

Annual Review of Financial Economics

The Rise of State-Owned Investors: Sovereign Wealth Funds and Public Pension Funds

William L. Megginson,^{1,2} Diego Lopez,³
and Asif I. Malik¹

¹Michael F. Price College of Business, University of Oklahoma, Norman, Oklahoma 73019, USA; email: wmegginson@ou.edu

²University of International Business and Economics, Beijing 100029, China

³Global SWF LLC, New York, NY 10016, USA

Annu. Rev. Financ. Econ. 2021. 13:247–70

First published as a Review in Advance on
August 20, 2021

The *Annual Review of Financial Economics* is online at
financial.annualreviews.org

<https://doi.org/10.1146/annurev-financial-110420-090352>

Copyright © 2021 by Annual Reviews.
All rights reserved

JEL codes: G32, G15, G38

Keywords

sovereign wealth funds, public pension funds, government policy,
government regulation

Abstract

State-owned investors (SOIs), including sovereign wealth funds and public pension funds, have \$27 trillion in assets under management in 2020, making these funds the third largest group of asset owners globally. SOIs have become the largest and are among the most important private equity investors, and they are key investors in other alternative asset investments such as real estate, infrastructure, and hedge funds. SOIs are also leaders in promoting environmental, social, and governance policies and corporate social responsibility policies in investee companies. We document the rise of SOIs, assess their current investment policies, and describe how their state ownership both constrains and enhances their investment opportunity sets. We survey the most impactful recent academic research on sovereign wealth funds, public pension funds, and their closest financial analogs, private pension funds. We also introduce a new Governance-Sustainability-Resilience Scoreboard for SOIs and survey research examining their role in promoting good corporate governance.

ANNUAL REVIEWS CONNECT

www.annualreviews.org

- Download figures
- Navigate cited references
- Keyword search
- Explore related articles
- Share via email or social media

1. INTRODUCTION

Can state-owned investment funds ever become truly capable investors of a citizenry's savings? While the verdict on this vital question is still in doubt, governments from 126 countries have launched almost 450 distinct investment funds in attempts to channel their national savings and/or surplus export revenues into productive investments in financial and real assets. The two most important state-owned investors (SOIs), sovereign wealth funds (SWFs) and public pension funds (PPFs), have assets under management (AUM) of \$8.8 trillion and \$18.2 trillion, respectively, as of September 2020. Their combined AUM of \$27.0 trillion makes SOIs the third largest group of asset owners globally—behind only insurance companies and private pension funds (Global SWF 2020). This article examines the phenomenal recent rise to prominence of SOIs and summarizes the academic research attendant upon this unique category of investors.

Both SWFs and, especially, PPFs have been fixtures of the world's financial architecture for many years. Almost half (46.4%) of the global total AUM of PPFs are controlled by the 87 funds headquartered in the United States, and American state and local governments were among the first governments anywhere to set up institutional funds in which to invest the pension contributions of government employees. Since American PPFs, like 94% of all such funds, are based in democratic societies, they are subject to electoral oversight and tend to be quite transparent in terms of their investment policies and allocations. This same political imperative has led a great many PPFs to be severely underfunded, relative to the promised long-term payouts to retirees (Novy-Marx & Rauh 2011; *The Economist* 2019), and their managements are often buffeted by political forces. SWFs generally do not face a stream of contractually fixed future payouts to pensioners. Funds controlled by nondemocratic governments are mostly answerable to a small group of officials, who control or strongly influence both the allocation policies of the funds and their ultimate payouts to sponsoring governments. SWFs are thus rarities in the investing world in being largely unconstrained in their investment policies, in being required to disclose little or no information publicly, and in facing little or no pressure to boost short-term returns. Nonetheless, PPFs and SWFs are inextricably bound together by the fact of being state-owned and because they do, in fact, pursue generally similar long-term investment strategies. While the mission statement of PPFs is fairly consistent—to provide pension income for retirees—SWFs have more diverse objectives. For example, while ADIA (United Arab Emirates) states its mission is promoting sustainable long-term prosperity, CIC (China) states diversifying the economy as its mission.

SWFs have been the focus of much top-tier empirical research recently—as summarized in surveys by Balding (2012), Megginson & Fotak (2015), Fotak, Gao & Megginson (2018), and Megginson & Liu (2021) and as detailed in Section 3. Somewhat surprisingly, however, the only recent academic research examining the even larger category of SOIs, PPFs, has focused mostly on U.S. state pension funds, usually examining how their politicized supervisory board members impact investment performance (Del Guercio & Hawkins 1999; Woidtke 2002; Coronado, Engen & Knight 2003; Bradley, Pantzalis & Yuan 2016; Andonov, Hochberg & Rauh 2018). A somewhat larger set of papers explicitly compares the investment policies and performance of SWFs with other globally active institutional investors (see Avendaño & Santiso 2011; Chambers, Dimson & Ilmanen 2012; Johan, Knill & Mauck 2013; Bortolotti, Fotak & Megginson 2015; Calluzzo, Dong & Godsell 2017; Karolyi & Liao 2017; Boubaker et al. 2018; Liu, Mauck & Price 2020). Our objective is to synthesize the research on SOIs, generally, and place this synthesis within the larger context of international corporate governance by institutional investors.

The first wave of research on SWFs started in 2010 (Dewenter, Han & Malatesta 2010), but much has changed since then. These funds more than doubled their AUM from \$4.11 trillion in 2009 to \$8.81 trillion in 2020, mostly through organic growth by existing funds but also through the creation of 56 new funds, many with very little funding (snidely referred to as wealthless

SWFs). While SWFs still overwhelmingly favor investing in developed country capital markets, especially the United States and the United Kingdom, the targets of their investments have shifted away from listed stocks and bonds toward real estate, alternative assets, and, especially, private equity. Along with the even larger group of PPFs, SWFs have become the largest and among the most important private equity investors, both as limited partners and as coinvestors (Fang, Ivashina & Lerner 2015).

Internationally active PPFs, in contrast, have attracted little academic research interest, except as part of a general assessment of the corporate governance role of institutional investors (Chen, Harford & Li 2007; Cronqvist & Fahlenbrach 2008; Ferreira & Matos 2008; Aggarwal et al. 2011; McCahery, Sautner & Starks 2016; Bena et al. 2017). More recent research now shows that institutional investors, far from being so-called foreign locusts pillaging domestic stock markets (Bena et al. 2017), improve governance and monitoring, enhancing value through their oversight activities. The results, however, may be driven by investors from countries where corporate governance, in general, is more effective (Iliev & Roth 2018; Dyck et al. 2019). PPFs are similar to SWFs in many important ways; in fact, they are more similar than different. Both PPFs and SWFs are large, (usually) internationally active investment funds with relatively small staffs that invest primarily in search of commercial rather than social returns.¹ Both types of funds are subject to political oversight, although for PPFs oversight and ownership sometimes lie with subnational governments, and the political overseer for SWFs is usually a national or state government (hence the name sovereign). These SOIs differ in that SWFs tend to be larger and more internationally active, and PPFs are somewhat more likely to pursue a foundation model (Chambers, Dimson & Ilmanen 2012) of investing, with asset allocations exclusively to publicly traded equity (usually 60%) and publicly traded debt (40%). Indeed, the largest SWF (Norway's GPFG) also follows an almost pure foundation model strategy, modified only with small allocations to real estate and, beginning in 2020, alternative assets and private equity. Most PPFs, however, have been moving away from the pure foundation model recently, in part because the promised returns on new fixed income investments are so low at the time of writing in most developed economies and also to capture the illiquidity return premiums offered by investing in nontraded financial assets—as discussed more fully in Section 2.3.

The most crucial difference between the two major SOI types is that SWFs do not have an explicit stream of pension liabilities that must ultimately be serviced, whereas all PPFs do. Some SWFs state that withdrawals are made at the discretion of the government to support budgets. Others, like the Alaskan state government, consider sustainability as a major factor when deciding on withdrawals.

The critical commonalities between the two major SOI types are their subjection to state ownership and control, which has both costs and benefits, and their lack of need to invest primarily in liquid assets. The latter feature gives the funds an extremely long investment horizon and frees them to capture illiquidity risk premiums by investing in long-duration, nontraded assets such as real estate, unlisted stocks and bonds, and, especially, private equity. We document the outsized role SOIs play in funding private equity and other alternative assets and foreshadow this as a promising area for future academic research.

¹The actual staff count of the top 100 SOIs, roughly 45,000 employees in 254 offices worldwide, is indeed strikingly small, since the AUM of these investment funds exceeds \$27.0 trillion. For comparison, note that one of the largest U.S. investment managers, Fidelity Investments, employs more than 50,000 associates worldwide yet has \$3.3 trillion AUM. Some of these SOIs—including the United States's CalPERS (2,852 staff), Singapore's GIC (1,753 staff), and Abu Dhabi's ADIA (1,700 staff)—have opted to hire top investment talent to handle investment analysis internally, while others, including Japan's huge GPIF (150 employees, all in Tokyo), have preferred to stick with external asset managers.

We argue that the state ownership feature, common to both PPFs and SWFs, fundamentally impacts the investment policies that SOIs will choose (or be forced) to follow. All democratic societies are sensitive to increasing foreign ownership of domestic companies, and that sensitivity tends to harden into suspicion when the foreign acquirer is state-controlled. This penalty of stateness (Cuervo-Cazurra, Grossman & Megginson 2020) has long constrained SWFs from making large, especially controlling, listed stock purchases in Western markets. PPFs are not subject to the same degree of sensitivity (at least not yet) but at important margins must be careful to not be viewed as politically motivated investors. We argue that this is a key reason why both SWFs and PPFs have shifted so dramatically toward favoring private equity investing over listed-stock purchases, since the former can absorb investment capital from foreign SOIs relatively anonymously and without arousing host-country hostility. The weight of recent research (Harris, Jenkinson & Kaplan 2014; Sensoy, Wang & Weisbach 2014; Ang et al. 2019) shows that private equity investments outperform public equity market investments operationally by both enhancing investee firm operating performance and achieving superior investor returns.² Investing this way also precludes the need for SOIs to build up large staffs to analyze prospective deals, since private equity funds perform this task very well—though often at eye-watering cost.

We also document and assess another important trend in state-owned investing: the pronounced shift toward pushing more activist environmental, social, and governance (ESG) and corporate social responsibility (CSR) agendas on investee companies—a trend that is mirrored throughout the institutional investing universe. The shift in purchasing power among SOIs from those SWFs ultimately funded through oil sales by state-owned national oil companies toward funds financed by export surpluses and pension contributions (PPFs) has augmented their push toward responsible investing. This seems likely to have major long-term implications, if for no other reason than most of the large oil-financed SWFs are controlled by nondemocratic governments (except Norway's), whereas almost all large PPFs are controlled by governments in democratic countries. As documented by Tsui (2010) and others, a negative econometric—and perhaps political-economic—association exists between major discoveries of petroleum reserves and a nation's democratic evolution, suggesting that oil and democracy might be natural enemies in countries with weak political institutions.

The remainder of this study is organized into five main parts. Section 2 documents the growth of SOIs, describes their key investment patterns, and compares these financially with other institutional investors. Section 3 surveys the most important recent literature examining SWFs, public and private pension funds, and other internationally active institutional investors. Section 4 surveys research assessing the promotion of an ESG and CSR agenda among institutional investors, especially state-owned funds. Section 5 briefly discusses avenues for future research, while Section 6 concludes.

2. THE RISE OF STATE-OWNED INVESTORS—BY THE NUMBERS

The data we use in our study are from the Global SWF LLC database.³ This data platform mainly feeds from fund websites, annual reports, and estimates, when public information is not available. The data include details on portfolios of SOIs for multiple asset classes, with acquisition date and value for each investment and a link to the source. Most of the commercial databases for SOIs

²For a contrasting view—that private equity does not outperform public equity investments—see Lopez-de-Silanes, Phalippou & Gottschalg (2015) and Phalippou (2020).

³Global SWF LLC provides consultancy and data services related to SWFs and public pension funds. One of the coauthors, Diego Lopez, is the Managing Director at Global SWF LLC. The Global SWF LLC database is described at <https://www.globalswf.com>.

that have been used by academics provide very limited ownership data. For ownership in public equities traded in the United States by pension plans, data are available from Thomson Financial's 13f Institutional Holdings. For equities traded outside the United States, pension plan ownership data can be obtained from the FactSet/LionShares database, which collects data directly from sources such as national regulatory agencies or stock exchange announcements.

For SWFs, the databases most commonly used are either SDC Platinum (e.g., Karolyi & Liao 2017), which provides acquisition data with a flag for SWFs, or the Sovereign Wealth Fund Institute's Transactions Database (e.g., Bertoni & Lugo 2014). As we document in Section 2, SOIs, especially SWFs, have been investing more in nonpublicly traded assets. For these assets, ownership and valuation data are not available in the databases traditionally used in the literature. Some authors have also hand-collected data for SOIs but with limited span. Dyck & Morse (2011) hand-collect data from SWF websites, news articles, regional business information agencies, and their own estimates. They are able to approximate the value of investments that are fairly close to the aggregate valuation disclosed by the funds. Their calculations and results, however, are only for the year 2008.

We begin our analysis by describing the sample of SOIs in the Global SWF database. **Table 1** reports the geographic distribution of SWFs and PPFs as of September 2020. The table details only the 40 countries with the highest combined AUM from SOIs, but no fewer than 126 countries have one or more SWFs or PPFs, and most countries have at least one of each. There are a total of 155 SWFs and 283 PPFs in the sample. The United States has the highest number and dollar value of PPFs, whereas China has the highest number and value of SWFs. The top seven countries in **Table 1** have total AUM of more than \$1.0 trillion. It is worth noting that three of these countries (United Arab Emirates, Norway, and Singapore) have populations smaller than 10 million people.

Countries in our sample tend to concentrate their investments in either SWFs or PPFs. Australia and Singapore are the only countries where assets in SWFs and PPFs are within $3\times$ of each other. The average sizes of SWFs and PPFs, \$56.8 billion and \$64.4 billion, respectively, do not differ greatly. Of the top 40 funds listed in **Table 1**, democratic countries tend to invest more in PPFs than in SWFs, and vice versa in the case of nondemocratic countries. Of the eight countries with at least \$1.0 trillion AUM by PPFs, all save China are democracies, as classified by the Economist Intelligence Unit (EIU) Democracy Index (<https://www.eiu.com/n/campaigns/democracy-index-2020/>). The only fully democratic nation of the seven countries with at least \$300 billion AUM in SWFs is Norway.⁴ Countries investing more in SWFs are also likely to have economies rich in natural resources like oil.

Figure 1 details the growth of SOIs in the 12-year period of 2008–2020. The AUM of SWFs grew by 128% from the onset of the global financial crisis in 2008 to 2020, while the AUM of PPFs grew by 85% during the same period.⁵ While hardly extraordinary, this combined SOI compound annual AUM growth rate of 7.1% exceeds those of other large institutional asset owners such as insurance companies and non-U.S. private pension funds, though this is virtually identical to the 7.1% growth rate in U.S. pension fund assets from 2009 to 2019 (Norrestad 2020). There are

⁴Singapore was classified as a “flawed democracy” in 2020 by the EIU Democracy Index.

⁵It is difficult to find a precisely comparable measure of the growth of private pension funds, but the Organization for Economic Cooperation and Development (OECD) documents that “funded and private pension assets” grew from a weighted average of 87.3% of OECD countries' GDP in 2008 to 126.0% in 2018—and nominal GDP for OECD countries increased by approximately 60% over that period. It thus appears that private pension fund assets roughly doubled between 2008 and 2018, a growth rate comparable with that of PPFs.

Table 1 Geographic distribution of state-owned investors (SWFs and PPFs) and AUM^a

No.	Country	SWFs	AUM (US\$ billion)	PPFs	AUM (US\$ billion)	SWFs + PPFs	AUM (US\$ billion)
1	United States	23	240	87	8,456	110	8,696
2	China	8	2,270	5	462	13	2,733
3	Japan	1	0	8	1,883	9	1,883
4	Canada	2	14	18	1,399	20	1,414
5	United Arab Emirates	9	1,363	0	0	9	1,363
6	Norway	2	1,099	1	3	3	1,102
7	Netherlands	0	0	8	1,065	8	1,065
8	Singapore	2	703	1	275	3	978
9	Australia	5	297	17	616	22	914
10	South Korea	1	157	7	741	8	898
11	Saudi Arabia	2	773	2	58	4	831
12	Kuwait	3	574	1	88	4	662
13	Qatar	1	345	1	28	2	373
14	Denmark	0	0	9	344	9	344
15	United Kingdom	1	0	15	296	16	296
16	France	1	33	5	249	6	283
17	Malaysia	2	37	3	235	5	272
18	Sweden	0	0	7	252	7	252
19	Brazil	0	0	4	189	4	189
20	Russia	2	176	0	0	2	176
21	India	1	2	4	168	5	170
22	Taiwan	1	17	2	151	3	168
23	Kazakhstan	4	133	1	28	5	161
24	South Africa	1	2	2	150	3	152
25	Multilateral funds	4	33	3	115	7	148
26	Switzerland	0	0	4	118	4	118
27	Germany	0	0	2	117	2	117
28	Israel	1	0	1	100	2	100
29	Thailand	0	0	2	83	2	83
30	Finland	1	7	2	75	3	83
31	Iran	1	68	0	0	1	68
32	Libya	1	67	0	0	1	67
33	Indonesia	1	0	4	66	5	66
34	Argentina	0	0	1	64	1	64
35	Turkey	1	34	1	19	2	53
36	Brunei	1	45	1	3	2	48
37	Oman	2	48	0	0	2	48
38	Azerbaijan	1	43	0	0	1	43
39	Morocco	1	2	2	36	3	37
40	Philippines	0	0	2	31	2	31

(Continued)

Table 1 (Continued)

No.	Country	SWFs	AUM (US\$ billion)	PPFs	AUM (US\$ billion)	SWFs + PPFs	AUM (US\$ billion)
	Others	68	224	50	257	118	481
	Total	155	8,808	283	18,222	438	27,031

Abbreviations: AUM, assets under management; PPFs, public pension funds; SWFs, sovereign wealth funds.

Data from Global SWF LLC database, updated Sept. 11, 2020.

^aThis table contains geographic distribution of SWFs and PPFs as of September 2020. The table only details the 40 countries with the highest combined AUM from state-owned investors.

two major reason for the high growth rates of SOI funds: First, existing SOIs received significant injections of capital from their hosting countries, and second, 80 new SOIs were established in the 2010s, an unprecedented pace compared with any previous decade.

Table 2 details the names, sponsoring countries, date of establishment, type of fund (SWF or PPF), and AUM of the 45 SOIs with more than \$60 billion in AUM in September 2020. The last column of **Table 2** also presents the fraction of a fund's assets allocated to alternative investments (AAA%) rather than fixed income securities and publicly traded equity. Only one PPF and two SWFs have AUM exceeding \$750 billion: Japan's GPIF, Norway's NBIM and China's CIC. Other funds with relatively high AUM include two SWFs, China's SAFE and Abu Dhabi's ADIA, and two PPFs, Korea's NPS and the Netherlands' APG. PPFs tend to be much older than SWFs; only 4 of the 22 PPFs on the list were founded in 2000 or later, versus 11 of the 23 SWFs.

2.1. Asset Allocation

Wide variation occurs in the fraction of fund assets allocated to alternative investments. The two largest funds, GPIF and NBIM, allocate less than 4% of assets to alternatives, and the fourth-, sixth-, and eleventh-ranked funds all allocate 12% or less. In contrast, both third-ranked SAFE (China) and seventh-ranked APG (Netherlands) allocate 29% of AUM to alternatives, and 13 large SOIs in **Table 2** allocate at least 40% of assets to alternatives. **Figure 2** presents the asset allocation data summarized in **Table 2** graphically, using bar graphs to describe the fraction of the

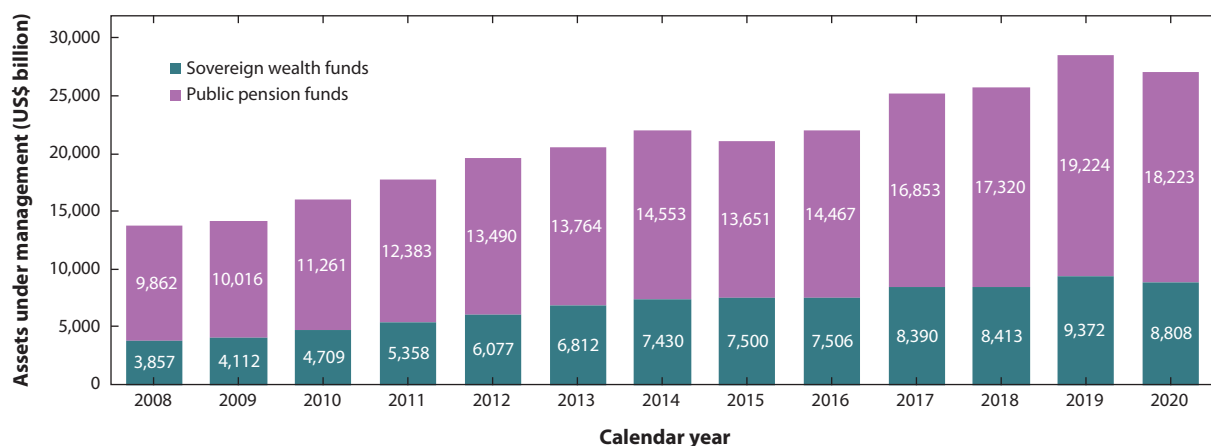


Figure 1

Growth of assets under management for sovereign wealth funds (green) and public pension funds (purple), 2008–2020, in USD billions. This figure documents the growth of state-owned investors in this time period. Data source: Global SWF LLC, <https://www.globalswf.com>, updated Sept. 11, 2020.

Table 2 Data for the 45 largest state-owned investors with more than US\$60 billion in AUM in September 2020

No.	Fund	Country	Established date	Type of fund	AUM (US\$ billion)	AAA%
1	GPIF	Japan	2006	PPF	1,491.3	1%
2	NBIM	Norway	1997	SWF	1,076.4	3%
3	CIC	China	2007	SWF	941.0	29%
4	SAFE	China	1997	SWF	743.0	10%
5	ADIA	United Arab Emirates– Abu Dhabi	1967	SWF	710.0	22%
6	NPS	South Korea	1988	PPF	663.0	12%
7	APG	Netherlands	1922	PPF	602.7	29%
8	KIA	Kuwait	1953	SWF	558.8	18%
9	HKMA	China–Hong Kong	1993	SWF	541.2	20%
10	GIC	Singapore	1981	SWF	488.0	20%
11	SAMA	Saudi Arabia	1952	SWF	447.8	0%
12	CalPERS	United States–California	1932	PPF	389.0	20%
13	QIA	Qatar	2005	SWF	345.0	41%
14	NSSF	China	2000	PPF	325.0	14%
15	PIF	Saudi Arabia	1971	SWF	325.0	60%
16	CPP	Canada	1997	PPF	318.1	48%
17	ICD	United Arab Emirates– Dubai	2006	SWF	305.3	65%
18	PGGM	Netherlands	1969	PPF	282.3	17%
19	CalSTRS	United States–California	1913	PPF	246.0	32%
20	CDPQ	Canada–Quebec	1965	PPF	243.8	36%
21	AP1–7	Sweden	2001	PPF	241.4	17%
22	Mubadala	United Arab Emirates– Abu Dhabi	1984	SWF	232.3	63%
23	NYSCRF	United States–New York	1983	PPF	216.3	25%
24	Temasek	Singapore	1974	SWF	214.7	48%
25	SBA Florida	United States–Florida	1943	PPF	203.7	26%
26	NWF	Russia	2008	SWF	173.5	20%
27	KIC	South Korea	2005	SWF	157.3	15%
28	OTPP	Canada–Ontario	1917	PPF	148.9	52%
29	PIC	South Africa	2015	PPF	148.7	6%
30	Future Fund	Australia	2006	SWF	140.9	35%
31	ATP	Denmark	1964	PPF	131.4	38%
32	BCI	Canada–British Columbia	1999	PPF	120.8	41%
33	AustralianSuper	Australia	1999	PPF	120.5	21%
34	PSP	Canada	1999	PPF	119.8	49%
35	QIC	Australia	1991	SWF	100.8	34%
36	SoftBank VF I	Japan	2017	SWF	100.6	86%
37	AIMCo	Canada–Alberta	1976	PPF	91.0	29%
38	OMERS	Canada–Ontario	1962	PPF	84.8	61%

(Continued)

Table 2 (Continued)

No.	Fund	Country	Established date	Type of fund	AUM (US\$ billion)	AAA%
39	HOOPP	Canada–Ontario	1960	PPF	72.1	27%
40	UNJSPF	Global	1949	PPF	70.0	14%
41	NDFI	Iran	2011	SWF	68.0	82%
42	LIA	Libya	2006	SWF	67.0	44%
43	Alaska PFC	United States–Alaska	1976	SWF	64.7	33%
44	EIA	United Arab Emirates–Abu Dhabi	2007	SWF	63.1	26%
45	Samruk Kazyna	Kazakhstan	2008	SWF	62.1	62%

Abbreviations: AAA%, percent of AUM allocated to alternative assets; AUM, assets under management; PPF, public pension fund; SWF, sovereign wealth fund.

Data from Global SWF LLC database, updated Sept. 11, 2020.

45 largest funds' assets allocated to fixed income and treasuries, public equities, and alternatives, respectively. While no overarching pattern can be gleaned from this figure, it at least seems that neither size nor fund type (SWF versus PPF) alone is the determining factor in the decision to allocate funds to fixed income, public equity, or alternative asset investments.

2.2. Categorizing State-Owned Investors by Investment Objectives

We further categorize SOIs based on investment objectives. Wide variation occurs in investment objectives of SWFs. While Russia's RDIF states its objective to modernize the economy, QIA's mission is to grow Qatar's reserve and create long-term value.

- *SWF, stabilization funds*: This subcategory has the smallest number of funds (26). They are defined as rainy-day funds because they are established as a buffer mechanism that can cover fiscal deficits in times of uncertainty and market shocks. One key implication of this strategy is that these funds allocate on average 90% of their capital into highly liquid public stocks and bonds.
- *SWF, savings funds*: Also known as future generations funds, these funds face less pressure for short-term liquidity and can afford to invest long-term. They are therefore more aggressive and invest an average of 22% in private markets. With an aggregate AUM of \$5 trillion, they represent some of the world's largest investors in real estate, infrastructure, and private equity (see **Table 3**).
- *SWF, development/strategic funds*: These funds have been a popular choice among governments in the past decade, as they combine a financial goal with an economic mission—contributing to the development of the domestic economy.⁶ For this reason, some of them are set up with low initial investment of their own but seek to raise capital from other SWFs. These funds have many characteristics in common with development banks such as Brazil's BNDES; the key distinction is that development banks tend to primarily make loans to projects and companies, whereas these SWFs rely almost exclusively (as far as we can determine) on equity investments.

⁶According to data from Global SWF (2021), the percentage of the total portfolio invested in domestic markets varies significantly among funds, from stabilization funds (30% on average), savings funds (34%), and public pension funds (44%) to development/strategic funds (82% on average).

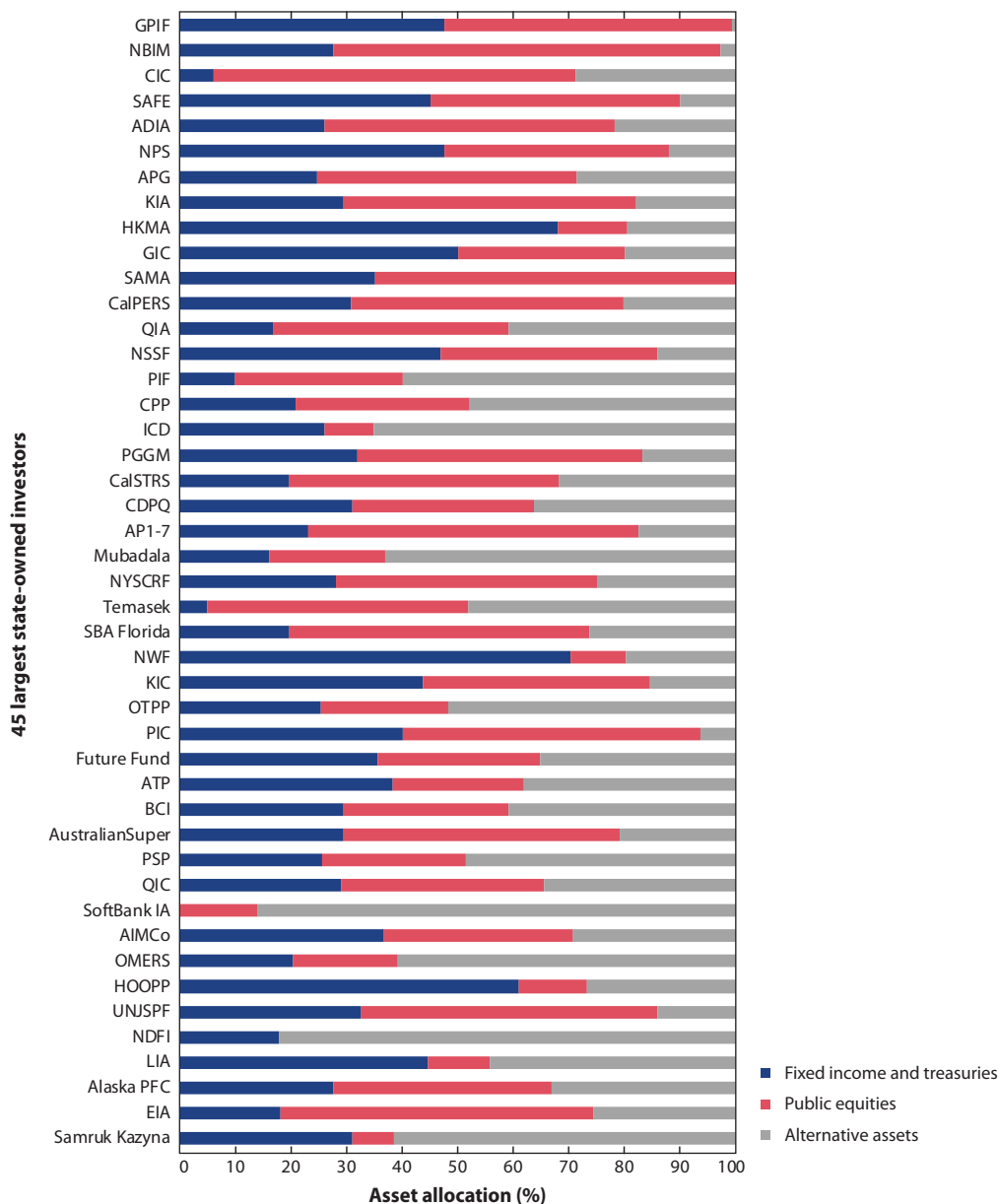


Figure 2

Asset allocations of the 45 largest state-owned investors. The allocation is given for three asset classes: fixed income and treasuries, public equities, and alternative assets. Data source: Global SWF LLC, <https://www.globalswf.com>, updated Sept. 11, 2020.

- *PPFs*: Lastly, PPFs have gained in significance and activity, and they are today very similar in behavior to savings funds despite the obvious differences in liability profile. They follow similar investment and asset allocation strategies and can be seen competing in the same public auctions and private placements around the world.

Table 3 The top 40 largest investors with PE investment (>US\$15 billion)

No.	Fund	Country	Type	AUM (US\$ billion)	PE (%)	PE (US\$ billion)
1	CIC ^a	China	SWF	941.0	17%	159.5
2	ICD ^a	United Arab Emirates–Dubai	SWF	305.3	52%	157.7
3	Allianz	Germany	IC	604.0	23%	138.9
4	Mubadala ^a	United Arab Emirates–Abu Dhabi	SWF	232.3	43%	99.9
5	HKMA	China–Hong Kong	SWF	541.2	17%	92.6
6	SoftBank VF I	Japan	SWF	100.6	86%	86.5
7	PGIM	United States	IC	1,394.0	6%	86.5
8	CPP	Canada	PPF	318.1	24%	77.3
9	PIF ^a	Saudi Arabia	SWF	325.0	20%	65.7
10	TIAA Nuveen	United States	IC	970.0	6%	60.0
11	APG	Netherlands	PPF	602.7	9%	56.3
12	KIA	Kuwait	SWF	558.8	9%	50.4
13	QIA ^a	Qatar	SWF	345.0	13%	44.9
14	Manulife	Canada	IC	526.0	8%	42.1
15	Aberdeen Standard	United Kingdom	IC	312.1	13%	41.0
16	Temasek ^a	Singapore	SWF	214.7	18%	38.6
17	CDPQ	Canada	PPF	243.8	16%	38.0
18	GIC	Singapore	SWF	488.0	7%	34.2
19	ADIA	United Arab Emirates–Abu Dhabi	SWF	710.0	5%	33.6
20	Samruk Kazyna ^a	Kazakhstan	SWF	62.1	51%	31.9
21	NDFI ^a	Iran	SWF	68.0	45%	30.4
22	CalPERS	United States	PPF	389.0	8%	30.0
23	OTPP	Canada	PPF	148.9	19%	28.2
24	LIA	Libya	SWF	67.0	39%	26.0
25	WSIB	United States	PPF	138.6	18%	25.2
26	NPS	South Korea	PPF	663.0	4%	25.0
27	Texas TRS	United States	PPF	157.4	15%	22.8
28	CalSTRS	United States	PPF	246.0	9%	22.5
29	NYSCRF	United States	PPF	216.3	10%	21.6
30	TVF ^a	Turkey	SWF	33.5	59%	19.9
31	OPERF	United States	PPF	82.1	23%	18.9
32	SAFE	China	SWF	743.0	3%	18.6
33	Bpifrance	France	SWF	33.5	55%	18.5
34	NWF	Russia	SWF	173.5	11%	18.2
35	Future Fund	Australia	SWF	140.9	12%	17.4
36	OMERS	Canada	PPF	84.8	20%	17.3
37	PSP	Canada	PPF	119.8	14%	17.0
38	NSSF	China	PPF	325.0	5%	16.3

(Continued)

Table 3 (Continued)

No.	Fund	Country	Type	AUM (US\$ billion)	PE (%)	PE (US\$ billion)
39	PGGM	Netherlands	PPF	282.3	6%	15.8
40	SBA Florida	United States	PPF	203.7	8%	15.3

Abbreviations: AUM, assets under management; IC, insurance company; PE, private equity; PPF, public pension fund; SWF, sovereign wealth fund.

Green cells refer to state-owned investors; orange cells refer to insurance companies.

Data from Global SWF LLC database, updated Sept. 11, 2020.

^aIncludes significant domestic unlisted holdings.

Figure 3 shows the changes in asset allocations between 2008 and 2020. The willingness to venture into alternative assets has increased substantially. SWFs and PPFs are investing more aggressively in search of higher yields and opportunities in different geographies and industries. While the average allocation of an SOI into private markets in 2008 was 10%, this figure rose to 22% in 2020. In nominal terms, this represents an increase of \$4.3 trillion invested by SOIs in real estate, infrastructure, and private equity around the world. Allocations to real estate roughly doubled for both fund types between 2008 and 2020. The largest percentage changes were observed for private equity, which more than tripled between 2008 and 2020 for both PPFs and SWFs.

2.3. The State-Owned Investor Focus on Private Equity

Table 3 lists the 40 largest institutional investors of all types of private equity as of September 2020, those investing at least \$15.0 billion per year. Other than the five private insurance companies (Allianz, PGIM, TIAA Nuveen, Manulife, and Aberdeen Standard), all the investors on this list are state-owned SWFs or PPFs. SOIs account for 80.2% of the total \$1.86 trillion invested by the top 40 in private equity. Nineteen of the 40 funds on this list are SWFs, and 12 of these allocate at least 15% of their assets to private equity; 8 of the funds allocate more than 25%. Sixteen of the funds in **Table 3** are PPFs, and 7 of these allocate 15% or more to private equity; none allocate 25% or more. Finally, among the five insurance companies (all privately owned), only Allianz allocates more than 15% of assets (23%) to private equity. We cannot definitively say why SWFs are

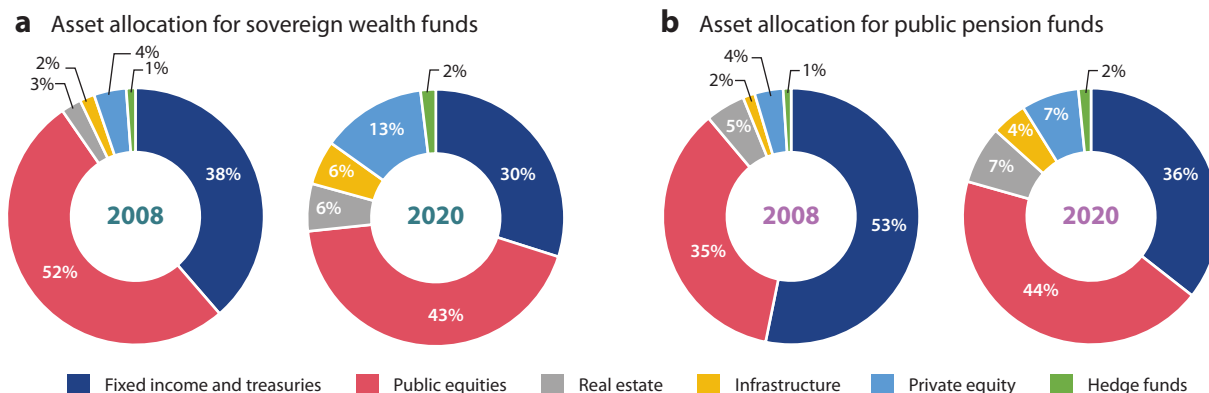


Figure 3

Change in strategic asset allocation (SAA) for (a) sovereign wealth funds and (b) public pension funds, 2008–2020. This figure reports the average SAA in percentage for a whole universe of 438 funds. Data source: Global SWF LLC, <https://www.globalswf.com>, updated Sept. 11, 2020.

so enamored with private equity investing, but such a strategy would be rational if their elevated stateness made investing in public equity problematic. It may also be true that investing in private equity is a way for SWFs and PPFs to reduce the transparency of their performance for domestic political reasons.⁷

3. SUMMARY OF RECENT RESEARCH ON SOVEREIGN WEALTH FUNDS

As noted earlier, there has been a virtual explosion of research on SWFs since the first top-tier academic publication appeared in 2010 (Dewenter, Han & Malatesta 2010). This research is comprehensively summarized in Fotak, Gao & Megginson (2018) and others, so we discuss only the most impactful empirical studies and studies published since 2017 in this section.

3.1. Research Examining the Impact of Sovereign Wealth Fund Investment on Target Companies

Let us begin by discussing the target firms' short- and long-term market performance following SWF investments. The evidence for the short-run market reaction is highly consistent. Four published papers all use standard event study methods and find that the announcement of an SWF equity investment in a listed company yields significantly positive announcement-period excess returns of 1–3% (Dewenter, Han & Malatesta 2010; Kotter & Lel 2011; Bortolotti, Fotak & Megginson 2015; Karolyi & Liao 2017). However, the long-term return findings are inconclusive.

Karolyi & Liao (2017) and Bortolotti, Fotak & Megginson (2015) explicitly test whether the average stock price reaction to news of an SWF investment is significantly different than the average reaction following announcements of investments in listed firms made by otherwise similar privately owned institutional and corporate investors. Karolyi & Liao (2017) use a sample of cross-border acquisition transactions from 1998 to 2008 to study the target firm announcement period returns. They find that the private acquirer group has the highest announcement period return (5.0%), which is almost twice the return for the government-controlled acquirer group (2.8%). The SWF/other state-owned fund acquirer group has the lowest announcement period return (0.8%), far below the other two groups. Bortolotti, Fotak & Megginson (2015) document a SWF discount in their study. They compare the valuation impact of SWF investments with those of comparable private investments and find that the market reaction to SWF investment is significantly lower than that of comparable private sector investments. They attribute this SWF discount to the inconsistency between political objectives and profit maximization inherent in state-owned fund investing.

A second group of papers examines how SWF equity investments impact the valuation, credit risk, and/or return volatility of investee firms, postinvestment. Since these studies employ differing methodologies and samples and examine different performance metrics, it is harder to draw general conclusions regarding their findings, except to say that two of these studies (Bertoni & Lugo 2014; Gagliardi, Gianfrate & Vincenzi 2014) find that SWF investments generally increase target firm value and/or reduce the target's credit risk, while Knill, Lee & Mauck (2012) find that both the risk and return of target firms' stocks decline following SWF investments. Borisova et al. (2015) document that SWF investment in target firms' stock is associated with an increase in those firms' bond yield spreads and, thus, an increase in their cost of debt financing. Finally, Liu, Mauck & Price (2020) present the first empirical analysis of SOI real estate investment policy. They find

⁷We thank Editorial Committee member Deborah Lucas for suggesting this as a possible rationale.

that, while both SWFs and PPFs show increasing levels of cross-border real estate investment, SWFs are significantly more likely than PPFs to invest across international borders.

Finally, two very recent papers analyze the impact of SWF equity investments on, respectively, the cost of equity and cost of debt of investee firms. Boubaker et al. (2017) find that target firms exhibit, on average, higher cost of equity financing than their peers after the announcement date. These findings suggest that SWF equity investments increase financing costs for target firms, although how or why has not been documented.

3.2. Research Examining and Contrasting Public and Private Pension Funds

According to the Organization for Economic Cooperation and Development (OECD), pension assets in member countries have grown from \$23.0 trillion in 2008 to \$32.3 trillion in 2019, making them the biggest institutional investors after investment funds and insurance companies (OECD 2020). Almost two-thirds (64.8%) of these pension assets are in the United States. Pension funds are expected to play an even larger role in providing income to retirees than has been the case historically: By 2050, the proportion of elderly (aged 65+) in the general OECD population will double from 10% to 20% (World Bank 2020). In this section, we discuss the factors that differentiate PPFs from other institutional investors.

3.2.1. Differences from other institutional investors. PPFs perform poorly as compared with other institutional investors, partly due to political interference (Andonov, Hochberg & Rauh 2018; Anzia & Moe 2019). Coronado, Engen & Knight (2003), using a sample of public and private pension funds, find that PPFs perform poorly compared with private pension funds as well. Politicians involved in decision-making may pursue political goals that may lower investment returns (Bernstein, Lerner & Schoar 2013). Andonov, Hochberg & Rauh (2018) use private equity investment decisions of PPFs to show that every 10-percentage point increase in board members of PPFs who are state officials decreases investment performance by 0.9 net internal rate of return percentage points. They argue that while incentives for political and personal gains play a role in reducing returns, it is the lack of financial expertise of board members who are state officials that dominates.

Pennacchi & Rastad (2010) and Anzia & Moe (2019) argue that having pension plan participants on the board may also contribute to lower returns of PPFs. Anzia & Moe (2019) argue that worker-elected board members who are beneficiaries have incentives to keep the plans underfunded. These insiders know that they will eventually receive their pension benefits but that keeping the liabilities underfunded minimizes the current outlay that would otherwise cause higher taxes and criticism.

3.2.2. Management of pension plans. Blake et al. (2013) use a proprietary dataset of pension plans in the United Kingdom to document the increasing decentralization of fund management. They show that pension funds have moved from balanced managers to specialized managers for each asset class and to multiple managers within each asset class. They find this change rational; specialized managers offer better returns. The coordination problem is resolved by controlling risk levels.

The funding ratio for pension plans is calculated as assets divided by liabilities discounted to present value. For the U.S. PPFs that follow Government Accounting Standards Board (GASB) rules, the discount rate used is the expected rate of return on assets. Andonov, Bauer & Cremers (2017) argue this creates an incentive to invest in riskier assets since doing so would allow the use of a higher discount rate by virtue of higher expected returns. Using a sample of Canadian, European, and U.S. (public and private) defined benefit pension funds, they show that

U.S. PPFs perform the worst and invest in the most risky assets. Having more political appointees on U.S. PPF managing boards exacerbates the problem. Using a higher discount rate allows these funds to show a higher funding ratio, which allows lower contributions from the government. Novy-Marx & Rauh (2011) document that the funding ratio for U.S. PPFs is much lower when a more realistic discount rate is used. They also argue that the 8% expected return (discount rate) used for all horizons is likely unattainable, especially at short horizons.

3.2.3. Activism. The evidence on the activist role played by private and public pension plans is mixed. Del Guercio & Hawkins (1999) use shareholder proposals by four of the largest pension funds to show that these proposals lead to board and corporate changes like asset sales and restructuring but do not affect performance in the long run. Their data, however, end in 1993, and their sample is limited to four pensions. They also are unable to account for endogeneity and selection bias. Giannetti & Laeven (2008) use pension reforms in Sweden as an exogenous variation in institutional ownership to study the effects of increases in ownership by public and private pension funds on firm performance and corporate governance. They show that firm valuation increases with ownership of both public and private pension funds if they are able to take large equity stakes. If, however, the private pensions are associated with industrial groups, they can decrease value, by increasing ownership concentration. Wang & Mao (2015) find similar problems with U.S. PPFs. They show that proposals by these funds are politically motivated and that the number of proposals decreases if the politicians on the board of the fund are connected to the firm.

4. THE ACTIVIST ROLE OF STATE-OWNED INVESTORS PROMOTING ESG AND CSR

We now examine how institutional investors generally, and SOIs specifically, have swung strongly toward promoting an activist ESG and CSR agenda among the corporations in which they invest. Institutional investors promote environmental and social (E&S) performance in their portfolio companies, motivated by financial and social returns (Dyck, Lins & Roth 2019). Social pressures and public scrutiny may affect SOIs differently from other institutional investors. We begin, however, by discussing the specific governance, sustainability, and other designations that have been assigned to SOIs.

While evidence suggests that pension plans are more susceptible to social pressure and have more socially responsible investments compared with mutual funds and hedge funds (Hong & Kacperczyk 2009), no such evidence exists on the vulnerability of SWFs to social pressure compared with other institutional investors. Based on our Governance-Sustainability-Resilience (GSR) Scorecard (discussed in Section 4.1 below), and similarly to Dyck et al. (2019), we find that the culture and social norms of the country are highly correlated with the social responsibility goals of SOIs. Of the nine SOIs that have a perfect score on sustainability, seven are in Western Europe, North America, and Oceania. Overall, these regions have higher scores on sustainability. Comparing the average sustainability scores of SOIs shows that SWFs have an average score of 4.61 (out of 10) on sustainability and PPFs have an average score of 8.3. Because SWFs are more common in regions with lesser cultural inclination toward SRI compared with PPFs and because of other factors that make a direct comparison of PPFs and SWFs difficult, it is hard to say whether PPFs or SWFs are more susceptible to social pressure.

4.1. Governance-Sustainability-Resilience Scores for State-Owned Investors

Almost from the date when Andrew Rozanov (2005) gave SWFs their famous moniker, these funds have been criticized for being opaque and for perhaps making politically oriented rather than strictly commercially oriented cross-border investments. The blocked takeover of certain

U.S. ports by the United Arab Emirates's DP World in 2006 and the global financial crisis in 2008 finished pushing the agenda that paved the way for the inception of the Santiago Principles, under the patronage of the International Monetary Fund, in 2008. These are voluntary international principles designed to promote best practices for the operation of SWFs. Since then, a series of rating schemes and transparency indices has sprung up, with those presented by Ted Truman (2008, 2011) carrying the greatest weight with policy makers, investors, and economists. The concept of well-governed investments evolved into responsible asset allocation when the United Nations introduced the Sustainable Development Goals in 2015.

In July 2020, Global SWF LLC introduced a new index that not only provided more comprehensive coverage of the governance quality and sustainability efforts of SWFs and PPFs but also introduced the concept of Resiliency to the mix. This GSR Scoreboard⁸ is comprised of 25 different elements, 10 of them related to Governance issues, 10 of them related to Sustainability issues, and 5 related to Resilience issues. These are Yes/No questions given equal weight, and the results are then converted into a percentage scale for each of the funds. The study is applied to a universe of 70 SWFs and 30 PPFs (the Global SWF Top 100) and repeated annually. **Table 4** presents and describes these 25 elements.

We apply the GSR Index to our sample of the 45 largest SOIs in **Table 5**, where the individual G, S, R, and combined GSR numerical scores (25 max for GSR) are presented for each fund, along with the percent GSR score—defined as 100% for a GSR score of 25. Only one fund, Australia's Future Fund, achieves this perfect score, although two other SWFs (Norway's NBIM and Singapore's Temasek) and five PPFs score more than 90% (corresponding to a GSR score of 23 or 24). Breaking GSR percentile scores into terciles—with 67–100% being classified as a high rating, 34–66% being a medium rating, and 0–33% being a low rating—we see that there are 28, 6, and 11 funds in the high, medium, and low ratings categories, respectively, among the 45 largest SOIs.

Tellingly, the GSR score rankings in **Table 5** also sort almost perfectly based on the democratic versus nondemocratic host-country classification we introduced earlier, based on the EIU Democracy Index. Only 3 (Singapore's Temasek, Hong Kong's HKMA, and Abu Dhabi's Mubadala) of the 28 funds in the high-rating category (67–100%) are from nondemocratic countries—and if Singapore is classified as a democracy (rather than as a “flawed democracy,” as in the 2020 EIU Democracy Index) and Hong Kong is classified as only nondemocratic-controlled, the only fund in the high-rating group from a nondemocratic country is Mubadala. Even the 6 mid-rated funds tend to be from democratic countries, with only Kuwait's KIC having a nondemocratic sponsoring government. Conversely, only one fund from a democratic country is in the lowest-rated GSR category, Japan's rather odd SoftBank Vision Fund I, which is partly sponsored by Saudi Arabia and the United Arab Emirates. The more democratic the sponsoring society, the better governed, more sustainable, and more resilient their state-owned investment funds tend to be.

4.2. Institutional Investors Push for Environmental, Social, and Corporate Governance

Since 1995, the size of ESG investing in the United States has increased from \$639 billion to \$11.6 trillion, an 18-fold increase (U.S. Forum Sustain. Responsible Invest. 2018). Of the 100 largest SOIs, 43 consider ESG risk management as part of their investment process. These funds

⁸The first version of the GSR Scoreboard was jointly developed by the authors of this article in June 2020. The index is designed to serve as a reference for asset owners and as a due diligence tool for asset managers and other relevant parties to stay informed of important aspects of their partners' and stakeholders' operations. The GSR Scorecard will be updated annually in July.

Table 4 The Global SWF GSR Index for state-owned investors^a

Governance (10 elements)	Sustainability (10 elements)	Resilience (5 elements)
1. Mission and vision: Does the fund clearly state its mission, objective, or purpose?	11. Ethical standards and policies: Does the fund have a code of conduct or conflict of interest policy?	21. Risk management policy: Does the fund have a robust risk management framework in place?
2. Deposit and withdrawal rules: Does the fund clearly state how it is funded and possibly withdrawn?	12. Stewardship team in place: Does the fund employ a dedicated team for responsible investing?	22. Strategic asset allocation: Is there proper thought behind the asset allocation of the fund?
3. External manager reputation: Is there a robust process to select external managers, if any?	13. Economic mission: Does the fund seek economic advancement?	23. Policy for withdrawals: Is there a mechanism to avoid the depletion of the fund in the long-term?
4. Internal and external governance: Does the fund provide clarity of its governance structure?	14. Economic impact and measure: Are ESG key metrics or figures provided?	24. BCM/crisis teams in place: Does the fund employ a dedicated operational risk team?
5. Investment strategy/criteria: What kind of assets does the fund seek to invest in?	15. ESG annual report: Does the fund produce an annual ESG report?	25. Speed and discipline: Is the fund generally well placed for its long-term survival?
6. Structure and operational data: How is the fund structured as an investment organization?	16. Reference to SDGs: Is the fund a PRI signatory member or does it invest in SDGs?	
7. Annual accounts audited: Are financial statements audited and in the public domain?	17. Partnership and memberships: Does the fund collaborate with international investors or bodies?	
8. AUM figure public: Does the fund provide clarity on how much capital it manages?	18. Emerging markets/managers: Does the fund invest in emerging markets and/or managers?	
9. Details of investment portfolio: Does the fund provide clarity on what assets it currently holds?	19. Role in domestic economy: Does the fund invest in the domestic economy and businesses?	
10. Annual versus LT return: Is the most recent year's return provided?	20. ESG risk management: Does the fund accept and address climate change and other ESG risks?	

Abbreviations: AUM, assets under management; BCM, business continuity management; ESG, environmental, social, and governance; GSR, Governance-Sustainability-Resilience; LT, long-term; PRI, principles for responsible investing; SDGs, sustainable development goals; SWF, sovereign wealth fund. Data from Global SWF, last updated Sept. 11, 2020.

^aThis table reports the components of the GSR Scorecard, which is used to rank state-owned investors. Data for these components are hand-collected from fund websites and annual reports. Each component is given a score of 0 or 1.

collectively have \$7.1 trillion AUM. Given the long horizon of these funds, they are poised to play an important role in promoting CSR (Boubaker et al. 2017; Starks, Venkat & Zhu 2017). PPFs, however, have been more influential in promoting ESG than SWFs because of their willingness to engage with portfolio companies on these issues. In this section, we discuss the motivation for ESG investing, how SOIs and other intuitional investors incorporate ESG criteria into their investment decisions, and the impact institutional investors have on firms to promote CSR.

4.2.1. Motivation. The demand for ESG investing for SOIs stems from their long-term investment mindset and from a demand from beneficiaries to promote responsible investing (Hentov & Petrov 2017). Starks, Venkat & Zhu (2017) argue that investor horizon is a major consideration in ESG investing. Long-horizon investors see employee trust, reputation, and lower litigation risk

Table 5 GSR ratings for 45 largest state-owned investment funds^a

Fund	Country	Established date	Type of fund	AUM (US\$ billion)	AAA%	Governance (10)	Sustainability (10)	Resilience (5)	GSR (25)	Percentage GSR score
GPIF	Japan	2006	PPF	1,491	1%	8	10	2	20	80%
NBIM	Norway	1997	SWF	1,076	3%	9	10	5	24	96%
CIC	China	2007	SWF	941	29%	9	4	2	15	60%
SAFE	China	1997	SWF	743	10%	2	1	0	3	12%
ADIA	United Arab Emirates– Abu Dhabi	1967	SWF	710	22%	6	3	4	13	52%
NPS	South Korea	1988	PPF	663	12%	9	6	4	19	76%
APG	Netherlands	1922	PPF	603	29%	9	10	3	22	88%
KIA	Kuwait	1953	SWF	559	18%	4	4	1	9	36%
HKMA	China–Hong Kong	1993	SWF	541	20%	10	5	5	20	80%
GIC	Singapore	1981	SWF	488	20%	5	6	4	15	60%
SAMA	Saudi Arabia	1952	SWF	448	0%	3	0	0	3	12%
CalPERS	United States– California	1932	PPF	389	20%	9	9	3	21	84%
QIA	Qatar	2005	SWF	345	41%	4	3	1	8	32%
NSSF	China	2000	PPF	325	14%	4	2	2	8	32%
PIF	Saudi Arabia	1971	SWF	325	60%	2	4	1	7	28%
CPP	Canada	1997	PPF	318	48%	9	8	5	22	88%
ICD	United Arab Emirates– Dubai	2006	SWF	305	65%	5	2	0	7	28%
PGGM	Netherlands	1969	PPF	282	17%	8	9	4	21	84%
CalSTRS	United States– California	1913	PPF	246	32%	10	10	3	23	92%
CDPQ	Canada–Quebec	1965	PPF	244	36%	8	10	5	23	92%
API–7	Sweden	2001	PPF	241	17%	10	8	5	23	92%
Mubadala	United Arab Emirates– Abu Dhabi	1984	SWF	232	63%	8	6	4	18	72%
NYSCRF	United States– New York	1983	PPF	216	25%	10	10	3	23	92%
Temasek	Singapore	1974	SWF	215	48%	8	10	5	23	92%
SBA Florida	United States– Florida	1943	PPF	204	26%	10	4	3	17	68%

(Continued)

Table 5 (Continued)

Fund	Country	Established date	Type of fund	AUM (US\$ billion)	AAA%	Governance (10)	Sustainability (10)	Resilience (5)	GSR (25)	Percentage GSR score
NWF	Russia	2008	SWF	174	20%	2	3	0	5	20%
KIC	South Korea	2005	SWF	157	15%	9	3	3	15	60%
OTPP	Canada–Ontario	1917	PPF	149	52%	8	8	5	21	84%
PIC	South Africa	2015	PPF	149	6%	7	9	3	19	76%
Future Fund	Australia	2006	SWF	141	35%	10	10	5	25	100%
ATP	Denmark	1964	PPF	131	38%	10	8	5	23	92%
BCI	Canada–British Columbia	1999	PPF	121	41%	8	10	4	22	88%
AustralianSuper	Australia	1999	PPF	120	21%	8	9	5	22	88%
PSP	Canada	1999	PPF	120	49%	8	9	5	22	88%
QIC	Australia	1991	SWF	101	34%	6	8	3	17	68%
SoftBank IA	Japan	2017	SWF	101	86%	3	2	0	5	20%
AIMCo	Canada–Alberta	1976	PPF	91	29%	9	8	4	21	84%
OMERS	Canada–Ontario	1962	PPF	85	61%	8	7	5	20	80%
HOOPP	Canada–Ontario	1960	PPF	72	27%	8	6	5	19	76%
UNJSPF	Global	1949	PPF	70	14%	10	7	5	22	88%
NDFI	Iran	2011	SWF	68	82%	2	3	0	5	20%
LIA	Libya	2006	SWF	67	44%	1	0	0	1	4%
Alaska PFC	United States–Alaska	1976	SWF	65	33%	9	4	4	17	68%
EIA	United Arab Emirates–Abu Dhabi	2007	SWF	63	26%	1	2	0	3	12%
Samruk Kazyna	Kazakhstan	2008	SWF	62	62%	7	6	1	14	56%

Abbreviations: AAA%, percent of AUM allocated to alternative assets; AUM, assets under management; GSR, Governance-Sustainability-Resilience; PPF, public pension fund; SWF, sovereign wealth fund.

Data from Global SWF, last updated Sept. 11, 2020.

^aThis table presents the GSR Scorecard for the top 45 state-owned investors (based on AUM). The components used in the scorecard are given in **Table 4**. Data for these components are hand-collected from fund websites and annual reports. Each component is given a score of 0 or 1.

as benefits of ESG investing. For short-term investors, the costs of ESG investing outweigh these benefits. Boubaker et al. (2017) find similar results and provide evidence of long-horizon investors being correlated with high CSR scores for portfolio firms.

The demand for ESG investing has been increasing as investors pay more attention to environmental issues. Choi, Gao & Jiang (2020) show that local extreme hot weather increases attention to climate change and investors in these localities reduce ownership of high-carbon-emission stocks. Their argument is that even though average global temperature is a better predictor of global warming, investors are more likely to pay attention to local weather. They find that retail investors are the ones driving these results. Investors are also willing to pay more and accept lower returns for more ethical investing (Bonnefon et al. 2019; Barber, Morse & Yasuda 2021). Riedl & Smeets (2017), in a survey of Dutch investors, find that changes in social preferences and reputational concerns are prompting increased socially responsible investing.

Political interference in the investment decisions of SOIs has been well documented (Johan, Knill & Mauck 2013). Evidence shows that incorporating ESG criteria can also have political motivations. Hoepner & Schopohl (2020) study PPFs and find that political leanings of state politicians can result in managers investing more in firms with high CSR scores if U.S. state politicians are Democrats and vice versa if they are Republicans. Hong & Kostovetsky (2012) document that fund managers who contribute to the U.S. Democratic Party's campaigns are less likely to invest in socially irresponsible firms.

4.2.2. Engagement with portfolio firms. Investors can use two main tools to influence their portfolio firms on ESG—either “choice” or “voice” (Dimson, Karakas & Lee 2020). First, they can select firms with better ESG ratings or exclude firms below a certain threshold. Second, they can engage these firms through voting proposals, discussions with management, or public scrutiny (McCahery, Sautner & Starks 2016; Brière, Pouget & Ureche 2018). The second channel has been documented to be more potent (Dyck et al. 2019; Krueger, Sautner & Starks 2020). Prior research has shown that PPFs are more likely to engage portfolio firms on ESG issues, whereas SWFs are more likely to use screening (Sievänen, Rita & Scholtens 2013; Liang & Renneboog 2020).

Krueger, Sautner & Starks (2020) present a survey of institutional investors, most of which are medium- to long-term investors, on the importance of climate risk in investment decisions. They find that many investors believe that engagement with portfolio firms on environmental issues is a better approach than divestment. Sievänen, Rita & Scholtens (2013) use a sample of European pension funds and show that PPFs are more likely to engage with portfolio firms on ESG issues than are private funds.

Liang & Renneboog (2020) use data for 24 SWFs from 1999 to 2018 and find that SWFs do consider ESG ratings of firms in the prior years when investing. Using a differences-in-differences approach following exogenous shocks, they do not find any evidence of improvement of ESG ratings of portfolio companies following investments by SWFs, and they attribute that finding to a lack of engagement. Barko, Cremers & Renneboog (2018) use data on fund activism from a large fund manager in Europe that manages institutional investors, including public pension funds. They find that firms that were ex ante in the lowest quartile of ESG ratings benefit the most from engagement by the fund. Finally, Dyck et al. (2019) use international data to investigate whether institutional investors improve E&S performance, finding they are able to do so but only through engagement and not through exit and selection—and that only European institutional investors exercise this influence.

5. AVENUES OF FUTURE RESEARCH

Perhaps unsurprisingly, we believe there are many possible avenues of future research analyzing the structure, investment, and asset allocation policies; ESG agendas; and disclosure policies of

SOIs. One branch of this research would econometrically analyze how and why SWFs and PPFs differ with regard to these issues. The second main avenue of research would compare the organization, asset allocation and other investment policies, and disclosure proclivities of SOIs with all other (privately owned) institutional investors. While this would be a herculean task, requiring the fusion of multiple large datasets, many of the questions that could be addressed would just be larger-sample analogs of the issues we discuss next for the SWF versus PPF determinations.

A great place to begin analyzing the differences between SOIs is to test econometrically whether oil endowments really do significantly influence the investment policies of SWFs and the propensity of democratic nations to set up PPFs rather than SWFs. Even though petroleum seems destined to play a slowly declining role in powering the global economy, and oil wealth is already a declining share of SOI capital funding, the first- and fourth-largest SWFs (Norway's NBIM and the United Arab Emirates's ADIA) are both funded by oil export revenues, and reinvested petroleum earnings still account for more than half of all SWF funding. Understanding whether and how oil endowments influence SOI investment policies will thus become an increasingly important issue.

More empirical work should be done on whether and how SWFs and PPFs truly differ regarding their ESG promotion proclivities. It appears that PPFs, especially from democratic countries, are much more enthusiastic about promoting ESG and CSR agendas than are SWFs, but this assumption should be analyzed rigorously. A related research question would examine whether and how SWFs and PPFs differ with regard to their propensity to invest (and their investment success) in private equity, and how these SOIs differ from other important private equity investors.

Finally, additional research is needed to address the choices different categories of SOIs make regarding (a) whether to bring investment analysis and execution in-house or to contract these functions out; (b) how different types of SOIs divide their assets between domestic and international investing; and (c) how a development fund focus influences the asset allocation policies of funds charged with promoting the domestic economy. We hope to participate in these research projects ourselves but also welcome any other interested economists.

6. SUMMARY

SOIs have emerged as an important force in global financial markets, as we document and analyze in this study. Both SWFs and PPFs have grown significantly in size and risk appetite during the past 12 years, becoming some of the world's most prominent investors in private equity and other alternative asset classes. During that period, there has been a significant rise of SWFs with a strategic function, which seek not only financial returns but also to attract further foreign direct investment and to support their domestic economies.

Despite the obvious difference in liabilities, PPFs and SWFs follow similar investment policies. Both types of SOIs are large, internationally active investment funds with relatively small staffs that invest primarily in search of commercial returns. However, while only 6% of the AUM managed by PPFs originates in a country characterized as nondemocratic, more than three-quarters of SWF capital comes from countries that we classify as undemocratic. This may cause recipient countries to be more reluctant and conscious about incoming SWF capital than about investments by PPFs, and it may help explain the higher propensity of SWFs to invest in private equity.

Today, SOIs seek to change their image from nontransparent and possibly marauding funds to that of responsible allocators and impact investors increasingly concerned about ESG risk factors. The demand for ESG investing is explained by rising political pressures, a stronger alignment with private equity funds, and the evidence that a low-carbon portfolio may indeed outperform other baskets, providing evidence of climate or ESG alpha. This mounting pressure has been

exacerbated since the start of the coronavirus disease 2019 (COVID-19) pandemic in 2020, and we expect it to be a major trend in the coming years.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENTS

We thank Alvaro Cuervo-Cazurra, David Chambers, Xia Chen, Darwin Choi, Rebel Cole, Matijns Cremers, Elroy Dimson, Serdar Dinc, Adam Dixon, Nuno Fernandes, Veljko Fotak, Xuechen Gao, Zhenyu Gao, Mariassunta Giannetti, Anna Grossman, Kate Holland, Wenxi Jiang, April Knill, Yong Li, Summer Liu, Stefano Lugo, Lukas Roth, Lemma Senbet, David Thesmar, Junjie Xia, and, especially, Deborah Lucas for helpful comments on previous drafts.

LITERATURE CITED

- Aggarwal R, Erel I, Ferreira M, Matos P. 2011. Does governance travel around the world? Evidence from institutional investors. *J. Financ. Econ.* 100(1):154–81
- Andonov A, Bauer RM, Cremers KJ. 2017. Pension fund asset allocation and liability discount rates. *Rev. Financ. Stud.* 30(8):2555–95
- Andonov A, Hochberg YV, Rauh JD. 2018. Political representation and governance: evidence from the investment decisions of public pension funds. *J. Finance* 73(5):2041–86
- Ang A, Chen B, Goetzmann W, Phalippou L. 2019. Estimating private equity returns from limited partner cash flows. *J. Finance* 73:1751–83
- Anzia SF, Moe TM. 2019. Interest groups on the inside: the governance of public pension funds. *Perspect. Politics* 17(4):1059–78
- Avendaño R, Santiso J. 2011. Are sovereign wealth funds politically biased? A comparison with other institutional investors. In *Institutional Investors in Global Capital Markets*, ed. N Boubakri, JC Cosset, pp. 313–53. Bingley, UK: Emerald Group Publ. Ltd.
- Balding C, ed. 2012. *Sovereign Wealth Funds: The New Intersection of Money and Politics*. New York: Oxford Univ. Press. 1st ed.
- Barber BM, Morse A, Yasuda A. 2021. Impact investing. *J. Financ. Econ.* 139:162–85
- Barko T, Cremers M, Renneboog L. 2018. *Shareholder engagement on environmental, social, and governance performance*. Work. Pap., Eur. Corp. Gov. Inst., Brussels
- Bena J, Ferreira MA, Matos P, Pires P. 2017. Are foreign investors locusts? The long-term effects of foreign institutional ownership. *J. Financ. Econ.* 126(1):122–46
- Bernstein S, Lerner J, Schoar A. 2013. The investment strategies of sovereign wealth funds. *J. Econ. Perspect.* 27(2):219–38
- Bertoni F, Lugo S. 2014. The effect of sovereign wealth funds on the credit risk of their portfolio companies. *J. Corp. Finance* 27:21–35
- Blake D, Rossi AG, Timmermann A, Tonks I, Wermers R. 2013. Decentralized investment management: evidence from the pension fund industry. *J. Finance* 68(3):1133–78
- Bonnefon JF, Landier A, Sastry P, Thesmar D. 2019. *Do investors care about corporate externalities? Experimental evidence*. HEC Paris Res. Pap. FIN-2019-1350
- Borisova G, Fotak V, Holland K, Megginson WL. 2015. Government ownership and the cost of debt: evidence from government investments in publicly traded firms. *J. Financ. Econ.* 118(1):168–91
- Bortolotti B, Fotak V, Megginson WL. 2015. The sovereign wealth fund discount: evidence from public equity investments. *Rev. Financ. Stud.* 28(11):2993–3035
- Boubaker S, Boubakri N, Grira J, Guizani A. 2018. Sovereign wealth funds and equity pricing: evidence from implied cost of equity of publicly traded targets. *J. Corp. Finance* 53:202–24

- Boubaker S, Chourou L, Himick D, Saadi S. 2017. It's about time! The influence of institutional investment horizon on corporate social responsibility. *Thunderbird Int. Bus. Rev.* 59(5):571–94
- Bradley D, Pantzalis C, Yuan X. 2016. The influence of political bias in state pension funds. *J. Financ. Econ.* 119(1):69–91
- Brière M, Pouget S, Ureche L. 2018. *Blackrock vs Norway Fund at shareholder meetings: institutional investors' votes on corporate externalities*. SSRN Work. Pap. 3140043
- Calluzzo P, Dong GN, Godsell D. 2017. Sovereign wealth fund investments and the US political process. *J. Int. Bus. Stud.* 48(2):222–43
- Chambers D, Dimson E, Imanen A. 2012. The Norway model. *J. Portf. Manag.* 38(2):67–81
- Chen X, Harford J, Li K. 2007. Monitoring: Which institutions matter? *J. Financ. Econ.* 86(2):279–305
- Choi D, Gao Z, Jiang W. 2020. Attention to global warming. *Rev. Financ. Stud.* 33(3):1112–45
- Coronado JL, Engen EM, Knight B. 2003. Public funds and private capital markets: the investment practices and performance of state and local pension funds. *Natl. Tax J.* 56(3):579–94
- Cronqvist H, Fahlenbrach R. 2008. Large shareholders and corporate policies. *Rev. Financ. Stud.* 22(10):3941–76
- Cuervo-Cazurra A, Grossman A, Megginson W. 2020. *Governments as foreign investors: discreet power through state-owned multinationals and sovereign wealth funds*. Work. Pap., Northeastern Univ., Boston
- Del Guercio D, Hawkins J. 1999. The motivation and impact of pension fund activism. *J. Financ. Econ.* 52(3):293–340
- Dewenter KL, Han X, Malatesta PH. 2010. Firm values and sovereign wealth fund investments. *J. Financ. Econ.* 98(2):256–78
- Dimson E, Karakaş O, Li X. 2020. *Coordinated engagements*. SSRN Work. Pap. 3209072
- Dyck A, Lins KV, Roth L, Wagner HF. 2019. Do institutional investors drive corporate social responsibility? International evidence. *J. Financ. Econ.* 131(3):693–714
- Dyck A, Morse A. 2011. *Sovereign wealth fund portfolios*. Work. Pap., Univ. Toronto
- The Economist*. 2019. America's multi-trillion dollar pension hole: Public pension funds are woefully underfunded. *The Economist*. Nov. 16.
- Fang L, Ivashina V, Lerner J. 2015. The disintermediation of financial markets: direct investing in private equity. *J. Financ. Econ.* 116(1):160–78
- Ferreira MA, Matos P. 2008. The colors of investors' money: the role of institutional investors around the world. *J. Financ. Econ.* 88(3):499–533
- Fotak V, Gao X, Megginson W. 2018. A financial force to be reckoned with? An overview of sovereign wealth funds. In *Oxford Handbook of Sovereign Wealth Funds*, ed. DJ Cumming, I Filatochev, J Reinecke, G Wood, pp. 16–62. Oxford, UK: Oxford Univ. Press
- Gagliardi T, Gianfrate G, Vincenzi R. 2014. *Sovereign wealth funds' investments: the bondholders' perspective*. Work. Pap., Bocconi Univ., Milan
- Giannetti M, Laeven L. 2008. Pension reform, ownership structure, and corporate governance: evidence from a natural experiment. *Rev. Financ. Stud.* 22(10):4091–127
- Global SWF. 2020. *2020 GSR Scoreboard*. Global SWF LLC. <https://globalswf.com/reports>
- Global SWF. 2021. *2021 Annual Report*. Global SWF LLC. <https://globalswf.com/reports>
- Harris RS, Jenkinson T, Kaplan SV. 2014. Private equity performance: What do we know? *J. Finance* 69:1851–82
- Hentov E, Petrov A. 2017. *How do sovereign investors approach ESG investing?* State Street Glob. Adv., New York
- Hoepner AG, Schopohl L. 2020. State pension funds and corporate social responsibility: Do beneficiaries' political values influence funds' investment decisions? *J. Bus. Ethics* 165(3):489–516
- Hong H, Kacperczyk M. 2009. The price of sin: the effects of social norms on markets. *J. Financ. Econ.* 93(1):15–36
- Hong H, Kostovetsky L. 2012. Red and blue investing: values and finance. *J. Financ. Econ.* 103(1):1–19
- Iliev P, Roth L. 2018. Learning from directors' foreign board experiences. *J. Corp. Finance* 51:1–19
- Johan SA, Knill A, Mauck N. 2013. Determinants of sovereign wealth fund investment in private equity versus public equity. *J. Int. Bus. Stud.* 44(2):155–72
- Karolyi GA, Liao RC. 2017. State capitalism's global reach: evidence from foreign acquisitions by state-owned companies. *J. Corp. Finance* 42:367–91

- Knill AM, Lee BS, Mauck N. 2012. Sovereign wealth fund investment and the return-to-risk performance of target firms. *J. Financ. Intermed.* 21(2):315–40
- Kotter J, Lel U. 2011. Friends or foes? Target selection decisions of sovereign wealth funds and their consequences. *J. Financ. Econ.* 101(2):360–81
- Krueger P, Sautner Z, Starks LT. 2020. The importance of climate risks for institutional investors. *Rev. Financ. Stud.* 33(3):1067–111
- Liang H, Renneboog L. 2020. The global sustainability footprint of sovereign wealth funds. *Oxf. Rev. Econ. Policy* 36(2):380–426
- Liu P, Mauck N, Price SM. 2020. Are government owned investment funds created equal? Evidence from sovereign wealth fund real estate acquisitions. *J. Real Estate Finance Econ.* 61(4):698–729
- Lopez-de-Silanes F, Phalippou L, Gottschalg O. 2015. Giants at the gate: investment returns and diseconomies of scale in private equity. *J. Financ. Quant. Anal.* 50(3):377–411
- McCahery JA, Sautner Z, Starks LT. 2016. Behind the scenes: the corporate governance preferences of institutional investors. *J. Finance* 71(6):2905–32
- Meggins WL, Fotak V. 2015. Rise of the fiduciary state: a survey of sovereign wealth fund research. *J. Econ. Surv.* 29(4):733–78
- Meggins W, Liu X. 2021. State ownership and corporate performance. In *The Oxford Handbook of State Capitalism and the Firm*, ed. M Wright, GT Wood, A Cuervo-Cazurra, P Sun, I Okhmatovskiy, A Grosman. Oxford, UK: Oxford Univ. Press. Forthcoming
- Norrestad F. 2020. Total assets of pension funds in the United States from 2009 to 2019. *Statista*. <https://www.statista.com/statistics/421729/pension-funds-assets-usa/>
- Novy-Marx R, Rauh J. 2011. Public pension promises: How big are they and what are they worth? *J. Finance* 66(4):1211–49
- OECD (Organ. Econ. Coop. Dev.). 2020. *OECD Pension Fund Statistics 2020*. Paris: OECD
- Pennacchi G, Rastad M. 2010. *Portfolio allocation for public pension funds*. NBER Work. Pap. 16456
- Phalippou L. 2020. Better alignment of financial interest in private equity. *J. Invest.* 30(1):101–8
- Riedl A, Smeets P. 2017. Why do investors hold socially responsible mutual funds? *J. Finance* 72(6):2505–50
- Rozanov A. 2005. Who holds the wealth of nations? *Cent. Banking J.* 15(4):52–57
- Sensoy BA, Wang Y, Weisbach MS. 2014. Limited partner performance and the maturing of the private equity industry. *J. Financ. Econ.* 112(3):320–43
- Sievänen R, Rita H, Scholtens B. 2013. The drivers of responsible investment: the case of European pension funds. *J. Bus. Ethics* 117(1):137–51
- Starks LT, Venkat P, Zhu Q. 2017. *Corporate ESG profiles and investor horizons*. SSRN Work. Pap. 3049943
- Truman EM. 2008. *A blueprint for sovereign wealth fund best practices*. Policy Brief 08-3, Peterson Inst. Int. Econ., Washington, DC
- Truman EM. 2011. Are Asian sovereign wealth funds different? *Asian Econ. Policy Rev.* 6(2):249–68
- Tsui KK. 2010. More oil, less democracy: evidence from worldwide crude oil discoveries. *Econ. J.* 121:89–115
- U.S. Forum Sustain. Responsible Invest. 2018. *2018 Trend Report*. Washington, DC: U.S. Forum Sustain. Responsible Invest.
- Wang Y, Mao CX. 2015. Shareholder activism of public pension funds: the political facet. *J. Bank. Finance* 60:138–52
- Woidtke T. 2002. Agents watching agents? Evidence from pension fund ownership and firm value. *J. Financ. Econ.* 63(1): 99–131
- World Bank. 2020. *World Bank Global Pension Statistics 2020*. Washington, DC: World Bank