



PERSPECTIVE

# Sovereign wealth funds in the post-pandemic era

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**Abstract**

Sovereign wealth funds (SWFs) have over \$11.5 trillion in assets under management as of February 2023. Most of these 176 funds are sponsored by non-Western countries and their growth has made SWFs important international investors, particularly in private equity funding. We first define SWFs, then discuss their evolution into today's categories of stabilization, savings, and development/strategic funds. We discuss the documented importance of SWF funding sources – oil sales revenues versus excess reserves from export earnings – and summarize the empirical literature studying how SWFs allocate funds geographically and across asset classes. Next, we summarize empirical evidence on the impact of SWF stock investments on target firm financial and operating performance and discuss the evidence showing that the announcement of SWF investment causes target firm stock prices to rise in the short term, but the positive impact is significantly less than the positive return following large stock purchases by private investors, and the longer-term effect of SWF investment on target firms is generally negative. SWFs' recent focus on promoting ESG policies of investee companies is assessed and briefly compared to the effectiveness of other institutional investors' ESG efforts.

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## INTRODUCTION

The emergence of sovereign wealth funds (SWFs) as global investors is one of the most significant financial developments of the past several decades. Two decades ago, SWFs held barely \$1 trillion in assets, but that has grown more than 11-fold to \$11.36 trillion at year-end 2022 (<https://globalswf.com>). The term 'sovereign wealth fund' was coined by Rozanov (2005) and SWFs entered mainstream Western news when they attempted to recapitalize much of the Western banking system immediately prior to the Global Financial Crisis of 2008–2010. Over the next dozen years, these funds expanded dramatically in number and aggregate size and emerged as true players in global institutional investing.<sup>1</sup>

An expansive definition of SWFs is provided by the Sovereign Investment Laboratory (Bortolotti, Fotak, & Megginson, 2015) as: "(1) an investment fund rather than an operating company; (2) that

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is wholly owned by a sovereign government, but organized separately from the central bank or finance ministry to protect it from excessive political influence; (3) that makes international and domestic investments in a variety of risky assets; (4) that is charged with seeking a commercial return; and (5) which is a wealth fund rather than a pension fund – meaning that the fund is not financed with contributions from pensioners and does not have a stream of liabilities committed to individual citizens.” SWFs, however, are far from homogeneous and ambiguities still remain. Some funds are organized and managed at the regional rather than the national level (Megginson & Malik, 2022). For example, the Alaska Permanent Fund was created in 1976 and is managed by a board of trustees appointed by the Alaska State Legislature. The Emirates Investment Authority is the only SWF at the federal level for the United Arab Emirates (UAE).

The precursor to modern SWFs is the commodity stabilization fund. Early growth in SWFs owes much to the reallocation of assets from stabilization funds and this trend continues today (Megginson & Malik, 2022). For instance, the Pula SWF (Botswana) is the oldest SWF in Africa. It was created in 1994 from excess revenue from diamond exports. Subsequent SWFs were established in Nigeria, Libya, Algeria, Angola, and Ghana using excess revenue from hydrocarbon exports (Adonu, 2020). From 2000 to the mid-2010s, 56 SWFs were created (Aguilera, Capapé, & Santiso, 2016). SWF growth slowed during the economic downturn of the Global Financial Crisis, and the drop in oil prices in late 2014 further hurt growth, but the rebound in oil prices after 2016 reignited growth in SWF assets under management (AUM), and this continued until the COVID-19 pandemic froze global economic activity in 2020–2021. Oil-based SWFs are benefiting today from rising oil prices due to an especially sharp post-pandemic rebound in economic activity and the havoc wreaked on energy markets by Russia’s invasion of Ukraine.

The roles that SWFs take on are diverse. Besides investing abroad to earn commercial returns, some SWFs are created as macro-stabilization “rainy day funds”. In response to the financial crisis caused by the COVID-19 pandemic, several such funds were required to act as first-responders by their governments. López (2022) notes that a total of \$211.3 billion had been withdrawn from 33 funds across 27 countries during the first 2 years of the pandemic. Five out of the 33 funds had over 50% of their funds withdrawn and three funds were

exhausted completely – Mexico’s FEIP, Colombia’s FAEP, and Peru’s FEF. SWFs also contributed \$57 billion to bailouts of domestic industries, of which \$19 billion was injected into airlines alone. Emergency damage mitigation behavior, however, is far from new. In 2009, the Mauritania government called upon its SWF to stimulate its domestic economy. Algeria has also drawn from its SWF to repay public debt (Adonu, 2020). The economic downturn due to the COVID-19 pandemic is still playing out today and SWFs have also suffered investment losses. Bortolotti and Fotak (2020) estimate that during the height of the pandemic, SWFs lost approximately 16% of asset values and suffered paper losses of US \$800 billion. Like López (2022), these authors document the different roles that funds played during the pandemic – some entered the crisis with large liquid reserves and bought stakes in firms selling at a discount, whereas other funds were used by their governments to fill domestic budget gaps.

Much empirical work has analyzed SWFs. Early studies are summarized in surveys by Balding (2012), Megginson and Fotak (2015), Fotak, Gao, and Megginson (2018), Megginson and Liu (2022), Megginson, Lopez, and Malik (2021), and Zhou (2022). These studies focused on papers that constructed their sample with SWF data from 1990 to 2016. As later sections will show, SWFs have and continue to undergo changes in size, asset allocation, and geographical preference since then. Therefore, this review will analyze very recent data (from 2021 or 2022) and summarize articles produced after 2016. The remainder of this paper is organized as follows. “The Sovereign Wealth Fund Ecosystem Today” section outlines a method of categorizing SWFs and describing their investment behavior. “SWFs and Alternative Investments” section focuses on SWFs’ heightened interest in alternative investments, notably real estate and private equity. Section 4 surveys the recent empirical research on the impact of SWF ownership on target firm value. “Wealth Impacts of SWF Investments” section reviews the research on the relationship between ESG and SWFs. Finally, “SWFs and ESG” section concludes and offers remarks on future research directions.

## THE SOVEREIGN WEALTH FUND ECOSYSTEM TODAY

As of February 2023, 176 SWFs have US \$11.515 trillion in AUM, according to Global SWF. Boubaker, Boubakri, Grira, and Guizani (2018) estimate

that SWFs grew at an average annual rate of 11% from 1999 to 2018. SWFs have continued to grow and seem certain to remain globally powerful and important investors for decades to come.<sup>2</sup> Global SWF estimates that the SWF industry grew by 6% in 2021. In this section, we first categorize SWFs by investment objectives and then discuss recent changes and trends in SWF asset allocation.

### SWF Organization Today

A concise method of categorizing SWFs is by their investment objective. We follow the Global SWF method of classification (Megginson et al., 2021).

1. *Stabilization funds* also called rainy-day funds. Their purpose is to provide capital in the event of market shocks. Liquidity is important for these funds; therefore, 90% of their portfolios are allocated into public stocks and bonds.
2. *Savings funds* also called future generations funds. These funds are to 'save' for future generations. They can invest for the long term and 22% of their portfolios are allocated in private markets.
3. *Development* also called strategic funds. These funds invest to contribute to the development of their domestic economies. These SWFs share characteristics with development banks, but rely primarily on equity investments while development banks make loans to projects or firms.

Carney (2021) offers an alternative SWF classification scheme to Megginson et al. (2021), though one also based on observed investment purpose. He categorizes SWFs into foreign exchange reserve funds, stabilization funds, pension reserve funds, and savings funds. He then examines empirically how these categorizations correlate with the investment impact of different SWF types. Carney employs 10,488 observations from 2013 to 2016, which contrasts with the 1,018 observations used by in Bortolotti et al. (2015), and finds that savings funds operated by authoritarian regimes are more likely than other types of SWFs to push for changes to a firm's business strategy and to participate in activism to achieve their goals. Finally, the authors find that investment by a savings fund from an authoritarian regime is associated with a 20% reduction in investee firm sales growth over the subsequent 3 years compared to other SWFs' investments.

One can also classify SWFs by whether they are commodity driven or non-commodity driven.

Commodity-based SWFs are funded by the financial surplus from commodity exports, mostly oil and gas. Non-commodity-based SWFs are funded by foreign exchange reserves. By 2008, the three largest oil funds made up 52% of total SWF assets (Gintschel & Scherer, 2008). Oil-based funds still make up the majority of funds – 57% of the largest SWFs by AUM are oil-based (Gangi, Meles, Mustilli, Graziano, & Varrone, 2019).

Table 1 describes the country of origin, source of funding, stated mission, establishment year, AUM, and the fractions invested in alternative assets and internationally of the 35 largest SWFs. The largest funds today are dominated by savings funds, with only one stabilization fund (SAFE IC of China) in the top five by AUM. The largest fund, NBIM of Norway, has only 3% invested in alternative assets while NDF of Saudi Arabia and Dubai World of the UAE has 100% of investments in alternatives. The average fraction of investments abroad for the top 35 funds is 47%, though the average for the top five funds is a much higher 72%.

Table 2 shows the distribution of investments in different asset classes for developed, developing, transition, and G7 nation funds. Developing nations are key players in the SWF ecosystem. For the years 2020–2022, a striking 71% of all public equity investments were made in developing countries. We define developing countries as in the World Economic Situation and Prospects (WESP) 2020. Developed countries take most of the investments in real estate, at 60% of the number of deals made and 70% of the value of deals in 2020–2022. Private equity, a risky asset class, is more evenly distributed between developed and developing countries, though developed countries hold the majority of deals in both number and value, excluding domestic investments. For cross-border deals, capital flows more into developed nations but developing countries are also focusing on their own domestic private equity markets.

Adonu (2020) argues that SWFs can play a key role in propelling the African continent's digital transformation and thus its digital economy. Africa has financing gaps in two key areas: digital infrastructure and venture innovation. Although small compared to the SWFs of other regions, with 30 wealth funds and \$55 billion AUM (Global SWF, 2022), the author argues that African SWFs are still in a strong position to help develop the continent's digital economy. Africa's digital ecosystem is one of the fastest-growing markets in the world, and a 10% increase in broadband penetration will lead to

**Table 1** Description of the 35 largest SWFs

| Fund          | Country      | Source      | Mission       | Establish Date | AUM (USD Bn) | AAA (%) | International (%) |
|---------------|--------------|-------------|---------------|----------------|--------------|---------|-------------------|
| NBIM          | Norway       | Commodities | Savings       | 1997           | \$1362       | 3       | 100               |
| CIC           | China        | Reserves    | Savings       | 2007           | 1222         | 25      | 33                |
| SAFE IC       | China        | Reserves    | Stabilization | 1997           | 980          | 22      | 26                |
| ADIA          | Abu Dhabi    | Commodities | Savings       | 1967           | 829          | 25      | 100               |
| GIC           | Singapore    | Reserves    | Savings       | 1981           | 799          | 25      | 100               |
| KIA           | Kuwait       | Commodities | Savings       | 1953           | 693          | 23      | 95                |
| PIF           | Saudi Arabia | Commodities | Strategic     | 1971           | 620          | 56      | 30                |
| HKMA EF       | Hong Kong    | Reserves    | Stabilization | 1993           | 587          | 8       | 87                |
| NSSF          | China        | Reserves    | Savings       | 2000           | 452          | 14      | 10                |
| QIA           | Qatar        | Commodities | Savings       | 2005           | 445          | 41      | 71                |
| ICD           | Dubai        | Commodities | Strategic     | 2006           | 300          | 65      | 51                |
| Mubadala      | Abu Dhabi    | Commodities | Strategic     | 1984           | 284          | 48      | 53                |
| Temasek       | Singapore    | Reserves    | Strategic     | 1974           | 283          | 43      | 76                |
| KIC           | South Korea  | Reserves    | Savings       | 2005           | 205          | 17      | 100               |
| Future Fund   | Australia    | Reserves    | Savings       | 2006           | 187          | 40      | 80                |
| NWF           | Russia       | Commodities | Stabilization | 2008           | 155          | 20      | 17                |
| NDFI          | Iran         | Commodities | Strategic     | 2011           | 139          | 82      | 0                 |
| ADQ           | Abu Dhabi    | Reserves    | Strategic     | 2018           | 108          | 58      | 3                 |
| NDF           | Saudi Arabia | Commodities | Strategic     | 2017           | 93           | 100     | 0                 |
| EIA           | Abu Dhabi    | Commodities | Strategic     | 2007           | 86           | 21      | 40                |
| Alaska PFC    | USA          | Commodities | Savings       | 1976           | 81           | 38      | 27                |
| TCorp         | Australia    | Reserves    | Savings       | 1983           | 80           | 12      | 25                |
| PNB           | Malaysia     | Reserves    | Strategic     | 1978           | 80           | 8       | 12                |
| QIC           | Australia    | Reserves    | Savings       | 1991           | 69           | 29      | 57                |
| Samruk Kazyna | Kazakhstan   | Commodities | Strategic     | 2008           | 69           | 62      | 0                 |
| UTIMCO        | USA          | Reserves    | Savings       | 1876           | 68           | 59      | 20                |
| LIA           | Libya        | Commodities | Savings       | 2006           | 67           | 23      | 65                |
| NBK (NOF+NIC) | Kazakhstan   | Commodities | Stabilization | 2000           | 58           | 0       | 95                |
| VFMC          | Australia    | Reserves    | Savings       | 1994           | 56           | 30      | 46                |
| Texas PSF     | USA          | Commodities | Savings       | 1854           | 56           | 35      | 17                |
| BIA           | Brunei       | Commodities | Savings       | 1983           | 55           | 18      | 80                |
| Bpifrance     | France       | Reserves    | Strategic     | 2008           | 51           | 61      | 0                 |
| SOFAZ         | Azerbaijan   | Commodities | Stabilization | 1999           | 45           | 9       | 75                |
| Dubai World   | Dubai        | Commodities | Strategic     | 2005           | 42           | 100     | 34                |
| FTF           | Norway       | Commodities | Savings       | 2006           | 40           | 0       | 15                |

This table presents the name, country of origin, funding source, mission, establishment date (Establish), assets under management as of June 2022 (AUM, in USD billions), the percentage of AUM invested in alternative investments (AAA %), and the fraction of AUM invested abroad (Intl %) versus domestically for the 35 largest SWFs

a 2.5% increase in GDP per capita in sub-Saharan Africa (Gallegos, Park, Morales Elorriaga, Fukui, Kelly, Ryu, & Gelvanovska-Garcia, 2020). Adonu argues that direct financing, underwriting, or guaranteeing debts are all tasks that African SWFs are in positions to undertake. African SWFs can also establish joint ventures and partner with foreign investors to conduct venture investing and to attract foreign capital. SWFs can enhance the domicile country's reputation as well as offer support for developmental organizations such as the World Bank. Overall, this paper offers a perspective about the developmental role that SWFs can play in a specific geographic context.

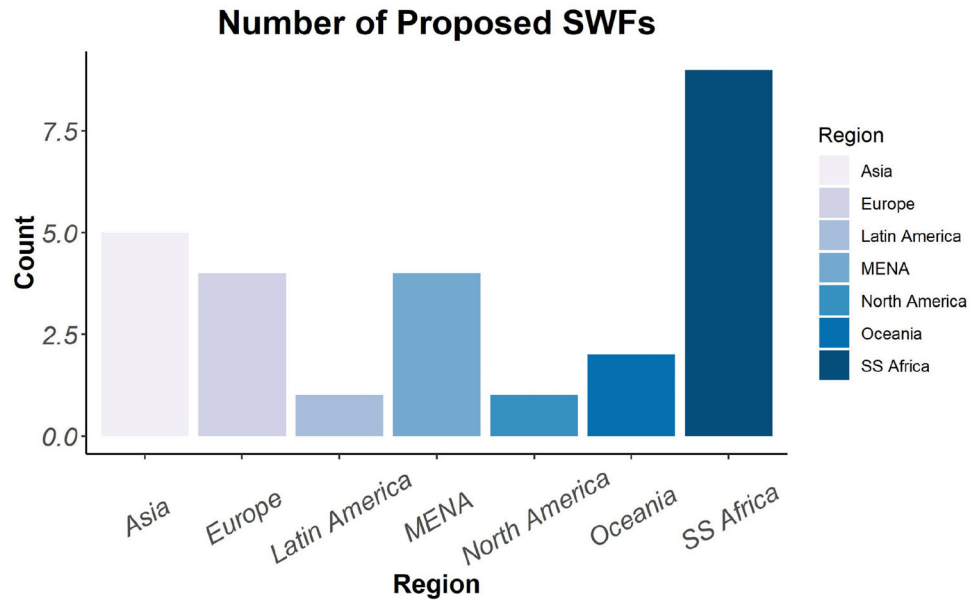
Gianfrate and Merlin (2016) study the selection of co-investment partners for SWFs. Their dataset of 55 funds includes public pension funds, and their paper uses the framework of social network analysis (SNA) to study the relationship and patterns among SWFs. In their sample, 69% of SWFs co-invested with at least one other SWF. The NBIM (Norwegian Government Pension Fund) is the most active co-investor, with co-investments in 32 firms. The authors create a network graph linking the co-investments of their sample for the period 1980–2014 and find that, on average, each SWF has 3.22 co-investments. The authors find a positive likelihood of co-investing in industries such as

Table 2 Investment patterns of sovereign wealth funds

| Asset class                 | All SWF investments – including domestic deals |                     |                                |                      |                                |                      |                           |                 |                        |              |                     |           |                     |           |  |
|-----------------------------|--|---------------------|--------------------------------|----------------------|--------------------------------|----------------------|---------------------------|-----------------|------------------------|--------------|---------------------|-----------|---------------------|-----------|--|
|                             | Developed                                      |                     |                                | Developing           |                                |                      | Transition                |                 |                        | Total        |                     |           | G7                  |           |  |
|                             | Number of deals (%)                            | Value (%)           | Number of deals (%)            | Value (%)            | Number of deals (%)            | Value (%)            | Number of deals (%)       | Value (%)       | Number of deals (%)    | Value (%)    | Number of deals (%) | Value (%) | Number of deals (%) | Value (%) |  |
| Public equities             | 26   | 8                   | 71                             | 92                   | 3                              | 0                    | 100                       | 100             | 21                     | 7            |                     |           |                     |           |  |
| Fixed income and treasuries | 100  | 100                 | 0                              | 0                    | 0                              | 0                    | 100                       | 100             | 29                     | 62           |                     |           |                     |           |  |
| Hedge funds                 | 100  | 100                 | 0                              | 0                    | 0                              | 0                    | 100                       | 100             | 100                    | 100          |                     |           |                     |           |  |
| Infrastructure              | 28   | 23                  | 63                             | 67                   | 8                              | 10                   | 100                       | 100             | 16                     | 10           |                     |           |                     |           |  |
| Private equity              | 55   | 57                  | 44                             | 42                   | 1                              | 1                    | 100                       | 100             | 48                     | 48           |                     |           |                     |           |  |
| Real estate                 | 60   | 70                  | 37                             | 30                   | 3                              | 0                    | 100                       | 100             | 35                     | 45           |                     |           |                     |           |  |
|                             | Excluding domestic deals                       |                     |                                |                      |                                |                      |                           |                 |                        |              |                     |           |                     |           |  |
| Asset class                 | Developed Number of deals (%)                  | Developed Value (%) | Developing Number of deals (%) | Developing Value (%) | Transition Number of deals (%) | Transition Value (%) | Total Number of deals (%) | Total Value (%) | G7 Number of deals (%) | G7 Value (%) |                     |           |                     |           |  |
| Public equities             | 32   | 56                  | 67                             | 43                   | 1                              | 0                    | 100                       | 100             | 26                     | 46           |                     |           |                     |           |  |
| Fixed income and treasuries | 100  | 100                 | 0                              | 0                    | 0                              | 0                    | 100                       | 100             | 67                     | 74           |                     |           |                     |           |  |
| Hedge funds                 | 0  | 0                   | 0                              | 0                    | 0                              | 0                    | 0                         | 0               | 0                      | 0            |                     |           |                     |           |  |
| Infrastructure              | 38   | 39                  | 56                             | 51                   | 6                              | 11                   | 100                       | 100             | 23                     | 20           |                     |           |                     |           |  |
| Private equity              | 60   | 71                  | 39                             | 28                   | 0                              | 0                    | 100                       | 100             | 54                     | 62           |                     |           |                     |           |  |
| Real estate                 | 65   | 79                  | 33                             | 20                   | 2                              | 0                    | 100                       | 100             | 41                     | 55           |                     |           |                     |           |  |

This table describes how much of each type of asset – public equities, fixed income and treasuries, hedge funds, infrastructure, private equity and real estate – SWFs allocate to developed, developing, transitions, and Group of 7 (G7: USA, Canada, UK, France, Italy, Germany, and Japan) countries. The top panel shows these including all SWF investments, while the lower panel is exclusively cross-border deals. Data are from 2020 to July 2022. For this table, we only use investments in the deal level data obtained from Global SWF LLC. Global SWF records public equity and fixed-income transactions only if they are deemed long-term and sizeable and for the remaining asset classes, they record every transaction for which data is available publicly. The first number 26% is interpreted as 26% of all public equity investments during 2020–2022 in our database are made in developed economies. Our definition of developing economies is taken from World Economic Situation and Prospects (WESP) 2020.

**Fig. 1** Newly proposed SWFs. Of the 26 newly proposed SWFs in 2021, this figure plots the count by region



transport, communication, finance, insurance, and real estate and a lower likelihood of co-investing in manufacturing industries. Co-investments exhibit a positive home bias, where SWFs come from the same country, and a negative country affinity bias, proxied by the host and target nations’ agreement on U.N. votes.

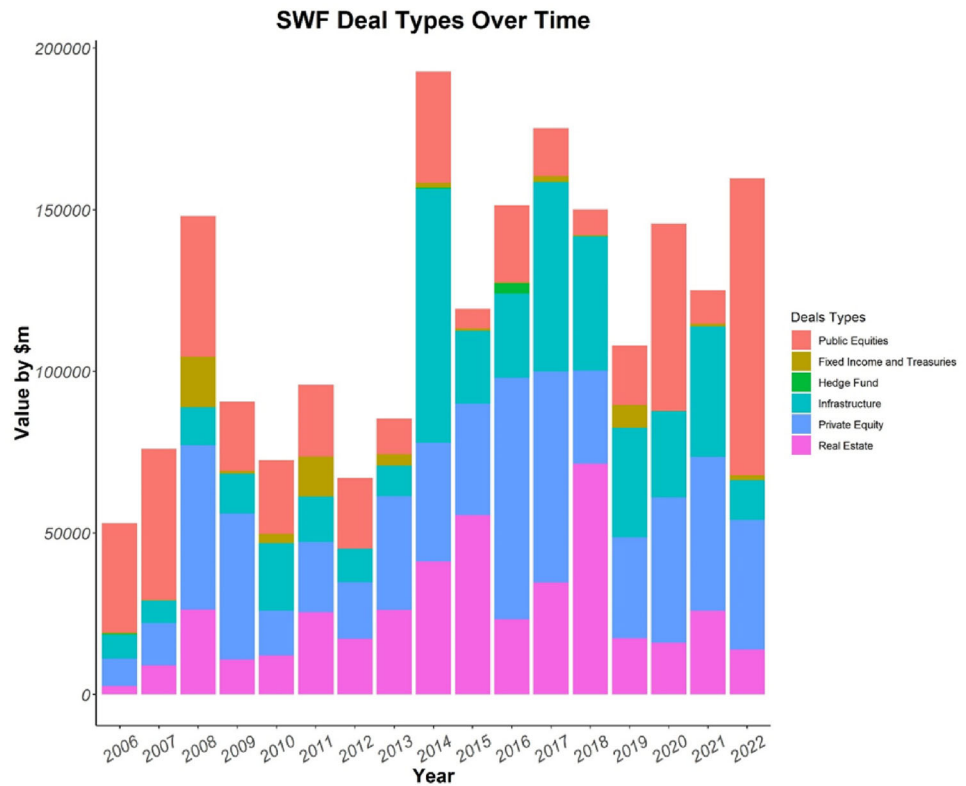
Carney (2021) empirically studies different types of SWFs. Using Sovereign Wealth Fund Institute (SWFI) data, the author constructs a large sample comprised of 10,488 investments made by 18 funds and SWF-majority owned subsidiaries from 16 countries into publicly traded target firms for the sample period 2013–2016. He compares the foreign exchange reserve funds to savings funds, and finds the latter own larger stakes than do foreign exchange reserve funds and the stakes are larger when both types of funds are headquartered in authoritarian countries. Additionally, he finds that short-term market reactions to savings funds are positive for the 1-, 3-, and 11-day event window whereas for foreign exchange reserve funds, reactions are positive for the 1-day, insignificant for 3-day, and negative for the 11-day windows. For long-term reactions, the author finds that if a savings fund from an authoritarian regime invests in a target firm, sales growth declines by 20% over the next 3 years compared to investments made by other SWF categories. Saving funds from authoritarian states also tend to be more activist.

**Statistical Overview**

The number of SWFs has grown steadily over the past two decades. There were only 62 funds in 2000. That number doubled to 125 by 2012 and has increased to 176 in 2023 and a further 24 funds are proposed. As Fig. 1 shows, the most popular region for new funds is sub-Saharan Africa, followed by Asia, MENA, and Europe.

Over two-thirds of these funds have been founded since 2000 and over two-thirds are funded by commodity export earnings. In 2021, SWF investment value grew 19%. Compared to 2016, real estate investments decreased from one-half to one-third of deals. Capital instead has moved to technology, healthcare, and retail and consumer. Global SWF considers 2021 to be the year SWFs entered a new phase, SWFs 3.0, marked by an increased preference for venture capital (VC). One characteristic of this shift towards VC is that the number of deals will increase though aggregate deal value will move less – since VC investments are, on average, relatively small. The healthcare sector received an injection of investments worth \$13.4 billion in 2021 from state-owned investors [SOIs, SWFs, and public pensions funds (PPFs) combined], triple the investment value it received in 2020. Direct investment made up 43% of investments while 18% were in VC (Global SWF, 2022). Figure 2 shows that at the deal level, from 2006 through 2018, SWFs steadily reduced investment in equities. As Fig. 3 shows, while investments in public equities was approximately 21% of SWF

**Fig. 2** SWF deal types, 2006–2022. This figure plots the dollar value in millions of SWF investments made in 2000–2022 by deal type



investments in 2008, they have since reduced to 10.7% in 2022.

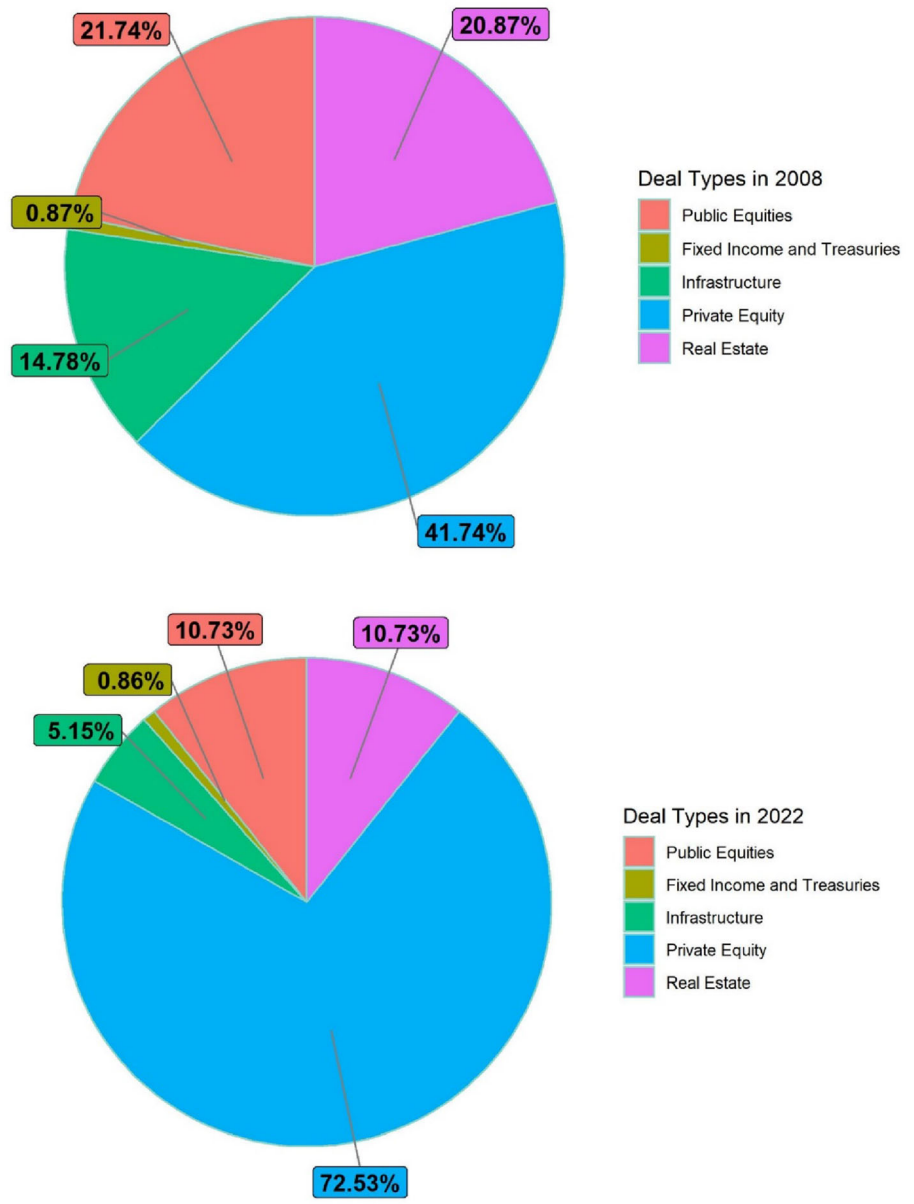
As mentioned above, SWFs are increasing their investments in alternative assets. SWFs and PPFs collectively increased investments into private markets from 10% in 2008 to 22% in 2020 (Megginson et al., 2021). The asset allocation of SWFs continues to change. Global SWF notes that in 2021, SWFs increased holdings of alternatives from 23% in 2016 to 25% in 2021. The two largest funds in the world, NBIM of Norway and CIC of China, both savings funds, allocate 3% and 25% to alternative assets, respectively (Megginson & Malik, 2022). There are 22 SWFs that allocate 100% of their portfolio to alternative assets. The largest of these funds includes NDF of Saudi Arabia, Dubai World of the UAE, and EIH of Ethiopia, with an average AUM of \$58 billion each (Global SWF, 2020).

According to the International Forum of Sovereign Wealth Fund,<sup>3</sup> SWF direct investments in 2021 increased 60% above the 5-year average number of deals. Direct investments rose to \$71.6 billion in 2021 from \$60.7 billion in 2020. One-third of investments were in technology and consumer goods, translating to a monetary value of \$25

billion. In 2021, SWFs also invested more in infrastructure, with funds valued at \$15.5 billion, which is double the \$8.1 billion invested in 2020. Across regions, Asian consumer sectors received the most capital, totaling \$8.9 billion, or 12% of total capital. Across sectors, technology made up almost 160 deals. The subsector SaaS (software as a service) alone attracted \$6.4 billion, or 10% of all investments. Fintech attracted \$2 billion and investors mostly chose firms outside of the US, Europe, and Asia. Qatar Holding invested \$200 million in Airtel Mobile Commerce, an African fintech firm. Foreign investments still dominated domestic investments in 2021; however, domestic investments increased slightly to 19% from 2020's 18.7%. During the pandemic years of 2020 and 2021, domestic SWF investments were higher than the average 13% in the previous 5 years. Further details on SWF statistics are presented in Megginson and Malik (2022).

Figure 4 shows the average asset allocation for the top 100 SWFs over the period 2008–2022. On average, there is a positive trend for allocations into private equity and infrastructure. Public equities and fixed income display downward trends while allocation levels into real estate and hedge

**Fig. 3** Comparison of SWF deal types, 2008 vs. 2022. This figure compares the breakdown, in percentage, of SWF deal types (average) in 2008 and 2022. An example reading of this plot would be: in 2008, on average, 21.74% of deals were in public equities while in 2022, on average, 10.73% of deals were in public equities



funds have remained level. In 2020, the average allocation to private equity overtook allocation to public equities.

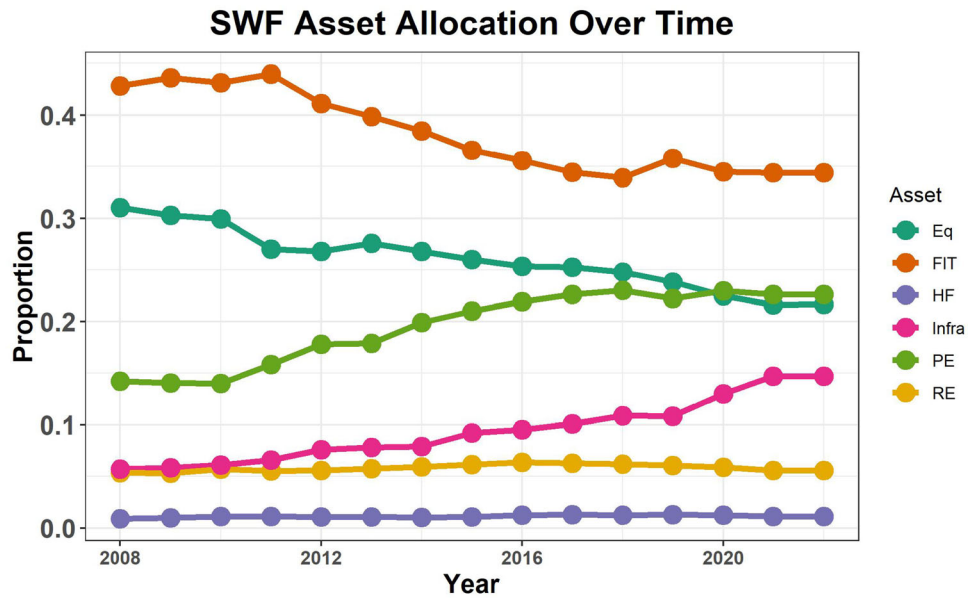
**SWFS AND ALTERNATIVE INVESTMENTS**

The success of technology companies, dramatically showcased when the world was in lockdown in 2020–2021, has convinced SWFs to inject large amounts of capital into alternative investments. Funds’ median allocation to alternative investments is 24% of AUM while the average allocation is higher, at 33% of AUM (Preqin, May 2021),

though it is the smaller SWFs putting greater weight onto their alternative investments. ISIF has 64% of AUM allocated to alternatives while GIC, one of the largest SWFs, only has 20% so allocated. SWFs increased their allocation to private equity from 31% in 2016 to 33% in 2020. *Private Equity International* estimates that three SWFs rank in the top 10 investors in private equity. They are GIC, Temasek (both from Singapore), and Abu Dhabi Investment Authority (UAE); these have a combined \$202 billion invested in private equity. SWFs have moved large amounts of capital out of hedge funds – 34% of allocations were made to hedge



**Fig. 4** SWF Asset Allocation, 2008–2022. This figure plots the trends of the top 100 SWFs' yearly asset allocation from 2008 to 2022. The *dots* are the mean allocation SWFs allocated to the six asset classes – public equities, fixed income and treasuries, hedge fund, infrastructure, private equity, and real estate



funds in 2016 and that value shrank to 11% in 2020. The capital that has been moved from hedge funds has largely been reallocated to real assets – real estate and infrastructure. Yet, SWFs are still 3.3% below their target amount of real estate investments.

SWFs have made inroads in VC as well. SWFs are showing an interest in early VC rounds. López (2022) documents an increasing preference for pre-IPO rounds. Emerging markets are benefiting from VC, with China and India receiving 40% of total VC capital in 2021 (López 2022). SWF investment into VC over 2014–2019 averaged 57 deals and 11 SWFs joining VC rounds each year. This culminated in a record \$15 billion invested in 2018, equivalent to 9% of total global VC dollar volume in 2018 (Capapé & Rose, 2020).

### SWFs and Real Estate

In this section, we review recent academic papers on SWFs' increased forays into real estate and private equity. The literature is limited on both subjects. Regarding the relationship between PE and SWFs, several studies only tangentially mention SWFs as part of their sample, usually as a source of funding. Nevertheless, as the above section details, SWFs are making riskier investments seeking high returns and it is important to understand the research, albeit nascent, on their newfound SWF taste for real assets.

SWFs are willing to fund infrastructure projects that last for decades, so most of their investments

are direct, as the time horizon for fund investments is too short. In 2020, 88% of SWF investments into infrastructure went directly into real assets and 68% went to unlisted firms. Less than 20% were into listed funds (Preqin, May 2021). The story is similar for real estate. Across SWF investments in 2020, 73% of real estate investments went into direct or unlisted funds while 33% went into listed funds. Another characteristic of SWF investments is the preference for investments with higher expected risks and returns. For infrastructure, 32% of commitments are to value-added strategies while 10% are to opportunistic strategies (Preqin, May 2021).

Ward, Brill, and Raco (2022) investigate the investment decisions of the Qatari Investment Authority in London's Olympic Village. Through case study methodology, the paper traces out the geopolitics of real estate in a global city, London. The authors note the soft power that states can potentially wield over the international investments its citizens make. For instance, Russia has used the flows of capital into foreign real estate markets as a source of leverage in negotiations. Rising housing prices fueled by international capital is an integral component to the domestic economic growth of the UK post-2008. Western markets welcomed the influx of capital offered by SWFs during the Great Financial Crisis and adherence to the Santiago Principles helped to soothe anxieties about the political actors behind the capital. Large amounts of capital from SWFs went into the London real estate market in the post-2010

recovery, peaking at over \$16 billion, with over \$15 billion devoted to office space in 2013. The QIA became the largest investor in the London real estate market, with estimated property holdings of \$18.6 billion, according to Real Capital Analytics. Five out of the top 20 property holders in London are SWFs. The QIA invested in a Qatari wholly owned subsidiary called Qatari Diar, which then created a joint venture with Delancey, a real estate advisory firm, called QDD. Subsequently, QDD purchased six plots of land, 'The East Village', on the low-income area of the London 2012 Olympics site. Overall, QDD funded projects that developed 1,439 homes aimed at middle-class professionals. The East Village was the first Build-to-Rent (BTR) site to open in London, with over 200,000 homes now in development across the UK on the BTR market. Through the success of East Village, the Qatar government enhanced informal relationships with London and UK politicians, including then Mayor Boris Johnson. From the UK's perspective, East Village is a successful example of local development with foreign capital and QIA was directly responsible for launching the new asset class BTR to alleviate London's housing crisis.

The study by Liu, Mauck, and Price (2020) is the first empirical study to rigorously compare the real estate investment activity of SWFs to that of PPFs. PPFs are financed by the social security contributions from workers' compensation whereas SWFs are unregulated pools of capital that are not required to disclose portfolio composition or investment activity to anyone besides their home government (Blundell-Wignall, Hu, & Yermo, 2008). Pulling data from the SWFI, Liu and coauthors construct a dataset with 856 real estate purchases by SWFs and PPFs from the sample period 1974–2016. They document that SWFs have a greater propensity of buying real estate in foreign countries than do PPFs: 92% of SWF deals are cross-border deals while only 48% of PPF deals are international. Although both SWFs and PPFs tend to cluster their real estate investments in cities of developed countries, such as New York and London, SWFs are more willing to buy property in a wider range of locations compared to PPFs. PPF real estate investments cluster in the US and Western Europe while SWFs also invest in China, India, countries in the Middle East and Africa. Additionally, using the approach from Stone and Truman (2016) to proxy for governance quality, the authors document that SWFs have lower best practice scores than PPFs and lower scores are more correlated with

cross-border deals, suggesting that cross-border deals in real estate are more likely to come from less transparent governments. However, this study finds no significant difference between the location capitalization rates of SWFs and PPFs.

### SWFs and Private Equity

There are two ways SWFs can invest into PE. One method is via PE funds through limited partner (LP) investments that are separate from the SWF. As PE is considered a risky asset class, SWF investment into PE funds seemingly reflect pursuit of a broader return maximizing portfolio strategy; thus, it is unlikely that such SWF investments into private equity are for political reasons. When a fund invests into a PE fund as an LP, it does not have the ability to directly target portfolio firms for acquisition, therefore it seems unlikely that investments in PE funds are motivated by ulterior motives beside financial returns. The second investment method is to make direct investments into portfolio companies instead of through a PE fund. This avenue avoids management fees and allows SWFs more organizational control over portfolio firms. While the lack of disclosure requirements for private firms means it is difficult to directly ascertain if such investments have non-financial motivations, the direct investment avenue allows for a higher possibility that SWF investments may be for political reasons. There has been an increase in direct PE investments by SWFs over the past decade (Preqin, 2021; Wright & Amess, 2017). Early research documented differences between SWF and other large investors' investments into private equity. SWFs prefer investing in PE in countries with lower investor protection and countries with governments with which their home governments have weaker political relations (Johan, Knill, & Mauck, 2013). Using data from January 2020 to June 2022, Table 2 shows that most SWFs' private equity investments are in developed countries (55% vs. 45% in developing and transition economies).

The structure of the PE industry itself has changed during the past two decades. Lerner, Mao, Schoar, and Zhang (2022) study the growth of alternative vehicles in private equity. SWFs are not directly tested in this study but are noted as a source of funding. The authors use State Street Global Exchange and outside sources such as SEC 10-K filings and EDGAR to identify 22,000 PE transactions and 5,322 unique investment vehicles. By 2017, 40% of all capital raised went into AVs. During the past 20 years, later-stage partnerships



create more AVs than other GPs. AVs are on average smaller than main funds. The LP and GP partnership plays a role in access to AVs. Access to the AVs of top-tier GPs is significantly more likely for top LPs than for lower-ranked LPs while access to AVs of lower-tier GPs is more even across LPs. The authors document that AVs underperform their main funds by about 0.011 PMEs (public market equivalents).

Bortolotti and Scortecchi (2019) provide a comprehensive summary of SWF investments in private markets. They develop a taxonomy of SWF investment types in PE. The first type is the LP arrangement, where SWFs are only passive providers of capital. The second type is the co-investment model, defined as where the LP (SWF in this context) co-invests with the GP in a target. In this arrangement, the LP takes on more risk but pays lower fees. The third model is the direct investment model, where the SWF acquires stakes in a target with no layer of external intermediation. The fourth model is the investment platform model, where the SWF teams with other SWFs or partners to form joint ventures with a specific mandate. The fifth model is the direct investment partnership, where the SWF co-invests with a strategic partner, making jointly sponsored deals. The authors document that over the past decade, SWFs have shifted away from the conventional LP model and embraced a collaborative approach. They find that from 2009 to 2018, SWFs largely replaced direct solo investments with direct equity partnerships. Over 2009–2018, direct equity partnerships increased from 19 to 61% of total deals whereas solo investments fell from 69 to 21%. The LP model peaked at approximately 20% of share of deals in 2014 and has since decreased in use. Interestingly, with deals worth \$111 billion, real estate is the second largest asset class by SWF investment in private markets and, starting from 2016, the conventional LP model has held less than 10% in both share of deals and share of value. Based on our analysis using the Global SWF LLC data, in 2008 SWFs made only 7 co-investments, whereas in 2021 they made 47 co-investments.

Recent research focusing on SWF investment into PE is scant. Goyal, Wahal, and Yavuz (2021) study the selection of GPs from the perspectives of LPs. Although this study does not focus exclusively on the relationship between SWFs and GPs, the authors construct a sample of 100,506 capital commitments from Preqin data sources and SWFs make up a significant fraction of LPs in their

sample. The sample period is 1990–2019 and the median capital commitment across all LPs is \$22 million. North America is the main destination – \$1.2 trillion out of the total \$1.9 trillion capital commitments are made to funds investing in North American markets. Interestingly, while SWFs are outranked by public pension funds in terms of aggregate commitment (\$126 billion and \$1.3 trillion, respectively), SWFs have the highest median commitment across LP groups, at \$50 million compared to \$22 million across LP groups. In their main regressions, the authors include LP and fund-type fixed effects, therefore a specific type of LP should not drive their results. They report that whether the LP has previous experience with a GP is the most influential criteria for whether an LP invests in a fund managed by the GP. Interestingly, they also find that LPs have a propensity to select young, first-time GPs without a previous record, prefer local GPs, and tend to hire GPs in the top quartile of performance, suggesting performance chasing. However, these attributes result in worse performance for first time funds.

Innovation centers (for science and technology) around the world continue to be dominated by high-income economies. The top 100 innovation clusters are in 26 countries and only six are in middle-income economies. For 2020, S&T clusters are dominated by Asian regions, with the top performing cluster being Tokyo–Yokohama and the next highest clusters are Shenzhen–Hong Kong–Guangzhou, Seoul, Beijing, and San Jose–San Francisco. When divided by population, European and American regions move up, with Cambridge and Oxford becoming the most innovative clusters. The Global Innovation Index ranked 131 economies in 2020. While high-income economies of the EU, North America, and only two Asian economies (South Korea and Singapore) dominate the rankings, the overall trend of the past 7 years is that Asian economies are improving – China, India, the Philippines, and Vietnam are in the top 50 and have made the most significant jumps in rankings. In 2020, China was the only middle-income economy in the top 30. Given the globally competitive environment, SWFs play a key role in financing innovation (Soumitra, Lanvin, & Wunsch-Vincent, 2020).

The long investment horizon that SWF can provide unlisted, innovative technology firms can be an attractive alternative to traditional private equity firms with liquidity constraints, and such funds must exit typically within 10 years (Engel,

Barbary, Hamirani, & Saklatvala, 2020). SWF investment as part of a consortium peaked in 2019 and, since 2016, SWF investment in technology VC has more than tripled. There is a trend for SWFs to invest more in domestic economies. Geopolitics will remain a challenge for certain SWFs. With major technology companies such as Google and Amazon collecting massive amounts of data on their users, investments from foreign countries into such companies may have political consequences for the SWF and its domicile government.

López (2022) documents that several trends – including more investment in real estate, technology, healthcare, ESG, and VC – began before 2020 but have been accelerated by the COVID-19 pandemic. The first such trend is the increased investment into technology sectors. Brick-and-mortar investments made up 34% of SWF investment volume in 2008, but this value fell sharply to only 8% of SWF investments in 2021. Meanwhile, the volume of investments in technology has increased sixfold, rising from 4% in 2012 to 25% in 2021. SWFs are attuned to contemporary changes and have taken advantage of opportunities the pandemic has opened up, with the volume of investment in healthcare doubling from pre-pandemic levels of about 7% during 2016–2019 to 14% in 2021.

Reputational effects are important for investors. It is not evident why CSR policies that would generate long-term benefits are of interest to private equity firms with typical exit timelines within 10 years. Süsi and Jaakson (2020) present a case study on the effects of BaltCap, a private equity firm, pursuing CSR goals, influencing the corporate governance (CG) of its investee firms in the Baltic states of Estonia, Latvia, and Lithuania. SWFs do not feature prominently in their study, but they note that SWFs are an important source of funding for PE firms. BaltCap was founded in 1995 and as of March 2020, it is the oldest and largest PE fund still operating in the Baltic States and has 35 firms in its portfolio. BaltCap has CSR as an explicit goal. The authors conducted interviews with several investee companies lasting between 1 and 1.5 h. BaltCap has created its own responsible investment strategy, which includes investing into sectors such as gambling, tobacco, arms, and human cloning. Additionally, BaltCap scrutinizes the ESG reports that investee firms compile. Overall, the governance measures that BaltCap pushes include active ownership, strong CG, relatively homogenous

boards (in terms of ethnicity and gender), and ESG reports.

### WEALTH IMPACTS OF SWF INVESTMENTS

The impact of SWF investment on the equity and debt value of target firms is one of the richest strands of empirical research on SWFs in the finance literature. More recently, there have been several studies analyzing the effect of SWF ownership on the cost of debt for target firms. Ghouma and Ouni (2022) find a “SWF bond risk premium.” Gangi et al. (2019) present a comprehensive empirical study on SWF’s impact on target firm performance when refined by fund type. Another key research area asks whether SWFs are different from other large institutional investors. We devote “SWFs and Private Equity” section to surveying the recent literature examining the differences between SWFs and other institutional investors. Finally, the impact of SWFs on other stakeholders besides shareholders, especially target firm employees is discussed in Sect. 4.3.

#### Wealth Impact of Sovereign Wealth Fund Investment on Target Companies

Most empirical studies of SWFs have focused on the effects of SWF investments on the cost of debt, equity value, and CG of target firms. First, we discuss the research on the impact of SWF ownership on target firms from existing bondholders’ perspective. Bulgarelli and Gianfrate (2018) find positive market reactions for the price of bonds following SWF investment announcements.

An early influential study by Borisova, Fotak, Holland, and Megginson (2015) shows that SWF equity ownership is positively correlated with an increase in the target firms’ bond yield spreads and their cost of debt financing during non-crisis times. The authors document higher bond spreads for those issued by firms with government ownership compared to bonds issued by firms without state ownership. However, during the Global Financial Crisis of 2008–2010, they find that the bond spreads of firms with state ownership were lower than those issued by firms without state ownership. An interesting implication of SWF equity ownership is thus that investors value the safety net – potential bailouts – that state ownership can provide during crisis periods. Bulgarelli and Gianfrate (2018) study the effects of SWF investment on the value of the existing bondholders of the investee firms. From the Sovereign Wealth Funds



Transaction Database, the authors construct a dataset of all investments made by a SWF in which the fund acquires a stake in a target firm during the period 2000 to 2016. Their final sample has deal-level information on 166 deals, and 691 debt instruments for 128 firms. The authors apply event-study methodology to estimate the cumulative average abnormal return (CAAR) on bonds for seven time windows around the announcement date. They report positive CAARs across their seven different time windows. Moreover, they document that bigger funds have a positive relationship with the returns of existing bonds and that low bond ratings are associated with low CAARs.

Ghouma and Ouni (2022) analyze the impact of SWF investment on target firm valuations from a bondholder perspective and find a “SWF bond risk premium”. The authors construct a dataset of 2,762 bonds issued during 1996–2020 by 369 SWF investee firms. Compared to Bulgarelli and Gianfrate (2018), this study has a larger sample size. The authors proxy for the cost of debt financing by the bond credit spread. They find the spread of bonds issued by firms with SWF ownership is higher than those issued by firms without SWF ownership, by an average 111.83 bps. Running a regression model where the dependent variable is spread, the authors find that SWF ownership is associated with a higher cost of debt financing by 110.92 bps. They also document a stronger effect for SWFs from autarchic countries. Quantitatively, a 1% increase of SWF stake from a non-democratic nation is associated with an increase of the bond spread by 28.53 bps while the bond spread increase is only 0.594 bps for firms targeted by SWFs from democratic nations. The authors suggest “democratic” SWFs increase transparency and thus mitigate this bond risk premium.

Second, we discuss the empirical results on equity valuation for target firms. A common denominator of influential SWF empirical studies is the use of event study methodology to investigate the impact of stock returns on SWF investments in publicly traded target firms (Bortolotti et al., 2015; Dewenter, Han, & Malatesta, 2010; Karolyi & Liao, 2017; Kotter & Lel, 2011). In the short term, these papers find a positive and significant impact for the target firm’s stock returns, of between 1 and 3%. The long-term effect is generally found to be negative.

Bortolotti et al. (2015) document a “sovereign wealth fund discount.” The authors manually construct a dataset of 1,018 investments made by SWFs in publicly traded target firms over the sample

period 1980–2012. They also construct a benchmark dataset of 5,975 investments made by private-sector financial investors to compare against SWF investments. They find that while still positive, the market reaction to SWF investment is significantly lower than that of the benchmark sample. The authors ascribe the observed SWF discount to the inconsistency between political objectives and profit maximization inherent in state-owned fund investing. Moreover, they also find that SWFs are passive investors. Quantitatively, only 6.74% of the investments have director appointments, compared to 29.46% for private-sector investments, though domestically SWFs take seats in 30.30% of investments.

Bortolotti, Fotak and Loss (2019) study the causes of the SWF discount. The authors argue that the SWF discount is concentrated in non-democratic countries, but non-democratic countries can mitigate this discount by signaling a passive stance by investing through subsidiaries, buying small stakes, and refraining from acquiring control. Bortolotti et al. (2019) follow a similar sample construction methodology as Bortolotti et al. (2015) and identify 900 SWF investments in publicly traded targets, worth \$254 billion. Using regression analyses, they find a positive relationship between higher ROA (return on assets) and large stakes and direct investments for SWFs located in democratic countries while they document a negative association between operating performance and stake size and direct investments for SWFs located in autarchic countries.

Karolyi and Liao (2017) also study stock returns. They use a sample of cross-border acquisition transactions consisting of 127,786 announced cross-border deals during the period 1990–2008, totaling a transaction value of \$9.04 trillion. They find the private acquirer group has the highest announcement period return (5.0%). The SWF/other state-owned fund acquirer group has the lowest announcement period return (0.8%). However, they show that government acquisitions have higher completion rates and higher announcement returns for the target firms than corporate acquisitions.

The study by Boubaker et al. (2018) analyzes the effect of SWF investment on the cost of equity financing of target companies. They apply a matching procedure on a sample of 310 target firms in 403 SWF-involved transactions to compare the *ex ante* cost of equity for firms that have SWF ownership to firms that do not. Within SWF acquisitions,

domestically acquired firms exhibit lower cost of equity than firms acquired by a foreign SWF. Interestingly, they document that firms with better CG experience a more significant decrease in the cost of equity after SWF deals. The authors show that the differential in institutional quality between the target and acquiring countries is positively associated with the cost of equity for targeted firms 1 year after the deal. Overall, the authors find that target firms exhibit, on average, higher costs of equity than their peers after the announcement date of SWF investment.

Park, Xu, In, and Ji (2019) use more recent data to study SWF investments' stock returns. Their results are in line with earlier studies (Bortolotti et al., 2015) and document the long-run underperformance of SWF stock market returns. Moreover, the authors also document a stabilizing effect of SWF capital – SWF investments during non-crisis periods tend to increase the crash risk of target firms, but during crisis periods SWF capital decreases crash risk.

Gangi et al. (2019) follow the classification used by the International Working Group of Sovereign Wealth Funds (2008) to categorize SWFs into five groups: saving funds, reserve investment corporations, pension reserve funds, development funds, and stabilization funds. They also categorize SWFs by the source of funding: commodity and non-commodity-based funding. Utilizing the Zephyr Bureau van Dijk and Thomson-Reuters databases, the authors collect information on 482 investment deals involving SWFs for the sample period 2000–2016. They find that the firms targeted by SWFs are on average larger (as proxied by total assets), have more leverage, and have lower cash to assets ratio than matching non-targeted firms, but have higher sales growth, ROAs, and dividend yields. Moreover, the median intangible assets and foreign sales ratios are lower for the target firms of SWFs. When they divide their sample by the type of fund, the authors find that reserve funds and development funds stand out from each other and other funds for their different preferences. Reserve funds tend to invest in large firms with high profitability and growth while development funds prefer poorly performing and higher-risk firms that pay high dividends. Their econometric analysis employs a multivariate logit model with the dummy variable SWF investment as the dependent variable. To test whether investment decisions vary with the type of fund, the authors also run a multinomial logit regression with the same dummy variable as the dependent variable.

Finally, to study the causal effect of SWF investment on the performance of target firms, the authors employ a difference-in-difference analysis where the dependent variable is the performance of the target firm. Overall, they show that SWFs choose to invest in high performing firms that are knowledge based and have high dividend yields. More specifically, savings SWFs and reserve investment corporations tend to invest in higher performing firms than do development SWFs. Non-commodity SWFs prefer to invest in higher performing firms more than do commodity SWFs.

Martinek (2021) notes the different and at times contradictory results from empirical studies on the impact of SWF investments for target firms. The main contribution of this paper is providing a systematic overview of the research methodologies used by the SWF literature. The author uses various databases including Google Scholar and Scopus to collect academic articles and books published during the period 2007–2018. The author then classifies the literature on SWFs into three categories. The first group is direct, or papers investigating SWFs' characteristics like risk–return ratio of their investments, governance, and monetary motivations. The second group is indirect, encompassing studies on the long- and short-term impacts of SWF investments on target firms. The final category is external, and papers in this group have macroeconomic focuses on questions such as how SWF investments affect the economy of the origin nation, on regional/national regulations, and/or international financial markets. Within his sample, Martinek finds that only 22 papers present original research on the effects of SWF investments on target firms. For short-term impacts, most papers use an event study methodology to study the announcement effects of SWF investments, based on CARs. For long-term impacts, Martinek observes that the prevalent methodology compares CMARs (cumulative market-adjusted returns) with BHARs (buy-and-hold market-adjusted returns). Importantly, he notes that over 90% of the transactions in the literature originate from less than ten large SWFs, thereby casting doubt on the representativeness of the evidence on SWF investments.

### Differences and Similarities Between SWFs and Other Large Investors

As state owned and operated investment vehicles, SWFs have been in the political crosshairs, with some recipient countries fearing they represent a new form of state capitalism that could threaten

free markets. In such cases, recipient countries fear that SWF investment would only further the political objectives of the home country. Thus, there is a major strand of literature investigating whether SWF investments are driven by political objectives and, if so, to what extent and what kind. The conclusion that this strand of research has generally come to is that, on average, SWFs are not 'too' different from other large institutional investors.

Starting with Knill, Lee, and Mauck (2012), the political nature differentiating SWFs from other large investors has been documented. The authors find that SWFs tend to invest in countries with which they have weaker political ties, and that SWF investment improves political relationships with countries that are relatively closed but harms political relationships with countries that are relatively open.

The United States is a popular destination for SWF capital. Calluzzo, Dong, and Godsell (2017) are the first to examine empirically the extent of SWF political motives in their U.S. investments. The authors leverage a natural experiment and apply a difference-in-differences approach to establish causality between the increase in financial contributions to U.S. campaigns from firms that are partly owned by SWFs to SWFs having political objectives in the U.S. They use the exogenous shock of two Supreme Court rulings that changed the legal environment – giving corporations much greater latitude to contribute to political campaigns – to test for causality. First, *Citizens United vs. FEC* in January 2010 and, second, *SpeechNow.org vs. FEC* in March 2010. They find that SWFs prefer to invest in politically active firms and there is an increase in campaign contributions from firms that receive SWF investment after 2010 compared to levels before the 2010 court rulings.

Wang, Weiner, Li, and Jandhyala (2021) study whether foreign direct investment acquisitions by SWFs are different from those by private investors. The authors collect data on 5,855 acquisitions – defined as purchasing 10% or more of a company's stock – made by 3,541 acquirers (both SWFs and private firms) from 10 SWF home countries spread across 88 target nations. Their sample period is 1982–2012. The authors also draw data to construct measures on conflict and cooperation from GDELT, a database of news events reported by print, web, and broadcast in over 100 languages. The authors find a negative relationship between conflict events and the probability of SWF acquisitions. Specifically, a one standard deviation increase in conflict

events is associated with a 24.6% decrease in the probability of SWF acquisition. Moreover, while both SWFs and private firms are more likely to invest in nations with which their home nations enjoy friendly relations the effect is stronger for SWFs.

Since numerous differences have been documented between SWFs and other large investors, a natural question that arises is whether SWFs are better or worse monitors. While some types of SWFs are long-term, patient investors, suggesting they can play an active monitoring role, the government ownership of SWFs may induce short-termism in their investment strategies. An early paper by Bernstein, Lerner, and Schoar (2013) finds that when there are politicians on management teams, SWFs will invest more in domestic firms and in firms that are in higher-priced sectors. SWFs with politicians involved tend to pick sectors that have a subsequent decrease in price-to-earnings ratios, suggesting that such funds are trend chasing. Overall, their evidence suggests that, when politicians are involved, SWFs are often pressured to pursue short-term gains over long-term returns.

Mietzner, Schiereck, and Schweizer (2015) present a more recent analysis of whether SWFs are active investors with non-pecuniary goals or passive investors seeking portfolio diversification. The authors collect data on all SWF transactions made between October 1989 and June 2008 from Thomson Financial Mergers and Acquisitions database. After filters, the final sample consists of 147 SWF targets. The authors use event-study methodology to compare each target firm's characteristics, including financial and investment policy and performance, 1 year before the SWF's acquisition through 2 years after against a control firm in the same industry. They find that SWFs choose firms that are larger and more profitable than industry rivals, with high dividend payouts and low market-to-book ratios, preferences that align with passive investors. They do not find significant changes in the target firms' long-term (post 2 years) operating performance. Overall, Mietzner et al. document evidence in support of SWFs as passive investors.

### **SWF Impact on Target Firm's Corporate Governance and Labor**

There is a literature documenting that institutional, non-state investors are associated with lower earnings management and healthier financial reporting (Beuselinck, Blanco, & García Lara, 2017; Fang, Maffett, & Zhang, 2015), while transient institutional

investment is associated with higher earnings management (Bushee, 1998). Godsell (2022) contributes to the literature on the monitoring capabilities of SWFs by studying the financial reporting consequences from SWF investment for target firms. The author uses the change in discretionary accruals to proxy for earnings management. Theoretically, if the political objectives of SWFs align with weak monitoring, then management should have stronger incentives to use accruals to increase the appearance of higher earnings. Drawing data on SWF investments from a database curated by the SWFI and firm data from Compustat, the author analyzes 364,378 firm-year transactions for the sample period 2002–2018. Using a difference-in-difference design, Godsell finds that there is a positive relationship between SWF investment stakes and discretionary accruals. The key mechanism facilitating this result is the decreased monitoring by the investor (SWF in this setting) and therefore, due to performance pay incentives, managers will orchestrate the appearance of better earnings using accruals. Godsell also finds that relative to control firms without SWF investments, SWF targets reduce operating expenses (SG&A), R&D, and advertising expenditures.

Vasudeva, Nachum, and Say (2018) take an interesting perspective and consider the signals that SWF investments create about the value of receiving countries' institutions. A limitation to their study, however, is the authors use only acquisitions by the Norwegian SWF, which has ranked consistently as one of the most transparent and well-run SWFs, and thus may not be representative of signals generated by SWFs in general. The authors develop an intermediary signaling theory about SWFs. Their fundamental assumption is that the amount of resources SWFs expend on investing in a foreign country, researching the assets, and setting up offices of local professionals to monitor and evaluate the performance of the investment is costly enough to send signals to other firms about the institutional quality of the host country. Anecdotally, there seems to be observable effects of the signaling power of the Norwegian SWF. In 2010, a Norwegian state-owned telecommunication company, Telenor, owned a majority stake in an Indian infrastructure firm called Unitech. Due to a corruption scandal involving Unitech, Telenor had threatened to write off \$1 billion worth of its assets in India. However, in 2013 the Norwegian SWF invested \$4 billion in oil and gas and shipping industries in India. Telenor then reversed its

previous position and instead invested an additional \$4 billion into India's telecom sector.

The paper's empirical methodology measures the cross-border acquisitions undertaken by Norwegian and Swedish firms in companies that have received equity investments from the Norwegian SWF, formally known as the Government Pension Fund Global. Their sample consists of 4,003 acquisitions made by Norwegian and Swedish firms during 1998–2011. The paper presents three main results. First, there is a positive relationship between the SWF investment and the probability of a firm being fully acquired. Specifically, a one standard deviation increase in SWF investment corresponds to a 7.2% increase in the probability of the firm being fully acquired. Second, Swedish firms are 8.9% more likely than Norwegian firms to make full acquisitions. An interpretation of this result is that co-national firms rely less on the information signaled by a SWF from their own country. Finally, if the home and host country are both members of intergovernmental organizations (IGOs), then there is a positive relationship between Norwegian SWF investment level and the probability of full acquisition of firms in the host country.

The literature on the impact of SWFs on labor and employees is limited. Goergen, O'Sullivan, Wood, and Baric (2018) empirically study employment effects on UK firms targeted by the Norwegian SWF, with the financial crisis in 2008 serving as an inflection point. The authors construct a panel dataset consisting of 508 firms with data on labor demand by target companies, before and after investment from the Norwegian SWF, over the sample period 2006–2013. The authors estimate a labor demand equation using a difference-in-difference approach. They find that the fund's investment prevents a decline in labor demand in the aftermath of the 2008 financial crisis. This prevention of workforce downsizing does not influence firm performance.

Cumming, Filatotchev, Reinecke, and Wood (2020) present a literature review with the goal of synthesizing research on different channels through which SWFs can affect target firms' employment relations and the home economy's labor dynamics. Different SWFs value employees differently and as such should impart varying dynamics to target firms. The paper considers three SWFs as case studies. Norway's Government Pension Fund sees employees as important stakeholders and is willing to divest from companies with poor human rights records. The CIC (China



Investment Corporation) displays hostility towards organized labor. For its investments in developing economies, the CIC has been known to prefer Chinese nationals, even for unskilled labor. For developed economies, the CIC may seek specialized labor, or pursue ‘knowledge seeking’, potentially disseminating the skills learned to organizations in China. ADIA (Abu Dhabi Investment Authority) has an ambiguous relationship with the labor dynamics of its portfolio firms. The authors conclude that Gulf SWFs may reinforce the managerial practices of the target firm and not significantly impart country of origin effects.

### SWFS AND ESG

In this section, we discuss the role that SWFs have thus far played in promoting corporate social responsibility (CSR) and environmental, social, and governance (ESG) policies. As large institutional investors, SWFs are in a prime position to pursue ESG. In general, institutional investors promote ESG due to both social and financial returns from doing so. Furthermore, Dyck, Lins, Roth, and Wagner (2019) note that social pressure and ESG activism by institutional investors is positively correlated with the home country culture of these investors. The domicile country’s norms regarding ESG are significant determinants of the intensity with which SWFs promote ESG. The Governance, Social and Resilience (GSR) scorecard introduced by Megginson et al. (2021) finds that SWFs and public pension funds headquartered in countries with a greater push for ESG are also more likely to include this as a motivation for their investments. Of the nine SOIs (SWFs and PPFs) with perfect scores on sustainability, seven are in Western Europe, North America, and Oceania – regions that have higher scores on sustainability. SWFs, which are mostly located in regions with less social pressure for ESG, score less than PPFs, with a mean score of 4.61 compared to PPFs’ 8.3. All is not lost – SWFs do seem to be improving on scoreboard rankings. Evidence from the 2019 Truman Scoreboard indicates that, on average, the scores for the 64 SWFs on the 2019 Truman Scoreboard is increasing, with the latest average score being 66 (ranging from 11 to 100). Norway’s Government Pension Fund – Global achieves a perfect score of 100 (Maire, Mazarei, & Truman, 2021).

In terms of environmentally conscious investments, SWFs seem to have begun choosing green (environmentally friendly) over black

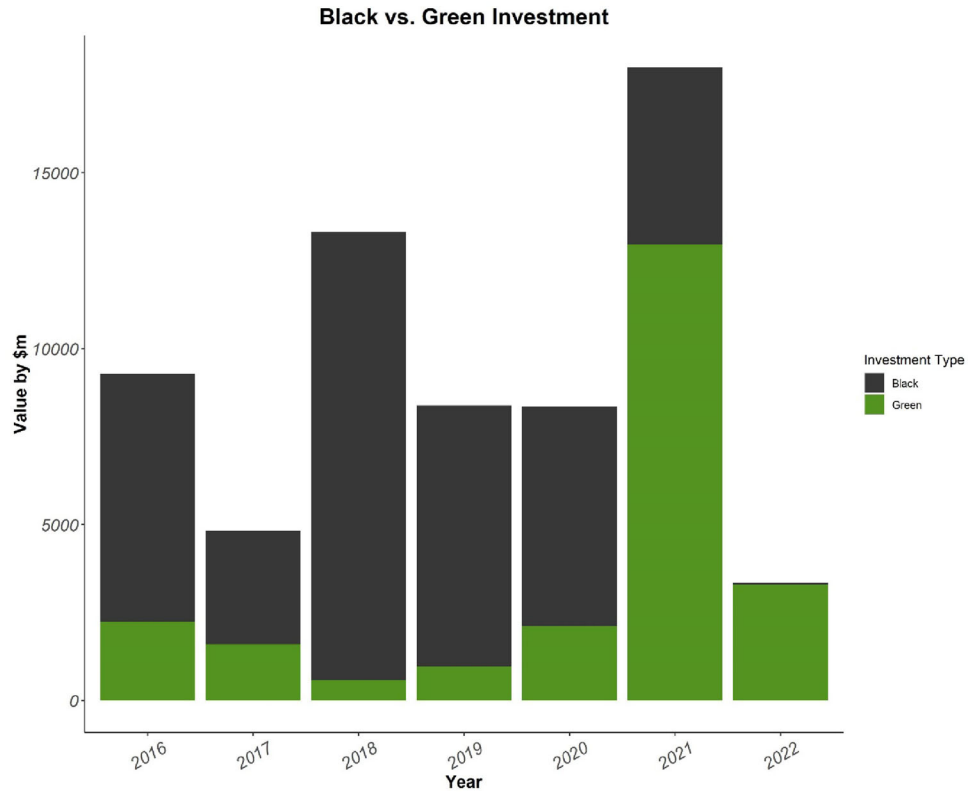
(environmentally damaging) investments. Figure 5 illustrates that historically, from 2016 to 2020, black investments were the great majority of investments. However, Figure 6 shows that since 2021, the proportion of green assets outweigh the proportion of black assets. In 2016, black assets were 75% of energy investments. In 2021, black assets have dropped by two-thirds to 25% of energy investments. We follow the classification scheme into “green” and “black” assets of Global SWF. Energy investments are classified as green if they are related to decarbonization and include investments in sectors like solar, wind, hydro-electricity, and geothermal energy. Black assets are those related to oil, gas, and propane.

Although there may be much societal pressure on institutional investors and corporations to promote ESG, the unique political nature of SWFs has caused repercussions with target nations whose firms are divested by SWFs for ethical reasons. For instance, the Norwegian Ethics Council (the Council was disbanded in 2014 and responsibility for determining which investments to exclude has since moved to Norges Bank) excluded investments for 40 firms, including Boeing, British American Tobacco, and Lockheed Martin. When the Norwegian SWF exited Wal-Mart, a diplomatic row was triggered, with the U.S. ambassador accusing the fund of passing national judgment on a single company (Bernstein et al, 2013; Cummings et al., 2020). U.S. diplomats have cited that the Norwegian SWF’s ethical policy disproportionately affects U.S. corporations, especially arms manufacturers. In this section, we review the academic literature to better analyze the future and potential for SWF sustainability.

### Are SWFs Sustainable?

The state-owned nature of SWFs could potentially put them in a unique position to promote ESG. National governments have the power to impose mandates for green commitments for their domestic economies. Bai, Song, Jiao, and Yang (2019) study the effects of Chinese government R&D subsidies on the green innovation of energy-intensive firms. The authors note that among such Chinese firms, those with higher revenues, larger numbers of employees, larger portions of non-state ownership, smaller asset sizes, and higher effective tax levels are more likely to receive government R&D subsidies. Moreover, the study finds that subsidized firms have 54.1% more patents than unsubsidized firms. Notably, the study also shows that both green innovation tendency and performance is stronger for state-owned enterprises than

**Fig. 5** SWF “green” vs. “black” energy investments, 2016–2022. This figure describes how much of SWFs energy investments are “green” or “black”. Classification is by Global SWF. Investments are categorized as green if they are in hydroelectricity, wind, solar, geothermal, bioenergy, and marine energy. Additionally, assets are also said to be green if they are related to decarbonization. Investments are categorized as black if the firms are engaged in oil, gas, crude, E&P, midstream, propane and uranium



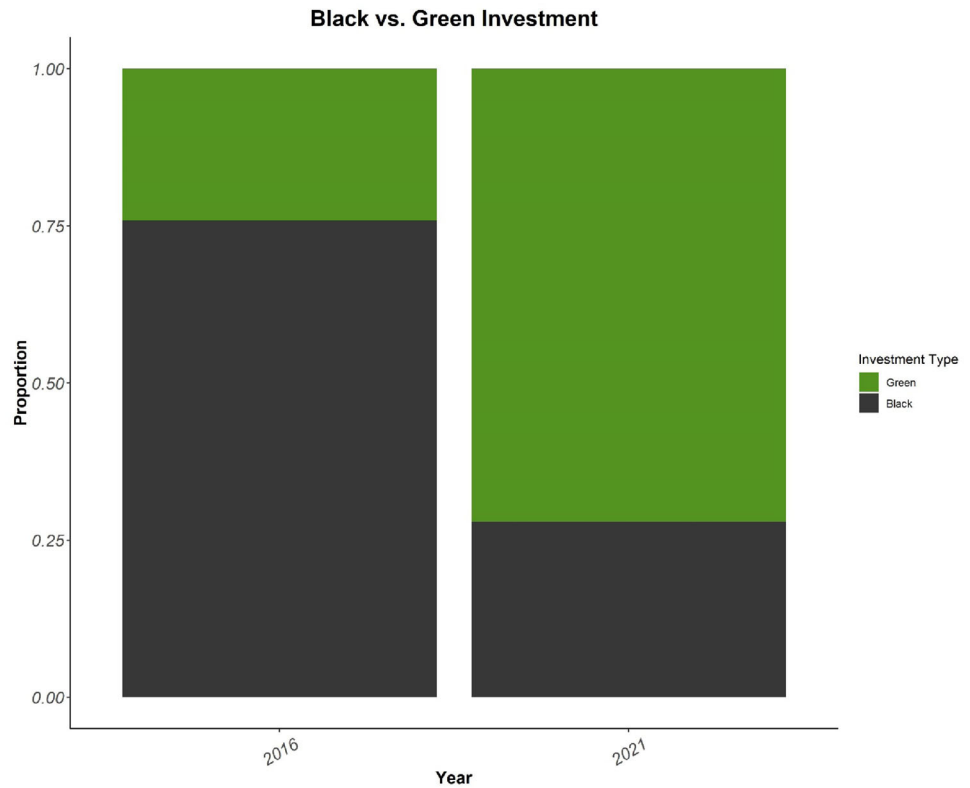
for non-state enterprises when both receive subsidies. As SWFs themselves do not generate any new products, the revenue through which they can impact sustainability may be limited only to selecting ESG conscious firms.

Chen, El Ghouli, Guedhami, and Liu (2022) analyze how SWF ownership impacts the target firm’s CG. They construct a large sample comprising 7,896 transactions of cross-border SWF investments from 2002 to 2015 and employ a difference-in-difference approach to test for CG quality changes in companies acquired by a SWF. They find that the CG index of targets where the SWF takes a minority stake ( $\leq 5\%$ ) decreases while the CG index of targets where the SWF takes a larger stake ( $> 5\%$ ) does not statistically change. In contrast to prior studies, (Bortolotti et al., 2015; Truman, 2011), ) do not find that Asian SWFs or politically driven SWFs significantly impact the CG of target firms. Chen, El Ghouli, Guedhami, and Liu (2022) and Chen, Wei, and Dai (2022) use a Chinese sample and show that firms with better ESG scores attract SWF investment. Specifically, their sample consists of 4,844 A-share listed companies in China from 2008 to 2020, of which 474 had SWF investors. They use a new tax law, the

Environmental Protection Tax Law, which came into effect in January 2018 and improves the quality of ESG information disclosure, to analyze the mechanism through which ESG attracts SWF investments. They find evidence supporting the interpretation that ESG improves firm performance, thereby indirectly assisting firms in winning SWF investment.

Wurster and Schlosser (2021) ask whether SWFs act as sustainable investment vehicles. The authors study the sustainability disclosures of 68 SWFs which altogether manage more than 90% of all SWF assets. The authors construct a dataset called the Sustainability Disclosure Index, outlining the disclosures of these 68 SWFs for 19 selected sustainability criteria during 2020. They assign the sustainability criteria into the following four categories: “Social Aspects”, “Environmental Aspects”, “Governance Aspects”, and “Economic Aspects”. They find that only 27% of the criteria are met by the funds in their sample. A ranking by highest portion of criteria met yields: governance (37%), social (30%), economic (21%), and ecological (18%). Thirteen funds do not meet a single criterion. No fund meets all 19 criteria and the best-performing funds, the New Zealand Super Fund and

**Fig. 6** SWF “green” vs. “black” investments, 2016 vs. 2021. This figure compares the proportion of SWF investments that are “green” vs. “black” for 2 years. 2016 is the earliest year for which data is available



the Ireland Strategic Investment Fund, score 16. Norway’s Government Pension Fund Global meets 15 of the 19 criteria. Furthermore, the study conducts multiple linear regression analyses to determine the factors that influence the sustainability score of SWFs. IFSWF membership, the population portion of young people, and commodity-based funds are positively and significantly correlated with the sustainability scores while natural resource wealth is significantly negatively associated with all scores. Interestingly, the authors do not find that electoral democracy (of origin country) has any significant association with the sustainability scores, though state capacity, which proxies for the ability of the host government to enact policies, is positively correlated with sustainability disclosures.

### Channels for SWFs to Promote ESG

The NBIM excludes firms based on a variety of ethical policies. Extant literature documents that SWFs are more likely to filter out firms with low rankings in ESG criteria rather than engage with management or through voting to enact changes directly with the target firm. Liang and Renneboog (2020) construct a sample of 24 SWFs representing more than 80% of total AUM by SWFs with

investments in 7,693 public firms during the period 2009–2018. The empirical methodology of the study involves estimates of two-state Heckman selection models and difference-in-difference models. They find that there is a positive relationship between SWF ownership and target firm ESG performance. Notably, they show that though ESG is an important selection criterion for SWFs regarding which firms to pick to invest in, SWF investment itself does not drive ESG performance. They employ a difference-in-difference methodology that exploits two exogenous shocks, the BP Deepwater Horizon oil spill and the Volkswagen emissions scandal, and find that though the shock has a significant change on the industry, SWF ownership does not affect the target firm’s ESG policies. In fact, Mullen and Rose (2018) survey the 26 largest SWFs by AUM in 2017 and find that 8% of SWFs disclose they have ESG considerations for investing while only 4% (one fund) disclose an ESG mandate. In line with the survey by Mullen and Rose (2018), Liang and Renneboog’s evidence suggests that SWFs use ESG scores to screen for which firms to invest or not invest in, but do not take an activist role in influencing the target’s ESG policies.

Farag, Neupane, Marshall, and Koirala (2022) is the first study to quantify the effect of SWF

investment on ESG reputation risk. The study follows the investments of 68 SWFs originating from 32 nations with investments in 6,440 public firms. Additionally, the authors use the variable reputation risk index (RRI) from a dataset managed by RepRisk to measure target ESG reputation risk. They run regressions to measure the impact of quarterly changes in SWF ownership on target ESG reputation risk. They find an increase in ESG reputation risk associated with SWF investment. Specifically, a one standard deviation increase in SWF ownership implies a risk increase of 0.138 points the following quarter. Overall, the authors conclude that SWF ownership increases ESG reputation risk exposure of the target firm and contributes to the ESG discount, though the effect is mitigated if the SWF is more transparent and accountable.

Brière, Pouget, and Ureche (2018) study whether institutional investors play a role in pressuring firms in their portfolios to reduce their negative externalities, specifically reducing carbon emissions. The paper focuses on the voting behaviors of BlackRock and the Norwegian SWF, the Government Pension Fund Global, as both are large institutional investors that can be seen as universal owners, with combined AUM of over \$6 trillion USD as of 2017. BlackRock has been publicly listed since 2009 and has a board with the fiduciary duty to represent its shareholders and is representative of the modern, well-diversified investor. The Norwegian SWF, on the other hand, has a fiduciary duty to the Norwegian people and is viewed as a leader in responsible investing. Therefore, a comparison of the voting characteristics between BlackRock and the Norwegian SWF can shed light on what role universal ownership or delegated philanthropy play in encouraging target firms to reduce negative externalities. The authors collected data from BlackRock's SEC filings and the Norway Fund's official website on 35,382 resolutions made by 2,796 international firms in 2014, voted on by both institutional investors. They find that the Norwegian SWF opposes management on resolution at a higher rate than BlackRock does, 8% and 3%, respectively. For environmental and social (E&S) issues, the Norwegian SWF opposes management on 101 out of 326 resolutions, or 31%, while BlackRock rarely opposes management on such resolutions. Notably, both investors oppose management more on shareholder-sponsored proposals than on management-sponsored ones, but the Norwegian SWF has a higher management

opposition rate for externality issues than governance issues. The results indicate that delegated philanthropy provides more incentives to pressure firms to reduce negative externalities than does universal ownership.

## CONCLUSION

This review presents an overview of the many types of SWFs in existence today and describes their different investment behavior. Geopolitical and financial developments of a tectonic scale are changing the investing world, and SWFs have emerged as important global investors. Studying SWFs should increase our direct understanding of these investment vehicles but may also offer a unique perspective into how different economies around the world view their development in relation to global financial markets.

With that being said, the literature on SWFs can be extended in two main directions. First, more research can investigate the effect of SWF ownership on stakeholders beyond shareholders. Direct causal evidence, however, may be difficult to arrive at since SWFs tend to be passive investors and prefer screening rather instigating CG change. It may also be interesting to quantify empirically when SWF funded projects are likely to be allowed to go ahead by the target nation. Current literature on this topic seems limited to case studies. To answer such a question, engagement with the legal literature may be necessary, as many target nations have enacted committees to screen foreign investment due to national security fears.

The COVID-19 pandemic has demonstrated that SWFs have been called to help the domestic economy in times of financial crisis. Beyond explicit bailouts by SWFs, what other benefits do funds hold for the domicile country? A second research direction is thus to analyze the impact of SWFs on their domestic economy as well as investments into emerging economies. SWFs have formed South-South partnerships and it will be interesting to see the role government organized investments can play in the economic development of other emerging economies. SWFs investments can perhaps be contrasted with developmental aid, since SWFs can play a major role in infrastructure. Supply chain and manufacturing issues during and after the pandemic have raised new concerns to diversify and increase resilience. In a 2021 survey by McKinsey, 93% of respondents said that they intended to make their supply chains far more flexible, agile,



and resilient. SWFs have recently started investing more in infrastructure (Fig. 3); extending our analysis in Table 2, 42% of total infrastructure deals before 2020 were done in developed countries and the rest in developing and transition economies. However, during and after 2020, only 28% of infrastructure deals were done in developed countries. While it is difficult to ascertain if these investments were made to diversify supply chains, without looking at each infrastructure investment in detail, the results provide some indication that SWFs may be using infrastructure investments to diversify their national supply chain from disruptions.

### NOTES

<sup>1</sup>Take-up of the phrase “sovereign wealth fund” was surprisingly slow after 2005, illustrated by noting the *Financial Times* first used the term on

May 17, 2007. However, once the phrase reached a critical mass of usage, and the *FT* began using the term, usage became universal, to the point where a search of the *Financial Times* website ([www.ft.com](http://www.ft.com)) on February 13, 2023 yielded 10,563 hits for “sovereign wealth fund”.

<sup>2</sup>We use proprietary data from Global SWF LLC. Global SWF LLC provides consultancy and data services related to SWFs and public pension funds. All figures and tables are made using data from this company. Table 1 uses data updated through July 2022. All other tables and figures are made from data updated through June 2022. The Global SWF LLC database is described at <https://www.globalswf.com>.

<sup>3</sup>The IFSWF Annual Review 2021, see more at <https://ifswfreview.org/record-breaking-investments.html>.

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