	3
Total					1,232	629	1,861

Table IA.3: Summary Statistics for U.S. Institutional Investors

In Panel A, we report summary statistics on an institutional investor level. *Investor Size* presents the average assets under management (\$ bil.) and *Year First Investment* is the year of the institution’s first investment in infrastructure. *#Funds* and *#Direct Deals* measure the average number of investments in infrastructure funds and direct deals by investor. *#Deals* reports the average number of deals to which an investor gains exposure (investing through funds exposes an investor to multiple deals). In Panel B, we report the distribution of investor-deal observations by deal characteristics. We show the number of observations by project stage (greenfield, brownfield, and secondary stage), concession agreement, industry, and regional location of the asset. In Panel C, we report statistics on the investor-deal level. *#Investors in deal* counts the average number of investors in the same deal (but institutions investing through the same fund are not counted multiple times). *Investment stake* measures the average investment stake of the investor, while *Total Stake* is the average stake of all investors in the deal.

	All	U.S. Public Investors			U.S. Private Investors		
		Public Pension Funds	Government Agencies	Sovereign Wealth Funds	Private Pension Funds	Insurance Firms and Banks	Endowments and Foundations
Panel A: Statistics on an Institutional Investor Level							
#Investors	765	171	5	4	237	77	271
Investor Size	23.57	23.31	10.26	25.11	11.17	136.84	2.60
Year First Investment	2007	2008	2011	2009	2006	2006	2006
#Funds	3.94	6.26	4.00	15.00	3.67	5.53	2.11
#Direct Deals	0.08	0.10	0.80	0.50	0.06	0.25	0.02
#Deals	50.20	67.58	10.20	150.50	54.63	64.34	29.05
Panel B: Distribution of Investor-Deal Observations							
#Investor-Deal Obs.	34,840	10,813	51	602	12,073	4,504	6,797
Secondary	26,699	8,737	19	513	9,485	3,296	4,649
Greenfield	5,056	1,309	22	56	1,587	741	1,341
Brownfield	3,085	767	10	33	1,001	467	807
No Concession	33,215	10,258	44	559	11,508	4,308	6,538
With Concession	1,625	555	7	43	565	196	259
Renewable Energy	9,418	3,120	22	179	3,281	1,039	1,777
Traditional Energy	15,509	4,193	10	195	5,115	2,216	3,780
Transport	4,968	1,709	13	128	2,044	541	533
Social	673	131	1	4	112	126	299
Utilities	2,450	822	4	56	971	326	271
Telecoms	1,725	805	1	39	507	248	125
Diversified	97	33	0	1	43	8	12
Western Europe	7,270	2,811	4	192	2,384	816	1,063
Northern America	20,865	5,610	4	233	7,185	2,960	4,873
Latin America	3,328	1,218	17	80	1,251	248	514
Asia	1,973	594	11	64	730	373	201
Oceania	617	259	0	14	210	55	79
Eastern Europe	571	274	7	14	208	36	32
Africa	216	47	8	5	105	16	35
Panel C: Statistics on an Investor-Deal Level							
#Investors in Deal	1.54	1.61	1.43	1.70	1.58	1.49	1.38
%Investment Stake	0.69	0.67	0.72	0.65	0.67	0.73	0.75
%Total Stake	0.83	0.82	0.85	0.80	0.82	0.86	0.86

Table IA.4: Number of Unique Assets by Country

Country	Assets	Country	Assets	Country	Assets
Albania	1	Germany	247	Oman	13
Algeria	1	Ghana	6	Pakistan	9
Angola	2	Greece	19	Panama	8
Argentina	6	Guatemala	8	Peru	27
Armenia	1	Guernsey	1	Philippines	27
Aruba	2	Guinea	3	Poland	33
Australia	261	Guyana	2	Portugal	22
Austria	6	Honduras	6	Puerto Rico	3
Azerbaijan	1	Hong Kong	11	Qatar	2
Bahamas	1	Hungary	6	Reunion	7
Bahrain	6	Iceland	1	Romania	5
Bangladesh	4	India	176	Russia	20
Belgium	37	Indonesia	27	Rwanda	4
Bolivia	6	Ireland	101	Saint Lucia	1
Botswana	1	Isle of Man	1	Saudi Arabia	16
Brazil	144	Israel	28	Senegal	8
Bulgaria	12	Italy	225	Serbia	2
Burkina Faso	1	Ivory Coast	3	Sierra Leone	2
Cambodia	2	Jamaica	5	Singapore	36
Cameroon	5	Japan	44	Slovakia	5
Canada	294	Jordan	8	Slovenia	3
Cape Verde	5	Kazakhstan	9	South Africa	62
Central African Republic	1	Kenya	16	South Korea	47
Chile	66	Kuwait	1	Spain	172
China	53	Laos	2	Sri Lanka	5
Colombia	28	Latvia	4	Sudan	2
Costa Rica	6	Lithuania	5	Sweden	58
Croatia	5	Luxembourg	7	Switzerland	12
Curacao	1	Madagascar	1	Taiwan	13
Cyprus	1	Malawi	1	Tanzania	8
Czech Republic	12	Malaysia	15	Thailand	25
Denmark	24	Mali	3	Trinidad and Tobago	6
Djibouti	2	Malta	1	Tunisia	2
Dominica	1	Mauritania	2	Turkey	36
Dominican Republic	4	Mauritius	2	Turks and Caicos Islands	1
Ecuador	1	Mexico	61	UK	1,374
Egypt	18	Mongolia	2	US	1,106
El Salvador	3	Morocco	12	Uganda	11
Estonia	5	Mozambique	2	United Arab Emirates	30
Ethiopia	3	Nepal	7	Uruguay	3
Finland	32	Netherlands	83	Uzbekistan	2
France	331	New Zealand	34	Venezuela	2
French Caribbean	2	Nicaragua	5	Vietnam	32
Gabon	3	Nigeria	14	Zambia	2
Georgia	2	Norway	23		
Total					5,907

Table IA.5: U.S. Infrastructure Assets by U.S. State and Industry

This table shows the number of unique assets by state and industry. The total number of assets is lower than the sum of assets by state as one asset can be located in multiple states.

State	Traditional Energy	Renewable Energy	Transport	Utilities	Telecoms	Social	Diversified	Total
Alabama	5	1	1	0	0	1	0	8
Alaska	0	2	0	0	0	0	0	2
Arizona	3	9	0	1	0	0	0	13
Arkansas	3	0	0	0	1	1	0	5
California	33	75	5	11	2	5	0	131
Colorado	16	5	5	1	3	0	0	30
Connecticut	10	14	5	3	0	0	0	32
DC	1	0	1	0	0	0	1	3
Delaware	3	2	0	0	0	0	0	5
Florida	10	2	7	1	5	10	0	35
Georgia	11	0	2	1	1	0	0	15
Hawaii	3	0	0	0	1	0	0	4
Idaho	1	13	0	0	0	0	0	14
Illinois	23	10	8	3	2	3	0	49
Indiana	3	3	1	0	1	3	0	11
Iowa	0	6	0	1	0	0	0	7
Kansas	2	5	1	0	0	0	0	8
Kentucky	4	0	0	0	0	0	0	4
Louisiana	15	2	2	1	0	1	0	21
Maine	5	14	0	1	0	0	0	20
Maryland	12	2	0	0	0	1	0	15
Massachusetts	21	18	0	2	0	0	0	41
Michigan	9	4	5	2	0	0	0	20
Minnesota	2	6	0	0	0	0	0	8
Mississippi	7	0	0	0	0	0	0	7
Missouri	3	0	0	0	3	0	0	6
Montana	0	1	0	0	0	0	0	1
Nebraska	1	1	0	0	1	1	0	4
Nevada	5	14	0	3	0	0	0	22
New Hampshire	3	5	0	0	0	0	0	8
New Jersey	18	10	8	5	0	0	0	41
New Mexico	7	6	0	0	0	0	0	13
New York	17	18	6	4	4	0	0	49
North Carolina	3	20	3	1	4	1	0	32
North Dakota	6	3	0	1	0	0	0	10
Ohio	13	2	5	0	1	1	0	22
Oklahoma	23	12	0	1	0	0	0	36
Oregon	2	21	1	0	1	0	0	25
Pennsylvania	29	16	4	7	0	1	0	57
Rhode Island	3	2	0	0	0	0	0	5
South Carolina	2	17	0	0	1	0	0	20
South Dakota	1	1	0	0	0	0	0	2
Tennessee	0	3	0	0	0	0	0	3
Texas	127	44	9	11	3	4	0	198
Utah	4	3	0	0	0	0	0	7
Vermont	0	0	0	1	0	0	0	1
Virginia	7	7	7	0	4	1	0	26
Washington	5	2	4	3	0	1	0	15
West Virginia	6	5	0	0	0	0	0	11
Wisconsin	2	1	0	1	0	2	0	6
Wyoming	4	4	0	0	0	0	0	8
Multiple States	3	13	10	1	2	1	0	30
Total	467	408	94	59	39	38	1	1,106

Table IA.6: List of Largest Direct Investors

This table shows the top 20 investors in direct deals. For every investor, we report investor type and country. *Freq* shows the number of direct deals executed by this specific investor, *Percent* reports the number of deals as a percentage of the total number of direct investments, and *Cum.* reports the cumulative percentage of the total number of direct investments.

Investor	Type	Country	Freq.	Percent	Cum.
CPP Investment Board	Public Pension Fund	Canada	115	5.61	5.61
APG - All Pensions Group	Public Pension Fund	Netherlands	97	4.73	10.35
CDPQ	Public Pension Fund	Canada	86	4.20	14.54
Ontario Teachers' Pension Plan	Public Pension Fund	Canada	84	4.10	18.64
GIC	Sovereign Wealth Fund	Singapore	79	3.86	22.50
Ontario Municipal Employees Retirement System	Public Pension Fund	Canada	66	3.22	25.72
PGGM	Public Pension Fund	Netherlands	57	2.78	28.50
Caisse des Depots et Consignations	Government Agency	France	54	2.64	31.14
Temasek Holdings	Sovereign Wealth Fund	Singapore	53	2.59	33.72
China General Nuclear Power Group	Government Agency	China	52	2.54	36.26
Norfund	Government Agency	Norway	48	2.34	38.60
International Finance Corporation	Government Agency	International	45	2.20	40.80
CDC Group	Government Agency	UK	44	2.15	42.95
Public Sector Pension Investment Board	Public Pension Fund	Canada	44	2.15	45.10
Manulife Financial Corporation	Insurance Company	Canada	43	2.10	47.19
British Columbia IMC	Public Pension Fund	Canada	41	2.00	49.19
Abu Dhabi Investment Authority	Sovereign Wealth Fund	United Arab Emirates	30	1.46	50.66
European Bank for Reconstruction and Development	Government Agency	International	30	1.46	52.12
China Investment Corporation	Sovereign Wealth Fund	China	28	1.37	53.49
Pensions Infrastructure Platform	Public Pension Fund	UK	28	1.37	54.86

Table IA.7: Alternative IRR Calculations

Robustness check of Table 3: Preqin-reported IRRs do not penalize funds for delaying capital calls or not calling the entire committed amount. We calculate three alternative IRR measures that address these issues.

We follow Gupta and Van Nieuwerburgh (2021) and calculate the IRR in three alternative ways. In these alternative measures, we work with \$10 million as a standardized commitment amount. First, *IRR Sum Call* calculation assumes that each fund makes only one capital call equal to the undiscounted sum of all calls. This estimation addresses the timing of capital calls and assumes that investors earn a 0% return on the capital committed from the first call date until the actual call date. Second, for several older infrastructure funds, the sum of all calls is greater than the amount of committed capital as sometimes partnership provisions allow GPs to reinvest distributions from early exits into new investments. The *IRR Sum Call Max Cap \$10* calculation adjust the first definition of IRR by truncating the capital call amount above \$10 million. Third, GPs do not always call the full committed amount because they may lack profitable investment opportunities, engage in market timing, or try to optimize the number of simultaneously managed deals. The *IRR \$10 Call Residual in T-Bills* measure addresses this issue by assuming that the LP gives \$10 million to the GP on the first call date. Any committed amount that has never been called is invested in T-Bills and returned to the LP at the end of the life of the fund (we combine it with the last cash flow in our calculation). Panel A summarizes the IRR measures for all infrastructure funds. Panel B presents summary statistics for infrastructure funds raised in vintages 2002–2013 that have finished investing the committed capital. For each measure, we present the number of fund observations, mean, median, and standard deviation by fund type. The last column presents the correlation with Preqin-reported IRRs.

	Funds	Mean	Median	SD	Corr IRR
Panel A: Funds Raised in the Period 2002–2017					
IRR Sum Call	106	4.79	6.06	14.05	0.55
IRR Sum Call Max Cap \$10	106	5.65	6.62	14.22	0.54
IRR \$10 Call Residual in T-Bills	106	4.16	4.53	8.23	0.51
Preqin IRR	106	9.96	9.30	16.44	
Panel B: Funds Raised in the Period 2002–2013					
IRR Sum Call	60	5.59	5.60	9.03	0.92
IRR Sum Call Max Cap \$10	60	6.85	6.43	9.19	0.90
IRR \$10 Call Residual in T-Bills	60	6.09	5.89	8.05	0.89
Preqin IRR	60	9.13	8.60	12.07	

Table IA.8: Percentage Exited Deals and Alternative IRR Calculations

Robustness check of Table 4: Preqin-reported IRRs do not penalize funds for delaying capital calls or not calling the entire committed amount. We calculate three alternative IRR measures that address these issues.

In this table, observations are at the infrastructure fund level. In Columns (1) and (2), performance is measured using the *IRR Sum Call* measure which assumes that each fund makes only one capital call equal to the undiscounted sum of all calls. In Columns (3) and (4), performance is measured using the *IRR Sum Call Max Cap \$10* measure which also assumes that each fund makes only one capital call equal to the undiscounted sum of all calls, but truncates the capital call amount above \$10 million. In Columns (5) and (6), performance is measured using the *IRR \$10 Call Residual in T-Bills* measure which assumes that the LP gives \$10 million to the GP on the first call date, and any committed amount that has never been called is invested in T-Bills and returned to the LP at the end of the life of the fund (we combine it with the last cash flow in our calculation). *%Exited deals* measures the percentage of exited deals from the total number of deals made by the fund. *%Exited deals in years 0-5, 5-10, and >10* captures the percentage of exited deals in the first five years after the transaction date, in five to ten years after the transaction, and in more than ten years after the transaction date, respectively. *Fund size* is the natural logarithm of the assets raised by the infrastructure fund. *%Greenfield* and *%Brownfield* measure the percentage of fund investments in deals in greenfield and brownfield project stage, respectively (the omitted category is secondary stage). *%Concession* measures the percentage of deals when a fund enters a concession deal with the government. We include vintage year fixed effects and control for the percentage allocated to different infrastructure industries and geographical regions. We cluster standard errors by vintage year and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	IRR Sum Call		IRR Sum Call Max Cap \$10		IRR \$10 Call Residual in T-Bills	
	(1)	(2)	(3)	(4)	(5)	(6)
%Exited Deals	23.387*** [7.881]		23.631*** [8.257]		17.451*** [5.529]	
%Exited Deals in Years 0-5		26.490*** [8.421]		27.345*** [8.412]		20.575*** [5.366]
%Exited Deals in Years 5-10		11.716 [11.870]		8.826 [12.494]		11.343 [10.740]
%Exited Deals in Years >10		89.730 [82.154]		119.219 [82.188]		-25.310 [41.100]
Fund Size	-0.174 [3.275]	-0.404 [3.364]	-0.067 [3.309]	-0.351 [3.412]	1.012 [2.129]	0.841 [2.150]
%Greenfield	-2.119 [8.861]	-2.560 [8.636]	-3.383 [9.018]	-3.868 [8.710]	-3.633 [7.171]	-4.364 [7.157]
%Brownfield	-1.278 [11.185]	-2.443 [10.717]	-2.019 [11.370]	-3.635 [10.784]	2.931 [6.717]	3.261 [6.406]
%Concession	-37.451 [23.203]	-36.692 [23.352]	-37.986 [23.143]	-36.970 [23.320]	-11.568 [9.222]	-11.536 [9.193]
Vintage FE	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Region	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Industry	Yes	Yes	Yes	Yes	Yes	Yes
Observations	129	129	129	129	129	129
Adjusted R-squared	0.031	0.016	0.044	0.034	0.045	0.032

Table IA.9: Cash Flows and Business Cycle

We examine the relation between cash flows of private funds and market conditions. The unit of observation is by fund-quarter. The sample includes funds raised in the period 1990–2019. Panel A focuses on buyout funds, Panel B on venture capital funds, and Panel C on real estate funds. $\ln(P/D)$ is the natural logarithm of the price/dividend ratio of the S&P 500. $\ln(\text{Yield Spread})$ is the natural logarithm of the Moody’s Baa-Aaa yield spread and we orthogonalize it with respect to $\ln(P/D)$. Inflation is the U.S. CPI for all urban consumers. In Columns (1) and (2), we estimate OLS regressions and the dependent variable is net cash flows (distributions – capital calls) as a percentage of committed capital. In Columns (3) and (4), we present Tobit regression results where the dependent variable is the natural logarithm of the distributions as a percentage of committed capital plus one. In Columns (5) and (6), we present Tobit regression results where the dependent variable is the natural logarithm of the capital calls as a percentage of committed capital plus one. All regressions include fund age fixed effects measured in quarters, calendar quarter fixed effects, and fund focus fixed effects. We cluster standard errors on a year-quarter level and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	Net Cash Flows		Distributions		Capital Calls	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buyout Cash Flows and Business Cycle						
$\ln(P/D)$	1.638***	1.796***	0.590***	0.685***	0.046	0.070
	[0.329]	[0.344]	[0.143]	[0.144]	[0.090]	[0.093]
$\ln(\text{Yield spread})$	-0.228***	-0.233***	-0.166***	-0.169***	-0.065***	-0.066***
	[0.060]	[0.059]	[0.022]	[0.021]	[0.012]	[0.012]
Inflation		-0.060		-0.036		1.662***
		[0.056]		[0.029]		[0.025]
Fund Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund Focus FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,841	46,841	46,841	46,841	46,841	46,841
Adjusted R-squared	0.147	0.147				
Pseudo R-squared			0.052	0.053	0.130	0.130
Panel B: Venture Capital Cash Flows and Business Cycle						
$\ln(P/D)$	6.587***	7.227***	1.558***	1.846***	-0.147	-0.139
	[2.120]	[2.075]	[0.297]	[0.297]	[0.119]	[0.126]
$\ln(\text{Yield spread})$	0.019	-0.007	-0.205***	-0.214***	-0.098***	-0.099***
	[0.176]	[0.174]	[0.036]	[0.033]	[0.021]	[0.021]
Inflation		-0.249***		-0.108***		-0.003
		[0.093]		[0.037]		[0.016]
Fund Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund Focus FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,708	41,708	41,708	41,708	41,708	41,708
Adjusted R-squared	0.063	0.063				
Pseudo R-squared			0.046	0.047	0.181	0.181
Panel C: Real Estate Cash Flows and Business Cycle						
$\ln(P/D)$	1.606*	3.074***	1.181***	1.652***	0.073	0.061
	[0.833]	[0.868]	[0.262]	[0.218]	[0.174]	[0.176]
$\ln(\text{Yield spread})$	-0.446***	-0.430***	-0.168***	-0.167***	-0.020	-0.020
	[0.110]	[0.103]	[0.036]	[0.031]	[0.021]	[0.021]
Inflation		-0.375***		-0.122***		0.003
		[0.086]		[0.044]		[0.021]
Fund Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund Focus FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,160	17,160	17,160	17,160	17,160	17,160
Adjusted R-squared	0.209	0.210				
Pseudo R-squared			0.054	0.056	0.126	0.126

Table IA.10: Cash Flows to Institutional Investors and Business Cycle

Robustness check of Table 4: The unit of observation is on an investor-quarter level instead of fund-quarter level and addresses the point that an institutional investors can commit capital to multiple funds.

We examine the relation between cash flows of infrastructure funds to institutional investors (LPs) and market conditions. The unit of observation is by investor-quarter. At each point in time, the methodology collapses the cross-section of investor-fund observations in a given quarter by aggregating the investor-level net cash flows, distributions, and capital calls. In Panel A, the sample includes all institutional investors. In Panel B, the analysis focuses on the subsample of 137 institutional investors that have committed capital to at least five infrastructure funds reporting cash flows in the Preqin database. In Columns (1)-(4), we estimate OLS regressions and the dependent variable is net cash flows (distributions – capital calls) as percentage of committed capital. In Columns (5)-(6), we present Tobit regression results where the dependent variable is the natural logarithm of the distributions as a percentage of committed capital plus one. In Columns (7)-(8), we present Tobit regression results where the dependent variable is the natural logarithm of the capital calls as a percentage of committed capital plus one. $\ln(P/D)$ is the natural logarithm of the price/dividend ratio of the S&P 500. $\ln(Yield\ Spread)$ is the natural logarithm of the Moody's Baa-Aaa yield spread. We orthogonalize $\ln(Yield\ Spread)$ with respect to $\ln(P/D)$. *Inflation* is the U.S. CPI for all urban consumers. *CFNAI MA3* is the three-month moving average of the Chicago Fed National Activity Index. The *CFNAI Production & Income* category of this index measures industrial production, manufacturing, construction, and real income. All variables are lagged and measured at the end of the previous quarter. All regressions include calendar quarter fixed effects. We cluster standard errors on an investor level and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	Net Cash Flows				Distributions		Capital Calls	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: All Institutional Investors								
ln(Yield spread)	-0.422*** [0.089]	-0.429*** [0.088]	-0.582 [0.357]	-0.234 [0.374]	-0.164*** [0.018]	-0.160*** [0.018]	-0.069*** [0.020]	-0.067*** [0.019]
ln(P/D)	4.357*** [0.593]	4.099*** [0.639]			0.746*** [0.162]	0.900*** [0.178]	-0.191 [0.170]	-0.119 [0.177]
Inflation		0.057 [0.082]				-0.034*** [0.010]		-0.015 [0.011]
CFNAI MA3			1.587*** [0.269]					
CFNAI Production & Income				3.434*** [0.406]				
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,560	27,560	27,560	27,560	27,560	27,560	27,560	27,560
Adjusted R-squared	0.010	0.010	0.011	0.012				
Pseudo R-squared					0.005	0.005	0.003	0.003
Panel B: Institutional Investors with at least 5 Funds Reporting Cash Flows								
ln(Yield spread)	-0.186 [0.246]	-0.256 [0.244]	-1.547* [0.932]	-0.494 [0.999]	-0.343*** [0.032]	-0.328*** [0.028]	-0.251*** [0.029]	-0.239*** [0.027]
ln(P/D)	8.489*** [1.318]	5.974*** [1.357]			0.439** [0.221]	0.980*** [0.257]	-0.763*** [0.275]	-0.377 [0.297]
Inflation		0.598*** [0.217]				-0.126*** [0.016]		-0.090*** [0.019]
CFNAI MA3			1.258* [0.693]					
CFNAI Production & Income				3.955*** [0.842]				
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760
Adjusted R-squared	0.020	0.021	0.019	0.021				
Pseudo R-squared					0.014	0.017	0.012	0.013

Table IA.11: Generalized Public Market Equivalent

In this table, we use the stochastic discount factor (SDF) valuation method of Korteweg and Nagel (2016) to estimate the generalized public market equivalent (GPME). The unit of observation is infrastructure fund cash flows on a quarterly frequency. The quarterly cash flows are normalized by fund size to a total commitment of \$1, and they are calculated as the difference between distributions and capital calls, rather than their ratio (so a PME equal to 1 in Table 3 corresponds to a GPME equal to 0 in this table). Panel A shows the estimates for buyout funds, Panel B for venture capital funds, and Panel C for real estate funds. In Columns (1)-(6), we analyze the cash flows of funds raised in the 2002-2018 period, while in Columns (7)-(12), we analyze the cash flows of funds raised in the 2002-2013 period. We estimate the GPME for all funds in Columns (1), (2), (7) and (8), as well as separately for funds with fund size above \$250 mil. in Columns (3), (4), (9) and (10), and for funds with fund size above \$500 mil. in Columns (5), (6), (11) and (12). Columns with $a = 0$ and $b = 1$ correspond to the public market equivalent calculation of Kaplan and Schoar (2005). In the other columns, a and b are SDF parameters that correctly price benchmark funds that receive the same inflows as the private funds but that invest in the S&P 500 index and T-bills. We report standard errors of the SDF parameter estimates in brackets, and p -values of the J -test of $GPME = 0$ in parentheses.

	Funds Raised in 2002–2018						Funds Raised in 2002–2013					
	All Funds		Size \geq \$250 mil.		Size \geq \$500 mil.		All Funds		Size \geq \$250 mil.		Size \geq \$500 mil.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Buyout Funds												
GPME	0.054*	-0.125**	0.056*	-0.126**	0.068*	-0.112*	0.067	-0.136**	0.067	-0.131**	0.081	-0.110*
	(0.054)	(0.037)	(0.089)	(0.021)	(0.061)	(0.052)	(0.175)	(0.037)	(0.243)	(0.029)	(0.184)	(0.079)
a	0	0.041	0	0.035	0	0.031	0	0.028	0	0.023	0	0.019
		[0.017]		[0.016]		[0.015]		[0.012]		[0.011]		[0.010]
b	1	3.454	1	3.202	1	3.029	1	2.871	1	2.614	1	2.445
		[0.739]		[0.733]		[0.727]		[0.566]		0.553		[0.541]
Funds	1,020	1,020	870	870	658	658	668	668	570	570	434	434
Panel B: Venture Capital Funds												
GPME	-0.034	-0.287***	-0.014	-0.274***	0.031	-0.250***	-0.077	-0.356***	-0.055	-0.335***	0.019	-0.301***
	(0.363)	(0.000)	(0.755)	(0.000)	(0.407)	(0.000)	(0.111)	(0.000)	(0.348)	(0.000)	(0.797)	(0.000)
a	0	0.047	0	0.040	0	0.044	0	0.034	0	0.026	0	0.026
		[0.016]		[0.015]		[0.020]		[0.010]		[0.009]		[0.012]
b	1	4.055	1	3.756	1	3.996	1	3.405	1	3.035	1	3.068
		[0.756]		[0.759]		[0.944]		[0.525]		[0.509]		[0.676]
Funds	770	770	435	435	219	219	480	480	261	261	121	121
Panel C: Real Estate Funds												
GPME	-0.065	-0.442**	-0.075	-0.487**	-0.077	-0.511**	-0.108*	-0.527***	-0.119*	-0.576***	-0.118	-0.618***
	(0.144)	(0.011)	(0.152)	(0.022)	(0.170)	(0.036)	(0.093)	(0.001)	(0.096)	(0.001)	(0.116)	(0.003)
a	0	0.093	0	0.090	0	0.099	0	0.067	0	0.068	0	0.076
		[0.028]		[0.029]		[0.030]		[0.020]		[0.021]		[0.024]
b	1	5.190	1	5.076	1	5.184	1	4.288	1	4.302	1	4.458
		[0.915]		[0.906]		[0.897]		[0.683]		[0.702]		[0.747]
Funds	646	646	472	472	329	329	350	350	277	277	192	192

Table IA.12: Leverage of Infrastructure Transactions

This table presents summary statistics on the proportion of leverage used in infrastructure transactions. For 683 transactions, Preqin provides information on the total deal size as well as the proportion of deals financed by equity and debt. The leverage ratio is estimated as the total amount of debt divided by total deal size. We summarize the leverage ratio and present the mean, 25th percentile, median, and 75th percentile. We present summary statistics separately for each investment structure and industry.

	N	Mean	p25	Median	p75
Closed	352	0.65	0.51	0.71	0.82
Direct	213	0.57	0.41	0.60	0.74
Listed	63	0.62	0.50	0.64	0.77
Open Ended	55	0.57	0.37	0.64	0.71
Diversified	1	0.43	0.43	0.43	0.43
Renewable Energy	126	0.67	0.62	0.71	0.77
Social	94	0.80	0.74	0.88	0.91
Telecoms	45	0.51	0.38	0.50	0.60
Traditional Energy	125	0.64	0.59	0.68	0.75
Transport	214	0.57	0.40	0.58	0.75
Utilities	78	0.47	0.22	0.51	0.68
Total	683	0.62	0.48	0.66	0.79

Table IA.13: Investor Type and Performance (Private Investors)**Robustness check of Table 8:** We control for private investor types instead of public investor types.

This table presents results of regressions in which the dependent variable is the performance of investors in closed infrastructure funds. Observations are at the investor-fund level. In Columns (1) and (2) performance is measured using the public market equivalent (PME), in Columns (3) and (4) using the net internal rate of return (IRR), and in Columns (5) and (6) using the net multiple of invested capital. *Private Investor* is an indicator variable for institutional investors from the private sector. We also split the private investors by type and include separate indicators for U.S. private pension funds, non U.S. private pension funds, insurance firms and banks, and endowments and foundations. We control for the natural logarithm of investors' size (*AUM*) and year of first infrastructure investment. *#Funds* measures the number of investments in infrastructure funds by investor. We include two indicator variables for infrastructure funds that do not take only equity positions in infrastructure deals, but that also act as a fund-of-funds or debt fund. We include vintage year fixed effects and investor (LP) country fixed effects. We also control for the percentage of deals in the portfolio of each infrastructure fund in different industries, geographical regions, project stages, and deals backed with a concession agreement. We double cluster standard errors by institutional investor and infrastructure fund, and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	PME		Net IRR		Multiple	
	(1)	(2)	(3)	(4)	(5)	(6)
Private Investor	0.026**		1.810***		0.038***	
	[0.012]		[0.588]		[0.014]	
U.S. Private Pension Funds		0.027*		2.582**		0.044**
		[0.016]		[1.120]		[0.023]
Non U.S. Private Pension Funds		0.052**		2.004***		0.066***
		[0.026]		[0.679]		[0.019]
Insurance Firms and Banks		-0.002		0.991*		0.021
		[0.013]		[0.560]		[0.017]
Endowments and Foundations		0.042*		1.668		0.005
		[0.023]		[1.015]		[0.031]
Log Investor Size	0.006**	0.009**	-0.018	0.082	-0.001	-0.001
	[0.003]	[0.004]	[0.117]	[0.145]	[0.004]	[0.005]
Year of First Investment	-0.001*	-0.002**	-0.044	-0.037	-0.001	-0.001
	[0.001]	[0.001]	[0.033]	[0.035]	[0.001]	[0.001]
#Funds	-0.000	-0.000	-0.005	-0.007	0.000	0.000
	[0.001]	[0.001]	[0.026]	[0.027]	[0.001]	[0.001]
Fund Type	Yes	Yes	Yes	Yes	Yes	Yes
LP Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Vintage FE	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Region	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Industry	Yes	Yes	Yes	Yes	Yes	Yes
%Project Stage	Yes	Yes	Yes	Yes	Yes	Yes
%Concession	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,342	2,342	3,021	3,021	3,853	3,853
Adjusted R-squared	0.450	0.452	0.150	0.150	0.326	0.326

Table IA.14: Investor Type and Performance (Robustness Tests)

Robustness check of Table 8: In Columns (1) to (3), we exclude funds labeled primarily as funds-of-funds and debt funds. In Columns (4) to (6), the observations are value weighted by infrastructure fund size in the regressions. In Columns (7) to (9), the estimations analyze only infrastructure funds raised in vintages before 2014, so they have existed for more than five years and have typically finished allocating the capital.

This table presents results of regressions in which the dependent variable is the performance of investors in closed infrastructure funds. Observations are at the investor-fund level. In Columns (1), (4) and (7) performance is measured using the public market equivalent (PME), in Columns (2), (5) and (8) using the net internal rate of return (IRR), and in Columns (3), (6) and (9) using the net multiple of invested capital. *Public Investor* is an indicator variable for institutional investors from the public sector. We control for the natural logarithm of investors' size (AUM) and year of first infrastructure investment. *#Funds* measures the number of investments in infrastructure funds by investor. In Columns (4) to (9), we include two indicator variables for infrastructure funds that do not take only equity positions in infrastructure deals, but that also act as a fund-of-funds or debt fund. We include vintage year fixed effects and investor (LP) country fixed effects. We also control for the percentage of deals in the portfolio of each infrastructure fund in different industries, geographical regions, project stages, and deals backed with a concession agreement. We double cluster standard errors by institutional investor and infrastructure fund, and report standard errors in brackets. $*p < .1$; $**p < .05$; $***p < .01$.

	Exclude FoF and Debt Funds			Value Weighted by Fund Size			Exclude Vintages before 2014		
	PME (1)	Net IRR (2)	Multiple (3)	PME (4)	Net IRR (5)	Multiple (6)	PME (7)	Net IRR (8)	Multiple (9)
Public Investor	-0.029** [0.012]	-1.663*** [0.570]	-0.041** [0.016]	-0.023** [0.011]	-1.644*** [0.563]	-0.034*** [0.013]	-0.032** [0.015]	-1.504*** [0.488]	-0.040** [0.019]
Log Investor Size	0.003 [0.002]	-0.118 [0.132]	-0.003 [0.004]	0.006** [0.002]	-0.015 [0.109]	-0.001 [0.004]	0.006** [0.003]	-0.088 [0.142]	-0.003 [0.005]
Year of First Investment	-0.001* [0.001]	-0.046 [0.036]	-0.001 [0.001]	-0.001** [0.001]	-0.035 [0.030]	-0.001 [0.001]	-0.000 [0.001]	0.017 [0.038]	0.001 [0.002]
#Funds	0.000 [0.001]	0.003 [0.026]	0.000 [0.001]	-0.000 [0.001]	-0.004 [0.024]	0.000 [0.001]	0.000 [0.001]	-0.006 [0.021]	0.000 [0.001]
Fund Type	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
LP Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
%Project Stage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
%Concession	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,044	2,725	3,509	2,342	3,021	3,853	1,269	2,071	2,444
Adjusted R-squared	0.462	0.190	0.329	0.456	0.150	0.326	0.606	0.275	0.298

Table IA.15: Investor Type and Alternative IRR Performance

Robustness check of Tables 8 and 9: Preqin-reported IRRs do not penalize funds for delaying capital calls or not calling the entire committed amount. We calculate three alternative IRR measures that address these issues.

In this table, observations are at the investor-fund level. In Columns (1) and (2), performance is measured using the *IRR Sum Call* measure which assumes that each fund makes only one capital call equal to the undiscounted sum of all calls. In Columns (3) and (4), *IRR Sum Call Max Cap \$10* measure assumes that each fund makes only one capital call equal to the undiscounted sum of all calls, but truncates the capital call amount above \$10 million. In Columns (5) and (6), *IRR \$10 Call Residual in T-Bills* measure assumes that the LP gives \$10 million to the GP on the first call date, and any committed amount that has never been called is invested in T-Bills and returned to the LP at the end of the life of the fund (we combine it with the last cash flow in our calculation). *Public Investor* is an indicator variable for institutional investors from the public sector. *Mandatory Regulation* and *Voluntary Regulation* are indicator variables measuring whether an institutional investor faces mandatory or voluntary regulation to consider ESG factors in its investment decisions. *UN PRI Signatory* is an indicator variable for investors that have signed the UN principles for responsible investing. *Impact Fund* is an indicator for infrastructure funds that make investments with the intention to generate positive social and environmental impact alongside a financial return. We control for the natural logarithm of investors' size (AUM) and year of first infrastructure investment. *#Funds* measures the number of investments in infrastructure funds by investor. We include two indicator variables for infrastructure funds that do not take only equity positions in infrastructure deals, but that also act as a fund-of-funds or debt fund. We include vintage year fixed effects and investor (LP) country fixed effects. We also control for the percentage of deals in the portfolio of each infrastructure fund in different industries, geographical regions, project stages, and deals backed with a concession agreement. We double cluster standard errors by institutional investor and infrastructure fund, and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	IRR Sum Call		IRR Sum Call		IRR \$10 Call	
	(1)	(2)	Max Cap \$10	(4)	Residual in T-Bills	(6)
	(1)	(2)	(3)	(4)	(5)	(6)
Public Investor	-1.183** [0.529]	-0.802* [0.455]	-1.166** [0.529]	-0.782* [0.449]	-0.759** [0.326]	-0.510* [0.288]
UN PRI Signatory		-2.297* [1.192]		-2.241* [1.174]		-1.355** [0.650]
Impact Fund		-7.577*** [2.669]		-7.997*** [2.743]		-6.076** [2.516]
Mandatory Regulation		-0.723 [1.682]		-0.762 [1.697]		0.289 [1.115]
Voluntary Regulation		-1.527 [2.935]		-1.482 [2.947]		0.365 [2.211]
Log Investor Size	0.141 [0.098]	0.134 [0.104]	0.131 [0.100]	0.120 [0.109]	0.149*** [0.057]	0.139** [0.060]
Year of First Investment	-0.041 [0.057]	-0.035 [0.054]	-0.050 [0.057]	-0.044 [0.054]	-0.019 [0.022]	-0.014 [0.020]
#Funds	-0.026 [0.030]	-0.012 [0.028]	-0.020 [0.029]	-0.005 [0.028]	-0.006 [0.015]	0.004 [0.015]
Fund Type	Yes	Yes	Yes	Yes	Yes	Yes
LP Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Vintage FE	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Region	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Industry	Yes	Yes	Yes	Yes	Yes	Yes
%Project Stage	Yes	Yes	Yes	Yes	Yes	Yes
%Concession	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,330	2,330	2,330	2,330	2,330	2,330
Adjusted R-squared	0.134	0.155	0.166	0.187	0.296	0.333

Table IA.16: Investor Type and Exits of Deals Accessed through Closed Funds

This table presents results of a survival analysis using the Cox proportional hazard model. We analyze the sample of deals accessed through closed funds. The event of interest is a sale transaction that results in a full (not partial) exit of an equity position in an asset. We present the hazard ratios. *Public Investor* is an indicator variable for institutional investors from the public sector. *UN PRI Signatory* is an indicator variable for investors that have signed the UN Principles for Responsible Investing. *Impact Fund* is an indicator for infrastructure funds that make investments with the intention to generate positive social and environmental impact alongside a financial return. *Mandatory Regulation* and *Voluntary Regulation* are indicator variables measuring whether an institutional investor faces mandatory or voluntary regulation to consider ESG factors in its investment decisions. We control for the natural logarithm of investors' size (AUM) and year of first infrastructure investment. We control for the natural logarithm of investors' size (AUM), year of first infrastructure investment, and the number of fund investments. *Concession* is an indicator variable equal to one if an investor enters a concession deal with the government. *Greenfield* and *Brownfield* are indicators for project stage (the omitted category is secondary stage). *Home deal* is an indicator for deals located in the same country (state) as the investor. *#Investors* counts the total number of investors in the same deal (multiple institutions investing through the same infrastructure fund are not counted multiple times). *Investment stake* is the ownership stake of an infrastructure fund or direct investor. We control for LP country, deal industry, and deal region fixed effects. We cluster standard errors by institutional investor. We report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	(1)	(2)	(3)	(4)
Public Investor	0.897** [0.039]	0.902** [0.038]	0.897** [0.038]	0.901** [0.038]
UN PRI Signatory		0.989 [0.054]		0.989 [0.054]
Impact Fund		0.749*** [0.050]		0.755*** [0.050]
Mandatory Regulation			0.665*** [0.090]	0.686*** [0.090]
Voluntary Regulation			0.907 [0.095]	0.894 [0.094]
Log Investor Size	0.991 [0.010]	0.991 [0.010]	0.988 [0.010]	0.988 [0.010]
Year of First Investment	0.979*** [0.004]	0.980*** [0.004]	0.980*** [0.004]	0.980*** [0.004]
#Funds	0.998 [0.002]	0.998 [0.002]	0.998 [0.002]	0.999 [0.002]
Concession	1.628*** [0.080]	1.628*** [0.079]	1.622*** [0.080]	1.622*** [0.079]
Greenfield	0.682*** [0.023]	0.688*** [0.023]	0.682*** [0.023]	0.688*** [0.023]
Brownfield	0.633*** [0.022]	0.633*** [0.022]	0.633*** [0.022]	0.633*** [0.022]
Home Deal	0.693*** [0.046]	0.691*** [0.045]	0.696*** [0.046]	0.694*** [0.045]
#Investors	0.979** [0.008]	0.979** [0.008]	0.979** [0.008]	0.978** [0.008]
Investment Stake	0.852*** [0.033]	0.869*** [0.034]	0.857*** [0.033]	0.874*** [0.034]
LP Country FE	Yes	Yes	Yes	Yes
Deal Region FE	Yes	Yes	Yes	Yes
Deal Industry FE	Yes	Yes	Yes	Yes
Observations	58,646	58,646	58,646	58,646

Table IA.17: Public Investors and Impact Funds

Robustness check of Table 9: In Columns (1) to (3), we examine the probability to invest in an impact fund. In Columns (4) to (6), we include an interaction term between public investors and impact funds.

Columns (1), (2) and (3) present results of logit regressions in which the dependent variable equals one if an investor commits capital to an impact fund. We present the average marginal effects of the independent variables. For indicator variables the marginal effects are for a change from 0 to 1. Above the logit regressions, we also show the unconditional probability to invest in an impact fund. Columns (4), (5) and (6) present the regression results in which the dependent variable is the performance in closed infrastructure funds. Observations are at the investor-fund level. Performance is measured using the public market equivalent (PME), the net internal rate of return (IRR), and the net multiple of invested capital. *Public Investor* is an indicator variable for institutional investors from the public sector. *Impact Fund* is an indicator for infrastructure funds that make investments with the intention to generate positive social and environmental impact alongside a financial return. We control for the natural logarithm of investors' size (AUM) and year of first infrastructure investment. *#Funds* measures the number of investments in infrastructure funds by investor. We include two indicator variables for infrastructure funds that do not take only equity positions in infrastructure deals, but that also act as a fund-of-funds or debt fund. We include vintage year fixed effects and investor (LP) country fixed effects. We also control for the percentage of deals in the portfolio of each infrastructure fund in different industries, geographical regions, project stages and deals backed with a concession agreement. We double cluster standard errors by institutional investor and infrastructure fund, and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	Logit Regressions			Performance Regressions		
	(1)	(2)	(3)	PME (4)	Net IRR (5)	Multiple (6)
Unconditional Probability	0.078	0.078	0.078			
Public Investor	0.050*** [0.018]	0.036** [0.015]	0.036*** [0.011]	-0.028** [0.013]	-1.777*** [0.634]	-0.031** [0.015]
Impact Fund				-0.242** [0.113]	-13.080*** [4.272]	-0.384*** [0.131]
Public Investor \times Impact Fund				0.111** [0.056]	2.840 [2.110]	0.032 [0.080]
Log Investor Size	-0.007 [0.005]	-0.010** [0.005]	0.001 [0.003]	0.005* [0.002]	-0.041 [0.109]	-0.001 [0.004]
Year of First Investment	0.001 [0.002]	0.002 [0.002]	-0.000 [0.001]	-0.001 [0.001]	-0.021 [0.027]	-0.000 [0.001]
#Funds	0.001 [0.001]	0.001 [0.001]	0.000 [0.001]	-0.000 [0.001]	-0.001 [0.028]	0.000 [0.001]
Fund Type	Yes	Yes	Yes	Yes	Yes	Yes
LP Country FE	No	Yes	Yes	Yes	Yes	Yes
Vintage FE	Yes	Yes	Yes	Yes	Yes	Yes
%Deal Region	No	No	Yes	Yes	Yes	Yes
%Deal Industry	No	No	Yes	Yes	Yes	Yes
%Project Stage	No	No	Yes	Yes	Yes	Yes
%Concession	No	No	Yes	Yes	Yes	Yes
Observations	3,675	3,526	3,491	2,342	3,021	3,853
R-squared				0.488	0.222	0.384

Table IA.18: Exiting a Deal and Investment Structure (Cluster by Asset)

Robustness check of Table 10: We cluster the standard errors by infrastructure asset instead of investor.

This table presents results of a survival analysis using the Cox proportional hazard model. The event of interest is a sale transaction that results in a full (not partial) exit of an equity position in an asset. We present the hazard ratios. *Direct deal* is an indicator variable for direct investments in infrastructure deals. *Listed* and *Open Ended* are indicators for deals accessed through listed and open ended funds. The omitted investment structure is closed funds. *Public Investor* is an indicator variable for institutional investors from the public sector. The ESG regulation and preferences variables are the same as in Table IA.16. We control for the natural logarithm of investors' size (AUM), year of first infrastructure investment, and the number of fund investments. *Concession* is an indicator variable equal to one if an investor enters a concession deal with the government. *Greenfield* and *Brownfield* are indicators for project stage (the omitted category is secondary stage). *Home deal* is an indicator for deals located in the same country (state) as the investor. *#Investors* counts the total number of investors in the same deal (multiple institutions investing through the same infrastructure fund are not counted multiple times). *Investment stake* is the ownership stake of an infrastructure fund or direct investor. We control for LP country, deal industry, and deal region fixed effects. We cluster standard errors by infrastructure asset and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	(1)	(2)	(3)	(4)
Direct Deal	0.491*** [0.053]	0.478*** [0.051]	0.504*** [0.055]	0.490*** [0.052]
Listed	0.291*** [0.043]	0.307*** [0.046]	0.296*** [0.044]	0.311*** [0.046]
Open Ended	0.698 [0.171]	0.699 [0.170]	0.700 [0.171]	0.699 [0.171]
Public Investor	0.926*** [0.020]	0.936*** [0.020]	0.927*** [0.019]	0.938*** [0.020]
UN PRI Signatory		0.972 [0.018]		0.973 [0.018]
Impact Fund		0.551*** [0.071]		0.558*** [0.072]
Mandatory Regulation			0.630*** [0.054]	0.666*** [0.054]
Voluntary Regulation			1.041 [0.068]	1.014 [0.067]
Log Investor Size	0.999 [0.006]	1.001 [0.006]	0.999 [0.006]	1.000 [0.006]
Year of First Investment	0.984*** [0.003]	0.984*** [0.003]	0.985*** [0.003]	0.985*** [0.003]
#Funds	0.998** [0.001]	0.998* [0.001]	0.998** [0.001]	0.998* [0.001]
Concession	1.652*** [0.175]	1.650*** [0.175]	1.643*** [0.174]	1.642*** [0.174]
Greenfield	0.711*** [0.068]	0.721*** [0.070]	0.713*** [0.068]	0.722*** [0.070]
Brownfield	0.664*** [0.084]	0.662*** [0.084]	0.663*** [0.084]	0.661*** [0.084]
Home Deal	0.701*** [0.046]	0.695*** [0.045]	0.704*** [0.045]	0.696*** [0.045]
#Investors	0.956 [0.040]	0.956 [0.040]	0.956 [0.040]	0.956 [0.040]
Investment Stake	0.987 [0.141]	1.032 [0.150]	0.992 [0.142]	1.035 [0.151]
LP Country FE	Yes	Yes	Yes	Yes
Deal Region FE	Yes	Yes	Yes	Yes
Deal Industry FE	Yes	Yes	Yes	Yes
Observations	79,705	79,705	79,705	79,705

Table IA.19: Exiting a Deal and Investor Type (Deal Country FE)

Robustness check of Table 10: We replace the deal region fixed effects with deal country fixed effects.

This table presents results of a survival analysis using the Cox proportional hazard model. The event of interest is a sale transaction that results in a full (not partial) exit of an equity position in an asset. We present the hazard ratios. *Direct deal* is an indicator variable for direct investments in infrastructure deals. *Listed* and *Open Ended* are indicators for deals accessed through listed and open ended funds. The omitted investment structure is closed funds. *Public Investor* is an indicator variable for institutional investors from the public sector. The ESG regulation and preferences variables are the same as in Table IA.16. We control for the natural logarithm of investors' size (AUM), year of first infrastructure investment, and the number of fund investments. *Concession* is an indicator variable equal to one if an investor enters a concession deal with the government. *Greenfield* and *Brownfield* are indicators for project stage (the omitted category is secondary stage). *Home deal* is an indicator for deals located in the same country (state) as the investor. *#Investors* counts the total number of investors in the same deal (multiple institutions investing through the same infrastructure fund are not counted multiple times). *Investment stake* is the ownership stake of an infrastructure fund or direct investor. We control for LP country, deal industry, and deal country fixed effects. We cluster standard errors by institutional investor and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	(1)	(2)	(3)	(4)
Direct Deal	0.441*** [0.049]	0.425*** [0.047]	0.452*** [0.051]	0.436*** [0.048]
Listed	0.305*** [0.046]	0.322*** [0.049]	0.310*** [0.047]	0.326*** [0.050]
Open Ended	0.690 [0.165]	0.693 [0.166]	0.691 [0.166]	0.692 [0.166]
Public Investor	0.917*** [0.019]	0.925*** [0.020]	0.919*** [0.019]	0.928*** [0.019]
UN PRI Signatory		0.978 [0.018]		0.979 [0.018]
Impact Fund		0.517*** [0.066]		0.524*** [0.066]
Mandatory Regulation			0.620*** [0.053]	0.659*** [0.054]
Voluntary Regulation			1.035 [0.067]	0.998 [0.066]
Log Investor Size	1.000 [0.006]	1.001 [0.006]	1.000 [0.006]	1.000 [0.006]
Year of First Investment	0.987*** [0.004]	0.987*** [0.004]	0.987*** [0.004]	0.987*** [0.004]
#Funds	0.998* [0.001]	0.998 [0.001]	0.998* [0.001]	0.998 [0.001]
Concession	1.596*** [0.173]	1.583*** [0.172]	1.587*** [0.172]	1.575*** [0.171]
Greenfield	0.704*** [0.067]	0.714*** [0.069]	0.706*** [0.067]	0.715*** [0.069]
Brownfield	0.653*** [0.083]	0.651*** [0.083]	0.652*** [0.082]	0.650*** [0.083]
Home Deal	0.680*** [0.048]	0.676*** [0.048]	0.682*** [0.048]	0.677*** [0.048]
#Investors	0.956 [0.039]	0.956 [0.039]	0.956 [0.039]	0.956 [0.039]
Investment Stake	1.012 [0.149]	1.064 [0.159]	1.016 [0.150]	1.067 [0.160]
LP Country FE	Yes	Yes	Yes	Yes
Deal Country FE	Yes	Yes	Yes	Yes
Deal Industry FE	Yes	Yes	Yes	Yes
Observations	79,705	79,705	79,705	79,705

Table IA.20: Asset Dispositions and Simulated Cash Flow Distributions

This table presents results of regressions in which the dependent variables measure exits and simulated cash flows of infrastructure deals over time. Observations are at the investor-deal-quarter level. We report the results separately for all four investment structures: closed funds, direct deal, listed funds, and open ended funds. Columns (1) to (4) present results of logit regressions in which the dependent variable equals one if an investor exits the deal in the quarter and zero otherwise. We present the marginal effects (elasticities) at the means of the independent variables. Above the logit regressions, we also show the unconditional probability to sell an infrastructure assets on an investor-deal-quarter level. Columns (5) to (8) present regression results in which the dependent variable is the simulated quarterly cash flow. In the simulation, the investment and exit dates remain the same, but all investors hold the MSCI World Infrastructure Index. The simulation includes all transactions after January 1999, assumes that all deals receive the investment capital of \$10, and uses the “price” and “gross” series of the index to decompose the cash flows over time into dividends and capital gains. The capital gains are realized in the quarter when an investor exits the deal. We combine all monthly cash flows into one quarterly cash flow for each investor-deal observation. *CFNAI MA3* is the three-month moving average of the Chicago Fed National Activity Index. *ln(Yield Spread)* is the natural logarithm of the Moody’s Baa-Aaa yield spread. We orthogonalize *ln(Yield Spread)* with respect to *ln(P/D)*. We include all controls from Table 10. In addition, all regressions include fund age fixed effects measured in quarters and calendar quarter fixed effects. We double cluster standard errors by infrastructure deal and quarter time, and report standard errors in brackets. * $p < .1$; ** $p < .05$; *** $p < .01$.

	Logit Model Asset Disposition				Total Quarterly Distributions			
	Closed (1)	Direct (2)	Listed (3)	Open (4)	Closed (5)	Direct (6)	Listed (7)	Open (8)
Unconditional Prob.	0.0140	0.0050	0.0038	0.0099				
CFNAI MA3	0.0024*** [0.001]	0.0006 [0.000]	0.0009 [0.001]	0.0020** [0.001]	0.0328** [0.015]	0.0118 [0.022]	0.0253* [0.014]	0.0677 [0.044]
ln(Yield spread)	-0.0007 [0.001]	-0.0003 [0.000]	-0.0008** [0.000]	-0.0009 [0.001]	-0.0173 [0.022]	-0.0123 [0.009]	-0.0178* [0.010]	-0.0636 [0.046]
Table 10 Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal Age FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,405,447	42,943	225,346	170,830	1,417,249	44,071	309,295	262,465
R-squared					0.010	0.012	0.016	0.078