# The sustainability footprint of Sovereign Wealth Funds

## The impact of sustainable investing on a target firm's performance, value and ESG score: evidence from global Sovereign Wealth Fund investments

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# Abstract

Using a sample of 75,063 sovereign wealth fund (SWF) holdings in 7,668 firms between 2004 and 2018, this study examines whether there are sovereign wealth funds with an explicit focus on sustainable investing (ESG SWFs), and how their investments affect target firm's operating performance, value and ESG score compared to investments of other types of SWFs. To control for the influence of other types of SWFs that are related to ESG SWFs, it distinguishes between transparent versus opaque SWFs and autonomous versus politically dependent SWFs. Furthermore, it assesses three other questions: first, what SWF and firm characteristics drive the height of ownership stakes taken by ESG SWFs; second, do ESG SWFs display activist behavior and how does this affect a firm's ESG score; and third, what firm characteristics influence a firm's probability of being targeted by an ESG SWF. The research provides evidence that there are several SWFs that are driven by environmental, social and governance criteria. The study finds mixed empirical evidence of the effect on the long-term performance and valuation for target firms. Firms targeted by either ESG or autonomous SWFs possibly benefit from monitoring activities. This sometimes translates into a significant increase in return on assets and sales growth, whereas the effect on the other measures remains insignificant. Furthermore, results suggest that ESG SWFs do neither have a consistent nor long-lasting significant influence on the operating performance and ESG behavior of their targets. ESG SWFs prefer targets located in developed economies and targets that previously experienced an increase in ESG score. This study adds value as it focuses on three relatively unexplored (ESG) components of the SWF investment domain: ESG SWFs, ESG score development for targets and determinants of cross-border ESG SWF stakes.

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# Nomenclature

| Acronym | Definition |
|---|---|
| ADIA | Abu Dhabi Investment Authority |
| AFF | Australian Future Fund |
| APF | Alaska Permanent Fund |
| ATE | Average Treatment Effect |
| AUM | Assets Under Management |
| BIA | Brunei Investment Agency |
| BV | Book Value |
| CADF | China-Africa Development Fund |
| CAR | Cumulative Abnormal Return |
| CAAR | Cumulative Average Abnormal Return |
| CIC | China Investment Corporation |
| CPI | Consumer Price Index |
| CPP | Canada Pension Plan |
| CSR | Corporate Social Responsibility |
| EBITDA | Earnings Before Interest, Taxes, Depreciation and Amortization |
| ESG | Environment, Social and Governance |
| GIC | Government of Singapore Investment Corporation |
| GPFG | Government Pension Fund Global |
| HKMA | Hong Kong Monetary Authority |
| KIA | Kuwait Investment Authority |
| KHAZ | Khazanah Nasional |
| KIC | Korea Investment Corporation |
| LMI | Linaburg-Maduell Index |
| MOF | Ministry of Finance |
| MTB | Market-to-book |
| MV | Market Value |
| NSSF | National Social Security Fund |
| NZSA | New Zealand Superannuation Fund |
| OPM | Operating Profit Margin |
| PAIF | Palestine Investment Fund |
| PBC | People's Bank of China |
| PIF | Public Investment Fund |
| P/E | Price to Equity |
| Q | Tobin's Q |
| QIA | Qatar Investment Authority |
| RRF | Russian Reserve Fund |
| ROA | Return on Assets |
| SAFE | SAFE Investment Company |
| SAMA | Saudi Arabian Monetary Authority |
| SCI | State Capital Investment |
| SG | Sales Growth |
| SGRF | State General Reserve Fund |
| SWF | Sovereign Wealth Fund |
| SWFI | Sovereign Wealth Fund Institute |
| TEMA | Temasek Holdings |
| TPSF | Texas Permanent School Fund |
| UK | United Kingdom |
| US | United States |

# 1. Introduction

Sovereign wealth funds manage investment portfolios on behalf of governments that own the portfolios (Dewenter, Han & Malatesta, 2010). Recently, they have emerged as major investors in corporate and real resources globally and have grown over $7 trillion assets under management (AUM) (Reuters, 2018). Despite their size, they represent a fairly new form of investment organizations, as they provide unusual financial flexibility and liquidity, have a sovereign background and most of them still display a lack of transparency about their activities.

Even though Rozanov (2005) coined the term SWFs in 2005 already, they first became a topic of debate in 2007. Between July 2005 and October 2008, SWFs invested almost $90 billion in the stock of European and U.S. financial institutions, and in total SWFs invested more capital into financial institutions than any other investment entity except for the U.S. government (Megginson, You & Han, 2013). However, especially in their early days SWFs provoked concern due to perceived problems related to their sizable growth combined with political independence, government ownership and a lack of transparency. More specific, critics of SWFs pointed out that government's capital could be used through SWFs to enhance political goals and buy strategic firms in foreign countries (Knill, Lee & Mauck, 2012; Chhaochharia & Laeven, 2010; Fotak, Gao & Megginson, 2016), which in turn could have a deteriorating effect on a firm's operating and governance performance. Hence, their emergence initially caused resistance from recipient countries (Curzio & Miceli, 2010), which has been mitigated by their willingness to provide liquidity during the financial crisis and increased transparency about their objectives and activities.

The most important fear of the ones previously described is arguably SWFs' lack of transparency regarding their investment goals, asset allocation and financial performance. This fuels the fear that SWFs do not act strictly as commercial investors, but rather seek political influence or access to foreign information. However, there are some examples of SWFs that counteract most of these criticisms by displaying excellent transparency, providing in-depth information on their objectives, asset allocation, portfolio composition, performance and responsible investment activities. Some SWFs explicitly take Environmental, Social and Governance (ESG) factors into account when making investment decisions. The best-known examples of this are the Government Pension Fund (GPFG) from Norway, the New Zealand Superannuation Fund (NZSA) and Australia's Future Fund (AFF).

Despite their size, rapid growth and interesting organizational characteristics, there exists limited academic research on SWFs, and in particular on the responsible investing activities of SWFs. The better part of SWF literature so far has focused on the impact of SWF investments on target firms. Following that line, this study tries to shed new light on the effects of SWF investment activities by focusing on the investment behavior of SWFs with respect to ESG factors. In order to formulate hypotheses about this, the

study first addresses the current standing of the SWF and ESG investing literature. First, the background, sources, financial objectives, investment goals, asset allocation, ESG investment goals and performance to-date are investigated. Based on this, the main research questions that are being answered are the following:

1. How do SWFs that use ESG information ('ESG SWFs') in investment decisions incorporate ESG criteria?
2. How do ESG and traditional SWFs differ with respect to their impact on a target firm's operating performance, firm value and ESG score? Do other SWF characteristics, such as their degree of transparency and autonomy, influence these results?
3. What SWF and firm characteristics drive the ownership stakes of ESG SWFs?
4. Do ESG SWFs display activist behavior? Does activist behavior influences ESG scores of target firms?

The first predictions formulated in this study are that investments from ESG SWFs, transparent SWFs and autonomous SWFs lead to a higher increase in the target firm's operating performance compared to investments from traditional SWFs, opaque SWFs and politically dependent SWFs, respectively (hypotheses 1 to 4). Because existing literature names the SWF's levels of transparency and (political) autonomy as significant determinants of target firm value and performance, this study also examines whether SWF transparency and political independency play a role in the development of target firm performance and value after an SWF investment. Furthermore, the study predicts that ESG SWFs take a higher stake in targets to establish influence in the decision-making process of the target, whereas it also hypothesizes that they take a lower stake compared to traditional SWFs because they do not want to get accused of political or sustainable interference (hypotheses 5 and 6). In addition, it is predicted that compared to firms with investment from traditional SWFs only, firms that receive an investment from ESG SWFs experience a higher increase in their ESG score over the time window after the investment (hypothesis 7). Last, the study expects that firms located in developed economies, countries with strong investor protection and a high ESG score have a higher probability of being targeted by ESG SWFs (hypotheses 8 to 10).

In order to empirically test these predictions, several methods are used throughout the research. The dataset contains 115,020 firm-year observations of ownership data from 29 SWFs, ranging from 2004 to 2018. The first four predictions are examined by looking at the average changes in means and medians for target firms' return on assets, sales growth, market-to-book ratio, operating profit margin and capex-to-sales ratio, and by assessing the changes in the three-year values of these measures after an ESG SWF investment. Furthermore, a propensity-score matching procedure is used to estimate the average treatment effect of an ESG SWF investment on the target's performance measures and to perform regression analyses

on specific subsamples of the data. Through regression analyses, the relationship between SWF investments and the firms' Tobin's Q is examined.

The fifth and sixth predictions are tested by analyzing the impact of the SWF being 'ESG' on the height of the stake that an SWF takes in a target firm. The seventh prediction is examined by assessing the determinants of the change in ESG score between the year of investment and the year after the investment. Finally, the research answers hypotheses 8 to 10 by examining the determinants of the height of an ESG SWF stake and the probability of being targeted by an ESG SWF, based on lagged firm characteristics and SWF characteristics.

In line with previous studies, this research obtains diverging findings with regard to the relation between SWF investment and target firm performance, as predicted in hypotheses 1 to 4. Firms targeted by either ESG SWFs or politically independent SWFs may benefit from monitoring activities and pursuit of shareholder wealth maximization from these SWFs, but it mainly positively affects their return on assets and does not translate into better performance regarding the other measures: sales growth, market-to-book ratio, operating performance, and capex-to-sales ratio. Furthermore, target firms do not display a significant increase in market value one year after an SWF investment, as proxied by Tobin's Q. In addition, the results indicate that the SWF's degrees of transparency and autonomy alone cannot proxy for motives that do not maximize shareholders' value. This is contrary to evidence provided by Kotter and Lel (2011), but in line with Dewenter Han and Malatesta (2010), who do not find a statistically significant effect of transparent SWF investments. Furthermore, the study finds that ESG SWFs prefer targets located in developed economies, consistent with Megginson, You and Han (2013), and a firm is more likely to be selected by an ESG SWF when it experienced an increase in ESG score the previous year. In sum, SWFs do not seem to have a consistent and long-lasting significant influence on the performance and ESG behavior of targets.

This research contributes to a growing empirical body of literature on the link between SWFs, sustainable investing and effects on target firms. Most studies on the impact of SWF investments on target firm performance have reached a consistent conclusion that markets usually generate positive short-term reactions to SWF investments (Dewenter, Han & Malatesta, 2010; Bortolotti, Fotak & Megginson, 2015; Kotter & Lel, 2011). Moreover, an interesting finding here is that the intensity of the market reaction usually depends on SWF transparency (Kotter & Lel, 2011). However, the results on the longer-term operating performance of target firms is mixed. Whereas Dewenter, Han& Malatesta (2010), Fernandes (2014) and Sojli and Wah Tham (2011) find positive post-investment operating performance of targets, Bortolotti, Fotak and Megginson (2015) report deteriorations in performance (return on assets, sales growth and market-to-book ratio) over the three years after an SWF investment, and Kotter and Lel (2011) do not find any substantial effect on firm performance and governance in the long-run.

Research conducted prior to this study mostly looked at the impact on firm valuation and performance by means of event studies. This study adds value since it looks into new areas (e.g., the ESG development and determinants of ESG SWF stakes) and employs several methods other than an event study. Nevertheless, its main limitation is that the availability of SWF ownership data leads to a substantial reduction in the amount of firm-year observations. Out of the more than 180 SWFs identified, only 29 of them eventually proved to have ownership data available through FactSet. This leaves room for improvement for future research on SWF ownership. The most important recommendations for future research are to improve the coverage of SWF ownership, especially for opaque and politically dependent SWFs, and to examine several SWF characteristics that could be associated with SWF ownership: its source of funding, objective(s) and size.

The thesis is structured as follows. Chapter 2 discusses literature on the relationship between SWFs, responsible investing and effects on target firms. Furthermore, hypotheses are formulated. Chapter 3 describes the data that is used throughout the study. Chapter 4 addresses the methodology to test the hypotheses, and chapter 5 lists and analyzes the empirical results. Chapter 6 presents conclusions, limitations and recommendations for future research.

# 2. Literature review and hypothesis development

This chapter summarizes the current standing of literature on SWFs, their background, sources and objectives, investment styles, strategies and allocations, and (the relationship between) their performance and the performance of target firms. First, section 2.1 examines the question what constitutes a sovereign wealth fund. To better understand their current investment decisions, section 2.2 elaborates on their history and main characteristics. Then, section 2.3 discusses the main sources of capital and the most common objectives. To see how these objectives are put in practice, section 2.4 analyzes the asset allocation and investment strategies. Section 2.5 surveys the studies to-date on the performance of SWFs and on how they affect target firms. Based on the foregoing, section 2.6 develops ten hypotheses regarding the behavior of SWFs and their effect on target firms.

## 2.1 Defining sovereign wealth funds

There is no consensus in the academic and practitioner literature on the definition of a sovereign wealth fund, although most researchers agree that SWFs can be seen as government-owned investment vehicles with no explicit liabilities, significant exposure to risky foreign assets and a long-term investment horizon (Kotter & Lel, 2011). Truman (2010) uses a broader definition and defines SWFs as pools of government-owned or controlled assets that include some international assets. Hence, he also defines some pension funds as SWFs. Maybe the most authoritative definition comes from the IMF (2008a), who define SWFs as special purpose investment funds owned by the general government. SWFs hold assets to achieve financial objectives and employ a set of investment strategies that include investing in foreign financial assets. They have diverse legal, institutional and governance structures. Fotak, Gao and Megginson (2016) use the definition employed by the Sovereign Investment Laboratory, that specifies an SWF as:

*1)* An investment fund rather than a company;
*2)* Wholly owned by a sovereign government, but organized separately from the central bank or finance ministry;
*3)* Makes international and domestic investment in a variety of risky assets;
*4)* Charged with seeking a commercial return;
*5)* A wealth fund rather than a pension fund – it should not be financed with contributions from pensioners and should not have explicit liabilities to individual citizens.

SWFs do exist at the subnational level, such as those of states, but more often at the level of regional governments. They usually do not take direct roles in the management of target companies. Their purpose is to explicitly hold their government's money in trust and transfer it to future generations. This feature makes SWFs a special type of investor, as it concentrates their assets and power in the hands of a few actors.

## 2.2 History and characteristics

### *2.2.1 History of SWFs*

*The emergence of SWFs*

The first wave of SWFs started in 1953 with the establishment of the SWF of Kuwait. This wave intensified after the oil price increases in the 1970s and 1980s (Fernandes, 2014; Curzio & Miceli, 2010). Most SWFs that were set up during this wave belong to the governments of oil-producing nations, who recognized that they could spread the benefit of oil revenues over a longer time horizon by investing a part of the oil's income in financial assets. The most common motives for setting up an SWF were substitution of resources for wealth and counter-cyclicality, the mitigation of the risk of booming commodity prices (Curzio & Miceli, 2010). The second wave of SWFs was the result of the East Asian crisis in the late 1990s (Fernandes, 2014) and ended in 2004 (Curzio & Miceli, 2010). This wave includes the establishment of the currently second largest SWF in the world, the China Investment Corporation (CIC). Most of the SWFs that emerged during this wave benefitted from trade-balance surpluses from exports of manufactured goods. The most common motive for setting up an SWF during this wave was self-insurance: nations wanted to cover the risks from financial and currency crises.

Kotter and Lel (2011) indicate a third wave of SWFs in the 2000s. Curzio and Miceli (2010) state that this phase covered 2005 to 2008, when the phrase 'sovereign wealth funds' was coined and SWFs gained attention from the broader public. This is also the time when SWFs were not received with caution and hostility, but rather with appreciation as some of them served as lenders of last resort during the financial crisis (Curzio & Miceli, 2010). Curzio and Miceli (2010) further distinguish a fourth wave, namely from the financial crisis onwards, starting in 2007. During this period, some SWFs experienced significant losses and most of them were forced to condense their investment activities. Nevertheless, SWFs also have shown to be important and responsible players in international financial markets during this period. Between July 2005 and October 2008, SWFs invested almost $90 billion in the stock of European and U.S. financial institutions, and in total SWFs invested more capital into financial institutions than any other investment entity except for the U.S. government (Megginson, You & Han, 2013). In between September 2007 and June 2014, the value of the AUM of SWFs doubled. At the same time, the number of SWFs also increased dramatically (Alhashel, 2015).

### *2.2.2 SWF characteristics*

SWFs have some distinctive characteristics that make them different from other asset management funds and institutional investors. Next to the government ownership already discussed, two other distinguishing features of SWFs are their long-term investment horizon and low spending needs (Chambers, Dimson & Ilmanen, 2011). Other important characteristics are discussed in-depth below.

*Size*. Notably the oldest SWFs have a size that makes their capital base considerably even larger than other investment institutions. For example, the current AUM for the Kuwait Investment Authority (KIA) is 592 billion US dollars; for the Government Pension Fund Global (GPFG), Norway's SWF, this is estimated at over 1 trillion US dollars. This also implies that especially the larger SWFs might not find it useful to 'hunt for alpha returns' because this is impractical. Nevertheless, there are also relatively young SWFs that are sizable given the size of their country's economy. For instance, the Timor-Leste SWF is about 4 billion dollars, whereas the GDP of Timor-Leste is only 0.5 billion.

*Time horizon.* In general, SWFs have a long time horizon, which translates into a relative advantage for harvesting liquidity premia and a higher tolerance of (short term) return volatility and capital losses than other investors. This means that SWFs can make long-term investments without short-term demands for liquidity.

*Low level of liabilities.* Related to their long-term horizon is that most SWFs are characterized by the absence of short-term withdrawals. Usually, SWFs face a low level of financial leverage. Nevertheless, many of them are investing in private equity and hedge funds, which increases their implicit level of leverage (Curzio & Miceli, 2010). Furthermore, Curzio and Miceli (2010) signal that young SWFs in particular make more use of leverage to finance their investments. Hence, this characteristic is considered as an often present but non-essential feature of SWFs.

*Ownership structure.* A distinctive feature of all SWFs is that they must be owned by a sovereign state (Curzio & Miceli, 2010). This includes both central governments as well as subnational entities. Therefore, the funds of different federal states in the USA and Canada are also considered SWFs. Furthermore, SWFs should be managed separately from the central bank of their respective country. This means that an SWF can be part of a central bank's structure, but it should be managed with different criteria. More specific, an SWF should be able to pursue investment strategies based on a longer-term horizon and higher risk propensity than that of its central bank. There are however some SWFs where ownership is still subject to debate. For instance, the ownership of the CIC remains a political discussion in China (Liew & He, 2012). The People's Bank of China (PBC), China's central bank, and the Ministry of Finance (MOF) are still in competition to gain management and control of CIC's funds. This ownership competition even influences CIC's organization and investment strategy. Currently, the CIC is placed directly under the State Council to avoid giving the ownership rights to either the bank or ministry.

*Portfolio.* Another distinctive characteristic of SWFs is that at least part of their investments is denominated in foreign currency (Curzio & Miceli, 2010). This does not need to be the majority of the total, but funds that invest completely in their respective national assets are not considered SWFs.[1] Another aspect

[1] As a result of this, funds as the Strategic Investment Fund (SIF) from France and the fund from Taiwan are excluded. France uses its fund to protect its industry from foreign buy-outs and Taiwan does this for stabilizing its national stock markets.

related to SWFs' portfolios is that SWFs usually have stable risk preferences over time (Chambers, Dimson & Ilmanen, 2011).

*Legal status.* SWFs have different legal statuses, as some are set up under specific laws and national budget acts, whereas others are based on their country's constitution. Furthermore, several SWFs are set up separately from the legal status of their home country's government or central banks, but some are legally part of a pool of assets owned by the government or a monetary authority. In this case, the home country's law defines how the SWF is financed and how the financial wealth is accessed.

*Governance and transparency.* The governance structure and transparency of SWFs differs widely (Truman, 2009). For example, whereas the GPFG regularly publishes updates on their portfolio and publicly debates with Norway's citizens and the parliament about their investment policies and decisions, the CIC explains relatively little about their purchases and underlying motive. Most SWFs from the Persian Gulf region do not even publish annual reports containing financial and statistical data. To date, most SWFs have been declining seats on the management boards of their target companies, but there might still be influence behind the scenes (Fernandes, 2014). Kotter and Lel (2011) note that voluntary transparency is useful in research because it can serve as a signal that this SWF's investment choices are financially based. Therefore, it can serve as a proxy for political interference.

In order to measure an SWF's transparency to the public, two main indices have been developed. The first one from Truman consists of 34 questions and ranges from 0 to 100. Truman publishes an SWF scoreboard every two to four years, which consists of updated scores for each SWF. The most recent scoreboard is the 2015 version (Truman, 2015). Since this publication, he also included questions on the corporate social responsibility (CSR) dimensions 'environment mentioned', 'voting policy' and 'voting in all cases'. Furthermore, Linaburg and Maduell (2018), connected to the Sovereign Wealth Fund Institute (SWFI), developed a transparency index in 2008. This index ranges from 0 to 10. Next to Truman's index, this is often used as a measure of SWF's transparency. The index is based on ten principles that cover SWF transparency to the public. Each principle adds one point of transparency. The SWFI states that only from a score of 8 onwards, an SWF can claim to be adequately transparent.

### *2.2.3 The Santiago Principles*

#### *Set-up*

In May 2008, the International Monetary Fund (IMF) developed an international working group (IWG) consisting of 23 representatives from countries that owned SWFs[2]. The IWG was responsible for

[2] The following countries participated in this working group: Azerbaijan, Bahrain, Botswana, Canada, Chile, China, Equatorial Guinea, Iran, Ireland, South Korea, Kuwait, Libya, Mexico, New Zealand, Norway, Qatar, Russia, Singapore, East Timor, Trinidad and Tobago, United Arab Emirates and the United States. Some permanent observers that joined the group as well are: Oman, Saudi Arabia, OECD and the World Bank. Furthermore, representatives from recipient countries were included.

designing a code of conduct for SWFs. At the end of three meetings, 24 guidelines were developed, also called the Generally Accepted Principles and Practices or Santiago Principles. As the name 'guidelines' implies, compliance with the principles remains voluntary. The explicit aim of the principles is to create trust towards SWFs in home as well as recipient countries. The principles should enhance SWFs' transparency, accountability and governance. The principles cover three main areas (Curzio & Miceli, 2010): first, legal framework and objectives and coordination with macroeconomic policies (principle 1-5); second, institutional framework and governance structure (principle 6-17); third, investment and risk management (principle 18-24). Table 1 gives a short explanation of these areas and the most important guidelines for each area.

**Table 1. Overview of the Santiago principles, adapted from Curzio and Miceli (2010).**

| Area | Main guidelines |
|---|---|
| Legal framework | Legal structure should be public. Define and publicize objectives and financial resources. Coordinate SWF activities with recipient country's monetary and fiscal policies. |
| Institutional framework, governance structure | Governance framework that ensures clear division of roles and responsibilities. Framework should be made official and publicized. Annual report that adheres to accounting standards. Disclosure of all financial information. |
| Investment and risk management | Define and publicize investment policies. Policies should be based on principles of portfolio management, which should take into account risk exposure, leverage, use of external managers, and exercise of ownership rights. |

*Follow-up*

In order to monitor the Santiago initiative, the IWG established the International Forum of Sovereign Wealth Funds (IFSWF) in April 2009. This IFSWF is a voluntary group of SWFs that can exchange views without legal enforcements. Topics that can be discussed are for instance risk management, the financial system as a whole, understanding and applying the principles and cooperation with recipient countries. Furthermore, in March 2016 the first knowledge sharing workshop took place, during which SWFs were able to exchange knowledge on how to apply the principles. At this moment, the IFSWF has more than 30 members. About half of them are funded by commodity revenues. Furthermore, members are invited to submit a self-assessment report every three years. In this report, the SWF evaluates their application of the principles. Some SWFs that are known for submitting such a report are Kuwait Investment Authority and the New Zealand Superannuation Fund.

*Compliance*

Since the establishment of the Santiago Principles, compliance of participating SWFs ranges from almost full compliance to under 50% compliance. The most compliant funds are obviously those that already were more or less compliant before signing up. This concerns New Zealand's Superannuation Fund, GPFG, Australian Future Fund and Ireland Pension Fund. The last decade, the CIC made significant progress in terms of the principles, especially when it comes to transparency. From 2009 onwards, they have published annual reports that provide financial information. SWFs that still do not comply are mostly from the Middle East and Northern Africa: the investment authorities from Libya, Kuwait, Qatar and Abu Dhabi, and the funds from Bahrain, Botswana and Mexico. Furthermore, even though Equatorial Guinea, Iran and Libya are members of the IFSWF, their SWFs are almost completely opaque.

Mehrpouya, Huang and Barnett (2009) performed a compliance analysis in which they examined the level of compliance of the ten largest SWFs with the Santiago principles. Their research reveals that full compliance with the principles often occurs when it concerns disclosure of legal and governance framework, the first main area. The least compliance often concerns the disclosure of financial information, investment performance and policy, ownership rights and engagement approach, the third main area.

## 2.3 Sources and objectives

### *2.3.1 Sources*

The majority of the SWFs publicly specify their source of funding. Most of them are funded from foreign exchange reserves, often but not always derived from the export of natural resources, such as oil and gas. Others use fiscal surpluses to fund their SWFs. One SWF, Temasek from Singapore, uses government enterprises to fund its activities (Truman, 2009). In line with Truman (2010), Curzio and Miceli (2010) state that SWFs derive their funds from payments surpluses, foreign currency operations, fiscal surpluses, receipts from commodity exports and the proceeds of privatizations.

Considering these different ways of funding, we can distinguish two main SWF types:

1. *Commodity funds*: these SWFs derive their financing from the export of raw materials. The most of these SWFs benefit from the revenues (exchange reserves) generated from scarcity of their materials. This type of funds are often found in the Middle East, Russia and Norway (Curzio & Miceli, 2010).
2. *Non-commodity funds:* these SWFs derive their financing from balance-of-payments surpluses, privatization revenues, fiscal proceeds and non-energy current accounts. In 2010, approximately 60% of all SWFs was a non-commodity fund (Curzio & Miceli, 2010). This type of fund is often found in Asia.

The aim of an SWF often relates to its source of funds. Truman (2010) distinguishes between four main types of sources. First, the most common source of SWF capital is natural and renewable resources. A second source of SWF capital is fiscal surpluses. A third source is foreign exchange reserves, often resulting from the large net exports of manufactured or traded goods (Ang, 2010). A fourth type is employee contributions, which is common for pension funds (which Truman counts as SWFs). These SWFs exist to meet actuarially specified pension liabilities and have outflows designed to meet these liabilities (Ang, 2010).

### *2.3.2 Objectives*

The IMF (2008b) lists five different objectives that SWFs may have:

1. *Savings.* Savings SWFs are for future generations and often transfer underground wealth to financial wealth. The GPFG is a good example of this type of SWF. It has a twofold aim: first, it serves as a long-term savings vehicle, second, but less relevant today is that the fund insulated Norway's economy from the 'Dutch disease', which means that a sudden increase in national resource wealth can inflate domestic prices and exchange rates (IMF, 2008b). This type of SWF is called 'wealth substitution' by Griffith-Jones and Ocampo (2008): the transformation of natural resources into financial assets. A savings SWF often wants to convert non-renewable resources into financial wealth for future generations while at the same time redistributing the proceeds from natural resources among generations as fairly as possible (Curzio & Miceli, 2010). Savings funds are often less liquid with longer time horizons compared to the other objectives (Curzio & Miceli, 2010). Another example of this type of fund is the KIA.
2. *Stabilization.* These SWFs are designed to insulate the state's budget or country's economy against price swings (Truman, 2010), often related to raw materials (Curzio & Miceli, 2010). Griffith-Jones and Ocampo (2008) name this type of motive 'counter-cyclicality', absorbing temporary current account surpluses and/or booming commodity prices, and 'self-insurance', reducing the risk of procyclical capital flows. Stabilization funds are often more liquid with shorter-term horizons compared to the other objectives (Curzio & Miceli, 2010). An example of this type of fund is the Russian Reserve Fund (RRF).
3. *Reserve investment fund.* Reserve investment SWFs work together with other vehicles in a country to manage foreign exchange reserves. The assets of such an SWF are counted as official reserves but are managed separately to generate more profitable investments (Curzio & Miceli, 2010). Nevertheless, it is important to note that an SWF is not a currency stabilization fund or a general reserve of a central bank (Ang, 2010), even though an SWF could be managed by the same authorities responsible for these activities. Griffith-Jones and Ocampo (2008) call this objective the

'resilient surplus' motive. Examples of this type of funds are the CIC and the Government of Singapore Investment Corporation (GIC).

4. *Development fund.* Development funds are often found in developing countries and are set up to achieve socio-economic objectives. Furthermore, the goal of this type of fund is to promote specific industrial policies (Curzio & Miceli, 2010). Examples of this type of fund are the Nordic Development Fund, the European Development Fund and the China-African Development Fund (CADF).
5. *Pension reserve funds.* Last, some pension reserve funds can be classified as SWFs because they are intended to backstop government pension funds (Truman, 2010). An example of this type of fund is the AFF.

In addition, the SWFI distinguishes five main goals of SWFs stabilization, savings/future generations, pension reserve, reserve investment and strategic development. This is in line with the categorization outlined above. The table below summarizes and compares the categorization of SWFs' motives and objectives.

**Table 2. Overview of SWFs' possible objectives.**

| | IMF (2008b); Curzio and Miceli (2010) | Griffith-Jones and Ocampo (2008) | Sovereign Wealth Fund Institute (SWFI) | Mehrpouya, Huang and Barnett (2009) |
|---|---|---|---|---|
| **1.** | Savings | Wealth substitution | Savings / Future generations | Intergenerational wealth transfer |
| **2.** | Stabilization | Counter-cyclicality<br>Self-insurance | Stabilization | Stabilization |
| **3.** | Reserve investment | Resilient surplus | Reserve investment | Reserve investment |
| **4.** | Development | | Strategic development | Development |
| **5.** | Pension reserve [without explicit pension liabilities] | | Pension reserve | Contingent pension reserve |

Practice shows that most SWFs employ a mix of these objectives. Moreover, objectives tend to change over time given the economic and financial circumstances of a country (Truman, 2010). In each development phase of an SWF, the motives mentioned above will have different relative importance (Curzio & Miceli, 2010); hence, an SWF can have multiple goals at the same time and objectives are likely to change over time. It is not surprising that the world currently knows different types of SWFs with respect to origin, objective and subsequently investment strategy. Curzio and Miceli (2010) argue that the intersection of the source of funding and objective generates an interesting outcome. They deduce the pattern that commodity SWFs tend to be stabilization or savings funds, reserve investment funds tend to be non-commodity SWFs and development and pension funds belong to both types.

## 2.4 Financial goals

### *2.4.1 Investment goals*

In general, the long-term investment goals of SWFs are accomplished by patient, liquidity-supplying and market-stabilizing value strategies, which often involve holding unpopular asset classes. Given their capital base, especially the larger SWFs might not find it useful to 'hunt for alpha returns', because this is impractical. Mehrpouya, Huang and Barnett (2009) distinguish three categories of SWF's investment missions:

1. *Purely return driven*: these funds mention that their investment are made with the sole objective of achieving financial returns.
2. *Returns plus national economic objectives:* these funds invest in national economies because they believe this yields higher long-term returns, but they do not explicitly disclose a set of national economic objectives as part of their mandate.
3. *Returns plus national political objectives:* funds never mention explicit political or national economic objectives in their mandate, but some can demonstrate politically motivated investments.

Regarding category 1, almost all SWFs state clear investment objectives that are based on purely returns. Wordings are different, but almost all aim to maximize risk-adjusted returns of the excess revenues generated by their sources, commodity or non-commodity. Nevertheless, there are variations in the risk appetite of SWFs which translates into their investment objectives. For instance, the Australian Future Fund (AFF) and GPFG put more emphasis on their long-term focus. Some SWFs include an explicit avoidance of downside risk in their investment objective. For instance, the Malaysian SWF Khazanah Nasional objective is to have no more than 10% chance of 30% annual loss, and the New Zealand Superannuation Fund has a return objective that allows only 1% chance of delivering a 20-year return worse than 1.2% per year.

An interesting subunit of this first category consists of SWFs that aim at maximizing return but also invest according to SRI or ESG guidelines. For instance, the GPFG, NZSA and Canada Pension Plan (CPP) explicitly aim at investing responsibly as they believe that this yields the highest return in the long-run. Hence, these SWFs can be said to have multiple investment goals that eventually serve the ultimate goal of maximizing long-term returns.

Regarding category 2, some SWFs can be said to have a national strategic component in their investment objective. Two examples are Khazanah Nasional, which states that it undertakes strategic investments, such as holding strategic national assets, and Temasek Holdings from Singapore, which aims at maximizing value by manages state-owned enterprises in strategic sectors.

Regarding category 3, the CIC can be said to have a political strategic component in its investment objective. Even though their official investment objective is the maximization of long-term returns using a well-balanced portfolio, some investments have raised the question whether it concerns a commercial or geopolitical goal. For instance, some investments were majority shares in strategic sectors such as transport, infrastructure, telecommunications, energy and defense.

There are other areas in which SWFs often specify what investment goal they have. These areas are discussed below.

*Country choice.* Kotter and Lel (2011) find that SWFs tend to invest in financially developed countries. When SWFs invest in developing counties, their targets are often financially-distressed, multinational firms. In this respect, their target choice is comparable to institutional investors. In addition, SWFs tend to invest in a country during crisis periods. Some but definitely not all SWFs specify their benchmark portfolio in terms of countries. For instance, the New Zealand Superannuation fund devotes a specific percentage of its funds available to equities of developed countries and to equities of emerging markets.

*Maximum ownership levels.* Kotter and Lel (2011) report various ownership stakes from SWFs in target firms, varying from very small stakes up to full acquisition stakes of over 50 percent. Curzio and Miceli (2010) report that during the financial crisis, many SWFs did not purchase a stake higher than 10% to avoid political discussions about their motives. Some SWFs explicitly do not take any ownership stake above 10% to avoid discussions about interference and politics at all, such as the GPFG. However, for other SWFs we do see ownership stakes of over 50% and sometimes of 100%, such as with the CIC.

*Based on objective.* Curzio and Miceli (2010) note that stabilization funds are often financed on the base of surpluses from the prices of raw materials compared to predefined targets. Similarly, their withdrawal rules are often based on prices of raw materials sinking below predefined targets. For pension funds, there often exist specific fixed objectives. Their investment goals are often tied to achieving a return that let them meet a target tied to the country's demand for funds, based on its aging population. Their rule of withdrawal often depends on current account deficits or calculations or future liabilities.

*Risk levels.* According to a survey from the IMF (2008c), about 65% of the surveyed SWFs use credit ratings to cover their risk. They report that credit risk is limited due to diversification. Currency risk is limited based on theoretical maximum exposure (IMF, 2008c). Furthermore, the use of financial leverage is minimal for most funds, as some are not even allowed to use (direct) leverage. Nevertheless, 20% of the asked SWFs use indirect leverage by investing in funds that do use leverage, such as hedge funds.

### *2.4.2 Benchmark goals*

There are many SWFs that use a benchmark as an investment goal. At least the larger SWFs are likely to use benchmarks that are loosely linked to market capitalization because of their large capital base. According to IMF's working group IMG, 45% of their interviewed SWFs use relative financial objectives relative to a benchmark, whereas 30% uses an absolute return and 25% did not have a detailed numerical objective (IMF, 2008c). Some examples of benchmark goals are the following: the GPFG explicitly aims at a real return of 4%, which is transferred to the state budget to finance non-oil deficits (Chambers, Dimson & Ilmanen, 2011). The GPFG uses an evolving benchmark, which specifies the asset mix and regional allocation. Changes in its benchmark are only made after thorough expert study and public dialogue. Furthermore, these strategic decisions often involve parliament debate and approval. The KIA wants to achieve a rate of investment return that exceeds market benchmarks on a three-year average (Curzio & Miceli, 2010). The CIC benchmark is debt-based and is equal to the cost of debt plus annual appreciation of RMB, which totals 6%. In general, by setting this kind of benchmarks SWFs do not harvest 'first mover' investment opportunities, but they do not need these to harvest premia in the long run. The table below provides an overview of benchmarks found in the most recent annual reports of SWFs.

**Table 3. Examples of benchmarks found in recent annual reports of SWFs.**

| SWF | Benchmark |
|---|---|
| Government Pension Fund – Global | Benchmark index from Ministry of Finance, consisting of global equity and bond indices. |
| Khazanah Nasional (Berhad) | For its commercial fund: +3% based on Malaysian CPI on 5-year rolling basis, no more than 10% chance of 30% annual loss. |
| Australian Future Fund | Uses a return objective. |
| Alaska Permanent Fund | Uses three reference benchmarks: passive index, blended performance and total fund return objective. |
| State Oil Fund of the Republic of Azerbeijan | Three benchmarks for debt and money markets instruments, tied to LIBOR. One benchmark for equity portfolio. |
| New Zealand Superannuation Fund | Return objective is the 90 day Treasury bill rate + 2.7% per annum + 1% per annum value add, with only 1% chance of delivering a 20-year return worse than 1.2% per annum. |
| New Mexico State Investment Office | Optimization of total risk-adjusted return by means of internal benchmark in basis points. |

## 2.5 Political goals

Even though most SWFs emphasize their financial objectives, there still is public, regulatory and investment community concern about the potential political and strategic motives behind some SWF investments (Mehrpouya, Huang & Barnett, 2009). Fernandes (2009) notes that SWFs are likely to have objectives next to the highest possible returns given the fact that most SWFs are either owned or controlled by the state. These political connections can have both a positive and negative impact: on the one hand, SWFs may be interested in political and social objectives at the expense of the performance and value of

their target companies (Fernandes, 2014). For instance, SWFs might invest overseas to distort another company's shareholder value maximizing strategy. Given their size, SWFs could take a large stake in a company and either expropriate minority shareholders or pursue other goals than maximizing the firm's performance (Kotter & Lel, 2011). On the other hand, SWFs could also improve the performance of their target companies by relaxing financing constraints. Given their long-time horizon, an SWF that invests in a target company allows that firm to make investments with more distant payoffs because there is no need for short-term return.

Curzio and Miceli (2010) state that SWFs only got public attention from 2007 onwards. An important reason they name for the increased attention is the West's uneasiness in coping with the redistribution of financial and economic power to other countries, which SWF symbolize. Especially in the early days of SWFs, cross-border SWF investments were viewed as a threat by the recipient-country governments (Fotak, Gao & Megginson, 2016). Furthermore, developed economies are worried that SWFs might be used for political agendas instead of financial objectives. These worries are partly confirmed by research: for instance, Sun, Li, Wang and Clark (2014) find that Chinese SWFs are used for noncommercial purposes. One example of strategic investment by the Chinese is their cross-border investments in the energy sector to secure their energy supply. On the part of recipient countries, Curzio and Miceli (2010) distinguish two kinds of concerns: first, macro risks that impact at the state level; second, micro risks that affect at the company level.

**Table 4. Overview of political concerns from recipient countries, as defined by Curzio and Miceli (2010).**

| Macro risks | Micro risks |
|---|---|
| Nation that owns the SWF can use power to negotiate political future of recipient countries. | An SWF can acquire shares from other countries' companies to weaken or control them, subsequently reinforcing one's own state-owned companies. |
| Protection of sensitive sectors such as defense, energy, infrastructure, transportation. | Conflict of interest between SWF owners and acquired companies or governments from recipient countries. |
| A change of geopolitical power from democratic to more non-democratic states, where most of the SWFs are located. | SWF investments can weaken target companies' efficiency because of political influence and absence of skills to manage the investments. |
| Nation that owns the SWF can get access to technology and know-how in specific sensitive fields, such as military technology. | Risk of corruption: emerging countries' assets can be misused or converted into personal wealth. |
| Triggering protectionist responses toward foreign investment. | |

Summarizing these concerns, the main issue seems to be that non-democratic or authoritarian countries' SWFs enjoy a growing importance, helped by growing global macroeconomic imbalances such as current account surpluses. Curzio and Miceli (2010) report that in 2009, only 18% of the SWFs belonged to countries of origin with full democracies, whereas 62% of the SWFs belonged to countries with authoritarian regimes. Mehrpouya, Huang and Barnett (2009) examined the engagement and proxy voting

practices of the ten largest SWFs in 2008. They find that at the time, some interesting examples of SWFs that hold seats at companies in which they have smaller, non-controlling stakes, for instance the Kuwait Investment Authority (KIA) and the Government Investment Corporate of Singapore (GIC).

There also are other negative political externalities that SWFs could cause. For example, Drezner (2008) emphasizes that autocratic countries' emerged importance in global finance can give incentives for smaller countries that need financing to follow other political model than democratic ones. An example of this is that the SAFE Investment Company from China provided financial support to companies in Costa Rica in exchange for the movement of Costa Rica's embassy from Taiwan to China (Dewenter, Han & Malatesta, 2010).

## 2.6 CSR and activism

This section discusses socially responsible investing (SRI), investor activism and the combination of the two, usually named CSR or ESG activism. The first section summarizes the definition and return of SRI. Section two examines CSR activism, which means that SRI investors actively engage with targets to improve their firms' ESG practices. The third and fourth section analyze the CSR activism of SWFs in theory and practice, respectively. The last section includes a list of all SWFs that can be considered ESG SWFs and provides an overview of their socially responsible investing as well as activist activities.

### *2.6.1 Socially responsible investing*

While CSR is generally perceived as creating shareholder value, this is not necessarily the case for socially responsible investing (SRI). Over the last years, SRI has grown from a niche segment to mainstream investing. There are multiple empirical studies that examine whether SRI creates value. Although these studies do not provide clear-cut evidence that SRI funds perform worse than conventional funds, they still hint at it (Renneboog, Ter Horst & Zhang, 2007). One reason for this is that including CSR goals into investment goals may have an effect on the performance of fund managers. When using social objectives next to financial goals, SWF managers face multiple (and possibly competing) tasks when selecting target firms. Renneboog, Ter Horst and Zhang (2007) argue that this may weaken fund managers' incentives to pursue risk-adjusted returns and increase agency costs. Therefore, it might be the case that SWFs that use responsible investment screens perform worse compared to SWFs that do not use these. However, some studies show that SRI funds can outperform their market benchmarks or conventionally managed funds. For example, Gibson and Krueger (2017) find that funds' investment strategies based on sustainability yield positive risk-adjusted returns.

### *2.6.2 CSR Activism*

Activism can be described as investors and individual shareholders reshaping corporate policies and strategy (Becht, Franks, Grant & Wagner, 2017). Empirical studies on activism offer mixed evidence regarding the financial return of activism. On the one hand, some studies show that it is beneficial: Brav, Jiang, Partnoy and Thomas (2008) find abnormal returns for target firms of 7% around the announcement of investment by activist hedge funds. Bebchuck, Brav and Jiang (2015) find lasting improvements in the operating performance of target firms. On the other hand, other papers do not find any significant effect of activism on target firms' financial performance. For instance, the event study conducted by Nelson (2006) does not find any significant abnormal return when controlling for other effects. Smith (1996) is in the middle as he finds that activism generates shareholder wealth but does not affect operating performance of target firms.

CSR activism occurs when a subset of SRI investors actively engages with companies in their portfolio with the aim of improving their targets' ESG practices (Dimson, Karakas & Li, 2015). Barko, Cremers and Renneboog (2018) study the effect of investor activism on corporate social responsibility through ESG practices. A fairly new way to pressure individual firms to address ESG issues is engagement, which means that investment funds file ESG-related requests to their portfolio companies (Barko, Cremers & Renneboog, 2018). They examine how activist investor choose targets, how they engage, whether and how these are successful and whether the activism is visible in operations and investment value. They find that engaged companies usually have higher market share and analyst coverage. Still, the impact of activist investors is twofold: whereas target firms with a lower ESG rating see their rating improve during the activism period, target companies with higher ESG ratings experience a negative correction. Engagements are more often considered successful by the investors when the target has a large market share and a good ESG track record. Furthermore, large controlling shareholders, high short-term growth and larger cash reserve decrease the probability of a successful activist outcome. However, they do not find a significant relation between the engagement and accounting performance of the targets, except for sales growth.

To date, practice shows that mostly mutual funds and pension funds contact target firms regarding ESG issues. Dimson, Karakas and Li (2015) find that successful engagements in social and environmental subjects create positive returns and improvements in operating performance and corporate governance. Hoepner et al. (2016) and Flammer (2015) also document positive outcomes of engagement on target firm performance: whereas Hoepner et al. (2018) find that engagement reduces left tail firm risk, Flammer (2015) finds significant returns and superior long-term accounting performance. Still, it is important to note that activist engagement differs across countries due to legal rules, the firm's orientation (shareholder versus stakeholder) and institutional developments (Liang & Renneboog, 2016). Therefore, it is important to control for these factors.

### *2.6.3 SWF activism: theory*

SWFs are emerging as a new class of potentially activist investors. Still, it remains questionable whether SWFs do engage in activist behavior. In practice, there have not been many cases reported. An event study from Kotter and Lel (2011) did not yield conclusive evidence on the degree of SWF activism. They conclude that even though SWFs might perform a monitoring role when acquiring a stake in a target firm, their results do not suggest successful SWF-oriented shareholder activism. Furthermore, the fact that they do not find a statistically significant effect on target firms' performance in the longer run suggests that there is not much shareholder activism present at SWFs. In contrast to this, Dewenter, Han and Malatesta (2010) also examine the hypothesis whether SWFs actively monitor firms in which they invest or seek to influence firm decisions and related regulatory events. Based on press coverage, they find that post-investment activity is significantly related to the target company's long-run returns. Therefore, they conclude that SWFs often adopt an active and significant role in their target firms.

There are some other SWF characteristics that make it questionable whether SWFs will act as activist investors. First, literature provides conflicting suggestions about the monitoring activity we can expect from (activist) SWFs. On the one hand, theory hypothesizes that investors with other objectives than value maximization for shareholders will not actively monitor their targets. Governments' agents and politicians in particular are 'bad owners' of corporations (Bortolotti, Fotak & Megginson, 2007) because of the other objectives they impose that negatively affect shareholders (Shleifer & Vishny, 1994; Megginson & Netter, 2001). As SWFs are ultimately owned and controlled by governments, this logic may also be applicable to them when they become shareholders of target firms. Applied to SWFs specifically, an SWF can impose its political agenda on target firms, at the same time diverting portfolio firm resources to the benefit of the SWF host country or its politicians. On the other hand, theory also hypothesizes that large investors such as SWFs will more actively monitor target firms, which increases firm value. This is because SWFs have a long investment horizon, large AUM, a lack of explicit liabilities and therefore typify the patient long-term shareholders with power and incentive to monitor managers, discipline underperformers and sustain firm value creation (Shleifer & Vishny, 1986; Chen, Harford & Li, 2007; Cai, Garner & Walking, 2009). Therefore, the impact of SWF investment on firm performance is still ambiguous.

Chhaochharia and Laeven (2008) empirically assess these two competing hypotheses and find evidence in favor of the latter. They find CARs that are positively associated with a large owner dummy variable, meaning that large investors enhance firm value by monitoring firm management. Furthermore, the economic effect on a firm's CAR is relatively large, as they find an excess of 1.4% compared to the CAR of a firm with a small ownership stake (Chhaochharia & Laeven, 2008).

Bernstein, Lerner and Schoar (2009) assess the same competing hypotheses but come to another conclusion. As these authors put it, SWFs have on the one hand the capability and incentives to monitor

firm managers and increase firm value by engaging actively in the governance of target companies, but sponsoring governments can on the other hand impose nonfinancial or noncommercial objectives not consistent with shareholder wealth maximization. If SWFs indeed are good monitors, their investment should create more value in target firms than in those by comparable private-sector investors, as those have short-run needs and explicit liabilities. Instead, they find a significant SWF discount, which means that SWF stock purchases have a smaller valuation impact on target firms than comparable purchases by private investors. About 80% of this discount is attributable to target characteristics. Nevertheless, the SWF discount is statistically and economically significant after controlling for target and deal characteristics. Their findings cast doubts on the conclusions by Dewenter, Han and Malatesta (2010), Fernandes (2009) and Kotter and Lel (2011), as they all three find that SWFs behave as active investors (but do not necessarily perform activism). Furthermore, also Knill, Lee and Mauck (2012) argue that their findings are inconsistent with SWFs providing the same monitoring benefits as other institutional investors.

Bortolotti, Fotak and Megginson (2015) test both hypotheses discussed above, i.e. that SWFs are superior monitors because of their power and incentives vs. SWFs pursue home-country governments' noncommercial objectives that harm shareholder wealth maximization, but also the hypothesis that SWFs are passive investors. Their third hypothesis is that SWFs refrain from taking an active corporate governance role in targets in order to not generate political opposition. This hypothesis is based upon empirical evidence from for instance Miracky and Bortolotti (2009), who show that SWFs sometimes do tend to take controlling stakes but this only happens often in emerging economies, as SWFs usually avoid control in the OECD and especially in sensitive sectors such as telecommunication, infrastructure and defense. Moreover, Mehrpouya, Huang and Barnett (2009) report that SWFs often only play a small visible role in target firm corporate governance and rare take seats on target firm boards – even when SWFs do take majority stakes, they rarely challenge incumbent managers. Eventually, Bortolotti, Fotak and Megginson (2015) use event-study techniques and regression analysis to measure target firms' abnormal stock-price reactions for SWF investments versus private institutional shareholders' investments. They find that the sovereign nature of SWFs negatively affects target firm value and operating performance compared to private-sector institutional investors. On the short-term, the market reacts less positive on a purchase from an SWF than from another financial investor. On the long-term, SWF investments lead to lower long-term operating performance, both absolutely and relative to private-sector institutional investments. They even find that SWFs are passive and non-confrontational with target firm managers.

However, Ang (2010) states that SWFs actually have strong incentives to exercise shareholder rights because they are asset owners. Exercising these rights enhances good corporate governance and the alignment of shareholder and management interests. This helps SWFs to achieve stable financial markets in the long-run. Still, Ang (2010) recognizes both benefits and drawbacks of actively advocating for better

corporate governance and efficient markets. On the one hand, SWFs could free-ride on other shareholders that pursue activist activities. On the other hand, it may have economic benefits for SWFs to actively push for free markets, as this in the best interest of SWFs in the long run given their corporate governance and performance benchmark. Furthermore, there might be other reasons why SWFs still engage in SRI and ESG activism in particular. According to Ang (2010), an important reason for SWFs to engage in responsible investing is their long-term horizon. There may be no economic reason, but perhaps a moral or ethical one to consider environmental, social and governance issues within companies because this is more beneficial for companies' long-term existence. However, even though SWFs care about the longer-term horizon and exercising shareholder rights and ESG investing may be part of this, it might not be necessary financially seen. Another reason for SWFs to pursue CSR as investment criterion is that some might use socially responsible investing as a strategy to reduce concerns about foreign investments made by SWFs and to facilitate the ease of investment while allowing for effective projection of soft power on the international stage. A last reason to pursue socially responsible investing is that management believes that ESG investing reduces risk or even can yield a superior risk-return trade-off.

### *2.6.4 SWF activism: practice*

Existing literature describes some ESG activities from several SWFs. For instance, Chambers, Dimson and Ilmanen (2011) report that for the GPFG, socially responsible investing is not the main criterion, but it adopted a responsible investing framework in 2004. Liew and He (2012) investigate the activities of the CIC, which states that it is socially responsible and avoids investing in socially undesirable industries. Furthermore, Truman (2009) reports that the GPFG, KIA and Wyoming's Permanent Mineral Trust explicitly use ethical guidelines for their investment decisions. During the financial crisis, SWFs did not show much activist behavior. Curzio and Miceli (2010) report that during the crisis, SWFs were welcomed as stabilizing liquidity providers, especially by investment banks that were in trouble. Nevertheless, SWFs almost always took minority positions up to approximately 10%, and some opted to buy stocks without voting rights. Furthermore, SWFs did not request board positions and did not participate in strategic or operational decision making processes.

One way of utilizing their investment vehicles to pursue nonfinancial social objectives is that SWFs that take large stakes in target companies influence the operating levels (employment, production technology and product mixes) to achieve social policy objectives (Dewenter, Han & Malatesta, 2010). Nevertheless, some SWFs (sometimes explicitly) do not take large stakes for the sake of avoiding discussion about their intentions. This might lead to conflicting incentives: one the one hand, SWFs might be inclined to pursue a large stake into a target company in order to have a significant say into the

operational decision making; on the other hand, they might refrain from this in order to stay away from accusations about political interference.

### *2.6.5 ESG SWFs*

All SWFs that take ESG considerations into account when making investment decisions ('ESG SWFs') have several types of guidelines at their disposal. A well-known and widely-used principle is a negative or positive investment screen. A non-financial negative investment screen means that specific equity stocks or industries are excluded from an investment fund's portfolio based on social, environmental and ethical criteria (Renneboog, Ter Horst & Zhang, 2007). A common-used negative screen is for example the exclusion of alcohol, tobacco, defense and gambling industries, or companies with poor labor conditions, little environmental protection, violation of human rights or animal testing (Renneboog, Ter Horst & Zhang, 2007). Other practices related to negative screens vary for each investment fund. For instance, the fund can only exclude companies if their revenues derived from an undesirable sector exceeds a specific threshold. A non-financial positive investment screen concerns the practice that a fund selects those shares that meet superior CSR standards and/or are 'best in class'. These screens often use criteria such as corporate governance, environment, sustainability and labor conditions.

Negative and positive investment screens are often referred to as the first and second generation of screens (Renneboog, Ter Horst & Zhang, 2007). Next to these two socially responsible investment guidelines, a third approach combines negative and positive screens and results in a selection of companies based on their economic, environmental and social (ESG) criteria. The fourth and last approach combines the third approach with shareholder activism, which means that the portfolio manager(s) try to influence a target company's decisions and actions by direct conversation with management or usage of voting rights.

The effect of using investment screens on fund performance can be twofold. On the one hand, all types of screening processes lead to an SWF retaining only those stocks that comply with the specific CSR criteria of the SWF. This imposes a constraint on an SWF's potential targets in the investment universe compared to conventional investors. This means that using CSR screenings can limit and alter diversification possibilities of SWFs (Renneboog, ter Horst & Zhang, 2007). On the other hand, CSR screenings may yield value-relevant information that is not available to traditional investors (Renneboog, ter Horst & Zhang, 2007). So, if SWFs use CSR screens, this may lead to SWF fund managers selecting better securities and generating better risk-adjusted returns than SWFs that do not use CSR screens.[3]

Below follows an overview of what types of screens SWFs say to use in annual reports, responsible investment reports and other news outlets.

[3]A key assumption that needs to hold in order for this hypothesis to work is that stock markets misprice CSR information in the short run (Renneboog, Ter Horst & Zhang, 2007).

*Negative screens (first generation).* There are multiple SWFs that use negative screening criteria. First, the CIC uses a negative screen to exclude undesirable industries, such as tobacco and gaming (Liew & He, 2012). Furthermore, the KIA states that it uses negative screens to exclude alcohol-related and gaming businesses.

*Positive screens (second generation).* Currently, there are no SWFs known that use positive screens only.

*Third generation.* The third generation combines negative and positive screens, which yields sustainable or 'people, planet and profit' screens. All SWFs considered under the fourth generation are also believed to fall into the third generation.

*Activism (fourth generation).* The fourth generation of socially responsible investing combines the third generation with shareholder activism. This approach means that portfolio managers attempt to influence their portfolio companies' policies through engagement with the management or board of directors and/or through using voting rights. Currently, there are multiple SWFs that fall into this category.

First, the GPFC uses a negative screen to exclude certain companies from its investing universe. The Ministry is involved in the screening. A government commission recommended ethical guidelines in 2004 that the fund acts upon to date. These guidelines are enforced by an independent advisory body by royal decree. This council can be asked by the ministry of finance for its opinion or may give an autonomous recommendation not to invest in a certain company. Furthermore, the commission regularly review whether a company's exclusion is still valid. In 2018, the GPFG excluded 13 companies and placed 4 companies under observation. Furthermore, it divested in 30 companies due to climate (15), corruption (9), human rights (4) and other (2) issues.

Second, the CPP uses a combination of negative and positive ('best in class') screens and activist activities. It monitors the ESG factors of their targets and actively engages with companies to promote improved management of ESG. Furthermore, it exercises voting rights and collaborates with organizations to engage companies and encourage better ESG-related practices. In addition, it established a power and renewables group that expands the fund's renewables portfolio.

Third, the AFF integrates ESG concerns into its processes for considering investment proposals and investment manager appointment. It exercises ownership rights and goes into dialogue and engagement activities to establish a climate of long-term asset stewardship. The fund designed its own ESG policy, which provides a framework for which entities and sectors to exclude. The fund also lists explicit corporate governance principles in this policy. In 2018, 40 firms were excluded.

Fourth, the NZSA uses negative screens. Furthermore, it mostly incorporates issues regarding climate change into its investment analysis and decisions. It pursues active ownership and sometimes engages with portfolio companies, mostly with large international investors. It also actively seeks new

investment opportunities such as renewable energy. Furthermore, it developed a responsible investment framework which integrates ESG considerations into the investment process. This best meets the obligation felt to manage the fund in a manner consistent with best practice portfolio management and being a responsible member of the world community. The responsible investment actions include investment, engagement, voting, exclusion and/or divestment.

Fifth, the Ontario Teachers' Pension Plan integrates ESG considerations into its investment process, build relationships with targets and use its influence to make expectations clear. It uses environmental, social and governance criteria.

Last, the Fonds de Reserve pour les Retraites uses negative screens and is particularly focused on reducing the carbon footprint of its equities investment portfolio. It also incorporate ESG criteria into its portfolio management process and investment decisions. It has an active policy of voting proxies and tries to convict businesses to adopt necessary measures to reduce their impact on climate.

The other ways of how SWFs use using CSR and ESG criterions when making investment decisions are shown in Table 5. This table summarizes the main CSR goal, screening criteria and main CSR or SRI activities reported by the SWF themselves in their annual report or responsible investment reports, if available. The main conclusion that can be drawn from this table is that the majority of the SWFs do not have an (explicit) ESG strategy or criteria. Even though the most SWFs do not have a strategic approach to ESG investments, those who do have this integrate the considerations in a transparent manner and document it extensively (see Table 5). The six SWFs that do have an explicit ESG strategy are the GPFG, Canada Pension Plan, Australia's Future Fund, New Zealand Superannuation Fund, Ontario Teachers' Pension Plan and the Fonds de Reserve pour les Retraites. Some SWFs without ESG strategy still signed the United Nations Principles of Responsible Investment (UN PRI), such as the GPFG and the South African Public Investment Corporation.

**Table 5. Overview of SWFs that use ESG criteria in their investment process**

| Name | Country | Main CSR goal | Screening criteria | Main CSR/SRI activities reported | Exclusions, voting and engagement publications in 2018 |
|---|---|---|---|---|---|
| Government's Pension Fund – Global | Norway | To contribute to well-functioning markets and good corporate governance. | Follows UN international principles and OECD principles of corporate governance.<br>*Negative:* Publish own expectations regarding several CSR areas.<br>*Positive:* Invest specially in climate solutions. | Attendance of meetings on responsible investment. Active contribution to development of climate-change and water-management priciples. Support and initiate research projects on ESG-related topics. Publish position papers on corporate governance issues. | Dialogue with 1000 companies that represent 2/3 of equity portfolio value. Publish strategic subjects of dialogue. Divested in 30 companies: 15 companies (climate), 9 (corruption), 4 (human rights), 2 (other).<br>Published voting activity at all shareholder meetings. |
| Canada Pension Plan | Canada | Sustainable investing. | *Negative:* Publish and follow own principles.<br>*Positive: S*elect 'best in class' firms for active investment. | Establishment of climate change steering committee. Design and implementation of toolkit that investment teams will use for investment evaluation.<br>Expansion of fund's renewables portfolio. | Actively engaged with target companies to promote improved management of ESG. Exercised voting rights and publish proxy voting principles and guidelines.<br>Issuance of green bonds. |
| Australian Future Fund | Australia | | Designed own ESG policy with principles.<br>*Negative:* Certain traditional screens (tobacco, mines, munitions) and other exclusions based on ESG policy. | Exercise ownership rights associated with investment according to corporate governance voting principles. | Published proxy voting summary, provide voting principles in annual report and provide own report on implementation of Santiago Principles.<br>Dialogue and engagement activities with portfolio companies to establish a climate of long-term asset stewardship. |
| New Zealand Superannuation Fund | New Zealand | | Designed RI framework to integrate ESG considerations into investment process.<br>*Negative:* eight screens related to munition, tobacco and other topics. | Active investment, engagement, voting, exclusion and/or divestment from companies. | Conducted work on climate change scenarios to understand their investment implications.<br>Updated exclusion list: approx. 280 companies from 15 countries are excluded. |
| Ontario Teachers' Pension Plan | USA | Integrate, engage, influence and evolve. | *Negative and positive*: environmental, social and governance | Integrate ESG considerations into investment process, build relationships with target companies, use influence to make expectations regarding ESG clear. | Developed plan for climate change policy advocacy. Developed long-term tailored engagement plans for public and private target companies. Developed customized governance guidelines and expectations for specific markets and countries. |
| Fonds de Reserve pour les Retraites | France | | Incorporate ESG criteria into portfolio management. | Convict businesses to adopt necessary measures to reduce their impact on climate. | Developed active policy of voting proxies at shareholder meetings. |

## 2.7 Asset allocation and investment strategies

The world currently knows different types of SWFs with respect to origin, purpose and subsequently investment strategy. Most SWFs combine risk and return by means of diversified allocation between instruments, areas, currencies and sectors (Curzio & Miceli, 2010). In addition, we can derive some rules for investment strategies depending on the SWF type. For instance, stabilization funds often invest in less risky liquid instruments, whereas savings funds have longer-term horizons and use riskier instruments. Furthermore, SWFs sometimes deviate from the 'ordinary' risk-return tradeoff that investment funds often use. These deviations will be discussed below. Nevertheless, it is important to note that many of the transactions that SWFs undertake are not publicly reported. This has various reasons: for example, some transactions are anonymous and sometimes asset managers act on behalf of the SWFs. Most SWFs therefore are quite opaque regarding asset allocation and investment strategies. Hence, the foundation of data is rather narrow, but still gives the opportunity to identify some macro trends.

### *2.7.1 Investment strategies*

In order to get an overview of how SWFs actually invest, thirteen studies that document SWFs' investment decisions are summarized by Fotak, Gao and Megginson (2016). The table below provides an overview of the main areas of investigation of these papers.

**Table 6. Overview of studies that investigate SWF asset allocation, as summarized by Fotak, Gao and Megginson (2016).**

| Area of investigation | Study |
|---|---|
| Documentation of actual portfolio decisions of SWFs | Chhaochharia and Laeven (2010), Dyck and Morse (2011), Avendaño (2012), Karolyi and Liao (2015) |
| Assessment of political and macroeconomic factors that influence observed SWF investment decisions | Candelon, Kerkour and Lecourt (2011), Avendaño and Santiso (2012), Knill, Lee and Mauck (2012), Ciarlone and Miceli (2014), Murtinu and Scalera (2016) |
| Examination of how SWFs select specific target companies | Heaney, Ri and Valencia (2011) |
| Measurement of how much SWFs invest in private equity and how this compares to other internationally active institutional investors | Bernstein, Lerner and Schoar (2013), Johan, Knill and Mauck (2013) |

In addition to the studies identified by Fotak, Gao and Megginson (2016), other studies deemed relevant are included as well. The sections below provide their conclusions regarding SWFs' actual choices for foreign asset allocation, sectors, industries and instruments.

*Foreign asset allocation*

During the financial crisis, many SWFs shifted their focus of investments from abroad to domestic markets (Kern, 2008; Kern, 2009; Miracky and Bortolotti, 2009). Nevertheless, between 2004-2014

approximately 84% of all investments were foreign investments (Fotak, Gao & Megginson, 2016). Fotak, Gao and Megginson (2016) argue that SWFs mainly invest in foreign countries for two reasons: first, wealth funds can achieve different macroeconomic and political exposure other than they have in their domestic economies by investing in global equities (and especially by investing in developed economies); second, as many SWFs are large funds compared to their small home economies, they are forced to invest abroad in order to avoid asset price bubbles. Still, it is important to note that since 2014, SWFs also reduced their investment proportions abroad and turned attention to their respective domestic markets. Especially the Middle East and North Africa region gave substantial support to their domestic economies.

The main target markets for SWF stock capital investments are the US, Europe and Asia. Especially OECD countries are attractive allocation targets (Fotak, Gao & Megginson, 2016). Within Europe, the UK is the most popular country (Curzio & Miceli, 2010). Nevertheless, emerging markets gained importance as SWF investment destinations since the financial crisis. Fotak, Gao and Megginson (2016) also point out that SWF investments in Middle East and North Africa and the Pacific region are increasing significantly. Furthermore, data shows that even though most SWFs invest internationally, there is a pattern of investing in near abroad countries. This is especially the case for Asian funds (Balding, 2008).

*Drivers of foreign asset allocation*

When comparing SWFs' asset allocations to the market portfolio, Chhaochharia and Laeven (2008) find several determinants of SWFs' foreign asset allocation. They report the following drivers of foreign bias of SWFs:

- Trade closeness (total exports and imports between source and destination country of investment scaled by total trade of host country of the SWF);
- Industrial closeness (industrial distance between source and destination country of investment based on UN industrial classification);
- Ethnic, language and religious closeness (Three cultural proximity variables that indicates similarity in culture between host and destination country, obtained from Acemoglu et al. (2008)).

These indicators were found to be statistically significant for almost all definitions of market capitalization. An interesting finding here is that SWFs tend to invest in countries with similar cultural traits (Chhaochharia & Laeven, 2008; Chhaochharia & Laeven, 2009). Possible explanations for this are that it is easier for SWFs to invest in familiar companies and that they are better able to exploit information asymmetries. However, the first explanation does raise the question whether such an SWF follows an efficient portfolio theory to allocate its funds. According to Chhaochharia and Laeven (2009), investment allocation of SWFs is often not completely profit maximizing driven as a result of this cultural bias, especially driven by religion.

Furthermore, two determinants that are significant drivers of foreign bias with respect to some definitions market capitalization are:

- Judicial efficiency;
- Accounting standards;
- Log per capita GDP.

In sum, they find that investment allocation of many SWFs is driven partly by cultural differences, especially by similarity in religion. This again confirms that it is likely that SWFs' determination of asset allocation does not completely correspond to the allocation of rational investors. Therefore, their objectives are not necessarily consistent with global diversification and improvement in risk-return tradeoffs (Chhaochharia & Laeven, 2008).

In addition to these determinants of SWF cross-border investments, Megginson, You and Han (2013) report several other drivers of cross-border transactions. What differentiates their approach from other studies such as Kotter and Lel (2011), Bernstein, Lerner and Schoar (2009), Bortolotti, Fotak and Megginson (2010) and Dewenter, Han and Malatesta (2010) is that Megginson, You and Han (2013) uses a country perspective. They first take an acquirer country perspective to analyze determinants of SWFs' investments. Later, they also examine the relationship between SWF investment and several financial, cultural and country metrics[4]. Their findings suggest that SWFs do not concentrate investment specifically in more developed or more open target countries. Furthermore, SWFs prefer to invest in countries with larger capital markets. This is line with Ciarlone and Miceli (2014), who find that SWFs tend to invest in countries with more developed financial markets, more stable macroeconomic environments and better investor protection. Furthermore, Megginson, You and Han (2013) find that sharing the same culture and higher bilateral trade increases the probability that the acquirer invests in the target country, comparable to the evidence of Chhaochharia and Laeven (2008).

Another aspect that influences the determinants of asset allocation seems to be the distinction between OECD and non-OECD countries. Candelon, Kerkour and Lecourt (2011) find that SWFs use different criteria to decide on investments in these two categories. They report that the investment decision depends on macroeconomic structural factors, such as GDP per capita and exchange rate stability, but financial returns do not play a significant role. With respect to advanced versus developing economies, they find that exchange rate stability is the main factor for investing in advanced countries whereas institutional factors, such as democracy, government stability and governance, are key determinants for investing in the rest of the world.

[4] Financial metrics: Target country investor protection, economic development and capital market depth. Cultural and country metrics: investment value and language, geographic proximity and bilateral trade.

*Foreign asset allocation*

A first sector in which many SWFs heavily invest in or have been investing in is the financial sector. From 1995 to just before the start of the financial crisis in 2008, many SWFs had a substantial portion of their funds invested in the financial sector (Kern, 2009). SWFs' investments in this sector peaked just before the financial crisis: in the first quarter of 2008, SWFs' investments in the financial services sector accounted for 60 percent of the total value of SWF investments (Miracky & Bortolotti, 2009). Nevertheless, the boom of SWF investment in the financial sector decreased after this first quarter. Other sectors in which SWFs tend to invest are manufacturing, services and retail, real estate, energy and raw materials, technology and defense.

Dyck and Morse (2011) find that SWFs allocations are very biased towards financial, transportation, energy and telecommunication industries. Candelon, Kerkour and Lecourt (2011) find that SWFs largely invest to diversify away from home industries. Nevertheless, they still do so in countries with economic and institutional stability. SWFs display industry biases (Chhaochharia & Laeven, 2009), as they tend to invest a disproportionally large fraction of their portfolios in oil company stocks.

All these findings are also shown in appendix A, which contains a figure from the Sovereign Investment Laboratory (2015) as indicated by Fotak, Gao and Megginson (2016). This figure displays the value of direct SWF foreign investment by target sector from 2006 until 2014. Besides the trends described above, this chart also shows that the proportion invested in the real estate sector has increased significantly since 2010. Furthermore, we see increases in infrastructure and utilities and communications, which are considered strategic sectors. A specific concern (already mentioned in section 3.5) regarding SWFs' investments in specific industries such as the latter two is that SWFs can target strategic industries that conflict with national interests of host countries (Chhaochharia & Laeven, 2008). It remains rather difficult to tackle this concern because of the lack of transparency and disclosure on the part of several SWFs.

*Foreign asset allocation*

(Mostly anecdotal) evidence suggests that SWFs invest in a variety of asset classes, such as equity and debt, commodities and real estate. In general, SWFs' choices for financial instruments range from relatively safe investments such as government bonds to more risky instruments. A survey from IMF's International Working Group (IWG) showed that in 2008, all SWFs used fixed income securities in their portfolios (IMF, 2008c). Furthermore, as most funds have stable risk preferences, they are likely to earn liquidity and other return premia by providing liquidity in financial markets and buying unpopular asset classes (Chambers, Dimson & Ilmanen, 2011). For instance, most funds invest in illiquid assets such as real estate, private equity and other alternative asset classes. Given their long horizon and large capital inflows, these funds can tolerate higher levels of illiquidity (Chambers, Dimson & Ilmanen, 2011). Most SWFs

invest in almost all developed countries as well as in emerging-market countries. In these respects, SWFs are similar to institutional investors' preferences for asset characteristics (Kotter & Lel, 2011).

According to Kotter and Lel (2008), a typical SWF portfolio would consist of the following elements: fixed income securities between 35-40%, stocks between 50-55% and alternative investments (private equity funds, hedge funds, raw materials, derivatives) between 8-10%. This implies that on the whole, SWF portfolios are fairly diversified with a balance between stocks, fixed income and alternative investment types. Nevertheless, it is hard to draw any conclusion regarding the mix of investment instruments used by SWFs as many funds to not make their portfolio composition public.

There has been done some other research into SWFs' choices for instruments. Dyck and Morse (2011) find that most SWFs employ a balanced allocation concerning their risky asset classes. Chhaochharia and Laeven (2009) report that SWFs tend to invest in mostly large capitalization stocks. Bernstein, Lerner and Schoar (2009) and Johan, Knill and Mauck (2013) both examine the private equity investments made by SWFs. Due to the sometimes politically difficult situations that SWFs might encounter, commentators suggested that SWFs should invest indirectly through private equity funds. The two studies above examine whether SWFs actually do so. Bernstein, Lerner and Schoar (2009) find that with respect to private equity investments, SWFs actually 'trend chase', which means that they follow markets in which equity prices have increased already. Johan, Knill and Mauck (2013) examine whether SWFs are more or less likely to invest in private equity compared to other investors, and they eventually find that they are less likely to do so. Nevertheless, the economic significance of this evidence is rather low.

The GPFG invests in a broad portfolio of international securities (Chambers, Dimson & Ilmanen, 2011). The regional allocation and specific types of asset classes are determined by the Ministry of Finance, guided by the Norges Bank Investment Management (NBIM). The CIC acquires substantial stakes in foreign energy and resource companies, which it not surprising given its aim to secure energy and resource security for China (Liew & He, 2012). An overview of all known asset allocations for the most recent publication year (2017 or 2018) can be found in appendix x.

*Other investment strategy drivers*

*Geographic origin.* Another driver of investment strategy is geographic origin, as there exists heterogeneity in terms of deal size with respect to geographies. Bernstein, Lerner and Schoar (2009) find that Middle Eastern funds have on average the largest deals and Western funds have the smallest average deal size. To compare these two: Middle Eastern funds invest on average $604 million per deal, whereas a Western fund only invests $97 million per transaction. In addition, geographic region also seems to matter for the propensity to invest at home: Western funds are more likely to invest at home than Asian and Middle Eastern funds. Still, they note that this may have to do with the fact that Asian and Middle Eastern funds

are almost forced to invest outside their home nations due to them being very large relative to the size of the local economies. Furthermore, Western funds are more likely to choose industries with higher P/E ratios when investing at home, whereas Middle Eastern and Asian funds choose industries with lower P/E ratios at home. Related to this, Middle Eastern and Asian funds are investing in targets with higher industry P/E ratios when investing abroad. In sum, Bernstein, Lerner and Schoar (2009) do not distinguish significant variations in average P/E levels of the sectors in which Western, Middle Eastern and Asian funds invest, but there is a sharp distinction when looking at domestic versus foreign investments. Based on further regressions, the authors find the most plausible explanation for this to be that for Asian and Middle Eastern funds their local firms have lower prospects in general. Another interesting difference is the average acquisition stake of SWFs: on average, Bernstein, Lerner and Schoar (2009) find a stake of 56.6%, but this is mainly driven by Middle Eastern funds (62.2% on average) - Western funds only acquire 25.7% on average. Thus, Asian and Middle Eastern funds tend to acquire significantly bigger stakes in target companies compared to Western funds.

Generally, the most active SWFs are the Asia-Pacific-based ones. This is confirmed by data from several empirical studies, such as Bernstein, Lerner and Schoar (2009) who use data from 1984 to 2007. In their case, the number of transactions of Asian funds is almost four times bigger than the number two, Middle Eastern funds. The GIC

Avendaño (2012) uses another geographic categorization, namely OECD-based and non-OECD-based funds. He finds that SWFs from these two categories differ regarding their preferences about target-firm leverage, degree of internationalization, and profitability. Hence, he finds differences in portfolio allocation between industrialized and emerging SWFs. Notably, SWFs owned by OECD countries do not consider target firm profitability a relevant factor for their investment choice but do favor targets with high turnover ratios. For both OECD and non-OECD SWFs, the size of the target seems to play a role in the investment decision.

*Governance structure: external managers vs. politicians.* Another SWF characteristic that causes differences in asset allocation is governance structure. Bernstein, Lerner and Schoar (2009) find a home bias for SWFs where politicians are involved. Relative to funds without politicians involved in investment decisions, they invest 13 percentage point more in their home countries. Next to this home bias, they also distinguish that SWFs with politicians involved generally make investments with high P/E levels, whereas funds with external managers make investments with lower P/E levels, controlled for geographic origin and investment mixture. In addition, investments by external manager-influenced SWFs correlate with a more positive change in industry P/E in the year after the deal and the other way around for politicians-influenced SWFs. Last, funds with external managers tend to acquire smaller stakes than politicians-managed funds.

In line with this, Bortolotti, Fotak and Megginson (2015) find that even though they speak of an SWF discount, the governance structure of the SWFs matters in that larger discounts and deteriorating performance are associated with large investments by highly politicized SWFs. For instance, investments made by Norway's GPFG, a more sophisticated and external manager-based fund, are not associated with a discount. This finding is supported by Murtinu and Scalera (2015), as they find that the higher the politicization of an SWF, the larger the stock price drop after an SWF investment announcement. However, Megginson, You and Han (2013) do not find evidence of political influence. Their evidence suggests that SWFs act as commercial investors that facilitate cross-border corporate investment and that they can be compared to other funds such as private pension funds or hedge funds.

*Target firm characteristics.* There are several other drivers of SWF's asset allocation that mostly concern target company's characteristics. For instance, Kotter and Lel (2011) find that large firms attract SWF investments, consistent with findings on other large investors such as public pension funds (Gompers & Metrick, 2011). In addition, Kotter and Lel (2011) find that poor performing firms attract investments from SWFs. This is again comparable to the investment behavior of institutional investors (Kotter & Lel, 2011). They also find that fims with a high leverage ratio, low cash holdings and/or financially distressed firms are more likely to be targeted by SWFs. This is confirmed by Chhaochharia and Laeven (2008), who find that SWFs tend to invest in financially constrained firms. A last feature is especially transparent SWFs are more likely to invest in financially distressed firms compared to opaque SWFs.

### *2.7.2 Strategies: how SWFs should invest*

Many authors have presented normative (either theoretical or empirical) studies of how SWFs should allocate their funds across asset classes. Fotak, Gao and Megginson (2016) provide a summary of twelve papers that argue how SWFs should design their allocation policy. Even though these studies are quite heterogeneous in terms of approaches and conclusions, most of them tend to compare the SWF investment strategy to either the endowment model or the (sometimes called optimal) GPFG allocation. Furthermore, two of these papers explicitly analyze SWFs' dependence on commodity price changes. Both find that oil dependent SWFs can adhere to a better asset allocation policy than most of them currently follow and they suggest that the allocation for an oil-funded SWF will deviate significantly from the general portfolio of a wealth-maximizing investor.

Concerning the question whether SWFs should follow active or passive management, Ang, Goetzmann and Schaefer (2009) endorse active management over passive, market-weighted benchmarks, and they favor factor investing in particular. In short, factor investing takes into account that assets are bundles of different types of risk factors. For instance, holding a corporate bond means that an investor exposes himself to default risk and interest rate risk. Factor investing explicitly acknowledges that asset

have returns, and returns subsequently reflects the underlying factors behind those assets. Subsequently, a factor approach is better able to harvest and measure benefits of diversification (Ang, 2010). Furthermore, different investors have different optimal risk exposures, which means that they want to be exposed to different types of factors. Applied to the SWF context, this implies that younger SWFs might have different factor exposure preferences than mature SWFs, or that SWFs with different governance structures and payment rules want different sets of factors.

The benefit of factor benchmarking is that it serves as a better standard than a traditional and passive index by seeking to understand the underlying drivers of asset returns rather than seeking diversification in a broad range of asset(s) (classes). In addition, factors allow a better understanding of risk-return trade-offs trade SWFs face. For an SWF, which normally employs a long-term view, a large factor exposure to liquidity, credit and volatility risk is appropriate (Ang, Goetzmann & Schaefer, 2009). Ang (2010) notices that an increasing number of SWF managers thinks about factor investing. A few examples of SWFs that either use factors or move into that direction for their asset allocation are the SWFs of Australia, Singapore, Norway, New Zealand and Alaska.

Ang (2010) rightfully notes that the management of SWFs differs from those of private companies. Hence, SWFs need to be evaluated using different benchmarks, namely broader benchmarks than a performance-based one only. She describes four benchmarks, including both qualitative and quantitative standards, which can be used as guidelines for evaluating SWFs. The four benchmarks she introduces are a legitimacy, integrated policy, long-run equilibrium and performance benchmark. Among these four benchmarks, Ang (2010) ranks the legitimacy and integrated policy benchmarks as the most important ones, followed by the performance benchmark, and the long-run equilibrium benchmark being the least important. AN SWF that meets the legitimacy benchmark if it is managed in such a way that its capital is not immediately spent (Ang, 2010). Without legitimacy, the SWF's capital will not be saved for future generations. Furthermore, without legitimacy an SWF suffers from a loss of reputation in credit markets and in the worst case inflationary pressure on the SWF's country. Nevertheless, legitimacy does not necessarily imply the preservation of capital, as it is sometimes inevitable that an SWF loses or pays out a part of the funds. Still, legitimacy does allow an SWF to experience losses without risking its existence (Ang, 2010). Ang (2010) notes that all SWF which meet the legitimacy benchmark have some features in common: they are held accountable to some authority, management submits regular reports, and managers are held responsible for the fund's performance. In the content of an SWF, transparency means that the goals of the fund are stated clearly, there is education about the management of the fund, and public's

preferences of investment styles are reflected in the fund's management. Even though transparency can enhance an SWF's legitimacy, it is not necessary but also not sufficient to meet the legitimacy benchmark.[5]

The integrated policy benchmark means that SWFs should anchor their existence into a well-defined mandate. For all countries, an SWF is part of an overall policy framework of managing wealth, assets and liabilities. AN SWF can play an important role in the asset-liability matching of a country (Ang, 2010). The benchmark of integrated policy takes into account the country's broader policy environment in which the SWF is embedded. Ang (2010) acknowledges that SWFs are used for different purposes. For every purpose, the integrated policies are different: for instance, an SWF that owes its funding to natural resources should take tariffs, development policy, economic policies of resource taxation and so on into account for determining how the SWF capital should be gradually distributed.[6] An important aspect of the integrated policy benchmark is the spending rules of an SWF. These rules should contain explicit spending prerogatives, thus how and under what conditions the money can be distributed (Ang, 2010). The optimal spending rule can be proportional vs. absolute, fixed vs. discretionary, time-varying vs. statistic, but in all cases the rule should be set to meet the SWF's liabilities. Nevertheless, the spending rules should be flexible, as one important reason for many countries to have an SWF is to balance large and negative shocks to a country's economy.

The long-run equilibrium benchmark means that SWFs are required to take into account externalities that short-term investors often do not. Furthermore, SWFs should ensure well-functioning capital market, corporate governance, the preservation of shareholder rights over time because this in their own interest in the longer term. It forces SWFs to take negative externalities into account, such as child labor, climate change and water management (Ang, 2010). Many of these externalities only become costly in the long run. Hence, the long-term perspective of SWFs (and other long-term investors such as endowment funds and pension funds) is altered by these externalities, whereas they are not taken into account by short-term investors.

The last benchmark, the financial one, means that the SWF should make sure that the fund is managed well. It should choose an asset allocation that is appropriate for a long-term investor. Moreover, this benchmark emphasizes that financial benchmarks differ for different governance structures. An unexperienced SWF should have less ambitious financial goals than an experienced fund. Moreover, the financial benchmark also depends on the principal-agent relationship between the SWF management and government (Ang, 2010). In some cases, governments give a much broader investment mandate compared to other SWFs. An important requirement for meeting this benchmark is the presence of a market-oriented

[5] For instance, the KIA (Kuwait) and GIC (Singapore) meet the legitimacy benchmark without transparency (Ang, 2010), as they do not release information to the public but do report detailed information to authorities and fund managers are held responsible for their investment actions.

[6] Some examples of SWFs that perform very well with respect to this benchmark are the SWFs from Timor-Leste, Botswana, Chile and South Korea (Ang, 2010).

and professional SWF management. Without a professional culture, there is a great probability of a poorly managed SWF.

It should not come as a surprise that also SWF can fall into widely-known general principal-agent problem. In this scenario, the principal is the government, the agent is the fund's manager and the principal faces asymmetric information. This causes problems such as moral hazard and adverse selection. Nevertheless, Ang (2010) notes that SWFs face unique challenges in mitigating these principal-agent problems. This is the case because SWFs are public sector organizations. According to Ang (2010), this has the disadvantage that an SWF lacks the discipline of the market: an SWF can perform unsuccessful for years without being forced to close. Therefore, Ang (2010) urges the importance of a professional culture. This is partly reached by sufficient compensation for the SWF management, a management structure that emphasizes responsibility and accountability[7], performance-based pay and delegating investment decisions to appropriate people in the management structure.

Ang (2010) describes the ideal mandate for many SWFs as a real return target plus some spread. However, the drawback of this benchmark is that it maximizes principal-agent misalignment. This is further enhanced if the SWF has little transparency. Another possible mandate is the 'financial planner' model, in which a planner manages assets for the investor, but also elicits information about the principal's preferences and financial goals (Ang, 2010). Even though there are some new SWFs that use some sort of financial planner model, it is important to note that it maximizes asymmetric information and favors the investment management over the principal, i.e. the government.

### *2.7.3 Similarities and differences with other (institutional) investors*

The overview of the characteristics and investment strategies of SWFs outlined in 2.2 and 2.7.1 show that SWFs are unique institutions. They often manage very large pools of capital, whereas their objective functions are often complex and involve non-financial objectives or returns as well. Their main difference from other large, internationally active institutional investors, such as currency reserves, pension funds, hedge fund and private equity funds, is that there are state-owned. Governments often have broader goals than simple wealth maximization. Hence, SWFs might suffer from such deviations that other institutional investors do not.

The main difference between SWFs and official exchange currency reserves is that unlike these reserves, SWFs do not need to be completely denominated in foreign currency nor invested in liquid assets. This implies that SWFs usually have higher exposure to risk as well as longer time horizons, because they are not subject to rules and guidelines from the international financial system.[8] Next, SWFs differ from

[7] Here, accountability refers to the fact that an investment decision is always traceable to a specific person within the management structure.

[8] Official exchange reserves usually need to comply with two main voluntary mechanisms: the Currency Composition of Official Foreign Exchange Reserves (COFER) and the Data Template on International Reserves and Foreign Currency Liquidity. Unlike foreign exchange reserves, SWFs do not need to adhere to these rules.

other public investments mainly because in theory, state-owned enterprises are mainly found in strategic sectors such as transport, energy, infrastructure and aeronautics. In addition, SWF differ from other types of investments funds, such as hedge or private equity funds for several reasons. The first reason is that specifically hedge funds are most of the time highly leveraged with a short-term and high-risk outlook, whereas SWFs tend to have a low (indirect) level of debt, less risk propensity and a longer-term horizon. A second difference is that incentives between ownership and management are easier to align within a hedge fund or private equity fund than within an SWF, because the shareholder of an SWF (the citizens of the owner state) have no access to information on the management of SWFs whereas hedge funds and private equity funds often feature higher transparency standards (for investors) (Curzio & Miceli, 2010).

The distinction between pension funds and SWFs may be the most difficult one. Curzio and Miceli (2010) distinguish two types of public pension funds: the 'normal' public pension funds that belong to the national security system or the social security reserve funds (SSRF) and the sovereign pension reserve funds (SPRF). SWF differ significantly from SSRFs, but the difference with SPRFs are only subtle. This is also the reason why for instance Truman (2010) counts several public pension funds (both SSRFs and SPRFs) as SWFs, for example the ABP from the Netherlands, the Pension Plan from Canada, the Government Pension Fund from Thailand and California's CalPERS. He argues that this type of pension funds is a functionally equivalent of an SWF. The IMF however only includes SPRFs into their definition of SWFs. Curzio and Miceli (2010) agree with this latter approach.

*Government ownership.* A more focused body of literature already looked at reasons for and against state-owned banks, which might also be applicable to SWFs. According to Bernstein, Lerner and Schoar (2009), the three most popular alternative theories on the performance of state-owned banks are the following:

- The *development* perspective argues that state-owned banks maximize broader social objectives than just financial profits, because governments direct their savings toward strategic long-term projects that overcome market failures and generate demand and increased growth (Atkinson & Stiglitz, 1980);
- The *political* perspective suggests that state-owned banks enable governments to invest in inefficient but politically desired projects, for instance financing favored enterprises because state-owned banks enable self-interested politicians to pursue private goals (Shleifer & Vishny, 1994).
- The *agency* perspective defends that state-owned banks are created to maximize social welfare, in line with the development perspective, but it can also generate corruption and misallocation (Banerjee, 1997). The agency costs presents in governmental organizations can result in weak managerial incentives, and public managers exert less effort as a result (Tirole, 1994).

Bortolotti, Fotak and Megginson (2015) note that the new model of state-led entrepreneurship, where government stock buyers tend to act primarily as investors, has seen a resurgence. Compared to other state-owned investors, SWFs are growing faster than any other institutional investor group. The authors try to address the tension between being state-sponsored and thereby functioning as investment fiduciaries of their citizens, and acting as objective, commercially driven long-term global investors.

Their findings cast doubts on the conclusions by Dewenter, Han and Malatesta (2010), Fernandes (2009) and Kotter and Lel (2011), as they all three find that SWFs behave as active investors. Still, their conclusion supports the findings by Knill, Lee and Mauck (2012), who argue that their findings are inconsistent with SWFs providing the same monitoring benefits as other institutional investors. Knill, Lee and Mauck (2012) find evidence that SWFs do not provide the same monitoring benefits as other institutional investors. Even though SWFs share characteristics with institutional investors, they show that their investment strategies are distinct as the target firm outcomes resemble the investment style from government-owned firms.

Karolyi and Liao (2015) have a quite similar goal as Bortolotti, Fotak and Megginson (2015) as they want to determine if state-controlled investors have a differential valuation impact on acquisition targets than do private, corporate acquirers. They find differences between state-controlled acquirers' and private acquirers' investment patterns and preferences. SWFs and other state funds pursue larger targets with higher growth options. Hence, they conclude that there is no reason to discriminate state-owned acquirers compared to private ones. Avendaño and Santiso (2012) support this finding as they do not find any difference in political influence between SWF investment decisions and those from private owned mutual funds.

Knill, Lee and Mauck (2012) specifically examine whether SWFs are similar to other institutional investors. They find a significant difference in the return-to-risk patterns of SWF target firms versus those of other institutional investors. The pattern is most consistent with those of government-owned firms in the sense that cross-border investment leads to increased risk and reduced returns for the target. Thus, even those SWFs are mainly similar to institutional investors regarding their aims and investment strategies, the results for target firms seem to be different, as SWFs seem to suffer from the same inefficiencies as other government investors.

In sum, institutional ownership does seem to matter for the question whether investment is value increasing. Furthermore, not all institutional investors are good monitors per se. Regarding the monitor abilities of SWFs compared to other institutional investors, the literature so far yields mixed results.

## 2.8 SWF performance and effects on financial markets

### *2.8.1 Performance of SWFs*

Truman (2010) reports that in the beginning of the financial crisis, several SWFs invested substantial amounts in financial institutions that were under stress. This again underlines their capability to bear short-run volatility and acquire higher-risk assets, but also generated political side benefits. However, SWF investments in these institutions decreased in 2008 and 2009. Furthermore, even though many SWFs showed a commendable investment performance until the financial performance, almost all of them reported negative returns during 2007-2008.

Even though it is clear that most SWFs experienced significant losses during the crisis, empirical studies to-date do not provide conclusive evidence how SWFs perform in the longer run. Most papers focus on the indirect performance of SWFs by examining the stock-price and operating performance of the target firms rather than the returns of SWFs themselves.[9] Studies provide mixed evidence regarding the impact of SWFs' investments on companies. Chhaochharia and Laeven (2008) find that long-run performance of equity investments by SWFs tends to be poor because of imperfect portfolio diversification and poor corporate governance. Bortolotti, Fotak, Megginson and Miracky (2009) support this finding, as their evidence indicates that targets experience poor long-term stock performance and poor post-investment performance because SWFs are unable to exercise proper monitoring. However, Fernandes (2009) finds that SWF ownership increases firm performance and value.

In addition, there is little research available on the performance of SWFs that use social responsible investment guidelines. Therefore, it is not yet possible to compare their performance to SWFs that do not (explicitly) use CSR or ESG guidelines when making investment decisions. It is important to note that especially SWFs that incorporate CSR investing are likely to care less about their financial performance than 'conventional' (non-SRI) investors because SRI investors derive non-financial utility from investing in companies that meet high CSR standards (Renneboog, Ter Horst & Zhang, 2007). By taking CSR standards into account, these SWFs may have a multi-attribute utility function, meaning that it incorporates personal and societal values next to standard risk-reward optimization (Bollen, 2007). Furthermore, it is likely that SWFs that take CSR performance into account have a lower volatility of their funds flow than 'regular' SWFs, because the socially responsible component of their targets smoothes allocation decisions (Renneboog et al., 2005; Bollen, 2007).

[9] Section 5.2 provides a more extensive overview of the literature that examines the performance and value of target firms.

*Forecast of SWF performance*

In general, the future performance of SWFs is related to three key factors (Curzio & Miceli, 2010): first, the volatility in prices of raw materials (especially oil), second, trends in the current account balances of the major exporting countries (especially Asian countries), which in turn depend on global growth rates, growth rates of exporting countries, currency policies and exchange rates, third, the yield on financial markets as they determine the returns on activities managed by SWFs.

### *2.8.2 Performance of target firms*

An important general benefit of SWF investment could be that SWFs, given their long-term horizon and low leverage, provide a long-term stabilizing influence on financial markets, which promotes higher economic growth (Baker, 2010; Butt, Shivdasani, Stendevad & Wyman, 2008). Several empirical studies have been conducted to quantify the impact of SWF investments on the performance of their target firms. Most of these studies perform an event study and analyze the impact of SWFs' investments announcements on stocks, based on abnormal returns at the time of announcement. Even though these researches use different samples, most of them provide evidence for positive abnormal returns. These papers find positive announcement date abnormal stock returns ranging from 0.5% to 2%. Still, the conclusions regarding the question whether SWFs also have a positive effect in the longer-run are mixed. Whereas most studies find a positive relationship between SWF ownership and target companies' values and performance in the short-run, some find evidence for a negative effect of SWF investment in the long-run.

*Target firm performance*

First, Fernandes (2009) argues that there is a positive and significant relation between SWF ownership and target companies' values, as he finds that companies with a larger percentage of ownership by SWFs have a higher value. Furthermore, he finds that the operating performance (ROE, ROA and EBITDA/Assets) and operating profit margins of target companies receiving large SWF investments increases relative to that of comparable companies. Some potential channels through which SWFs could impact the performance and value of their target companies are the following (Fernandes, 2014). First, SWFs can function as monitors of corporate managers. Second, SWF investments might lead to improved access in foreign product markets, Third, a target firm could acquire better access to capital as a result of SWF investments. In line with Fernandes (2009), Bertoni and Lugo (2013) find a positive relationship between SWF investment and target company's performance, as they find that the target company's credit risk decreases significantly after SWF investment.

Kotter and Lel (2011) also find a significant effect of the announcement of SWF investment on share prices of the target firm in the short-run. Thus, investors react positively to an SWF investment. There is a greater market reaction when it concerns:

- target firms with higher leverage and low cash holdings;
- more opaque target firms;
- a large SWF stake;
- an investment from a more transparent and accountable SWF.

However, Kotter and Lel (2011) do not find statistically significant changes in the target firms' profitability, growth, investment, and corporate governance environment in the three-year period following an SWF investment. This suggests that SWF investments actually do not improve firm value and governance environment of their targets in the longer run.

First, Kotter and Lel (2009) find that SWF investments have a positive effect on target firms' stock prices around the announcement date, but no significant effect on firm performance and governance in the long run. Using voluntary SWF disclosure as a signal of the quality of screening and monitoring, they find that the degree of transparency and accountability positively affect the effect of SWF investment on target firm value.

Second, Dewenter, Han and Malatesta (2010) find significant short-term positive returns to announcements of SWF investments and negative returns to announcements of divestments. Using a 3-day window of [-1, +1], they study share sales and purchases and find significant positive announcement abnormal returns of 1.5% on average. Furthermore, divestment announcements lead to significant negative announcement abnormal returns of 1.4%. They argue that divestments convey negative information about the former-target firm or are expected to result in a withdrawal of monitoring activities by the SWFs, and investments convey positive information about or are expected to have positive effects on the target company. Regarding control variables, their most important finding is that these two relationships are nonlinear with respect to transaction size. For purchases, abnormal returns first increase in transaction size and then decrease; for divestments, this trend is the other way around. Nevertheless, they find mixed evidence for 3- and 5-year positive returns, in line with Kotter and Lel (2009). Still, Dewenter, Han and Malatesta (2010) are the only researchers that look into a 5-year period.

Third, Bortolotti, Fotak, Megginson and Miracky (2009) do find significant negative mean compounded matched-firm returns for the 1-year horizon. This implies value-destroying effects from SWF investments, which supports an agency conflict hypothesis that SWFs destroy value by driving firm managers to pursue non-value maximizing goals. Nevertheless, on the short term they do find positive abnormal returns around the announcement using an event window of [-1, 1], which indicates that financial markets welcome investments made by SWFs.

Fourth, Chhaocharia and Laeven (2008) use investment portfolios of SWFs and focus on the investments in listed companies. They compare these portfolios to the market portfolio and quantify both short- and long-run valuation effects of SWF investments. They find that SWFs tend to invest in different sectors than those found at home, but their target countries often share the same culture and religion. This is not in line with strictly profit maximizing investment objectives. Furthermore, they find that the announcement effect of SWF investment in listed equities is positive, partly because these investments often take place when target firms are in financial distress. Nevertheless, they also find that target firms perform worse than the average market return in the long-run (3-year return period). They ascribe this negative long-run impact to imperfect portfolio diversification, which can be explained by their first finding, and poor corporate governance.

Fifth, Knill, Lee and Mauck (2012) find evidence that SWFs do not provide the same monitoring benefits as other institutional investors. They find that target firm raw returns decline following SWF investment announcements, but risk also declines and they find a net reduction in the compensation for risk assumed over five years after investment. Still, this decrease in volatility of target firms is not enough to offset a reduction in returns. Hence, target firms from SWFs experience a decline in risk-return trade-off, whereas studies on the impact of institutional investors on target firms often find an improvement.

Last, as already elaborated upon in the section on activism, Bortolotti, Fotak and Megginson (2015) find a significant SWF discount, which means that SWF stock purchases have a smaller valuation impact on target firms than comparable purchases by private investors. About 80% of this discount is attributable to target characteristics. Nevertheless, the SWF discount is statistically and economically significant after controlling for target and deal characteristics. The sovereign nature of SWFs negatively affects target firm value and operating performance compared to private-sector institutional investors. On the short-term, the market reacts less positive on a purchase from an SWF than from another financial investor. On the long-term, SWF investments lead to lower long-term operating performance, both absolutely and relative to private-sector institutional investments. The authors hereby providing very contrasting evidence compared to Kotter and Lel (2011), who found market reaction to be the same for SWFs and private investors.

Another study that measures the impact of SWFs on financial markets is Fernandes (2009). Nevertheless, he does not use SWF transactions, but shareholdings instead. For the period 2002-2007, he examines the impact of SWF ownership on firm value. He reports a significant positive premium of 15-20%. Next to the fact that he uses shareholdings, it is also important to note that Fernandes (2009) uses the most extensive dataset compared to all other empirical studies mentioned in this section. He composed a dataset of 8000 investments in 58 countries.

Table 7 provides a summary of the most important results described in this section.

*Performance of private equity*

Bernstein, Lerner and Schoar (2009) examine the effect of SWFs' investments in private equity. More specifically, they investigate the relationship between SWFs' investment styles in private equity and their organizational structures, and the relationship between SWFs' investment styles and geographies. The most important patterns they find in their data are the following: first, SWFs are more likely to invest at home when domestic equity prices are higher and more likely to invest abroad when foreign equity prices are higher. Second, SWFs invest at lower P/E ratios when investing at home and higher P/E levels abroad. This result can be mostly ascribed to Asian and Mid-Eastern funds, whereas Western funds tend to distort this trend. The explanation that the authors find most plausible is that SWFs tend to 'trend chase', which means that they gravitate to markets where equity values are already high. Third, especially for Asian SWFs and to a lesser extent Middle Eastern SWFs experience a decrease in P/E ratios of their home investments drop in the year after their investment and an increase in P/E ratios of their foreign investments.

*Performance driven by geography and industry*

Murtinu and Scalera (2015) examine whether the stock prices of target companies are influenced by investment geography and target industry. They find that for a 50-day event window, foreign investments have higher increases in stock prices than domestic investments, on average. Furthermore, for the same window SWF investments in strategic industries experience a higher drop in stock price than for non-strategic industries.

*Performance for bondholders*

Gagliardi, Gianfrate and Vincenzi (2014) employ a different perspective than most other empirical studies, as they examine the market reaction to SWF investments from the target company bondholders' perspective. They find that bondholders experience positive and significant abnormal returns in both the short-run and medium-run. These returns are higher when the target firm is a non-financial or non-strategic company.

*Stabile vs. disrupting agents*

There still is debate upon the question whether SWFs contribute to financial markets in a stabilizing or disrupting way. On the one hand, SWFs have a long-term horizon which contribute to a more stable financial system. Furthermore, they usually diversify portfolios, have a relatively low level of leverage and low to zero liquidity risk. During the financial crisis, many SWFs invested in Western financial institutions that were seeking for liquidity, which contributed to returning to a more stable market. On the other hand, SWFs can have a destabilizing impact on financial markets due to their size and potential for controlling behavior. In combination with opacity and little regulation they have the potential to disrupt financial

markets. Furthermore, SWF investments can negatively impact corporate governance in their target firms because they usually are passive investors. In addition, political objectives are not harmful per se but financial governance is often designed with the assumption that investors pursue economic returns and not political criteria.

*Management operating techniques*

Eventually, we will see that it matters for the performance of the fund how the SWF is managed. Especially the choice for the use of external managers versus the employment or involvement of politicians seems to be an important determinant of the performance of the SWF and how the SWFs' investments affect the industry they invest in. Bernstein, Lerner and Schoar (2009) find that SWFs with external managers tend to invest in lower P/E industries, whereas those SWFs with politicians involved in the governance process usually invest in higher P/E industries. Furthermore, investments by SWFs with external managers involved are more likely to experience a positive change in the P/E in the industry in the year after the deal, which is the opposite for SWFs with politicians involved.

*Ways to achieve financial goals (relative to private investors)*

Dewenter, Han and Malatesta (2010) argue that there are different ways in which SWFs can gain advantage over private investors to generate financial returns. First, SWF managers may have informational advantages over private investment managers if information flows freely between agencies of a government. SWF managers could know early about changes in government action or policy that affect firm values. In this case SWF transactions can function as signals to private investors. Second, SWF managers can act as lobbyists for their target companies: for instance, managers can use their status as government insiders to affect government procurement contracts in ways that enhance their target companies' values.

**Table 7. Overview of studies on the short- and long-run performance of SWF targets.**

| Information | | | (Most important) results for target firms | | |
|---|---|---|---|---|---|
| **Source** | **(Main) data** | **Method** | **Short-term effect** | **Long-term effect** | **Other effects** |
| Chhaochharia and Laeven (2008) | 10,282 global equity investments from four large SWFs across 51 countries at year-end 2007, from 1998 to 2007. | Cross-sectional regressions<br>Time-series regressions | N/A | N/A | SWFs tend to invest with a cultural bias, which disappears with repeated investments in the same country.<br>SWFs display significant industry biases (oil) and prefer large-cap targets. |
| Kotter and Lel (2009) | 417 investment events in 326 unique firms from 1988 to 2009 | Event study: (0, +1), (-1, +1) and (-2, +2)<br>Multivariate analysis<br>Multinomial analysis | Average CAR is positive and statistically significant.<br>(0, +1): 1.32%; (-1, +1): 2.25%; (-2, +2): 2.74%. | CAR remains positive during the month following the announcement date | SWFs target financially distressed, cash-constrained, large multinational, poor performing firms<br>CAR of (0, +1) is influenced by firm, SWF, country and deal characteristics |
| Fernandes (2009) | SWF holdings in 8,000 firms in 58 countries from 2002 to 2007. | Time-series cross-sectional regressions | N/A | No significant difference in Tobin's Q between target firms of SWFs and control firms.<br>Operating performance of SWFs' target firms increases relative to control group. | Large investments from SWFs lead to target firms having better monitoring, expanding international operations and having a better ability to raise capital. |
| Bortolotti, Fotak, Megginson and Miracky (2009) | 1,216 investments from 1986 to 2008 (event study sample: 235 investments) | Event study: (-1, +1)<br>Cross-sectional regressions | Average CAR is positive and statistically significant. (-1, +1): 0.9%. Holds for raw, market adjusted and matched-firm abnormal returns. | Significant negative mean compounded matched-firm returns for 1-year horizon. | Short-term: market reactions are stronger for financial targets. |
| Dewenter, Han and Malatesta (2010) | 202 investment and divestment | Event study: (-1, +1)<br>Cross-sectional regressions | Average CAR is positive and statistically significant. (-1, +1): 1.52%. | No significant long-run returns for (-1, +1) years. For (-1, +3) and (-1, +5) years: | Stock price announcement effects are significantly and nonlinearly related to transaction size. For purchases, |

| | | | | | |
|---|---|---|---|---|---|
| | announcements from 1996 to 2008 | | | mixed evidence of significant positive returns. | abnormal returns first increase in transaction size and then decrease. For sales, this pattern is reversed. |
| Kotter and Lel (2011) | 163 investment announcements in 135 unique firms from 1980 to 2008 | Event study: (0, +1), (-1, +1) and (-2, +2) Multivariate analysis | Average CAR is positive and statistically significant. (0, +1): 1.94%; (-1, +1): 2.15%; (-2, +2): 2.43%. | Target firms do not experience significant changes in profitability, growth, investment and corporate governance. Event windows are (t-1, t+1) and (t-1, t+3) years. | SWF's transparency and accountability plays major role in determining investors' reaction to acquisition announcement |
| Knill, Lee and Mauck (2012) | 130 SWF acquisitions. | Event study: (-1, 0) Autoregressive panel model Multinomial logit regression | Average CAR is positive and statistically significant. (-1, 0): 1.37%. | In general, a negative but often insignificant abnormal returns for 1-year horizon. Marginal effect of SWF investment on Sharpe Ratio and Appraisal Ratio are negative and significant for 1-, 3- and 5-year horizon. | SWF target firm performance most closely resembles the performance of government-owned firms. There is a lack of compensated risk borne by the existing shareholders of the target firm. |
| Bortolotti, Fotak and Megginson (2015) | 1,018 investments by SWFs from 1980 to 2012; control sample of 5,975 stock purchases by private financial investors. | Event study: (0), (-1, +1) and (-5, +5) Return decomposition by probit model. Match and measure long-term impact on operating performance (cross-sectional regression). | Average CAR is positive and statistically significant. (0): 0.95 %. (-1, +1): 0.84%. (-5, +5): 0.55%. Market reaction influenced by extent of activism and degree of politicization of SWF. | A significant decline in probability, growth rates, and valuations relative to the matched sample, often for all time horizons considered. | SWFs tend to target larger (higher total assets) and more profitable (higher ROA) firms than private sector investors, but also acquire smaller stakes and assume control less frequently. |

## 2.9 Hypotheses

Based on the literature review of the background, sources, objectives, investment practices and performance of SWFs, the following hypotheses are derived.

**Hypothesis 1. CSR Superior Monitor Hypothesis**. Due to their long investment horizon, large AUM, and lack of explicit liabilities, SWFs are a type of shareholder that have both power and incentive to monitor the managers of their target firms, discipline underperformers in their portfolio and sustain firm value creation in the long run. SWFs that engage in CSR or ESG investing ('ESG SWFs') almost always use the monitoring opportunities provided such as voting, engagement and discussion regarding undesirable practices. This creates more value in target firms than the investment by SWFs that do not take CSR or ESG guidelines into account, both at the time of 1) making investment decisions and 2) the ownership and monitoring process.

**Hypothesis 1:** *ESG SWFs have a more positive impact on target firm performance and value than traditional SWFs*

The testable predictions of this hypothesis are: (1) investment from ESG SWFs, e.g. SWFs that engage in CSR or ESG investing, should increase firm value and improve operating and governance performance more than investments from 'non-CSR' SWFs; (2) this difference should be related to the extent of the SWF involvement, measured by acquisition stake, acquisition of majority control; (3) the difference is greater for domestic investment because SWFs are better able to exercise positive influence on same-country target companies; (4) the marginal benefit of additional 'CSR' monitoring is lower for target firms with other significant blockholders, hence the difference is weaker in these firms.

**Hypothesis 2. CSR Agenda Hypothesis**. Due to their CSR agenda next to achieving the best possible financial return, ESG SWFs may not act as purely commercially-minded investors only, but can also be used to exert environmental, social and governance influence in target firms. Accordingly, a negative impact of ESG SWF investment on target firm performance could result from the imposition of a non-commercial, CSR driven agenda by ESG SWFs investing in target firms, which would benefit the target company maybe in the (very) long-run but not in the short-run. Thus, this 'CSR agenda hypothesis' predicts that ESG SWFs will pursue noncommercial, CSR-based objectives and thus have a less positive impact on investment targets than will comparable 'non-CSR' SWFs.

**Hypothesis 2:** *ESG SWFs have a more negative impact on target firm performance and value than traditional SWFs*

The testable predictions of this hypothesis are: (1) investment from ESG SWFs should increase firm value and improve operating and governance performance less than investment from 'non-CSR' SWFs; (2) this difference should be related to the extent of the SWF involvement, measured by acquisition stake, acquisition of majority control; (3) the difference is greater for domestic investment because SWFs are better able to exercise influence on same-country target companies; (4) the marginal disadvantage of additional 'CSR' monitoring is lower for target firms with other significant blockholders, hence the negative difference is mitigated in these firms.

**Hypothesis 3. External Manager Hypothesis.** The literature suggests that politicians have a negative effect on corporations because they impose political objectives that negatively affect shareholders' value (Shleifer & Vishny, 1994; Megginson & Netter, 2001). SWFs may not act as purely commercially-minded investors, seeking only the highest possible financial return, but instead may be used by home-country governments to exert political influence in target firms. Accordingly, a negative impact of SWF investments on target firm performance could result from the imposition of a non-commercial, political agenda by SWFs investing in target firms, then diverting resources to the benefit of the SWF's home country or rent-seeking politicians (Bortolotti, Fotak & Megginson, 2015).

**Hypothesis 3:** *SWFs with autonomous investment managers have a more positive impact on target firm performance and value than politically dependent SWFs*

The testable predictions of this hypothesis are: (1) investment from political SWFs should increase firm value and improve operating and governance performance less than investment from SWFs (partly) managed by external managers; (2) this difference should be related to the extent of the SWF involvement, measured by acquisition stake, acquisition of majority control; (3) the difference is greater for domestic investment because SWFs are better able to exercise influence on same-country target companies; (4) the marginal disadvantage of politically-motivated SWFs is lower for target firms with other significant blockholders, hence the differential impact should be positively related to the presence of other blockholders; (5) political interference should have a stronger impact when there are no external managers on board of the SWF, hence a negative relation should exist between the differential impact and the degree of politicians on the SWF's board.

**Hypothesis 4. Transparency and Agenda Hypothesis.** The effect described in hypothesis 3 will be higher for opaque SWFs, because these SWFs have more opportunity to pursue home-country governments' noncommercial objectives without being criticized by other financial players, governments or lawmakers.

**Hypothesis 4:** *More transparent SWFs have a more positive impact on target firm performance and value than opaque SWFs*

The testable predictions of this hypothesis are: (1) investments from political and opaque SWFs should increase firm value and improve operating and governance performance less than investment from SWFs that are political and (more) transparent; (2) this difference should be related to the extent of the SWF involvement, measured by acquisition stake, acquisition of majority control; (3) the difference is greater for domestic investment because SWFs are better able to exercise influence on same-country target companies; (4) the marginal disadvantage of politically-motivated and opaque SWFs is lower for target firms with other significant blockholders, hence the differential impact should be positively related to the presence of other blockholders.

**Hypothesis 5. CSR Stake Hypothesis.** A review of the annual reports and responsible investing reports of the most CSR- or ESG-engaged SWFs learns that they often explicitly take low stakes in target companies, often in order to avoid discussions about (political) interference, avoid getting accused of imposing CSR or ESG measures or expropriate minority shareholders. Hence, this hypothesis predicts that on average, ESG SWFs will take lower stakes in target firms than non-ESG SWFs.

**Hypothesis 5:** *ESG SWFs take lower stakes in target companies than traditional SWFs*

The testable predictions of this hypothesis are: (1) investments from ESG SWFs should have a lower percentage ownership of the total target company than 'non-CSR' SWFs; (2) this difference should be related to the extent of the SWF being CSR- or ESG, measured by adding control variables; (3) the difference is smaller for domestic investment because SWFs are less likely to get accused of political interference and expropriation; (4) the marginal difference in stake is lower for target firms with other significant blockholders, because the stake that can be taken by an SWF is lower.

**Hypothesis 6. CSR Influence Hypothesis.** As described in chapter 3 and 4, ESG SWFs are often involved in engagement strategies. This means that they actively engage and discuss ESG-related matters with their target firms in order to let them become more aware of the importance of doing business

responsibly. ESG SWFs might be inclined to take higher stakes in target firms, because a larger stake can give them more influence in the ESG policies of their target firms.

**Hypothesis 6:** *ESG SWFs take higher stakes in target companies than traditional SWFs*

The testable predictions of this hypothesis are: (1) investments from ESG SWFs should have a higher percentage ownership of the total target company than 'non-CSR' SWFs; (2) this difference should be related to the extent of the SWF being CSR- or ESG, measured by adding control variables; (3) the difference is smaller for domestic investment because SWFs are less likely to get accused of political interference and expropriation; (4) the marginal difference in stake is lower for target firms with other significant blockholders, because the stake that can be taken by an SWF is lower.

**Hypothesis 7. CSR Engagement Hypothesis.** A review of the responsible investment reports and annual reports from ESG SWFs shows that they often follow-up on their engagement actions to see how companies in their portfolio adhere to their advice or wishes. By nature, ESG SWFs seem to pay more attention to the ESG-score of their target firms than SWFs who do not explicitly use ESG-criteria for their investment decisions. Hence, it is expected that target firms with ESG SWFs as investors will gradually achieve higher ESG scores target firms that do not have investments from ESG SWFs.

**Hypothesis 7:** *Target firms of ESG SWFs experience a higher growth in ESG score than target firms from traditional SWFs*

The testable predictions of this hypothesis are: (1) the difference in target firms' ESG score over a 1-year period is positive for firms that are targeted by ESG SWFs; this increase in ESG score is related to the extent of the SWF being ESG, measured by adding control variables.

**Hypothesis 8. CSR and developed markets hypothesis.** A review of the annual reports and responsible investing reports from ESG SWFs reveals that these SWFs are often investing in industries that anticipate on CSR-topics such as climate change, children's rights and water management. Target companies that are active in these sectors, such as renewable energy, and this type of firm activity, such as plastic reduction, recycling and research related to climate, are often located in OECD countries, which usually have developed financial markets.

**Hypothesis 8:** *A target firm located in a developed market has a higher probability of being targeted by an ESG SWF than a target firm located in an emerging or frontier market.*

The testable predictions of this hypothesis are: (1) the probability of being targeted by an ESG SWF increases when the target is located in a country with a developed economy; (2) this increased probability is related to the extent of the SWF being CSR- or ESG, measured by adding control variables.

**Hypothesis 9. Agency conflict hypothesis.** ESG SWFs are more likely to engage in conversations and meetings with their portfolio companies (or at least are more transparent about this to the public). They are less likely to invest in weak investor protection countries, because the degree of managerial agency conflicts is higher (Leuz, Lins & Warnock, 2009) and this is unattractive to ESG SWFs for two reasons: first, they need to exert larger effort in discussing and meeting with these portfolio companies because there are more agency conflicts; second, their negative investment screens lead them to invest in companies in strong investor protection countries because these firms suffer from less managerial conflicts.

**Hypothesis 9:** *A target firm located in a country with strong investor protection market has a higher probability of being targeted by an ESG SWF than a target firm located in a country with weak investor protection*

The testable predictions of this hypothesis are: (1) the probability of being targeted by an ESG SWF decreases when the target is located in a country with weak investor protection; (2) this increased probability is related to the extent of the SWF being CSR- or ESG, measured by adding control variables.

**Hypothesis 10. CSR Target Hypothesis.** ESG SWFs are more likely to select target firms with high ESG-scores, because these firms rank highest when ESG SWFs use investment screens to decide on investment targets.

**Hypothesis 10:** *A target firm with a relatively high ESG score has a higher probability of being targeted by an ESG SWF than a target firm with a relatively low ESG score*

The testable predictions of this hypothesis are: (1) the probability of being targeted by an ESG SWF increases when the target firm has a relatively high ESG-score; (2) this increased probability is related to the extent of the SWF being CSR- or ESG, measured by adding control variables.

**Table 8. Overview of hypotheses.**

| | Predicted impact of ESG SWF on firm value, operating and governance performance compared to traditional SWF is | Predicted impact of political SWF on firm value, operating and governance performance compared to SWF that uses external manager(s) is | Predicted impact of transparent SWF on firm value, operating and governance performance compared to opaque SWF is | Predicted impact of ESG SWF (measured by stake taken in SWFs' target firms) compared to traditional SWF is | Predicted impact of ESG SWF (measured by the progress of target firms' ESG scores) compared to traditional SWF is |
|---|---|---|---|---|---|
| *CSR superior monitor hypothesis:* SWFs that engage in CSR or ESG investing have power and incentive to monitor portfolio firm managers, discipline CSR/ESG under-performers, sustain firm value creation better than traditional SWFs. | higher | | | | |
| *CSR agenda hypothesis:* SWFs that engage in CSR or ESG investing have power and incentive to pursue CSR or ESG-related nonfinancial objectives that conflict with (short-run) shareholder wealth maximization. | lower | | | | |
| *External manager hypothesis:* SWFs that experience political influence on their boards and investment management, unlike SWFs that use external managers, pursue home-country governments' or private noncommercial objectives that conflict with shareholder wealth maximization. | | lower | | | |
| *Transparency and agenda hypothesis:* SWFs that have low transparency scores, unlike SWFs with high transparency scores, pursue home-country governments' noncommercial objectives that conflict with shareholder wealth maximization. | | | higher | | |
| *CSR stake hypothesis:* SWFs that engage in CSR or ESG investing take lower stakes in target firms than SWFs that do not engage in CSR or ESG investing. | | | | lower | |
| *CSR influence hypothesis:* SWFs that engage in CSR or ESG investing take higher stakes in target firms than SWFs that do not engage in CSR or ESG investing. | | | | higher | |
| *CSR activist hypothesis:* SWFs that engage in CSR or ESG investing are more likely to increase the ESG score of their target firms over time. | | | | | higher |

| | Predicted impact of DEV on probability being targeted by ESG SWF compared to EMER and FRON is | Predicted impact COMMON (strong rule of law) on probability being targeted by ESG SWF compared to SOCIAL and CIVIL is | Predicted impact of ESG in high percentile on probability being targeted by ESG SWF compared to ESG in middle or low percentile is |
|---|---|---|---|
| *CSR and developed markets hypothesis:* SWFs that engage in CSR or ESG investing are more likely to invest in targets firms located in developed financial markets. | higher | | |
| *CSR agency conflict hypothesis:* SWFs that engage in CSR of ESG investing are less likely to invest in targets located in weak investor protection countries. | | higher | |
| *CSR target hypothesis:* SWFs that engage in CSR or ESG investing are more likely to invest in firms with high ESG scores. | | | higher |

# 3. Sample selection and data description

## 3.1 Sample selection

The sample consists of SWF holdings in target firms that originate from FactSet, a commercial datastream.[10] The sample of SWF holdings analyzed originates from the FactSet database. The database covers ownership data for domestic and international holdings of SWFs, subsidiaries and investment vehicles. The data include investments in listed equity. The data are assembled using the time period 2000 until 2019, but we discard the 2000 – 2004 window as it contains insufficient useful data. From the 84 SWFs identified in multiple sources, we find data in FactSet for 41 SWFs. We find public equity investments with sufficient holding data for 29 of those funds, originating from 17 countries. The resulting sample is summarized in Appendix B, Table B.3 and B.4.

Further firm- and country- level data on characteristics, ratios and scores are assembled using a variety of sources. Accounting data is from Worldscope, ESG performance indicators from Asset4, board and target remuneration information is provided by BoardEX. The ESG data is complemented with manually collected information from SWF websites, annual reports and investment reports. Finally, the data is merged using ISINs, CUSIPs and Datastream codes. The final sample contains 75,063 holdings by SWFs in publicly-traded targets. Eventually, the collection yields a short, balanced, fixed panel dataset of 115,020 observations. We observe an ESG-score for 37,560 out of the 115,020 observations (see Table B.9).

## 3.2 Variable definitions

### *3.2.1 Main variables*

The operating performance is proxied through a number of variables. A number of studies has used *return on assets, sales growth* and *operating profit margin* as proxies for a firm's operating performance (e.g. Kotter & Lel, 2011; Bortolotti, Fotak & Megginson, 2015; Fernandes, 2009). Furthermore, the value of the target firm is proxied through the *market-to-book* ratio (Bortolotti, Fotak & Megginson, 2015) and through Tobin's Q (Fernandes, 2009). To calculate $Q_{i,t}$, the book value of equity and liabilities and the market value of equity and liabilities are used at the firm-level:

$$Q_{i,t} = \frac{MVequity_{i,t} + MVliabilities_{i,t}}{\text{BVequity}_{i,t} + \text{BVliabilities}_{i,t}} \quad \textbf{(3.1)}$$

where $Q_{i,t}$ denotes the Q ratio for target firm *i* in year *t*. Then, $MVequity_{i,t}$ and $MVliabilities_{i,t}$ denote the market value of equity and market value of debt, respectively, for firm *i* in year *t*. The denominator consists of $\text{BVequity}_{i,t}$ and $\text{BVliabilities}_{i,t}$, which denote the book value of equity and

[10] FactSet provides financial information and analytics software and integrates information from other databases such as Datastream, Worldscope and Compustat. Compared to Compustat and Bureau van Dijk, Factset provides balanced information in terms of firm size and quantity with reasonable geographical coverage (Dai, 2012).

book value of liabilities, respectively, of target firm *i* in year *t*. All mentioned variables are collected annually.

The CSR performance of the target firm is proxied through the firm's ESG score and its difference between two subsequent periods. To calculate the difference between two time periods, two definitions are used throughout analysis:

$$\Delta ESG_{i,t} = ESG_{i,t+1} - ESG_{i,t} \quad \textbf{(3.2)}$$

$$\Delta ESG_{i,t-1} = ESG_{i,t} - ESG_{i,t-1} \quad \textbf{(3.3)}$$

where $\Delta ESG_{i,t}$ denotes the forward difference in ESG score for target firm *i* in year *t* and $\Delta ESG_{j,t-1}$ denotes the current difference in ESG score for target firm *i* in year *t*. The ESG scores are collected annually.

The stake that SWFs take in target firm *i* in year *t* is calculated as

$$SWF\ stake_{i,t} = \sum Stake_{i,t} \quad \textbf{(3.4)}$$

where $Stake_{i,t}$ denotes the stake of the SWF *i* in target firm *i* over year *t*. Ownership stakes are collected annually.

To distinguish ESG SWFs from so-called traditional SWFs, two main sources are used: first, the SWF scoreboard from Truman (2015); second, a crosstable with ESG data based on hand-collected information from SWF reports on investments, asset allocation, socially responsible investing, CSR and engagement efforts.[11] Throughout this study, two definitions of what constitutes an *ESG SWF* or *ESG SWF* are used: first, a less strict definition, where SWFs need to have at least 1 out of 3 points in Truman's questions on CSR, and at least 2 out of 3 points in the ESG crosstable. This constitutes a list of SWFs that take ESG into account when making investment decisions: the Government Pension Fund Global, Public Investment Fund, Korea Investment Corporation, Australia's Future Fund, the New Zealand Superannuation Fund and the Alaska Permanent Fund. Second, a strict definition is used, where SWFs need to have at least 2 out of 3 points in Truman's questions on CSR, and 3 out of 3 points in the crosstable. This selects the 'best in class' SWFs regarding implementing ESG criteria when making investing decisions. This yields the following list of SWFs: Government Pension Fund Global, Australia's Future Fund, New Zealand Superannuation Fund and the Alaska Permanent Fund. All other main variables are defined in Table B.1.

### *3.2.2 Control variables*

Based on prior research concerning SWF investment choices and target selection, a multitude of control variables is selected. All control variables are defined in Table B.2.

[11] The full table can be found in Appendix B, Table B.8.

First, the study controls for ownership characteristics that may affect the target firm's operating performance and market value. Hence, institutional ownership, IO, is included to control for shares owned by institutional investors. Institutional investors are known to perform a monitoring role (Shleifer & Vishny, 1986), and controlling for their ownership in the target firm, the measure of being an ESG SWF is better able to capture the isolated effect of an ESG SWF. Furthermore, blockholder ownership (*Block*) and the Herfindahl-Hirschmann index (*HF*) are included to control for ownership concentration. Blockholder ownership is calculated as the percentage of shares owned by institutional investors who have at least 5% ownership. The HF-index is directly downloaded from BoardEX and constitutes the sum of squares of each investor's holdings as a proportion of the total institutional holding.

Second, control variables are added for firm-specific characteristics that are associated with firms' operating performance and market value. As established in the literature on ownership and performance, size, growth and performance are controlled for, using log(Total Assets), log(Leverage) and log(Fixed Charge Coverage Ratio [FCCR]). Also control variables for country-specific characteristics, such as Rule of law (COMMON, CIVIL and SOCIAL), Economic development (DEV), and a binary variable identifying banking crises (Crisis), are added.

## 3.3 Descriptive analysis

Table B.3 of Appendix B reports the final list of SWFs used in the sample distribution. Table B.4 reports the final sample distribution over countries. The sample includes observations from a wide range of countries. Targets in the United States, China, Japan and the United Kingdom represent the largest part of the sample, accounting for 46.9% of the observations. The number of observations remains stable over the sample period.[12] Nevertheless, the number of observed SWF investments slightly varies over the sample period. In total, there are 75,063 SWF investments over the sample period and around 5,000 SWF investments every year. Also see Figure B.1.

Table B.5 reports summary statistics on measures of firm performance, firm ownership, firm ESG scores and control variables. To mitigate the impact of outliers, continuous variables are winsorized at the top and bottom 1 percentiles. With regard to firm performance measures, mean ROA is 5.5%, SG is 16.5%, MTB is 2.72, OPM is 8.35% and CAPEXS is 1.3. Looking at ESG scores, the average ESG score is 46.60, and the average environmental, social and governance score are 53.52, 53.04 and 46.62, respectively. With respect to economic development, Table B.4 shows that 63% of the target countries has a developed economy, compared to 1% and 36% for a frontier and emerging economy, respectively. Approximately 52% of the target countries uses a civil law system, compared to 12% for social law and 35% common law.

[12] Final sample distribution over years is not reported as the panel data is strongly balanced: we have the same number of observations for every year.

With respect to these characteristics for the ESG SWF and Traditional SWF sample, Table B.6 shows that the targets chosen by ESG SWFs have a slightly higher ROA and a much higher OPM, but a lower sales growth, market-to-book and capex-to-sales ratio. Furthermore, these targets have a higher fixed coverage ratio, lower ownership concentration (as measured by the Herfindahl index, 9% compared to 15%) and higher institutional ownership. ESG SWFs are more likely to have a developed economy as their home country (73% compared to 48%, respectively), and are more likely to use a civil law system or common law system. Another important feature is that the average stake that ESG SWFs take in target firms is 1.32% compared to 0.37% for the traditional SWFs. This is likely driven by the GPFG, a prominent ESG SWF that usually takes larger stakes compared to the other SWFs in the sample.[13] An interesting finding is that the ESG-score of ESG SWF targets is 47.53 on average, whereas this is 43.05 for firms targeted by traditional SWFs. Nevertheless, this observation has multiple explanations: for instance, ESG SWFs increase the score of their targets over time through engagement, or they choose targets that already have a high ESG score.[14]

Simple descriptive statistics are first looked at to identify possible systematic trends or preferences in SWFs' target selections that should be accounted for. Table B.7 reports the Pearson correlations between target firms performance and valuation measures, target firm characteristics and SWF characteristics. In line with hypothesis 1, ROA and OPM are positively related to ESG SWFs, and in line with hypothesis 2, SG and MTB are negatively related to ESG SWFs. An interesting finding here is that ESG is negatively related to both MTB and CAPEXS. A possible explanation would be that a higher ESG score implies that management is also monitored to keep capital investment balanced. Overall, Table B.6 shows that SWF characteristics such as autonomy, transparency and being ESG highly correlate with target firm performance, valuation and characteristics. More transparent SWFs seem to hold larger firms with a slightly higher FCCR and LEV. This also goes for SWFs with autonomous managers. This closely relates to the correlation coefficient between AUTON, TRANS and ESG SWF, as the matrix shows that these are highly and significantly correlated. A possible explanation would be that ESG SWFs naturally are more transparent about their investment style and allocations and give more space to their autonomous investment managers to decide on ESG-related investment opportunities.

The differences between the CSR and the traditional sample are further explored in Figures B.2 and B.3. These figures confirm the summary statistics from Table B.5 and B.6: for the whole sample period, ESG SWFs invest in firms that have a higher ESG score than targets from traditional SWFs. Especially after 2009, the difference increases. Still, Figure B.2 shows that the *difference* in ESG scores, computed as

[13] This is also the reason why the broad and narrow definition of *ESG SWF*s also have a version in which the GPFG is excluded. These two variables are used to run all regression analyses again to check for robustness.
[14] This will be more closely examined in figures B.7 and B.8.

the change in ESG score over one year, does not differ significantly for targets of ESG SWFs versus traditional SWFs. The yearly change in ESG scores of targets from ESG SWFs is volatile and sometimes lower than those of targets from traditional SWFs. Hence, this suggests a limiting role of the engagement practices of ESG SWFs. Furthermore, Figure B.3 visually confirms the summary statistics from Table B.5 and B.6: for the whole sample period except for 2009, the ROA of targets from ESG SWFs is slightly higher than the ROA of targets from traditional SWFs. SG is higher for the targets of traditional SWFs for the whole sample period, even though both types of targets experience a huge decrease in growth following the economic crisis. Regarding profitability, OPM for ESG targets is higher across the whole sample period. The OPM follows the same development for both types of targets: it decreases in the period 2008-2010 and increases sharply at the end of 2010. Regarding the firm's valuation, MTB is higher for traditional targets for the whole sample period. Similarly, Tobin's Q is slightly higher for targets from traditional SWFs for the whole sample period. Regarding the yearly change in Tobin's Q, computed in the same way as the change in ESG score, both types of targets experienced a large decrease during the financial crisis. Nevertheless, the change is more volatile for targets from traditional SWFs.

Liang and Renneboog (2016) show that there is an important difference in the perception and implementation of CSR across countries with different legal, political and historical origins. To see whether this translates into differences in ESG scores, the sample is split into three groups based on legal origin. The same is done for economic development. Figure B.9 shows that the ESG score for developed countries has been the higher from 2004 to 2017. However, targets in frontier countries have been catching up tremendously, resulting in an average ESG score of 54 compared to an average of 47 for both developed and emerging countries. However, there are only 1,365 observations in frontier countries throughout the sample, hence these target firms are likely to drive this result for the frontier market. With respect to law systems, targets from civil law systems systematically have a higher ESG score than targets from common law and social law countries. Social law countries have been at the bottom from 2004 to 2016 but are catching up since then.

# 4. Methodology

This chapter describes the methodology to test the hypotheses. First, section 1 describes the model to assess how an investment from an ESG SWF affects the target firm performance compared to an investment from a traditional SWF. Furthermore, it assesses how to control for the influence autonomous and transparent SWFs and describes the matching procedure to create subsamples to address possible selection issues. By means of fixed effects models, section 2 discusses whether an ESG SWF investment impacts target firm value in a different way than a traditional SWF investment. Next, section 3 addresses the empirical methods to examine the determinants of the height of the ownership stakes that SWF take. Last, section 4 assesses the models used to track any activist influence from SWFs that comes with their ownership.

## 4.1 Impact of SWF investments on short- and long-term performance

**Hypothesis 1, 3 and 4** predict that investments from ESG, autonomous and transparent SWFs enhance target firm's operating performance, whereas **hypothesis 2** predicts that investments from ESG SWFs deteriorate the target firm's performance. To estimate the impact of SWF investments on **target firms' performance**, the development of several variables that proxy for this performance is investigated. The variables that are used to indicate target firms' performance are: return on assets, sales growth, market-to-book ratio, operating profit margin and capital expenditures-to-sales ratio (see Fernandes, 2009; Bortolotti, Fotak & Megginson, 2015). To track the impact of SWF investments, these proxies are used in two ways. First, mean changes over the one, two and three years following the SWF investment can be computed, following Bortolotti, Fotak and Megginson (2015). For an investment that occurs in 2013, the change in a variable would be the difference between value of the variable as of the end of the calendar year following the investment (December 31, 2014) and the end of the year preceding the SWF investment (December 31, 2012). This can be done for two and three-year horizons as well. The time windows then become (-1, +1), (-1, +2) and (-1, +3), respectively. Second, sets of matched traditional SWF-investments are identified which resemble the ESG SWF investments in terms of target characteristics. After this, the Average Treatment Effect (ATE) is computed. Third, by means of propensity-score matching, several subsamples are created in order to determine the effect of the first (ESG, autonomous or transparent) SWF investment on a target's performance while controlling for possible selection issues.

**For hypothesis 1 and 2**, that needs a distinction between ESG and traditional SWFs, we compute the mean changes over the three time windows for firms that experience an investment from an ESG SWF at year *t* and firms that experience an investment from a traditional SWF. Difference-in-differences statistics are computed by subtracting the mean changes in the variable of interest for the firms targeted by ESG

SWFs from changes for the sample of firms targeted by traditional SWFs. The significance of these changes by t-tests with standards errors clustered at the target firm level.

To check the robustness of this method, the median changes of the performance measures over the one and three years following the SWF investment are computed as well. This yields the time windows (-1, +1) and (-1, +3). For both methods, the sample of target firms is divided into firms that experienced investment(s) from one or more ESG SWFs and firms that were targeted by traditional SWFs. For both groups, the average mean change and average median change are computed.

The second way to track the impact of SWF investments is identifying sets of matched traditional SWF-investments which resemble the ESG SWF investments in terms of target characteristics (see Bortolotti, Fotak & Megginson, 2015; Fernandes, 2014).[15] The matching is based on propensity-scores. First, it is determined how SWF investment differ based on target characteristics. Then, within the sample that consists of traditional SWF investments, an investment is chosen whose target most resemble the target selected by the ESG SWF. After this, the ATE is determined, which is the average effect of the treatment (investment by an ESG SWF) compared to a target that has an investment from a traditional SWF.

**For hypothesis 3**, that needs a distinction between transparent and opaque SWFs, we repeat the procedure described above. However, the treatment binary variable is now based on the SWF being transparent or not. Hence, we compute the mean changes over the three time windows for firms that experience an investment from a transparent SWF at year *t* and firms that experience an investment from an opaque SWF. Difference-in-differences statistics are computed by subtracting the mean changes in the variable of interest for the firms targeted by transparent SWFs from changes for the sample of firms targeted by opaque SWFs. The significance of these changes by t-tests with standards errors clustered at the target firm level.

To check the robustness of this method, the median changes of the performance measures over the one and three years following the SWF investment are computed as well. This yields the time windows (-1, +1) and (-1, +3). For both methods, the sample of target firms is divided into firms that experienced investment(s) from one or more transparent SWFs and firms that were targeted by opaque SWFs. For both groups, the average mean change and average median change are computed.

Second, we identify sets of matched opaque SWF-investments which resemble the transparent SWF investments in terms of target characteristics. The matching is based on propensity-scores. First, it is determined how SWF investment differ based on target characteristics. Then, within the sample that consists of traditional SWF investments, an investment is chosen whose target most resemble the target

[15] These characteristics are leverage, size, fixed charge coverage ratio, cash, ESG score, institutional ownership and ownership concentration.

selected by the ESG SWF. After this, the average treatment effect (ATE) , the effect of the treatment (investment by a transparent SWF) compared to an investment from an opaque SWF, is determined.

For transparency, two different measurements are used: first, a definition based on the scoreboard of Truman (2015). Based on the total score of question 16 to 29, the SWFs are divided into Transparency terciles. In turn, a binary variable $TRANSt_{j,t}$ is created that takes one if the SWF is in the highest tercile and zero otherwise. Second, a definition based on the index of Linaburg and Maduell (2018) is used. Based on the total score of 1-10, a binary variable $TRANSlmi_{j,t}$ is created that takes one if the SWF has a total score of at least 8 and zero otherwise.[16]

**For hypothesis 4,** that needs a distinction between autonomous and politically dependent SWFs, we repeat the two procedures described above. However, the treatment binary variable is now based on the SWF being politically independent or not. Hence, we compute the mean changes over the three time windows for firms that experience an investment from an autonomous SWF at year *t* and firms that experience an investment from a politically dependent SWF. Difference-in-differences statistics are computed by subtracting the mean changes in the variable of interest for the firms targeted by autonomous SWFs from changes for the sample of firms targeted by politically dependent SWFs. The significance of these changes by t-tests with standards errors clustered at the target firm level.

To check the robustness of this method, the median changes of the performance measures over the one and three years following the SWF investment are computed as well. This yields the time windows (-1, +1) and (-1, +3). For both methods, the sample of target firms is divided into firms that experienced investment(s) from one or more autonomous SWFs and firms that were targeted by politically dependent SWFs. For both groups, the average mean change and average median change are computed.

Second, we identify sets of matched politically dependent SWF-investments which resemble the autonomous SWF investments in terms of target characteristics. The matching is based on propensity-scores. First, it is determined how SWF investment differ based on target characteristics. Then, within the sample that consists of politically dependent SWF investments, an investment is chosen whose target most resemble the target selected by the autonomous SWF. After this, the average treatment effect (ATE) is determined, which is the average effect of the treatment (investment by a transparent SWF) compared to a target that has an investment from a politically dependent SWF.

To distinguish autonomous from politically dependent SWFs, questions 9 to 15 from Truman's scoreboard (2015) are used. Based on a total score of 1-7, a binary variable $AUTON_{j,t}$ is created that takes one if the SWF has a total score of at least 5.5 and zero otherwise.

[16] Results with both definitions are reported in chapter 5 and Appendix C.

**Third, to test hypotheses 1 to 4** simultaneously, a regression sample is used that only contains the firms that experience a certain type of SWF investment at time *t* and matched firms with not this type of SWF investment at that time. [17] For instance, for hypothesis 1 only the firms that experience an SWF investment and the matched firms with no SWF investment at that time are included. The composition of these subsamples is done by propensity-score matching based on firm characteristics. This matching allows to look at firms which have a SWF investment for the first time, where we distinguish between with and without prior SWF investments. In order to empirically assess hypothesis 1 to 4, four subsamples and corresponding regression models are used:

1. First, to infer results about the influence of SWF investments in general, a regression sample is designed that consists of only the firms that experience an SWF investment at time *t* and the matched firms with no SWF investment at that time. Using this sample, the effect of the first SWF investment on a target's firm long-run performance is estimated as follows: **(4.1a)**

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ SWF\ stake_{i,t} + \varepsilon_{i,t}$$

where $First\ SWF\ stake_{i,t}$ is a binary variable that equals one if the firm experiences it first SWF investment and zero otherwise.

2A. For hypothesis 1 and 2, a regression sample is designed that consists of only the firms that experience their first ESG SWF investment at time *t* and the matched firms with no ESG SWF investment at that time. Using this sample, the effect of the first ESG SWF investment on a target's firm long-run performance is estimated as follows:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ ESG\ SWF\ stake_{i,t} + \varepsilon_{i,t} \quad \textbf{(4.1b)}$$

where $First\ ESG\ SWF\ stake_{i,t}$ is a binary variable that equals one if the firm experiences it first ESG SWF investment and zero otherwise.

2B. The same regression sample as above is used, but we allow for the firms with their first ESG SWF investment to have experienced an SWF investment in the past. Hence, the regression needs to control for prior SWF investments:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ ESG\ SWF\ stake_{i,t} + \sum_{n \in N} \gamma_n X_{,i,t-x} + \varepsilon_{i,t} \quad \textbf{(4.1c)}$$

where the vector of control variables accounts for other SWF investments made in the firms with their first ESG investment before time *t*.

3A. For hypothesis 3, a regression sample is designed that consists of only the firms that experience

[17] The matching procedure deals better with potential selection issues than the regression analyses approach used in method 1. Nevertheless it is interesting to look at both methodologies and observe whether there arise significant differences in results.

their first transparent SWF investment at time *t* and the matched firms with no transparent SWF investment at that time. Using this sample, the effect of the first transparent SWF investment on a target's firm long-run performance is estimated as follows:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ TRANS\ SWF\ stake_{i,t} + \varepsilon_{i,t} \quad \textbf{(4.1d)}$$

where $First\ TRANS\ SWF\ stake_{i,t}$ is a binary variable that equals one if the firm experiences it first transparent SWF investment and zero otherwise.

3B. The same regression sample as above is used, but we allow for the firms with their first transparent SWF investment to have experienced an SWF investment in the past. Hence, the regression needs to control for prior SWF investments:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ TRANS\ SWF\ stake_{i,t} + \sum_{n \in N} \gamma_n X_{,i,t-x} + \varepsilon_{i,t} \quad \textbf{(4.1e)}$$

where the vector of control variables accounts for other SWF investments made in the firms with their first transparent investment before time *t.*

4A. For hypothesis 4, a regression sample is designed that consists of only the firms that experience their first autonomous SWF investment at time *t* and the matched firms with no autonomous SWF investment at that time:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ AUTON\ SWF\ stake_{i,t} + \varepsilon_{i,t} \quad \textbf{(4.1f)}$$

where $First\ AUTON\ SWF\ stake_{i,t}$ is a binary variable that equals one if the firm experiences it first autonomous SWF investment and zero otherwise.

4B. The same regression sample as above is used, but we allow for the firms with their first autonomous SWF investment to have experienced an SWF investment in the past. Hence, the regression needs to control for prior SWF investments:

$$PERF_{i,t+3} = \propto_0 + \beta_1 * First\ AUTON\ SWF\ stake_{i,t} + \sum_{n \in N} \gamma_n X_{,i,t-x} + \varepsilon_{i,t} \quad \textbf{(4.1g)}$$

where the vector of control variables accounts for other SWF investments made in the firms with their first transparent investment before time *t.* For equations 4.1a to 4.1g, all independent variables are dummy variables that equal one if the firm experiences its first investment from an (certain type of) SWF and zero otherwise.

## 4.2 Impact of SWF investments on target firm's value

**Hypothesis 1, 3 and 4** predict that ESG, autonomous and transparent SWFs enhance target firm's value, whereas **hypothesis 2** predicts that ESG SWFs deteriorate the target firm's value. To examine the impact of SWF investment on target firms' **value**, a time-series cross-sectional regression on the one-year forward Tobin's Q is conducted. This can be done according to a method used by Fernandes (2009) and by

extension of his method. The regression analysis takes place with two main independent variables of interest: (1) percentage ownership, which represents the stake of the SWF held in the target firm; and (2) an SWF dummy, which equals one if a firm experienced an SWF investment of more than a certain threshold percentage of its shares and zero otherwise. Using (1), the regression takes the following form:

$$Q_{i,t+1} = \propto_0 + \beta_1 SWF\ stake_{i,t} + \beta_2 ESG\ SWF_{j,t} + \beta_3 AUTON_{j,t} + \beta_4 TRANS_{j,t} + \beta_5 \Delta Q_{i,t} + \sum_{n \in N} \gamma_n X_{n,i,t} + \varepsilon_{i,t} \quad \textbf{(4.2)}$$

where $Q_{i,t+1}$ represents the firm's Tobin's Q ratio at year *t+1*.[18] SWF stake represents the height of the SWF stake at time *t*, ESG SWF represents the presence of an ESG SWF by means of a binary variable, AUTON SWF represents the presence of an autonomous SWF by means of a binary variable, TRANS SWF represents the presence of a transparent SWF by means of a binary variable, $\Delta Q$ represents the change in Tobin's Q between year t and t+1. . $X_n$ is the vector of control variables. These variables are documented or suspected to affect the height of the stake that SWFs take in target firms and consists of SWF-level controls (a binary variable identifying investments from the GPFG), target-level controls (share of institutional ownership, fixed charge coverage ratio, size, and leverage) and deal based controls (a crisis dummy). All continuous variable are winsorized at the top and bottom percentile. Using (2) and setting 1% as the ownership threshold, the regression takes the following form:

$$Q_{i,t+1} = \propto_0 + \beta_1 OWN1_{i,t} + \beta_2 ESG\ SWF_{j,t} + \beta_3 AUTON_{j,t} + \beta_4 TRANS_{j,t} + \beta_5 \Delta Q_{i,t} + \sum_{n \in N} \gamma_n X_{n,i,t} + \varepsilon_{i,t} \quad \textbf{(4.3)}$$

where *i, j* and *t* index target firms, SWFs and years, respectively. $Q_{i,t+1}$ represents the firm's Tobin's Q ratio at year *t+1*. SWF stake represents the height of the SWF stake at time *t*, ESG SWF represents the presence of an ESG SWF by means of a binary variable, AUTON SWF represents the presence of an autonomous SWF by means of a binary variable, TRANS SWF represents the presence of a transparent SWF by means of a binary variable, $\Delta Q$ represents the change in Tobin's Q between year t and t+1. All continuous variable are winsorized at the top and bottom percentile. Industry and year fixed effects are included and standard errors are clustered at the target level. To test hypotheses 1 and 2, the primary coefficients of interest are $\beta_1$ and $\beta_2$.[19] For hypotheses 3 and 4, the coefficients of interest are $\beta_3$ and $\beta_4$, respectively.

## 4.3 Determinants of the ownership stake taken by SWFs

**Hypothesis 5** predicts that ESG SWFs take lower stakes in target firms compared to traditional SWFs because they do not want to risk being accused of political interference, expropriation or imposing

[18] Chapter 5 and Appendix C also report regression models where the dependent variable equals the change in Tobin's Q between year t and t+1. For brevity reasons these are not included here as they do not diverge from the models presented here with regard to the independent variables.
[19] Again, OWN1 and OWN2 are used as well.

ESG measures on targets, whereas **hypothesis 6** predicts that ESG SWFs prefer higher stakes because it gives them a better say into the target company's decision-making processes. This can help ESG SWFs to successfully engage with targets to improve their CSR policies. The regression model that estimates the plausibility of these hypotheses is a fixed effects model with a dependent variable being the stake taken by SWFs in percentage points:

$$SWF\ Stake_{i,t} = \propto_0 + \beta_1 ESG\ SWF_{j,t} + \beta_2 ESG_{i,t} + \beta_3 AUTON_{j,t} + \beta_4 TRANS_{j,t} + \sum_{n \in N} \gamma_n X_{n,i,t-1} + \varepsilon_{i,t} \quad \textbf{(4.4)}$$

where *i, j* and *t* index target firms, SWFs and years, respectively. The coefficient estimate of interest for both hypothesis 5 and 6 is $\beta_1$. The coefficient associated with this variable offers an estimate of the difference in stake taken by an ESG SWF compared to a traditional one. While the fifth hypothesis predicts that this coefficient is negative, the sixth hypothesis predicts that this coefficient is positive. As control variables, a series of variables from the literature are added (see the list of control variables under equation 4.2).

Next, the same independent variables are regressed against two other dependent variables: DUM1, and DUM2. These are binary variables that equal 1 if the SWF ownership of a target exceeds 1% and 2%, respectively, and zero otherwise. The model specified is a logit model with robust standard errors and year and industry fixed effects. Again, all continuous variable are winsorized at the top and bottom percentile. In order to interpret the coefficients of the logit models, the odds-ratios are computed. The log odds of the independent variables estimated according to equation 4.4 are transformed to odds-ratios by exponentiation of the value of log odds estimates $\beta_1$, $\beta_2$, $\beta_3$ and $\beta_4$.

## 4.4 Activist behavior of SWFs

**Hypothesis 7** predicts that target firms with ESG SWFs as investors will gradually achieve higher ESG scores than target firms without investments from ESG SWFs, because ESG SWFs self-report to engage with targets firms regarding improving their ESG-policies. To examine the impact of ESG SWFs on the ESG-score of target firms through engagement compared to traditional SWFs, the following fixed effects regression analysis is formulated:

$$\Delta ESG_{i,(t,t+1)} = \beta_1\ SWF\ stake_{i.t-1} + \beta_2\ \Delta ESG_{i,(t-1,t)} + \beta_3\ [\Delta ESG\ \times\ SWF\ stake]_{i,(t-1,t)} + \beta_4\ ESG\ SWF_{i(t-1)} + \beta_5\ [ESG\ SWF\ \times\ SWF\ stake]_{i,t-1} + \sum_{n \in N} \gamma_n X_{n,i,t-1} + \varepsilon_{i,t} \quad \textbf{(4.5)}$$

where *i, j* and *t* index target firms, SWFs and years, respectively. This captures the change in ESG-score of target firms over time. *Stake* represents the total stakes of SWFs taken in the firm, ESG SWF is a binary variable identifying ESG SWFs, ΔESG represents the difference in ESG score over two consecutive

time periods and $\chi$ is a vector of the previously described firm-level, SWF-level and deal-level control variables. If ESG SWFs invest in target firms with relatively low ESG scores and increase these scores over time through engagement activities, the interaction variable $ESG\ SWF\ \times\ stake$ should reflect this. As control variables, the same series of control variables is added as specified below equations 4.2 and 4.3. Industry and year fixed effects are included and standard errors are clustered at the target level. All continuous variable are winsorized at the top and bottom percentile.

**Hypothesis 8** predicts that ESG SWFs are more likely to invest in targets located in developed countries, because firms in developed economies are often active in industries related to ESG-topics such as climate change, children's rights and water management. **Hypothesis 9** predicts that ESG SWFs are less likely to invest in weak investor protection countries, because the degree of managerial agency conflicts is higher (Leuz, Lins & Warnock, 2009). **Hypothesis 10** predicts that ESG SWFs are more likely to select target firms with high ESG-scores up-front, because these firms rank highest when ESG SWFs use investment screens to decide on investment targets. To empirically confirm these hypotheses, the following pooled logit model is formulated (following Kotter & Lel, 2011):

$$ESG\ SWF_{i,t} = \beta_1\ DEV\ _{i,t} + \beta_2\ COMMON\ _{i,t} + \beta_3\ ESG_{i.t-1} + \beta_4\ \Delta ESG_{i,(t-1,t)} + \sum_{n \in N} \gamma_n X_{n,i,t-1} + \varepsilon_{i,t} \quad \textbf{(4.6)}$$

where *i, j* and *t* index target firms, SWFs and years, respectively. For hypothesis 8, the main coefficient of interest is $\beta_1$. This coefficient belongs to the binary variable DEV that equals one if a target firm is located in a developed economy and zero otherwise. The expected coefficient estimate is positive, as the hypothesis predicts that targets in developed economies attract ESG SWF investments. For hypothesis 9, the main coefficient of interest is $\beta_2$, which belongs to the binary variable COMMON that equals one if a target firm is located in a country with a common law system and zero otherwise. The expected coefficient estimate is positive, as the hypothesis predicts that targets in countries with strong investor protection attract more investments from ESG SWFs. Compared to social and civil law systems, the common law system provides investors with the best legal protection (La Porta et al., 1997). Hence, ESG SWFs are expected to prefer common law targets over civil or social law firms. Last, for hypothesis 10 the main variables of interest are $\beta_3$ and $\beta_4$. The expected coefficient estimates are positive, as the hypothesis predicts that ESG SWFs are attracted to firms with relatively high ESG scores. Furthermore, $\beta_4$ accounts for the fact that a target firm experienced an increase in ESG score over the past year, which may attract even more investments from ESG SWFs. The same firm-level control variables and the lagged dependent variable ($ESG\ SWF_{i,t-1}$) are used as controls.

# 5. Results

This chapter reports and analyzes empirical results. First, section 5.1 discusses the impact of SWF investment on short- and long-term performance of target firms, especially focusing on the distinction between ESG and traditional SWFs. Second, section 5.2 reports the empirical results of the impact of SWF investments on target's firm value as measured by changes in Tobin's Q, and whether there is a difference between ESG and traditional SWFs, autonomous and politically dependent SWFs and transparent and opaque SWFs. Third, section 3 presents the fixed effects and logit models that examine what characteristics are significant determinants of the height of an SWF ownership stake. Last, section 4 reports whether there is empirical evidence for an activist role of ESG SWFs after their investment in a target and examines possible causality issues. The tables corresponding to the models can be found in Appendix C and robustness tests are provided in Appendix D.

## 5.1 Impact of SWF investments on short- and long-term performance

### *5.1.1 Mean and median change analysis*

The impact of SWF investments on target firms' operating and governance performance is examined by investigating the development of several variables that proxy for these performances. The variables that are used to indicate target firms' performance are: return on assets, sales growth, market-to-book ratio, operating profit margin and capital expenditures-to-sales ratio (see Fernandes, 2009; Bortolotti, Fotak & Megginson, 2015). According to **hypothesis 1**, effective monitoring from ESG SWFs should lead to an increase in profitability, (sales) growth and other valuation measurements relative to target firms that experience investments from regular SWFs only. According to competing **hypothesis 2**, the nonfinancial agenda from ESG SWFs can lead to a decrease in profitability, growth rates and valuation metrics relative to target firms from regular SWFs. Results are reported after estimating the proxies for firm performance over one-, two- and three-year time windows (see section 4.1). Results are provided in Table C.1.

The first sample consists of targets from ESG SWFs versus targets from traditional SWFs. The results show that compared to targets from traditional SWFs, targets from ESG SWFs targets experience a significant decrease in sales growth and a lower growth of market-to-book ratio and operating profit margin. Sales growth decreases by 7.94 percentage points over the three-year time window, compared to an increase of 4.82 percentage points for targets of traditional SWFs for the same period. The market-to-book ratio of ESG SWF targets increases with 0.13 percentage points for the three-year time window, compared to 1.20 percentage points for the targets of traditional SWFs. Last, the development of operating profit margin over the two- and three-year time window is also lower: for targets of ESG SWFs, this is 0.56 and 1.46 percentage points, respectively, compared to 3.95 and 4.74 percentage points for targets of traditional SWFs.

Column 3 and 4 of Table C.1 report the same analysis but exclude the GPFG from the sample of ESG SWFs. In this case, only the mean change differences regarding return on assets display significance: for the ESG SWF targets, the average mean change in ROA is 2.00, 1.96 and 1.73 percentage points for the one-, two- and three-year window, respectively. For the traditional SWF targets, the average mean change in ROA is -0.28, -0.05 and -0.22 percentage points for the three time windows, respectively. These differences are statistically significant at the 10% level (for the one- and two-year windows) and at the 5% level (for the three-year window). The finding that return on assets increases for ESG SWF targets is in accordance with results from Fernandes (2009), who finds that the return on assets of SWF targets increase for one- and three-year time windows. Nevertheless, Bortolotti, Fotak and Megginson (2015) find that SWF investments decrease return on assets who find that SWF investments decrease return on assets over the one-, two- and three-year time windows.

Because the operating performance variables have a relatively skewed distribution, a robustness check is done by performing the same analysis for the median changes and corresponding difference-in-differences. The results are reported in Table D.1. The conclusion from the Mann-Whitney U test mainly confirms the previous results. Interestingly, for both samples (with and without Norway) the median change analysis displays a development in the capex-to-sales ratio that the mean change analysis did not show: whereas traditional SWF targets experience a decrease in this ratio from the first year onwards, ESG SWF targets display an increase for all three time windows. This difference is statistically significant at the 5% and 1% level for the two- and three-year window, respectively. In the sample that excludes the GPFG, the development of ROA is similar to the mean change analysis: the ROA of ESG SWF targets remains higher than the ROA of targets from traditional SWFs for all time windows.

According to **hypothesis 3**, targets that experience investments from politically dependent SWFs should perform worse in terms of profitability, valuation measurements and growth compared to targets that experience investments from SWFs with autonomous managers, because 'political' SWFs might pursue political objectives inconsistent with shareholder wealth maximization (Bortolotti, Fotak & Megginson, 2015). Table C.2 shows the results of the mean changes and difference-in-differences analysis.

Targets of SWFs with relatively autonomous managers experience a decrease in sales growth whereas targets of dependent SWFs display an increase in sales growth over the three-year time window. This difference is statistically significant at the 5% level. Furthermore, targets from autonomous SWFs display a lower increase in operating profit margin than targets from politically dependent SWFs over the two- and three-year horizon: they experience an average mean increase of 0.72 and 1.44 percentage points over the two and three-year window, respectively, whereas targets from dependent SWFs experience an increase of 3.72 and 4.78 percentage points, respectively. These differences are statistically significant at the 10% level.

Nevertheless, the difference in mean operating profit margin change vanishes when using the sample excluding Norway (column 3 and 4). The mean change analysis of this sample reveals that on average, targets from autonomous SWFs have an increase in ROA of 1.80 percentage points for the one-year horizon, but targets from dependent SWFs experience a decrease of their ROA of 0.29 percentage points. This difference is statistically significant at the 5% level. Furthermore, comparing these two types of SWFs for the sample excluding the GPFG shows the same development of capex-to-sales ratio as the previous comparison of ESG versus traditional SWFs: the targets from autonomous SWFs display an increase in capex-to-sales (1.52 percentage points) over the three-year horizon, but the targets from politically dependent SWFs display a decrease over this period (4.37 percentage points).

For this sample, an analysis with median changes instead of mean changes is conducted as well (see Table D.2). The median change analysis again confirms the results from the mean change analysis. In addition, it shows that the increase in ROA for targets from autonomous SWFs is not only higher for the one-year horizon, but also for the two- and three-year time windows. Targets from autonomous SWFs display a ROA mean change of 0.83 and 1.11 percentage points for the two- and three-year horizon, respectively, whereas targets from politically dependent SWFs display a change of 0.08 and -0.03 percentage points, respectively. Furthermore, for the capex-to-sales ratio, the median analysis shows that the differences in capex-to-sales ratio are already statistically significant for the two-year horizon. Targets from autonomous SWFs have an average increase of 0.21 percentage points, but targets from dependent SWFs experience a decrease in average capex-to-sales ratio of 1.04 percentage points.

**Hypothesis 4** predicts that targets that experience investments from SWFs with lower transparency scores display worse profitability, growth and performance metrics than targets that experience investments from SWFs with high transparency scores. The findings of the mean changes are reported in Tables C.3 and C.4. In Table C.3, the sample is split into firms targeted by opaque SWFs versus transparent SWFs based on the transparency scores that SWFs receive on a scoreboard composed by Truman (2015).[20] In Table C.4, the sample is again split into firms targeted by opaque versus transparent SWFs, this time based on the LMI index.[21]

The t-tests and difference-in-differences analyses of mean changes over the one-, two- and three-year horizon do not yield any statistically significant differences, except for the capex-to-sales ratio over the three-year horizon in the sample excluding the GPFG. Here, targets from transparent SWFs display a decrease in capex-to-sales ratio of 6.41 percentage points, whereas targets from opaque SWFs display an increase of 0.97 percentage points. The corresponding median analysis (see Table D.3) confirms this. It

[20] SWFs are considered transparent when they score at least 11 out of 14 points for questions 16-29 of this scoreboard and they are considered opaque when they score at most 6.5 points.

[21] SWFs are considered transparent when they score at least 8 out of 10 points.

could imply that whether an SWF is transparent or opaque does not influence the target firm's performance in a significant way, or the stakes taken by one or more type of SWF is too low to see the effect on target performance through the performance and valuation metrics used here.[22]

In conclusion, the computations of the average mean and median changes and difference-in-differences analyses for different types of SWF investments do not provide conclusive evidence. For firms targeted by ESG SWFs, the average return on assets change is significantly higher than for firms targeted by traditional SWFs, but the opposite goes for the sales growth and capex-to-sales ratio. Furthermore, for firms targeted by autonomous SWFs, the return on assets also performs better than the mean ROA change for the sample of firms targeted by dependent SWFs, but this is the opposite for sales growth and operating profit margin. For firm targeted by transparent versus opaque SWFs, the results indicate that the degree of transparency alone cannot proxy for motives that do not maximize shareholders' value. All in all, firms targeted by SWFs with a focus on ESG and politically independent managers may benefit from monitoring activities and pursuit of shareholder wealth maximization from these SWFs, but it mainly positively affects their return on assets and does not translate into better performance for the other measurements.

### *5.1.2 Difference-in-differences using matched pairs*

Next, it is interesting to not only look at entire samples, but also at matched pairs of targets in order to account for a possible bias caused by confounding variables when comparing just samples. In order to do so, firms from the two samples are matched using propensity-scores. For hypothesis 1 and 2, that concern ESG SWF versus traditional SWFs, the first group consists of the firm-year observations where firms experienced their first investment from an ESG SWF for the first time. The second group consists of the firm-year observations where firms experienced their first investment from a traditional SWF. For hypothesis 3, that concerns autonomous versus politically dependent SWFs, the first group consists of firm-year observations where firms experienced their first investment from an autonomous SWF for the first time. The second group consists of the firm-year observations where firms experienced their first investment from a politically dependent SWF. For hypothesis 4, that concerns transparent versus opaque SWFs, the first group consists of firm-year observations where firms experienced their first investment from a transparent SWF for the first time. The second group consists of the firm-year observations where firms experienced their first investment from an opaque SWF. For every hypothesis, firms from the first and second group are matched using propensity scores. The targets are matched based on lagged firm characteristics (see Fernandes, 2014). After matching the pairs, the effect of being targeted by an ESG,

[22] Table C.4 and D.4 report the mean and median analysis as described above, the difference being that the definition of a transparent or opaque SWF is now based on the Linaburg-Maduell Index (LMI) that is provided by the Sovereign Wealth Fund Institute (SWFI). This definition does not yield any statistically significant differences.

autonomous or transparent SWF is estimated. This is done by calculating the average treatment effect (ATE) on the targets' change in ROA, SG, MTB, OPM and CAPEXS for the three time windows used before: (-1, +1), (-1, +2) and (-1, +3). Results are reported in Table C.5.

When controlling for the firm characteristics, the results show that the first investment from an ESG SWF has some significant effects on a target's future performance and value. Panel A indicates that firms with an investment from an ESG SWF experience an increase in sales growth over the time window (-1, +1) of 19.71 percentage points, an increase in sales growth over the time window (-1, +2) of 10.07 percentage points, an decrease in market-to-book ratio of 3.87 percentage points over the time window (-1, +3) and an increase in capex-to-sales ratio of 4.90 percentage points over the time window (-1, +3), compared to investments from a traditional SWF for the first time. These effects are statistically significant at the 1%, 10%, 10% and 5% level, respectively. Hence, even though the first investment from an ESG SWF seems to increase future sales growth considerably, the target does not profit from the investment regarding its market value and capital expenditures.

When looking at the average treatment effect on firms with an investment from an autonomous SWF, only the market-to-book ratio, return on assets and sales growth are affected. Firms with an investment from an autonomous SWF experience an increase in market-to-book ratio over the time window (-1, +1) of 1.01 percentage points, an increase in return on assets over the time window (-1, +3) of 1.18 percentage points and a decrease in sales growth of 9.03 percentage points over the time window (-1, +3). These effects are statistically significant at the 5%, 1% and 1% level, respectively.

For investments from transparent SWFs, the average treatment effect is statistically significant the following metrics and time windows: firms with an investment from a transparent SWF experience an average decrease of 3.55 percentage points in ROA over the time window (-1, +2), a decrease of 15.61 percentage points in sales growth over time window (-1, +2), a decrease in operating profit margin of 2.19 percentage points over the time window (-1, +2) and a decrease in ROA of 4.07 percentage points over the time window (-1, +3). These effects are statistically significant at the 5%, 1%, 10% and 10% level, respectively.

When using matched pairs, it becomes clear that the first investment that ESG, autonomous and transparent SWFs undertake in target firms are mainly associated with worse future performance compared to first investments from their counterparts, namely traditional, politically dependent and opaque SWFs, respectively. Especially transparent SWFs seem to select firms that perform worse over a three-year horizon than the firms targeted by opaque SWFs.

*5.1.3 Regression analyses after propensity-score matching*

Table C.6 reports the results of the regression analyses for the matched samples based on propensity-score matching. Panel A shows the regression analyses for the subsample of firms that experience their first investment from an SWF and the matched firms without an SWF investment at that time. When using this sample, the independent dummy variable First SWF stake is significant for four out of five regressions. For the three-year forward ROA, the coefficient estimate remains insignificant. For the three-year forward sales growth, the coefficient estimate is equal to 16.181 and statistically significant at the 1% level. This implies that the very first SWF investment in a firm is associated with an increase in sales growth of 16.18 percentage points in three years. For the three-year forward market-to-book ratio and the operating profit margin ratio, the coefficient estimates are -1.636 and -4.508, respectively, and they are both statistically significant at the 5% level. This implies that the very first SWF investment in a firm is associated with a decrease in the market-to-book ratio of 1.64 and a decrease in the operating profit margin ratio of 4.51 percentage points after three years. The coefficient for the three-year forward capex-to-sales ratio equals 8.288 and is significant at the 1% level, meaning that the first SWF investment in a firm is associated with a capex-to-sales ratio increase of 8.23 percentage points in three years. Overall, panel A suggests that the first investment of any SWF in a target firm does not lead to better operating performance, except for its sales growth. Still, the increase in capex-to-sales ratio can signal an increase in investment opportunities for the firm, which in the longer run leads to better performance when the investments pay off.

The regression analyses shown in Panel B use the subsample of firms that experience their very first investment from an ESG SWF and the matched firms without an ESG SWF investment at that time. Column 1 and 2 correspond with approach 2A and 2B as described in section 4.1 (equation 4.1b and 4.1c, respectively). Column 1 shows that without taking earlier other types of SWF investments into account, the first ESG SWF investment in a firm is associated with a decrease in ROA of 1.10 percentage points in three years (statistically significant at the 1% level). However, when controlling for investment of different types of SWFs in the past, column 2 shows that the coefficient estimate is not statistically significant anymore. Column 5 shows that without taking earlier other types of SWF investments into account, the first ESG SWF investment in a firm is associated with a decrease in the market-to-book ratio of 0.82 percentage points (statistically significant at the 1% level). However, when again controlling for investments of different types of SWFs in the past, column 6 shows that the coefficient estimate does not remain statistically significant. Column 3 and 4, 7 and 8, and 9 and 10, that belong to the three-year forward sales growth, operating profit margin and capex-to-sales ratio, respectively, do not show statistically significant coefficient estimates for the variable of interest.

Panel C uses the subsample of firms that experience their first investment from a transparent SWF and the matched firms without a transparent SWF investment at that time. This panel displays similar results

as the previous panel: column 1 and 5 show the first investment from a transparent SWF is associated with a lower return on assets and market-to-book ratio in three years (1.15 and 0.83 percentage points, respectively), but these effects do not remain statistically significant when controlling for earlier non-transparent SWF investments (column 2 and 6). The other columns, that display results for the dependent variables sales growth, operating profit margin ratio and capex-to-sales ratio, do not display statistically significant coefficient estimates for the variable of interest.

Panel D uses the subsample of firms that experience their first investment from an autonomous SWF and the matched firms without an autonomous SWF investment at that time. This panel again display similar results as panel B and C, as it finds a negative relationship between the first autonomous SWF investment and the three-year forward return on assets and market-to-book ratio (coefficient estimates are -0.830 and -0.953, respectively, as displayed in column 1 and 5). These effects disappear when controlling for earlier investments from other types of SWFs (column 2 and 6). The other columns, that display results for the dependent variables sales growth, operating profit margin ratio and capex-to-sales ratio, do not display statistically significant coefficient estimates for the variable of interest.

To summarize, panel A shows that the start of an SWF investment is mainly associated with a worse three-year operating performance, except for the long-run sales growth. Panel B, C, and D show that ESG, transparent and autonomous SWFs investing for the first time in a target are negatively related to the three-year forward return on assets and market-to-book ratio. However, when controlling for earlier SWF investments from other types of SWFs, the three types of SWFs do not have a statistically significant effect on the long-run operating performance of their targets.

## 5.2 Impact of SWF investments on a target firm's value

**Hypothesis 1** predicts that the development of the target firm's Q ratio is higher for firms that experience investments from ESG SWFs compared to traditional SWFs, whereas **hypothesis 2** predicts that this development is lower. **Hypothesis 3** posits that firms that receive investments from SWFs with autonomous managers display a higher development of their Q ratio compared to firms that receive investments from politically dependent SWFs. Last, **hypothesis** 4 predicts that firms that receive investments from more transparent SWFs show a higher development of their Q ratio compared to firms that receive investment from opaque SWFs. In order to follow the impact of investments of different types of SWFs on a target firm's value, multiple fixed effects regression as specified in equation 4.2 and 4.3 have been conducted. Table C.7 displays the results. For column 1-3, the dependent variable is the Tobin's Q ratio in year *t+1* when an SWF investment occurred in year *t,* following equation 4.2 and 4.3. For column 4-6, the dependent variable is the change in Tobin's Q between year *t+1* and *t* if the firm experiences its first SWF investment in year *t*.

Column 1 of Table C.7 presents the coefficient estimates with ESG SWF, TRANS, AUTON and SWF stake as main variables of interest. However, none of the variables of interest are statistically significant. Column 2 and 3 present the coefficient estimates with CSR, TRANS and AUTON as main variables of interest, but use OWN1 and OWN2 as fourth variable of interest, respectively. These models do not yield any significant variables of interest, implying that the investment from ESG, autonomous and transparent SWFs do not have a visible impact on the one-year market value of their targets.

Next, the change in Tobin's Q from t to t+1 is estimated. These three models reported use the same independent variables as the first three models but now use $\Delta Q_{(t, t+1)}$ as the dependent variable. Interestingly, the binary variable AUTON, identifying investment from autonomous SWFs, is negative and statistically significant in model 4 and 5. In model 4, the coefficient estimate is -2.92, and in model 5 it is equal to -0.46. This implies that an investment from an autonomous ASWF is associated with a negative development of Tobin's Q over the upcoming year. Furthermore, in model 4, the interaction variable ESG $SWF_t$ × SWF $stake_t$ is positive and statistically significant at the 5% level. This implies that the effect on the change in Tobin's Q increases with an additional 0.65 per percentage point SWF ownership of an ESG SWF. Nevertheless, in model 5, that uses the interaction variable ESG $SWF_t$ × OWN1, the coefficient estimate is negative and statistically significant at the 1% level, meaning that the effect on the change in Tobin's Q decreases with 0.71 if an ESG SWF has an ownership stake > 1%.

## 5.3 Determinants of the ownership stake taken by SWFs

**Hypothesis 5** predicts that ESG SWFs take lower stakes in target firms compare to traditional SWFs because they do not want to risk being accused of political interference, expropriation or imposing ESG measures on targets, whereas **hypothesis 6** predicts that ESG SWFs prefer higher stakes because it gives them a better say into the target company's decision-making processes. These hypotheses are tested using a fixed effects models specified according to equation 4.4. The results of these regressions are found in Table C.8. The first model presents the coefficient estimates with two SWF-level controls, TRANS (based on Truman's classification) and AUTON. The coefficient estimate for ESG SWF is positive and statistically significant at the 1% level. Hence, ESG SWFs are associated with a higher percentage ownership share in targets than traditional SWFs (a premium of 0.46 percentage point on average). The second model presents the coefficient estimates with two SWF-level controls, TRANS (based on the LMI index) and AUTON. In this case, coefficient estimate for ESG SWF is still positive and statistically significant at the 1% level. Here, ESG SWFs are associated with a higher percentage ownership of 1.47 percentage point, on average.

The third and fourth model repeat the equation specifications of the first and second model, respectively, but use another dependent variable, namely OWN1, the binary variable that equals one if the target firm experiences SWF Ownership > 1% and zero otherwise. Due to the dependent variable being a

dummy, the third and fourth model are a logistics regression and the coefficient estimates are translated into odds-ratios in order to ease their interpretation. These odds-ratios are found in Table C.9, column 1 and 2. In model three, ESG $SWF_t$ is again positive and statistically significant at the 1% level. It has a coefficient estimate of 2.09 and an odds-ratio of 8.07, meaning that the odds that an ESG SWF takes a stake of more than 1 percent is approximately 8 times the odds of the probability that a traditional SWF does this. For the fourth model, the coefficient estimate equals 1.85 and statistically significant at the 5% level. In terms of odds-ratios, this implies that the probability that an ESG SWF takes a stake of more than 1% is 6.3 times higher than for a traditional SWF.

The fifth and sixth model repeat the equation previously used, but use the dependent variable OWN2, a binary variable that equals one if the target firm experiences SWF ownership > 2% and zero otherwise. The odds-ratios of these models are found in column 3 and 4 of Table C.9. For the sixth model, the coefficient estimate of ESG SWF is again positive and statistically significant at the 5% level. The probability that an ESG SWF takes a stake of more than 2% is 4.2 times higher than for a traditional SWF. Interestingly, the control variable GPFG is positive and statistically significant in the first four models specified. This implies that the GPFG is associated with larger ownership stakes, on average, compared to the stakes of other SWFs. In conclusion, these results mainly point into the direction of hypothesis 6, that predicts that ESG SWFs prefer higher stakes. Nevertheless, the pseudo R-squared varies between 13.20% and 17.64% for the fixed effects models (1) and (2), and it ranges from 9.73% to 29.43% for the logit models (3) to (6). Hence, the explanatory power of the six models is relatively weak.

## 5.4 Activist behavior of SWFs

### *5.4.1 Development of ESG score*

**Hypothesis 7** predicts that the difference in target firms' ESG score over a 1-year period is positive for firms that are targeted by ESG SWFs and that this increase in ESG score is related to the extent of the SWF being ESG, measured by adding control variables. To examine the impact of ESG SWFs on the ESG-score of target firms through engagement compared to traditional SWFs, a fixed effects regression analysis is used that captures the change in ESG-score of target firms over time. The results are reported in Table C.10. Column 1 uses the SWF stake as independent variable, whereas column 2 and 3 use the OWN1 and OWN2 binary variable, respectively. All use $\Delta ESG_{(t,\, t+1)}$ as dependent variable. Unfortunately, when using these three regression specifications, the main variables of interest lack statistical significance.

### *5.4.2 Probability of being targeted by ESG SWFs*

**Hypothesis 8** predicts that the probability of being targeted by an ESG SWF increases when the target is located in a developed economy. **Hypothesis 9** predicts that the probability of being targeted by an ESG SWF increases when the target is located in a country with strong investor protection. Last,

**hypothesis 10** predicts that the probability of being targeted by an ESG SWF increases when the target has a high ESG score before the investment.

The results of the pooled logit and fixed effects logit are found in Table C.11. Column 1 reports the pooled logit and column 2 translates the coefficient estimates into odds-ratios. Column 3 reports the fixed effects logit and column 4 translates the coefficient estimates into odds-ratios. What is clear from the logistic regressions is that targets located in a developed economy face a higher probability of being targeted by an ESG SWF rather than a traditional: for the pooled logit, this probability is 12.58 times higher, and for the fixed effects logit, this is 11.52 times higher. Hence, the results point towards the direction of hypothesis 8, which predicts that targets in developed economies face a higher probability of receiving an ESG SWF investment. However, the results display no statistical significance regarding the variable $COMMON_{t-1}$, a binary variable that equals 1 if the target is located in a country with strong investor protection and zero otherwise. Hence, the degree of investor protection before investing does not seem to be a significant determinant of whether or not an ESG SWF will select a firm for investment. The variable $\Delta ESG_{(t-1,t)}$ is positive and statistically significant at the 5% level in the fixed effects logit, implying that an increase in ESG score during the year before the investment yields a slightly higher probability of being targeted by an ESG SWF (odds-ratio is 1.037). Other control variables, such as ROA, SG, MTB, OPM and CAPEXS do not seem to play a clearly significant determinant of the probability being targeted by an ESG SWF.

### *5.4.3 Granger-causality*

To further examine whether SWF ownership precedes ESG scores or ESG scores are a determinant of SWF ownership given the inconclusive results from 5.4.1 and 5.4.2, a panel vector autoregression (VAR) model (see Abrigo and Love, 2015) and a Granger-causality test are conducted, which together can identify causality. The panel VAR regresses $ESG_t$ on lagged terms of ESG and SWF stake, and regresses SWF $stake_t$ on lagged terms of ESG and SWF stake. The results of the regression models are displayed in Table D.5. Panel A, column 1 shows that lagged terms of ESG have a significant effect on ESG. Furthermore, the first and third lag of SWF stake are positively associated with ESG. Panel A, column 2 however shows that lagged terms of ESG and SWF stake are not significantly related to SWF stake. The Granger causality test is reported in Panel B. The results show that both ESG Granger-causes SWF ownership ($p = 0.068$), and SWF ownership Granger-causes a higher ESG score ($p = 0.045$). Hence, a higher ESG score seems to happen before an SWF stake is taken as well as that SWF ownership happens before an increase in ESG score occurs.

# 6. Conclusion

In this chapter, results, limitations and recommendations for future research are presented. Section 6.1 summarizes the main findings and relates these to results presented in earlier literature. Section 6.2 discusses the limitations of the study. Last, section 6.3 provides recommendations for further research.

## 6.1 Discussion

This study aims to answer three main questions. First, how do SWFs that explicitly use ESG criteria in their investment decisions incorporate these considerations? Second, can this 'sustainability footprint' be empirically confirmed by comparing the short- and long-term operating and governing performance of their target firms with unaffected SWF targets? And third, what firm and SWF characteristics influence the height of the stake taken by ESG SWFs? Several sub questions are answered in order to control for factors that possibly could influence this relationship: first, does the SWF's degree of autonomy influence target firms' performance and governance? Second, does the SWF's degree of transparency influence this?

A review of current literature and SWF reports shows that there are multiple SWFs that use ESG criteria in their investment decisions. The main reason for incorporating ESG criteria is to ensure the financial viability and sustainability of the SWF itself and the world (economy) in general. SWFs mainly incorporate ESG considerations by exercising their ownership rights, publishing voting principles, using (self-designed) investment screens and principles, and through engaging with their targets.

The empirical section of this study starts with several mean and median change analyses. These mainly point in the direction of hypothesis 2, as targets from ESG SWFs often perform worse than targets from traditional SWFs over one, two and three years after the SWF investment. The decrease in sales growth for ESG SWF targets is in line with findings of Bortolotti, Fotak and Megginson (2015), who find that sales growth decreases after an SWF investment.

The mean and median change analyses do not provide conclusive evidence for hypothesis 3, since targets from politically dependent SWFs mostly outperform targets from autonomous SWFs over the one-, two- and three-year horizons. Targets from autonomous SWFs perform worse compared to targets from dependent SWFs when it concerns sales growth, capex-to-sales and operating profit margin, which is not predicted by hypothesis 3. The findings regarding sales growth and operating profit margin are not in line with existing theory and empirical evidence that political influence produces bad decisions within corporations due to political objectives inconsistent with shareholders' value (Shleifer and Vishny, 1994; Megginson & Netter, 2001).

Nevertheless, targets from autonomous SWFs do display a higher median change in ROA than targets from politically dependent SWFs. This is consistent with findings and hypotheses provided by

Bortolotti, Fotak and Megginson (2015), who report lower profitability when the stake of a politically dependent SWF is larger. This 'discount' for political funds can be explained in multiple ways: for example, external managers are better at selecting targets than politicized boards, or SWFs that suffer from political influence divert resources to the benefit of SWF-sponsor countries or their rent-seeking politicians (Bortolotti, Fotak & Megginson, 2015). Hence, the relative increase in return on assets relative to the sample of firms targeted by politically dependent SWFs is consistent with hypothesis 3. Furthermore, it is interesting to see that in several cases, the targets from ESG and autonomous SWFs display an increase in their capex-to-sales ratio after the SWF investment, whereas the targets from traditional, politically dependent and opaque SWFs usually show a decrease for this performance measure

The difference-in-differences analysis using matched pairs from section 5.1.2 shows that when using matched pairs, the first investments that ESG, autonomous and transparent SWFs undertake in target firms are mainly associated with worse future performance compared to first investments from their counterparts, namely traditional, politically dependent and opaque SWFs, respectively. Especially transparent SWFs seem to select firms that perform worse over a three-year horizon than the firms targeted by opaque SWFs.

The regression analyses using matched subsamples from section 5.1.3 address a potential selection issue, because the matching procedure only matches those firms that experience an SWF investment for the first time in the sample. Hence, it is more plausible to assume that the relationship between the SWF investment and a firm's operating performance runs from the former to the latter. Using the very first SWF investment eliminates the possibility that the dependent variable, the firm's operating performance influences the independent variable, namely the target selection decision of the SWF, reflected by the SWF taking a stake in the firm. The beginning of a general SWF investment is mainly associated with a worse three-year operating performance, except for the long-run sales growth. Furthermore, ESG, transparent and autonomous SWFs investing in a target for the first time are negatively related to the three-year forward return on assets and market-to-book ratio. However, when controlling for earlier SWF investments from other types of SWFs, the three types of SWFs do not have a statistically significant effect on the long-run operating performance of their targets. This could be related to the relatively low stake that SWFs tend to take.

Section 5.2 shows the regression analyses related to the effect on a target firm's value. The results do not indicate a significant impact of autonomous and transparent SWFs on the development of target firm's value one year after an SWF investment. For ESG SWFs, the findings yield mixed results: on the one hand, they predict a positive development of Tobin's Q when the stake of ESG SWFs increases, consistent with for instance Lehmann and Sarabi (2018) and Liu (2016), but on the other hand they also show a negative development of Tobin's Q when the stake exceeds the one percent threshold. Still, ther eis

no significant effect when the stake exceeds the two percent threshold. Given the relatively low R-squared, this contradictory evidence could be caused by other investors having informational advantages which influences target firm value regardless of the stake that ESG SWFs take.

After this, the study examines possible determinants of the height of the stake that ESG SWFs take in their targets in section 5.3. The results show that ESG SWFs generally take higher stakes in target firms compared to traditional SWFs, supporting hypothesis 6. Furthermore, ESG SWFs prefer targets locates in developed economies (consistent with Megginson, You and Han (2013)), and targets that experienced an increase in ESG score last period, supporting hypothesis 8. The degree of investor protection and accounting measures of the period before the investment do not seem to play a significant role in the target firm decision, contrary to evidence provided by Megginson, You and Han (2013).

Last, section 5.1.4 reports the development of the ESG score of targets firms one year after their first SWF investment, it is shown that firms' score is not significantly affected by the investment of an ESG SWF. Based on these results, the predictions of hypothesis 7 and the qualitative research of Dewenter, Han and Malatesta (2010) cannot be empirically confirmed. However, the lack of significant improvement aligns with the passive investor hypothesis of Bortolotti, Fotak and Megginson (2015). Possible explanations for this are that the improvement of the firm's ESG score is only visible over a longer horizon. Thus, it takes an SWF more time than just one year to effectively engage with a target to increase its ESG score. Furthermore, it could be that the stake that SWFs take in a company is too low to effectively influence the firm's (decision-making) processes that relate to its ESG score. Still, to date, there has not been extensive research into the effect on ESG scores in the context of SWF investors, although there is evidence on successful investor activism promoting ESG improvements through CSR engagements in general (Barko, Cremers & Renneboog, 2018). However, a concern here is that when estimating a causal effect of ESG SWF ownership changes and on the ESG score development of target firms, the results may be affected by endogeneity. To address this concern, a Granger causality test is employed which tests for Granger causality of ESG scores and SWF ownership. The results point at a bidirectional causal relationship between a firm's ESG score and SWF ownership.

In sum, the research obtains mixed evidence with regard to the relation between SWF investment and target firm performance, as described in hypotheses 1 to 4. Firms targeted by either ESG SWFs or politically independent SWFs may benefit from monitoring activities and pursuit of shareholder wealth maximization from these SWFs, but it mainly positively affects their return on assets and does not translate into better performance regarding the other measures. With respect to the relation between SWF investment and target firm value, targets do not display a significant increase in market value, as proxied by Tobin's Q. Furthermore, the results indicate that the degrees of transparency and autonomy alone cannot proxy for motives that do not maximize shareholders' value. With regard to the determinants of SWF ownership, the

results indicate that ESG SWFs prefer targets located in developed economies. In addition, a firm is more likely to be selected by an ESG SWF when it experienced an increase in ESG score the previous year. Last, with respect to ESG scores of targets, SWFs do not seem to have a consistent a long-lasting significant influence on the ESG behavior of their targets.

## 6.2 Limitations

Measuring determinants of SWF stakes and the influence of different types of SWF investment on the performance of target firms knows several challenges, of which the most important ones will be discussed below. First and foremost, the availability of SWF ownership data is a limiting factor since it leads to a substantial reduction of the number of firm-year observations. Out of more than 180 SWFs identified, only 29 of them eventually proved to have ownership data available through FactSet. This causes room for improvement for future research on SWF ownership. For instance, some variables are constructed with the assumption that year *t* is the first year that an SWF invests in the target firm. However, given that there is only data available on 29 SWFs, it could be the case that there is another SWF not present in FactSet that already held a share in the target. Hence, the assumption that the SWF in the dataset is the first to invest in the target would be violated. Related to this is that the average treatment effect estimated in chapter 5 applies to the subset of firms that are considered in this study because they are target firms of the SWFs that have ownership data available on FactSet. As such, the economic magnitude estimates obtained through the matching and ATE procedure need not be representative for the average target firm.

Another concern is that the sample sizes of firms targeted by transparent versus opaque SWFs and politically dependent versus autonomous SWFs are sometimes unbalanced. This limits the statistical power of the analyses carried out with these samples. Furthermore, the GPFG has an ownership stake in a large part of the firms available in the sample. To account for this, a control variable is present in all regression analyses. Moreover, the difference-in-difference analyses of mean and median changes are carried out for samples that exclude the GPFG. Nevertheless, its presence and investment style could still impact the results, since it is known as an ESG, autonomous and transparent SWF.

The research is also constrained by the availability of ESG data. Even though Asset4 provides data from before the sample period used in this study, the availability of scores is rather limited and only increases in the second half of the sample period.[23] Furthermore, ESG scores are subjective and do not have an accepted worldwide reporting standard (Cheng, Ioannou & Serafeim, 2014). Therefore, the choice of the source of ESG scores affects both the amount of available ESG scores and research outcomes.

[23] Table B.9 provides an overview of the ESG scores available for the 7,668 target firms in the sample.

## 6.3 Recommendations

This research aims to provide a new step towards understanding the motives and consequences of SWF investments, especially for SWFs that incorporate ESG considerations into their investment processes and decisions. The conclusions provide information for (professional) investors and leaders in politics, governments and business, and can be used as a source of knowledge for decision making on how to deal with (foreign) SWFs. Nevertheless, future academic research is needed to further unravel the objectives and effects of investments from SWFs, how SWF characteristics affect the performance of target firms, and how firm characteristics affect the investment choices of SWFs. The most important recommendations for further research are the following:

- **Additional coverage of SWFs:** Almost every empirical study on the influence of SWF investments on target firms is conducted with a subsample of SWFs, even though there are many more SWFs that actively invest on a large scale (SWFI, 2019). This study contributes by collecting ownership data on all SWFs available in FactSet. Still, far too little is known about the details of (other) SWF investments, and the current data reveals that the largest SWFs in this sample are usually the most transparent and autonomous SWFs. Hence, inclusion of additional SWFs, and especially those with a high degree of opaqueness and a high AUM, would allow interesting replications of the research that already has been done for the lower number of (relatively transparent and autonomous) SWFs. Furthermore, adding large, politically dependent and opaque SWFs to the sample gives opportunities to further examine whether SWF and firm characteristics influence target firm performance and SWF investment decisions, respectively.

- **Transparency and autonomy classifications:** Related to the additional coverage of SWFs is the recommendation to incorporate data on these SWFs into scoreboards such as those designed by Truman (2015) and Linaburg and Maduell (2018). This way, it is likely that the number of SWFs that is classified as either transparent or opaque and either autonomous or politically dependent increases, which helps to conduct analyses with balanced sample sizes and increased statistical power. Furthermore, increased coverage of transparency data might help to answer the question for policymakers whether the benefit of cross-border SWF investments is greater than the benefit provided by SWF investments (Megginson & Gao, 2019). Moreover, Stone and Truman (2016) recently found that SWFs are making progress to improve their transparency, which could also future results regarding the impact of opaqueness of SWFs on target firms and investment decisions.

In addition, another valuable link to study is how political pressure from domestic governments will affect an SWF's autonomy, transparency and subsequently, its investment strategy.

- **Endogeneity:** Endogeneity is a central concern to research that investigates the motives and implications of investments, whether they are made by institutional investors, governments, hedge funds, SWFs or any other financial agent. In the case of firm performance, the main strategy has been to use matched subsamples. In the case of ESG scores, a Granger causality test is reported. The Granger test executed here confirmed the bidirectionality of the relationship between ESG score and SWF ownership (see section 5.4). It could be very well possible that other firm characteristics other than ESG score influence an SWF's investment decision, but those characteristics are also affected by the SWF's influence after an SWF takes a stake in the firm.

  To test the validity of the results put forth, more work is required, for instance by using inclusions into the MSCI index and treating these a shock for target firms. This can help to further test assumptions about exogeneity. For example, it would be possible to use the index inclusion of MSCI ACWI (which covers 80% of the market capitalization of all companies in the world) to execute a Regression Discontinuity Design (RDD) setting (following a method such as Bena, Ferreira, Matos & Pires, 2017). This setting can be used to not only remove endogeneity concerns for the link between ESG score and SWF ownership, but also determine relationships between SWF ownership and firm value (Himmelberg, Hubbard & Palia, 1999). In addition, the matching method used to determine the impact on long-term performance (section 5.1.3) could also be applied to determining the effect on firm value (section 5.2).

- **Source of funding:** Even though their sources of funding is arguably one of the best documented features of SWFs (see Ang, 2010; Truman, 2010; Curzio and Miceli, 2010) and the importance of the type of funding is already documented by Fotak, Gao and Megginson (2016), this characteristic is often not taken into account when formulating predictions and empirically testing hypotheses about SWF activities. Nevertheless, the source of funding could prove to be a significant determinant of SWF's asset allocation and target choice. For instance, Megginson and Gao (2019) report that the rise of protectionism and escalating international trade frictions may potentially pose financial pressure on emerging economic with trade surpluses. Furthermore, SWFs from traditional resource exporting or trade surplus countries may receive reduced financial support from home country governments, or may be required to invest in their home countries to help the domestic budgets and economy. The decline in oil export revenues of the last five years is very likely to impact SWFs funded by oil export revenues, such as the GPFG, ADIA and KIA (Fotak, Gao &

Megginson, 2016). Hence, new circumstances due to these political and economic developments of the last years might force SWFs to shift their focus from traditional target countries, such as the US and UK, to other attractive countries, and will likely alter SWF investment levels.

- **SWF's objective and size:** Another interesting direction for future research would be paying attention to two possible determinants of an SWF's investment strategy: its objective and size. One way in which an SWF's objective may impact its target, industry and country choice is that SWFs that have formulated relatively short-term objectives (for instance, financing state budget expenditures and reduce inflationary pressure, such as the RRF) invest with more short-termism than SWFs that have formulated relatively long-term objectives (such as the NZSA, that exists to pre-fund the future cost of universal superannuation). Another determinant of investment allocation could be the size of the SWF, or, in other words, its diseconomies of scale (as already touched upon by Bernstein, Lerner and Schoar (2013)). A sovereign fund with the size of the GPFG, CIC or ADIA is likely unable to find enough attractive investments and suffers from the fact that its strategy is less profitable when buying larger blocks of stock, as this usually affects the target's market price.

In sum, future research should be geared towards gathering more and in-depth (quantitative) information about the structure, governance and investment activities of SWFs, thereby providing a comprehensive framework for assessing both the antecedents and outcomes of SWF investments.

# Bibliography


Abrigo, M.R.M., & Love, I. (2015). Estimation of panel vector autoregression in Stata: a package of progams. *University of Hawaii: Working paper.* Retrieved from https://sites.google.com/a/hawaii.edu/inessalove/home/pvar

Ang, A. (2010). The four benchmarks of sovereign wealth funds. http://dx.doi.org/10.2139/ssrn.1680485

Ang, A., Goetzmann, W. N., & Schaefer, S. M. (2009). Evaluation of active management of the Norwegian government pension fund – global. *Report to the Norwegian Ministry of Finance.* Retrieved from https://www0.gsb.columbia.edu/faculty/aang/papers/report%20Norway.pdf

Atkinson, A. B., & Stiglitz, J. E. (1980). *Lectures on public economics.* London, England: McGraw-Hill.

Avendaño, R. (2012). Sovereign wealth fund investments: From firm-level preferences to natural endowments. Retrieved from Paris School of Economics website: https://www.parisschoolofeconomics.eu/IMG/pdf/JobMarket-1paper-AVENDANO-PSE.pdf

Avendaño, R., & Santiso, J. (2011). Are sovereign wealth funds politically biased? A comparison with other institutional investors. In: B. Boubakri and J. C. Cosset (Eds.), *Institutional investors in global capital markets* (pp. 313-353). Bingley, UK: Emerald.

Balding, C. (2009). Framing Sovereign Wealth Funds: What we know and need to know. https://dx.doi.org/10.2139/ssrn.1335556

Baker, C. (2010). Sovereign wealth funds. In J. R. Boatright (Ed.), *Finance Ethics: Critical Issues in Theory and Practice* (pp. 253-271). Retrieved from https://www.ebookcentral.proquest.com

Banerjee, A. V. (1997). A theory of misgovernance. *Quarterly Journal of Economics, 112*, 1289-1332. Retrieved from https://ebscohost.com

Barko, T., Cremers, M., & Renneboog, L. C. R. (2018). *Shareholder engagement on environmental, social, and governance performance* (European Corporate Governance Institute (EGCI) - Finance Working Paper No. 509/2017). https://dx.doi.org/10.2139/ssrn.2977219

Bauer, R., Gunster, N., & Otten, R. (2005). International evidence on ethical mutual fund performance and investment style. *Journal of Banking and Finance, 29*, 1751-1767. https://doi.org/10.1016/j.jbankfin.2004.06.035

Bebchuk, L.A., Brav, A., & Jiang, W. (2017) The long-term effects of hedge fud activism. *Columbia Law Review, 115*(5), 1-63. https://dx.doi.org/10.2139/ssrn.2291577

Bena, J., Ferreira, M. A., Matos, P., & Pires, P. (2017). Are foreign investors locusts? The long-term effects of foreign institutional ownership. *Journal of Financial Economics*, 126(1), 122-146. https://dx.doi.org/ 10.1016/j.jfineco.2017.07.005

Bernstein, S., Lerner, J., & Schoar, A. (2009). *The investment strategies of sovereign wealth funds* (NBER Working Paper No. 14861). Retrieved from National Bureau of Economic Research Website: https://www.nber.org/papers/w14861.pdf

Bertoni, F., & Lugo, S. (2014). The effect of sovereign wealth funds on the credit risk of their portfolio companies. *Journal of Corporate Finance, 27,* 21-35. https://doi.org/10.1016/j.jcorpfin.2014.04.004

Bollen, N. (2007). Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis, 42*, 683-708. https://doi.org/10.1017/S0022109000004142

Bortolotti, B., Fotak, V., & Loss, G. (2017). *Taming leviathan: Mitigating political interference in sovereign wealth funds' public equity investments* (Social Science Research Network Working Paper No. 64). Retrieved from http://ssrn.com/abstract=3088430

Bortolotti, B., Fotak, V., & Megginson, W. L. (2015). The sovereign wealth fund discount: Evidence from public equity investments. *The Review of Financial Studies, 28*, 2993-3035. https://doi.org/10.1093/rfs/hhv036

Bortolotti, B., Fotak, V., Megginson, W. L., & Miracky, W. (2009). Sovereign wealth fund investment patterns and performance. Paper presented at *The Fifteenth Dubrovnik Economic Conference.* Retrieved from http://old.hnb.hr/dub-konf/15-konferencija/paper-bortolotti-fotak-megginson-miracky.pdf

Brav, A., Jiang, W., Partnoy, F., & Thomas, R. (2008) Hedge fund activism, corporate governance, and firm performance. *Journal of Finance*, *64*(4), 1729-1775. https://dx.doi.org/10.1111/j.1540-6261.2008.01373.x

Brecht, M., Franks, J., Grant, J., & Wagner, H. F. (2017). Returns to hedge fund activism: An international sstudy. *The Review of Financial Studies, 30*(9), 2933-2971. https://doi.org/10.1093/rfs/hhx048

Butt, S., Shidasani, A., Stendevad, C., & Wyman, A. (2008). Sovereign wealth funds: A growing global force in corporate finance. *Journal of Applied Corporate Finance, 20*(1), 73-83. http://dx.doi.org/10.1111/j.1745-6622.2008.00170.x

Cai, J., Garner, J. L., & Walking, R. A. (2009). Electing directors. *Journal of Finance, 64*, 2389-2421. https://doi.org/10.1111/j.1540-6261.2009.01504.x

Candelon, B., Kerkour, M., & Lecourt, C. (2011). Are sovereign wealth funds' investments determined by macroeconomic factors? (Working Paper). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.416.2383&rep=rep1&type=pdf

Chambers, D., Dimson, E., & Ilmanen, A. (2011). The Norway model. *Journal of Portfolio Management, 38*(2), 67-81. http://dx.doi.org/10.2139/ssrn.1936806

Chen, X. Harford, J., & Li, K. (2007). Monitoring: Which institutions matter? *Journal of Financial Economics, 86*, 279-305. https://doi.org/10.1016/j.jfineco.2006.09.005

Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal, 35*(1), 1-23. https://dx.doi.org/10.1002/smj.2131

Chhaochharia, V., & Laeven, L. (2008). *Sovereign wealth funds: Their investment strategies and performance* (CEPR discussion paper No. 6959) (September 2008). Retrieved from https://ssrn.com/abstract=1308030

Chhaochharia, V., & Laeven, L. (2009). The investment allocation of sovereign wealth funds (July 2009). Retrieved from https://ssrn.com/abstract=1262383

Ciarlone, A., & Miceli, V. (2014). *Are sovereign wealth funds contrarian investors?* (Bank of Italy Discussion Paper No. 972). https://dx.doi.org/10.2139/ssrn.2550736

Cremers, M., & Nair, V. R. (2005). Governance mechanisms and equity prices. *Journal of Finance, 60*, 2859-2894. https://doi.org/10.1111/j.1540-6261.2005.00819.x

Curzio, A. Q., & Miceli, V. (2010). *Sovereign Wealth Funds: A complete guide to state-owned investment funds.* Retrieved from https://ebookcentral.proquest.com

Dai, R. (2012). International accounting databases on WRDS: Comparative analysis. https://dx.doi.org/10.2139ssrn.2938675

Derwall, J., Gunster, N., Bauer, R., & Koedijk, K. (2004). The eco-efficiency premium puzzle. *Financial Analyst Journal, 61*(2), 51-63. http://dx.doi.org/10.2139/ssrn.551590

Dewenter, K. L., Han, X., & Malatesta, P. H. (2010). Firm values and sovereign wealth funds investments. *Journal of Financial Economics, 98*, 256-278. http://dx.doi.org/10.1016/j.jfineco.2010.05.005

Dimson, E., Karakas, O., & Li, X. (2015). Active ownership. *Review of Financial Studies, 28*(12), 3225-3268. https://doi.org/10.1093/rfs/hhv044

Dyck, A. I. J., & Morse, A. (2011). *Sovereign wealth fund portfolios* (Chicago Booth Research Paper No. 11-15). https://dx.doi.org/10.2139/ssrn.1792850

Fernandes, N. (2009). Sovereign wealth funds: Investment choices and implications around the world. http://dx.doi.org/10.2139/ssrn.1341692

Fernandes, N. (2014). The impact of sovereign wealth funds on corporate value and performance. *Journal of Applied Corporate Finance, 26*(1), 76-84. https://dx.doi.org/10.1111/jacf.12056

Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science, 61*(11), 2549-2568. https://doi.org/10.1287/mnsc.2014.2038

Fotak, V., Gao, X., & Megginson, W. L. (2016). *A financial force to be reckoned with? An overview of sovereign wealth funds* (European Corporate Governance Institute paper No. 476). https://dx.doi.org/10.2139/ssrn.2825928

Gagliardi, T., Gianfrate, G., & Vincenzi, R. (2014). *Sovereign wealth funds' investments: The bondholders' perspective* (Bocconi University Working Paper). Retrieved from https://wbiworldconpro.com/uploads/london-conference-2014/finance/1396419417_334_ Gianfranco.pdf

Giannetti, M., & Laeven, L. (2008). Pension reform, ownership structure, and corporate governance: Evidence from a natural experiment. *Review of Financial Studies, 22,* 4091-4127. https://doi.org/10.1093/rfs/hhn091

Gompers, P. & Metrick, A. (2001). Institutional investors and equity prices. *Quarterly Journal of Economics, 116*, 229-259. http://dx.doi.org/10.1162/003355301556392

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics, 118,* 107-155. 2003. http://dx.doi.org/10.2139/ssrn.278920

Griffith-Jones, S., & Ocampo, J. A. (2008). *Sovereign Wealth Funds: A developing country perspective.* Retrieved from https://academiccommons.columbia.edu/doi/10.7916/D8571JS9/download

Heaney, R., Li, L., & Valencia, V. (2011). Sovereign wealth fund investment decisions: Temasek Holdings. *Australian Journal of Management, 36*, 109-120. https://doi.org/10.1177/0312896210388859

Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L. T., & Zhou, X. (2016). ESG shareholder engagement and downside risk. Retrieved from https://www.houseoffinance.se/wp-content/uploads/2018/04/HOSSZ-Paper-20180810-Stockholm-Conference-1.pdf

IMF (2008a). *Global Financial Stability Report – Containing systemic risks and restoring financial soundness* (IMF Global Financial Stability Report April edition). Retrieved from IMF's website: https://www.imf.org/en/Publications/GFSR/Issues/2016/12/31/Global-Financial-Stability-Report-April-2008-Containing-Systemic-Risks-and-Restoring-21707

IMF (2008b). *Sovereign Wealth Funds – A Work Agenda*. Retrieved from IMF's Monetary and Capital Markets and Policy Development and Review Departments website: https://www.imf.org/external/np/pp/eng/2008/022908.pdf.

IMF (2008c). *Sovereign wealth funds: Current institutional and operational practices* (IMF Working Paper No. 08/254). Retrieved from IMF's Monetary and Capital Markets Departments website: https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Sovereign-Wealth-Funds-Current-Institutional-and-Operational-Practices-22453

Himmelberg, C., Hubbard, R., & Palia, D. (1999). Understanding the determinants of managerial ownership and the link between ownership and performance. *Journal of Financial Economics, 53*, 353-385.

Johan, S. A., Knill, A., & Mauck, N. (2013). Determinants of sovereign wealth fund investments in private equity vs public equity. *Journal of International Business Studies, 44*, 155-172. https://dx.doi.org/:10.1057/jibs.2013.1

Johnson, M. & Mitton, T. (2003). *Cronyism and capital controls: Evidence from Malaysia* (NBER Working Paper No. 8521). Retrieved from National Bureau of Economic Research Website: https://www.nber.org/papers/w8521

Kern, S. (2008). SWFs and foreign investment policies: An update (Deutsche Bank Research Paper). Retrieved from Deutsche Bank Research website: https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD0000000000465344/SWFs_and_foreign_investment_policies_-_an_update.pdf

Kern, S. (2009). Sovereign wealth funds – state investments during the financial crisis [PowerPoint slides]. Retrieved from https://www.investireoggi.it/forums/attachments/prod0000000000244283-pdf.25393/

Kotter, J. D., & Lel, U. (2008). Friends or foes? The stock price impact of sovereign wealth fund investments and the price of keeping secrets (International Finance Discussion Papers No. 940). Retrieved from the Federal Reserve Website: https://www.federalreserve.gov/pubs/ifdp/2008/940/ifdp940.pdf

Kotter, J. D., & Lel, U. (2011). Friends or foes? Target selection decisions of sovereign wealth funds and their consequences. *Journal of Financial Economics, 101*, 360-381. http://dx.doi.org/10.2139/ssrn.1292407

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Law and Finance. *Journal of Political Economy, 106*(6), 1113-1155. https://dx.doi.org/0022-3808/98/0606-0006$02.50

Lehmann, N., & Sarabi, A. (2018). Revisiting the monitoring role of sovereign wealth funds: Evidence from a quasi-experimental setting. In: Academy of management proceedings, 1, 15828. Retrieved from http://aom.org/proceedings/

Liang, H., & Renneboog, L. (2016). On the foundations of corporate social responsibility (European Corporate Governance Institute (EGCI) – Finance Working Paper No. 394/2013). Retrieved from http://dx.doi.org/10.2139/ssrn.2360633

Liew, L. H., & He, L. (2012). Operating in an inharmonious world: China Investment Corporation. *Journal of the Asia Pacific Economy, 17*, 253-267. http://dx.doi.org/10.1080/13547860.2012.668027

Linaburg, C., & Maduell, M. (2018). *Linaburg-Maduell Transparency Index.* Retrieved from https://www.swfinstitute.org/research/linaburg-maduell-transparency-index

Liu, K. (2016). Government block holder ownership, sovereign wealth fund and firm performance. *Journal of Advanced Studies in Finance, 7*(14), 95-106.

Leuz, C., Lins, K. V., & Warnock, F. E. (2009). Do foreigners invest less in poorly governed firms? *Review of Financial Studies, 22*, 3245-3285. https://doi.org/10.1093/rfs/hhn089.ra

Megginson, W. L., & Netter, J. M. (2001). From state to market: A survey of empirical studies on privatization. *Journal of Economic Literature, 39*, 321-389. https://dx.doi.org/10.1257/jel.39.2.321

Megginson, W. L., You, M., & Han, L. (2013). Determinants of sovereign wealth fund cross-border investments. *Financial Revivew, 48*, 539-572. https://doi.org/10.1111/fire.12015

Mehrpouya, A., Huang, C., & Barnett, T. (2009). An analysis of proxy voting and engagement policies and practices of the sovereign wealth funds (IRRCI SWF Report Draft Version September 2009). Retrieved from https://www.researchgate.net/publication/265085150_An_Analysis_of_Proxy_Voting_and_Engagement_Policies_and_Practices_of_the_Sovereign_Wealth_Funds

Miracky, W., & Bortolotti, B. (2009). *Weathering the storm: Sovereign Wealth Funds in the global economic crisis of 2008* (SWF Annual Report). Retrieved from https://www.feem.it/m/publications_pages/20091161532464Monitor-FEEM_SWF_AnnualReport2008.pdf

Murtinu, S. & Scalera, V. G. (2015). Sovereign wealth fund investments and stock prices: The effect of target industry and location. *Rivista Internazionale di Scienze Sociali*, 4, 447-462. https://dx.doi.org/10.2139/ssrn.2668726

Nelson, J. M. (2006). The ‘‘CalPERS Effect’’ revisited again. *Journal of Corporate Finance, 12*(2), 187-213. https://dx.doi.org/10.1016/j.corpfin.2005.07.002

Renneboog, L., Ter Horst, J., & Zhang, C. (2005). Is ethical money financially smart? (European Corporate Governance Institute (EGCI) – Finance Working Paper No. 117/2006). Retrieved from http://dx.doi.org/10.2139/ssrn.887162

Renneboog, L., Ter Horst, J., & Zhang, C. (2007). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance, 32*, 1723-1742. http://dx.doi.org/10.1016/j.jbankfin.2007.12.039

Reuters (2018). *Global sovereign fund assets jump to $7.45 trillion.* Retrieved from www.reuters.com/article/us-global-swf-assets/global-sovereign-fund-assets-jump-to-7-45-trillion-preqin-idUSKBN1HJ2DG

Rozanov, A. (2005). Who holds the wealth of nations. *Central Banking Journal*, *15*(4), 52-57. Retrieved from http://piketty.pse.ens.fr/files/capital21c/xls/RawDataFiles/WealthReportsEtc/SovereignFunds/General/Rozanov2005.pdf

Shleifer, A., & Vishny, R. (1986). Large shareholders and corporate control. *Journal of Political Economy, 94*, 461-488. Retrieved from https://scholar.harvard.edu/files/schleifer/files/lg_shareholders.pdf

Shleifer, A., & Vishny, R. (1994). Politicians and firms. *Quarterly Journal of Economics, 109*, 995-1025.

Smith, M. (1996). Shareholder activism by institutional investors: Evidence from CalPERS. *Journal of Finance, 51,* 227-252. https://doi.org/10.1111/j.1540-6261.1996.tb05208.x

Solji, E., & Wah Tham, W. (2011). The impact of foreign government investments: Sovereign wealth fund investments in the United States. In: N. Boubakri & J. Cosset (Eds.), *Institutional Investors in Global capital Markets* (pp. 207-243). https://doi.org/10.1108/S1569-3767(2011)0000012011

Stone, S. E., & Truman, E. M. (2016). Uneven progress on sovereign wealth fund transparency and accountability. *Policy Brief*, 1-27. Retrieved from https://www.piie.com/publications/policy-briefs/uneven-progress-sovereign-wealth-fund-transparency-and-accountability

Sun, X., Li, J., Wang, Y., & Clark, W. W. (2014). China’s sovereign wealth fund investments in overseas energy: The energy security perspective. *Energy Policy, 65*, 654-661. http://dx.doi.org/10.1016/j.enpol.2013.09.056

SWFI. (2019). Top largest sovereign wealth fund rankings by total assets. Retrieved from https://www.swfinstitute.org/fund-rankings/sovereign-wealth-fund

Thatcher, M., & Vlandas, T. (2016). Overseas state outsiders as new sources of patient capital: Government policies to welcome sovereign wealth fund investment in France and Germany. *Socio-Economic Review, 14*(4), 647-668. https://dx.doi.org/10.1093/ser/mww028

Tirole, J. (1994). The internal organization of governments. *Oxford Economic Papers, 46*, 1-29.

Truman, E. M. (2009). A blueprint for Sovereign Wealth Fund best practices. *Revue d'Economie Financière,* special issue, 429-451. Retrieved from http://www.ebschohost.com

Truman, E. M. (2010). *Sovereign Wealth Funds: Threat or Salvation?* Retrieved from https://ebookcentral.proquest.com

Truman, E. M. (2016). *Sovereign wealth fund scoreboards.* Retrieved from https://piie.com/system/files/documents/pb16-18.xlsx

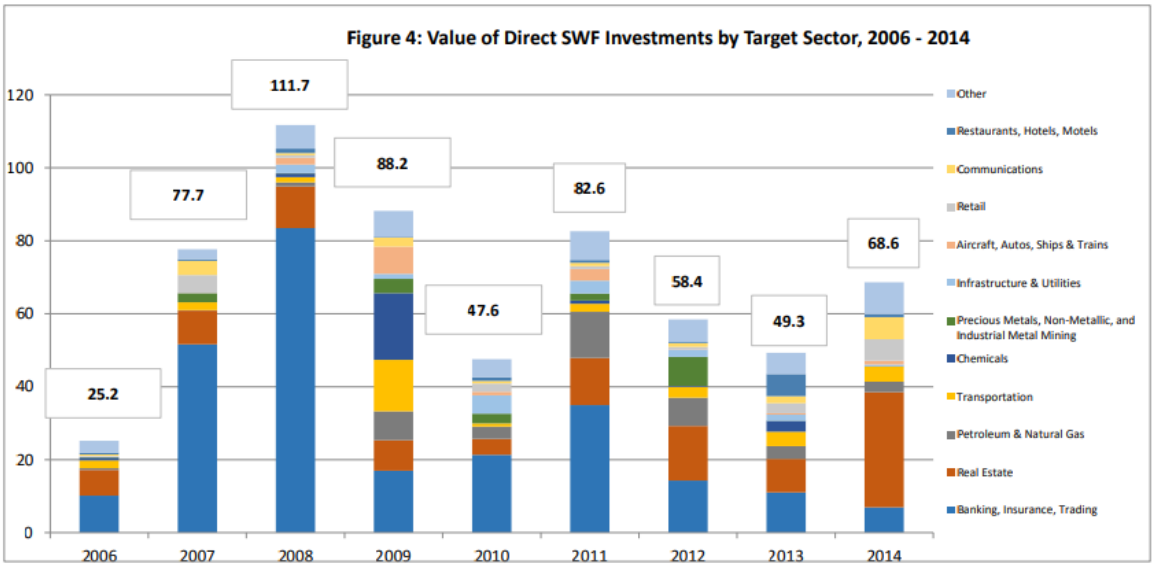
Vigeo Eiris. (2017). Index rule book: Euronext Vigeo family. Retrieved from http://www.vigeoeiris.com/wp-content/uploads/2016/11/Euronext-Vigeo-rules-version-17-02Jul2017.pdf?x62552

Woidtke, T. (2002). Agents watching agents?: Evidence from pension fund ownership and firm value. *Journal of Financial Economics, 63,* 99-131. https://doi.org/10.1016/S0304-405X(01)00091-5

# Appendix A: Figures

**Figure A. 1: Value of direct SWF investment by target sector from 2006 to 2014**

Source: Fotak, Gao and Megginson (2016), from Sovereign Investment Laboratory's Sovereign Wealth Fund Annual Report 2014 (2015).



# Appendix B: Variable definitions and descriptives

**Table B. 1: Measurement of main and control variables**

| Variable | Definition |
|---|---|
| $Q_{i,t}$ | $\frac{MVequity_{i,t} + MVliabilities_{i,t}}{\text{BVequity}_{i,t} + \text{BVliabilities}_{i,t}}$ |
| $\Delta ESG_{i,t}$ | $ESG_{i,t+1} - ESG_{i,t}$ |
| $\Delta ESG_{i,t-1}$ | $ESG_{i,t} - ESG_{i,t-1}$ |
| $SWF\ stake_{i,t}$ | $\sum Stake_{j,t}$ , denotes sum of stake of SWF *j* in target firm *i* at year *t* |
| $TRANSt_{j,t}$ | Transparency level of SWF *j* at year *t* according to Truman's scoreboard (Truman, 2015).<br>High transparency: SWF has a score ≥ 11<br>Medium transparency: SWF has a score ≥ 7<br>Low transparency: SWF has a score < 7 |
| $TRANSlmi_{j,t}$ | Transparency level of SWF *j* at year *t* according to the Linaburg-Maduell index (LMI, 2018).<br>High transparency: SWF has a score between 6 and 10.<br>Low transparency: SWF has a score of 5 or lower. |
| $AUTO_{j,t}$ | Autonomy level of SWF *j* at year *t* according to Truman (2015) |
| $TRANStNN_{j,t}$ | Transparency level of SWF *j* at year *t* according to Truman's scoreboard (Truman, 2015) without taking GPFG into account |
| $AUTONN_{j,t}$ | Autonomy level of SWF *j* at year *t* according to Truman (2015) without taking GPFG into account |
| $CSRSWFBR_{j,t}$ | ESG SWFs broadly defined: at least 2 out of 3 checks in designed 'ESG crosstable' that reports the ESG activities of all SWFs in the sample AND at least 1 point in Truman's scoreboard on CSR (2015) |
| $CSRSWFNA_{j,t}$ | ESG SWFs narrowly defined ('best in class'): 3 out of 3 checks in designed 'ESG crosstable' that reports the ESG activities of all SWFs in the sample AND at least 2 points in Truman's scoreboard on CSR (2015) |
| $CSRSWFBRNN_{j,t}$ | Broad definition of ESG SWFs, without GPFG |
| $CSRSWFNANN_{j,t}$ | Narrow definition of ESG SWFs, without GPFG |
| $ROAY1i$ | Return on assets for firm *i* measured 1 year after first SWF investment |
| $ROAY3_i$ | Return on assets for firm *i* measured 3 years after first SWF investment |
| $SGY1_i$ | Sales growth for firm *i* measured 1 year after first SWF investment |
| $SGT3_i$ | Sales growth for firm *i* measured 3 years after first SWF investment |
| $MTBY1_i$ | Market-to-book ratio for firm *i* measured 1 year after first SWF investment |
| $MTBY3_i$ | Market-to-book ratio for firm *i* measured 3 years after first SWF investment |
| $OPMY1_i$ | Operating profit margin for firm *i* measured 1 year after first SWF investment |
| $OPMY3_i$ | Operating profit margin for firm *i* measured 3 years after first SWF investment |
| $CAPEXSY1_i$ | Capex-to-sales ratio for firm *i* measured 1 year after first SWF investment |
| $CAPEXSY3_i$ | Capex-to-sales ratio for firm *i* measured 3 years after first SWF investment |
| $DROA1_{i,t}$ | $ROA_{t+1}$ - $ROA_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DROA2_{i,t}$ | $ROA_{t+2}$ - $ROA_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DROA3_{i,t}$ | $ROA_{t+3}$ - $ROA_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DSG1_{i,t}$ | $SG_{t+1}$ - $SG_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DSG2_{i,t}$ | $SG_{t+2}$ - $SG_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DSG3_{i,t}$ | $SG_{t+3}$ - $SG_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DMTB3_{i,t}$ | $MTB_{t+1}$ - $MTB_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DMTB3_{i,t}$ | $MTB_{t+2}$ - $MTB_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DMTB3_{i,t}$ | $MTB_{t+3}$ - $MTB_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DOPM3_{i,t}$ | $OPM_{t+1}$ - $OPM_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DOPM3_{i,t}$ | $OPM_{t+2}$ - $OPM_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DOPM3_{i,t}$ | $OPM_{t+3}$ - $OPM_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DCAPEXS3_{i,t}$ | $CAPEXS_{t+1}$ - $CAPEXS_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DCAPEXS3_{i,t}$ | $CAPEXS_{t+2}$ - $CAPEXS_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |
| $DCAPEXS3_{i,t}$ | $CAPEXS_{t+3}$ - $CAPEXS_{t-1}$ for firm *i* if *t* is the first year of an SWF investment |

**Table B. 2: Measurement of other main variables and control variables**

| Variable | Definition |
|---|---|
| $ISIN_i$ | ISIN of firm *i* |
| $Date_i$ | Date of investment in firm *i* |
| $Year_i$ | Year of investment in firm *i* |
| $Target$ | Target number |
| $YNUM$ | Year (numeric, 1-15) |
| $Name_i$ | Name of firm *i* |
| $Price_{i,t}$ | Price of firm *i* at year *t* |
| $MV_{i,t}$ | Market Value of firm *i* at year *t*, in US$ |
| $BVE_{i,t}$ | Book value of equity of firm *i* at year *t*, in US$ |
| $BVL_{i,t}$ | Book value of liabilities of firm *i* at year *t*, in US$ |
| $TQ_{i,t}$ | Tobin's Q of firm *i* at year *t* |
| $DIVY_{i,t}$ | Dividend yield of firm *i* at year *t* |
| $LEV_{i,t}$ | Leverage of firm *i* at year *t* |
| $ROA_{i,t}$ | ROA of firm *i* at year *t* |
| $SG_{i,t}$ | Sales growth of firm *i* at year *t* |
| $CASHAR_{i,t}$ | Cash to assets ratio of firm *i* at year *t* |
| $ESG_{i,t}$ | ESG score of firm *i* at year *t* |
| $ESGDUM_{i,t}$ | Dummy if ESG score is available for firm *i* at year *t* |
| $CRISIS_i$ | Dummy for crisis years in country of target *i* |
| $MTB_{i,t}$ | Market-to-book ratio of firm *i* at year *t* |
| $ROE_{i,t}$ | Return on equity of firm *i* at year *t* |
| $GWAi,t$ | Goodwill to assets ratio of firm *i* at year *t* |
| $CAPEXSi,t$ | Capex/sales ratio of firm *i* at year *t* |
| $STAGBi,t$ | Staggered Board presence of firm *i* at year *t* |
| $SUPERMi,t$ | Supermajority presence of firm *i* at year *t* |
| $GOLDENPi,t$ | Golden Parachute presence of firm *i* at year *t* |
| $PPi,t$ | Poison Pill presence of firm *i* at year *t* |
| $EINDEXi,t$ | E-Index (combines staggered board, supermajority, golden parachute, poison pill presence) of firm *i* at year *t* |
| $NIBMi,t$ | Stake of Norges Bank Investment Management in firm *i* at year *t* |
| $CICi,t$ | Stake of China Investment Corp. (Investment Management) in firm *i* at year *t* |
| $ADIAi,t$ | Stake of Abu Dhabi Investment Authority (Investment Management) in firm *i* at year *t* |
| $KIAi,t$ | Stake of Kuwait Investment Authority (Investment Management) in firm *i* at year *t* |
| $SAMAi,t$ | Stake of Saudi Arabian Monetary Agency (Investment Management) in firm *i* at year *t* |
| $HKMAi,t$ | Stake of Hong Kong Monetary Authority (Investment Management) in firm *i* at year *t* |
| $SAFEi,t$ | Stake of SAFE Investment Co. Ltd. in firm *i* at year *t* |
| $GICi,t$ | Stake of GIC Pte Ltd. (Investment Management) in firm *i* at year *t* |
| $TEMASi,t$ | Stake of Temasek Holdings Pte Ltd. (Investment Management) in firm *i* at year *t* |
| $NCSSi,t$ | Stake of National Council for Social Security Fund in firm *i* at year *t* |
| $QIAi,t$ | Stake of Qatar Investment Authority (Investment Management) in firm *i* at year *t* |
| $PIFi,t$ | Stake of Public Investment Fund (Investment Management) in firm *i* at year *t* |
| $PICi,t$ | Stake of Public Investment Corporation (SOC) Ltd. in firm *i* at year *t* |
| $KICi,t$ | Stake of Korea Investment Corp. (Investment Management) in firm *i* at year *t* |
| $FFi,t$ | Stake of Future Fund Management Agency in firm *i* at year *t* |
| $APFi,t$ | Stake of Alaska Permanent Fund Corp. in firm *i* at year *t* |
| $BIAi,t$ | Stake of Brunei Investment Agency (Investment Management) in firm *i* at year *t* |
| $TPSF_{i,t}$ | Stake of Texas Permanent School Fund in firm *i* at year *t* |
| $KHAZ_{i,t}$ | Stake of Khazanah Nasional Bhd. (Investment Management) in firm *i* at year *t* |
| $NZSA_{i,t}$ | Stake of Guardians of New Zealand Superannuation in firm *i* at year *t* |
| $SGRF_{i,t}$ | Stake of State General Reserve Fund of Oman (Investment Management) in firm *i* at year *t* |
| $CADF_{i,t}$ | Stake of China-Africa Development Fund Co., Ltd. (Invt Mgmt) in firm *i* at year *t* |
| $PAIF_{i,t}$ | Stake of Palestine Investment Fund (Investment Management) in firm *i* at year *t* |
| $SCI_{i,t}$ | Stake of State Capital Investment Corp. (Investment Management) in firm *i* at year *t* |
| $OWN05_{i,t}$ | Dummy if SWFs have over 0.5% ownership in firm *i* at year *t* |
| $OWN1_{i,t}$ | Dummy if SWFs have over 1% ownership in firm *i* at year *t* |
| $OWN2_{i,t}$ | Dummy if SWFs have over 2% ownership in firm *i* at year *t* |

| | |
|---|---|
| $OWN5_{i,t}$ | Dummy if SWFs have over 5% ownership in firm *i* at year *t* |
| $SECTOR_i$ | Sector of firm *i* |
| $INDUSTRY_i$ | Industry of firm *i* |
| $EXCH_{i,t}$ | Exchange of firm *i* at year *t* |
| $TICKER_i$ | Holding Ticker of firm *i* |
| $DOMESTIC_{i,t}$ | Indicates a domestic vs foreign investment for firm *i* at year *t* |
| $REGION_{i,t}$ | Region of firm *i* at year *t* |
| $COUNTRY_{i,t}$ | Country of firm *i* at year *t* |
| $ASSETTU_{i,t}$ | Asset turnover of firm *i* at year *t* |
| $ESG_{i,t}$ | Numerical total ESG Score of firm *i* at year *t* |
| $ENV_{i,t}$ | Numerical Environmental Pillar Score of firm *i* at year *t* |
| $SOC_{i,t}$ | Numerical Social Pillar Score of firm *i* at year *t* |
| $GOV_{i,t}$ | Numerical Governance Pillar Score of firm *i* at year *t* |
| $FCCR_{i,t}$ | Fixed charge coverage ratio of firm *i* at year *t* |
| $OPM_{i,t}$ | Operating profit margin of firm *i* at year *t* |
| $CASH_{i,t}$ | Cash holdings of firm *i* at year *t* |
| $TA_{i,t}$ | Total assets of firm *i* at year *t* |
| $NED_{i,t}$ | Presence of non-executive director at the board of firm *i* at year *t* |
| $MSAL_{i,t}$ | Mean salary of board of firm *i* at year *t* |
| $MBONUS_{i,t}$ | Mean bonus of board of firm *i* at year *t* |
| $MTOTALC_{i,t}$ | Mean total compensation of board of firm *i* at year *t* |
| $MVALTOTEQ_{i,t}$ | Mean total equity held by board members of firm *i* at year *t* |
| $MBONUSR_{i,t}$ | Mean bonus ratio of board of firm *i* at year *t* |
| $COMMON_j$ | SWF *j*'s home country has common law |
| $SOCIAL_j$ | SWF *j*'s home country has social law |
| $CIVIL_j$ | SWF *j*'s home country has civil law |
| $LAW_{i,t}$ | Categorical variable that combines COMMON, SOCIAL and CIVIL |
| $COMMONF_{i,t}$ | Country of firm *i* at year *t* has common law |
| $SOCIALF_{i,t}$ | Country of firm *i* at year *t* has social law |
| $CIVILF_{i,t}$ | Country of firm *i* at year *t* has civil law |
| $BLOCK_{i,t}$ | Number of >5% institutional block ownerships |
| $TOTBLOCK_{i,t}$ | Total ownership by institutional blockholders as percentage of shares outstanding |
| $TOTALIO_{i,t}$ | Total institutional ownership in percentage of shares outstanding |
| $HF_{i,t}$ | Herfindahl-Hirschman Index that measures ownership concentration in percentage |
| $IO_{i,t}$ | Total institutional ownership as percentage of shares outstanding |
| $DEV_{i,t}$ | Target firm *i* resides in a developed economy at year *t* |
| $FRON_{i,t}$ | Target firm *i* resides in a frontier economy at year *t* |
| $EMER_{i,t}$ | Target firm *i* resides in an emerging economy at year *t* |
| $GPFG_{i,t}$ | Binary variable identifying the firm *i* with the GPFG owning shares at year *t* |
| $ESGT_{i,t}$ | 3 terciles of ESG |
| $FIRSTINV_i$ | Indicates first year of SWF investment |
| $FIRSTINV05_i$ | Indicates first SWF investment, where 2004 is replaced by 2005 to account for the sample starting in 2004. |

**Table B. 3: Descriptive statistics**

| Country | Fund name | AUM (US$ billion) | Obs. | ESG SWF (broad) | ESG SWF (narrow) | Transparency (Truman) | Transparency (LMI) | Autonomy | Mean stake acquired (%OS) |
|---|---|---|---|---|---|---|---|---|---|
| Norway | Government Pension Fund Global (GPFG) | 1,059 | 66,518 | Yes | Yes | High | 1 | 1 | 0.5377 |
| China | China Investment Corporation (CIC) | 941 | 2,517 | No | No | Middle | 1 | 0 | 0.0534 |
| United Arab Emirates (Abu Dhabi) | Abu Dhabi Investment Authority (ADIA) | 697 | 804 | No | No | Low | 0 | 0 | 0.0098 |
| Kuwait | Kuwait Investment Authority (KIA) | 592 | 1,804 | No | No | Low | 0 | 1 | 0.0122 |
| Saudi Arabia | Saudi Arabian Monetary Agency (SAMA) | 516 | 1,248 | No | No | Low | 0 | 0 | 0.0143 |
| Hong Kong | Hong Kong Monetary Agency (HKMA) | 509 | 8 | No | No | Middle | 1 | 1 | 0.0001 |
| China | SAFE Investment Company | 440 | 531 | No | No | Middle | 0 | 0 | 0.0046 |
| Singapore | Government of Singapore (GIC) | 390 | 3,075 | No | No | Middle | 1 | 1 | 0.0525 |
| Singapore | Temasek Holdings | 375 | 587 | No | No | Middle | 1 | 1 | 0.0354 |
| China | National Social Security Fund | 341 | 509 | No | No | Middle | 0 | 0 | 0.0180 |
| Qatar | Qatar Investment Authority | 320 | 108 | No | No | Low | 0 | 0 | 0.0076 |
| Saudi Arabia | Public Investment Fund | 290 | 13 | No | No | Low | 0 | 0 | 0.0016 |
| South-Korea | Korea Investment Corporation (KIC) | 134 | 2,173 | Yes | No | High | 1 | 1 | 0.0011 |
| Australia | Australian Future Fund (AFF) | 104 | 15 | Yes | Yes | High | 1 | 1 | 0.0010 |
| USA (Alaska) | Alaska Permanent Fund (APF) | 66 | 6 | Yes | Yes | High | 1 | 1 | 0.0001 |
| Brunei | Brunei Investment Agency (BIA) | 60 | 34 | No | No | Low | 0 | 0 | 0.00001 |
| USA (Texas) | Texas Permanent School Fund | 47 | 7,624 | No | No | High | 0 | 1 | 0.0067 |
| Malaysia | Khazanah Nasional (Berhad) | 33 | 163 | No | No | Middle | 1 | 1 | 0.0303 |
| New Zealand | New Zealand Superannuation Fund | 25 | 43,480 | Yes | Yes | High | 1 | 1 | 0.0169 |
| Oman | State General Reserve Fund of Oman | 18 | 24 | No | No | Low | 0 | 0 | 0.0021 |
| China – Africa | China-Africa Development Fund | 5 | 2 | No | No | Low | 0 | 0 | 0.0002 |
| State of Palestine | Palestine Investment Fund (PAIF) | 1 | 29 | No | No | High | 0 | 0 | 0.0042 |
| Vietnam | State Capital Investment | 0 | 12 | No | No | Low | 0 | 0 | 0.0014 |

## Table B. 4: Sample distribution

This table reports the distributions of firm-year observations by country (panel A) and industry (panel B) over the period 2004 – 2018. Countries are classified according to the location of primary listing. Industries are classified using the Fama and French (1997) 17-industry classification.

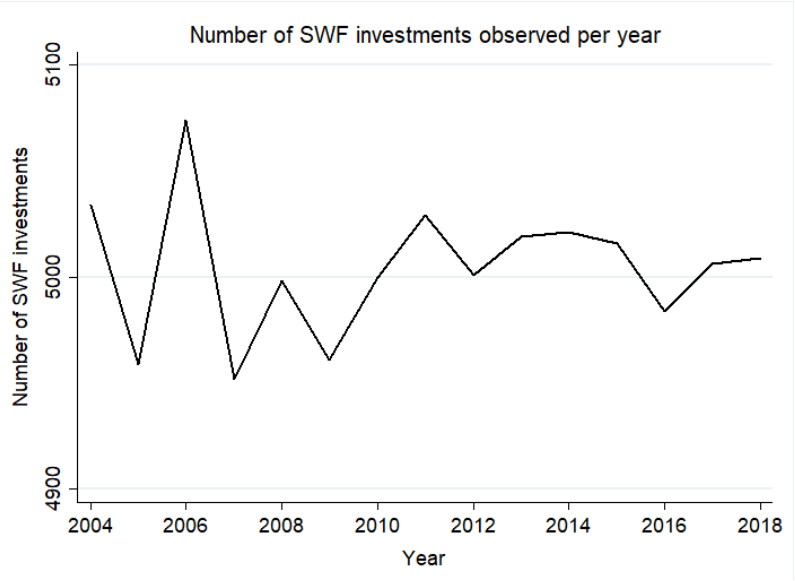
### Panel A: Sample distribution across countries

| Country | Observations | Country | Observations | Country | Observations |
|---|---|---|---|---|---|
| Argentina | 15 | India | 3,720 | Philippines | 615 |
| Australia | 3,750 | Indonesia | 930 | Poland | 765 |
| Austria" | 465 | Ireland | 660 | Portugal | 300 |
| Bahrain | 45 | Israel | 780 | Puerto Rico | 30 |
| Bangladesh | 165 | Italy | 1,695 | Qatar | 240 |
| Belgium | 765 | Japan | 17,010 | Romania | 60 |
| Bermuda | 300 | Jordan | 60 | Russian Federation | 675 |
| Brazil | 1,545 | Kazakhstan | 15 | Saudi Arabia | 540 |
| Bulgaria | 15 | Kenya | 75 | Singapore | 1,275 |
| Cambodia | 15 | Kuwait | 150 | Slovenia | 75 |
| Canada | 5,085 | Liechtenstein | 30 | South Africa | 2,565 |
| Cayman Islands | 45 | Luxembourg | 375 | South Korea | 4,035 |
| Chile | 495 | Macau | 45 | Spain | 1,305 |
| China | 13,815 | Malaysia | 1,650 | Sri Lanka | 90 |
| Colombia | 165 | Malta | 30 | Sweden | 1,680 |
| Croatia | 45 | Mauritius | 60 | Switzerland | 2,010 |
| Cyprus | 30 | Mexico | 975 | Taiwan | 4,560 |
| Czech Republic | 75 | Monaco | 15 | Thailand | 555 |
| Denmark | 630 | Morocco | 120 | Turkey | 780 |
| Egypt | 375 | Netherlands | 1,200 | U.S. Virgin Islands | 15 |
| Finland | 735 | New Zealand | 735 | Ukraine | 30 |
| France | 2,685 | Nigeria | 90 | United Arab Emirates | 360 |
| Germany | 2,640 | Norway | 240 | United Kingdom | 6,465 |
| Gibraltar | 30 | Oman | 225 | United States | 16,665 |
| Greece | 390 | Pakistan | 30 | Uruguay | 15 |
| Hong Kong | 3,360 | Palestine | 45 | Vietnam | 465 |
| Hungary | 75 | Peru | 135 | **Total** | **115,020** |

### Panel B: Sample distribution across industries

| Industry | Observations | Percentage of total sample (%) |
|---|---|---|
| Automobiles | 2,625 | 2.28 |
| Chemicals | 3,135 | 2.73 |
| Clothing | 1,665 | 1.45 |
| Construction | 6,480 | 5.63 |
| Consumables | 3,720 | 3.23 |
| Durables | 7,305 | 6.35 |
| Fabricated products | 1,275 | 1.11 |
| Finance | 16,620 | 14.45 |
| Food | 4,740 | 4.12 |
| Machinery and business equipment | 8,475 | 7.37 |
| Mining | 3,075 | 2.67 |
| Oil | 3,120 | 2.71 |
| Retail | 4,230 | 3.68 |
| Steel works | 1,140 | 0.99 |
| Transportation | 3,075 | 2.67 |
| Other | 44,340 | 38.55 |
| **Total** | **115,020** | **100.0** |

**Figure B. 1: Number of SWF investments across years**



## Table B. 5: Summary statistics

This table reports summary statistics on the main variables and control variables. All information is obtained on a yearly basis. Board compensation information is obtained per announcement, but averaged for that year and appended to the firm-year to which the announcement applies. If multiple announcements were available for one year, salary information is averaged and appended. To mitigate the impact of outliers, continuous variables are winsorized at the top and bottom percentile. All variables are defined in Appendix B.

| Variable | Source | Obs | Mean | St Dev | 25p | Median | 75p |
|---|---|---|---|---|---|---|---|
| $Q_{i,t}$ | Worldscope | 91,312 | 1.83 | 2.16 | 1.01 | 1.29 | 1.97 |
| $ESG_{i,t}$ | Asset4 | 37,560 | 46.60 | 16.40 | 34.34 | 44.54 | 58.44 |
| $ROA_{i,t}$ | Worldscope | 94,460 | 0.055 | 0.0957 | 0.0198 | 0.0512 | 0.093 |
| $SG_{i,t}$ | Worldscope | 94,708 | 0.1653 | 0.4072 | 0.0000 | 0.0839 | 0.2124 |
| $MTB_{i,t}$ | Worldscope | 92,306 | 0.0272 | 0.0298 | 0.0109 | 0.0181 | 0.032 |
| $OPMi,t$ | Worldscope | 114,451 | 0.0835 | 0.2647 | 0.0114 | 0.0777 | 0.1709 |
| $CAPEXSi,t$ | Worldscope | 97,689 | 0.1266 | 0.3012 | 0.0188 | 0.0421 | 0.0993 |
| $SWF\ stake_{i,t}$ | Worldscope | 115,020 | 0.0095 | 0.0284 | 0.0000 | 0.0027 | 0.0101 |
| $FCCR_{i,t}$ | Worldscope | 90,537 | 1.0672 | 5.0065 | 0.0268 | 0.0746 | 0.2527 |
| $LEV_{i,t}$ | Worldscope | 98,099 | 0.9259 | 1.6401 | 0.1057 | 0.4597 | 1.0454 |
| $HF_{i,t}$ | Thomson Reuters | 10,102 | 0.11 | 0.19 | 0.04 | 0.05 | 0.07 |
| $TOTALIO_{i,t}$ | Thomson Reuters | 10,096 | 0.69 | 0.29 | 0.53 | 0.76 | 0.91 |
| $MSAL_{i,t}$ | BoardEX | 9,904 | 586.09 | 360.78 | 387.6 | 518.19 | 705.53 |
| $MBONUS_{i,t}$ | BoardEX | 7,850 | 975.03 | 1183.35 | 245.57 | 623.5 | 1277.71 |
| $ENV_{i,t}$ | Asset4 | 37,678 | 53.52 | 31.70 | 19.40 | 55.30 | 86.63 |
| $SOC_{i,t}$ | Asset4 | 37,643 | 53.04 | 31.15 | 22.16 | 54.99 | 84.12 |
| $GOV_{i,t}$ | Asset4 | 37,646 | 46.62 | 30.64 | 15.82 | 48.03 | 74.99 |
| $EINDEXi,t$ | Worldscope | 33,869 | 1.23 | 0.9 | 1 | 1 | 2 |
| $OWN1_{i,t}$ | | 115,020 | 0.25 | 0.44 | 0 | 0 | 1 |
| $OWN2_{i,t}$ | | 115,020 | 0.11 | 0.32 | 0 | 0 | 0 |
| $OWN5_{i,t}$ | | 115,020 | 0.03 | 0.16 | 0 | 0 | 0 |
| $TRANSt_{j,t}$ | | 74,493 | 1.19 | 0.54 | 1 | 1 | 1 |
| $TRANSlmi_{j,t}$ | | 115,020 | 0.63 | 0.48 | 0 | 1 | 1 |
| $AUTO_{j,t}$ | | 115,020 | 0.62 | 0.48 | 0 | 1 | 1 |
| $CSRSWFBR_{j,t}$ | | 115,020 | 0.61 | 0.49 | 0 | 1 | 1 |
| $CSRSWFNA_{j,t}$ | | 115,020 | 0.61 | 0.49 | 0 | 1 | 1 |
| $CRISIS_{i,t}$ | | 115,020 | 0.13 | 0.34 | 0 | 0 | 0 |
| $DEV_{i,t}$ | | 115,020 | 0.63 | 0.48 | 0 | 1 | 1 |
| $FRON_{i,t}$ | | 115,020 | 0.01 | 0.11 | 0 | 0 | 0 |
| $EMER_{i,t}$ | | 115,020 | 0.36 | 0.48 | 0 | 0 | 1 |
| $CIVIL_j$ | | 115,020 | 0.52 | 0.5 | 0 | 1 | 1 |
| $SOCIAL_j$ | | 115,020 | 0.12 | 0.33 | 0 | 0 | 0 |
| $COMMON_j$ | | 115,020 | 0.35 | 0.48 | 0 | 0 | 1 |

## Table B. 6: Summary statistics by ESG SWF classification

This table reports summary statistics on the main variables and control variables, where the sample is split into two non-overlapping groups: the ESG SWF sample contains all target firms that experience an investment from an ESG SWF in the sample period 2004-2018. The traditional SWF sample contains all target firms that do not experience any investment from an ESG SWF from 2004-2018. All information is obtained on a yearly basis. Board compensation information is obtained per announcement, but averaged for that year and appended to the firm-year to which the announcement applies. If multiple announcements were available for one year, salary information is averaged and appended. To mitigate the impact of outliers, continuous variables are winsorized at the top and bottom percentile. All variables are defined in Appendix B.

| | **ESG SWF sample (broadly defined)** | | | | **Traditional SWF sample** | | | |
|---|---|---|---|---|---|---|---|---|
| | **N** | **Mean** | **St Dev** | **Median** | **N** | **Mean** | **St Dev** | **Median** |
| $Q_{i,t}$ | 62,019 | 1.71 | 2.01 | 1.23 | 29,293 | 2.07 | 2.44 | 1.42 |
| $ESG_{i,t}$ | 29,768 | 47.53 | 16.55 | 45.49 | 7,792 | 43.05 | 15.34 | 41.10 |
| $ROA_{i,t}$ | 63,056 | 0.0567 | 0.0866 | 0.0503 | 31,404 | 0.0515 | 0.1118 | 0.0532 |
| $SG_{i,t}$ | 63,196 | 0.1389 | 0.3621 | 0.0724 | 31,512 | 0.2183 | 0.4808 | 0.1156 |
| $MTB_{i,t}$ | 62,372 | 0.0256 | 0.0279 | 0.0171 | 29,934 | 0.0307 | 0.0331 | 0.0205 |
| $OPMi,t$ | 70,023 | 0.1003 | 0.2378 | 0.0874 | 44,428 | 0.057 | 0.3003 | 0.0562 |
| $CAPEXSi,t$ | 64,685 | 0.1123 | 0.2738 | 0.0402 | 33,004 | 0.1546 | 0.3469 | 0.0473 |
| $SWF\ stake_{i,t}$ | 70,324 | 0.0132 | 0.0296 | 0.0073 | 44,696 | 0.0037 | 0.0252 | 0.0000 |
| $FCCR_{i,t}$ | 60,412 | 1.1265 | 5.0879 | 0.0819 | 30,125 | 0.9483 | 4.837 | 0.0614 |
| $LEV_{i,t}$ | 64,720 | 0.949 | 1.663 | 0.4744 | 33,379 | 0.8811 | 1.5938 | 0.4315 |
| $HF_{i,t}$ | 7,675 | 0.09 | 0.17 | 0.05 | 2,427 | 0.15 | 0.24 | 0.06 |
| $TOTALIO_{i,t}$ | 7,671 | 0.71 | 0.28 | 0.77 | 2,425 | 0.65 | 0.33 | 0.73 |
| $MSAL_{i,t}$ | 8,305 | 609.38 | 365.57 | 536.54 | 1,599 | 465.12 | 307.69 | 431.25 |
| $MBONUS_{i,t}$ | 6,562 | 1040.8 | 1216.16 | 679.67 | 1,288 | 639.94 | 930.37 | 399.75 |
| $ENV_{i,t}$ | 29,845 | 56.49 | 31.82 | 63.00 | 7,833 | 42.19 | 28.53 | 33.96 |
| $SOC_{i,t}$ | 29,812 | 55.54 | 31.17 | 59.89 | 7,831 | 43.49 | 29.16 | 37.95 |
| $GOV_{i,t}$ | 29,815 | 47.08 | 31.14 | 49.02 | 7,831 | 44.88 | 28.61 | 44.95 |
| $EINDEXi,t$ | 26,858 | 1.20 | 0.90 | 1.00 | 7,011 | 1.32 | 0.91 | 1.00 |
| $OWN1_{i,t}$ | 70,324 | 0.37 | 0.48 | 0.00 | 44,696 | 0.07 | 0.26 | 0.00 |
| $OWN2_{i,t}$ | 70,324 | 0.16 | 0.37 | 0.00 | 44,696 | 0.04 | 0.20 | 0.00 |
| $OWN5_{i,t}$ | 70,324 | 0.03 | 0.18 | 0.00 | 44,696 | 0.02 | 0.13 | 0.00 |
| $TRANSt_{j,t}$ | 70,324 | 1.11 | 0.41 | 1.00 | 44,696 | 2.48 | 0.84 | 3.00 |
| $TRANSlmi_{j,t}$ | 70,324 | 0.95 | 0.22 | 1.00 | 44,696 | 0.06 | 0.24 | 0.00 |
| $AUTO_{j,t}$ | 70,324 | 1.00 | 0.01 | 1.00 | 44,696 | 0.03 | 0.18 | 0.00 |
| $CSRSWFBR_{j,t}$ | 70,324 | 1.00 | 0.00 | 1.00 | 44,696 | 0.00 | 0.00 | 0.00 |
| $CSRSWFNA_{j,t}$ | 70,324 | 1.00 | 0.02 | 1.00 | 44,696 | 0.00 | 0.00 | 0.00 |
| $CRISIS_{i,t}$ | 70,324 | 0.13 | 0.34 | 0.00 | 44,696 | 0.13 | 0.34 | 0.00 |
| $DEV_{i,t}$ | 70,324 | 0.73 | 0.45 | 1.00 | 44,696 | 0.48 | 0.50 | 0.00 |
| $FRON_{i,t}$ | 70,324 | 0.01 | 0.08 | 0.00 | 44,696 | 0.02 | 0.14 | 0.00 |
| $EMER_{i,t}$ | 70,324 | 0.27 | 0.44 | 0.00 | 44,696 | 0.50 | 0.5 | 0.00 |
| $CIVIL_j$ | 70,324 | 0.58 | 0.49 | 1.00 | 44,696 | 0.43 | 0.5 | 0.00 |
| $SOCIAL_j$ | 70,324 | 0.05 | 0.22 | 0.00 | 44,696 | 0.23 | 0.42 | 0.00 |
| $COMMON_j$ | 70,324 | 0.37 | 0.48 | 0.00 | 44,696 | 0.33 | 0.47 | 0.00 |

## Table B. 7: Pairwise correlation-matrix of main variables

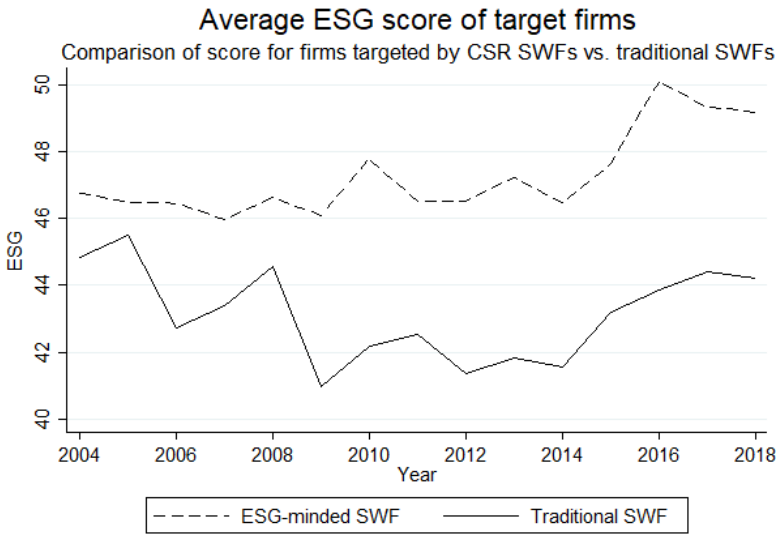
The table reports the Pearson correlation matrix between measures of firm performance and valuation, firm characteristics and SWF characteristics. All variables are defined in Appendix B.

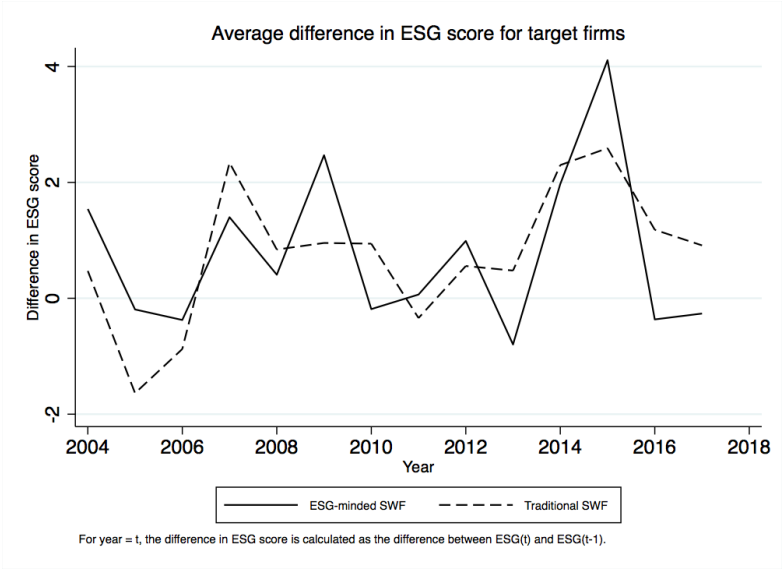
| | Target firm performance and valuation | | | | | | | Target firm characteristics | | | | | | SWF characteristics | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| **Variable** | **ROA** | **SG** | **MTB** | **OPM** | **CAPEXS** | **Q** | **ESG** | **STAKE** | **FCCR** | **LEV** | **TA** | **HF** | **IO** | **TRANS** | **AUTON** | **ESG SWF** | **CRISIS** |
| **1** | 1.00 | | | | | | | | | | | | | | | | |
| **2** | 0.077* | 1.00 | | | | | | | | | | | | | | | |
| **3** | 0.201* | 0.126* | 1.00 | | | | | | | | | | | | | | |
| **4** | 0.544* | -0.028* | -0.010* | 1.00 | | | | | | | | | | | | | |
| **5** | -0.094* | 0.137* | -0.031* | -0.137* | 1.00 | | | | | | | | | | | | |
| **6** | 0.174* | 0.114* | 0.617* | -0.028* | -0.004 | 1.00 | | | | | | | | | | | |
| **7** | 0.011 | -0.067* | -0.020* | 0.046* | -0.028* | -0.044* | 1.00 | | | | | | | | | | |
| **8** | 0.019* | -0.012* | -0.013* | 0.016* | 0.002 | -0.022* | 0.071* | 1.00 | | | | | | | | | |
| **9** | 0.098* | -0.005 | 0.056* | 0.038* | -0.040* | 0.076* | -0.037* | -0.016* | 1.00 | | | | | | | | |
| **10** | -0.111* | -0.014* | 0.090* | 0.028* | 0.026* | -0.120* | 0.042* | 0.009* | -0.095* | 1.00 | | | | | | | |
| **11** | -0.080* | -0.056* | -0.102* | 0.068* | -0.055* | -0.100* | 0.113* | 0.016* | -0.042* | 0.279* | 1.00 | | | | | | |
| **12** | -0.096* | 0.028* | -0.079* | -0.048* | 0.147* | -0.068* | 0.016 | -0.028* | -0.043* | 0.026* | | 1.00 | | | | | |
| **13** | 0.117* | -0.027* | 0.096* | 0.035* | -0.094* | 0.106* | -0.054* | 0.043* | 0.048* | -0.066* | -0.119* | -0.628* | 1.00 | | | | |
| **14** | 0.038* | -0.085* | -0.061* | 0.083* | -0.082* | -0.060* | 0.114* | 0.217* | 0.020* | 0.016* | 0.113* | -0.112* | 0.076* | 1.00 | | | |
| **15** | 0.029* | -0.094* | -0.080* | 0.082* | -0.070* | -0.075* | 0.107* | 0.183* | 0.017* | 0.016* | 0.113* | -0.173* | 0.152* | 0.880* | 1.00 | | |
| **16** | 0.026* | -0.092* | -0.081* | 0.080* | -0.066* | -0.077* | 0.111* | 0.162* | 0.017* | 0.020* | 0.117* | -0.117* | 0.077* | 0.886* | 0.972* | 1.00 | |
| **17** | 0.030* | 0.060* | -0.011* | -0.015* | 0.039* | -0.001 | -0.018* | -0.001 | 0.013* | 0.006 | -0.017* | -0.012 | 0.002 | -0.001 | -0.001 | -0.001 | 1.00 |

*denotes statistical significance at the 1% level.

The figures report the average ESG score of target firms over the sample period 2004 to 2018. To make the distinction between ESG and traditional SWFs, the broad definition is used (see appendix B).

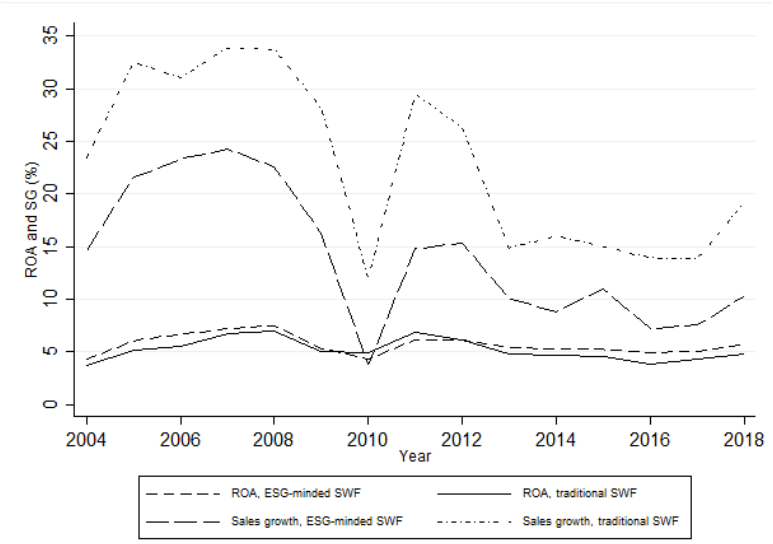
## Figure B. 2: Average ESG score of target firms over time

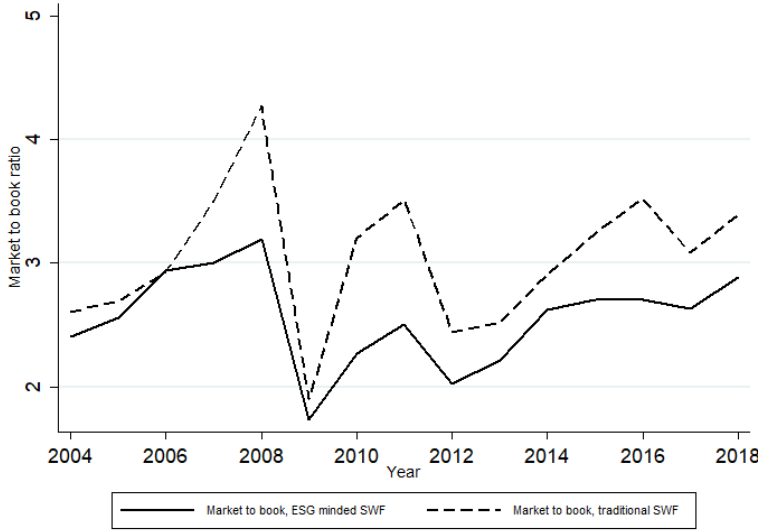


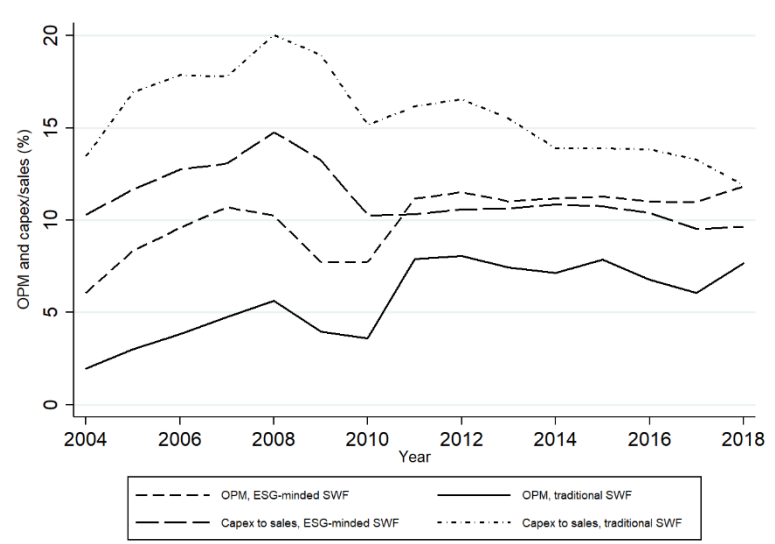



## Figure B. 3: Average performance and valuation of target firms over time

The figures report the average performance and valuation of target firms over the sample period 2004 to 2018. Firm performance is proxied by return on assets, sales growth, operating profit margin and capex-to-sales ratio. Firm valuation is proxied by market-to-book ratio and Tobin's Q. To make the distinction between ESG and traditional SWFs, the broad definition is used (see Appendix B).



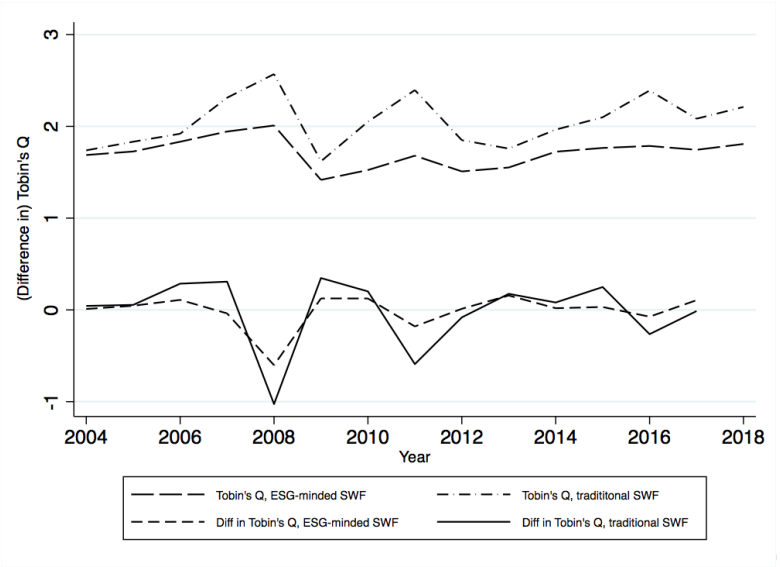



**Table B. 8: Crosstable on reported CSR and ESG efforts of SWFs**

| SWF Details | | CSR areas | | | | | | | | | | | | Investment screens | | | ESG activities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Report year | Children's rights | Climate change | Water management | Human rights | Tax | Trans-parency | Ocean sustainability | Anti-corruption | Anti-terrorism | Remuneration | Board effectiveness / composition | Shareholder democracy | Positive screens | Negative screens | Activism | Establishing principles | Exercising ownership rights | (Explicitly) investing sustainably | E | S | G |
| **GPFG** | 2018 | × | × | × | × | × | × | × | × | | × | | × | | × | × | × | × | × | × | × | × |
| **CIC** | 2017 | | | | | | | | × | | | | | | × | | | | | | | × |
| **ADIA** | 2017 | | | | | | | | | | | | | | | | | × | | | | |
| **KIA** | N/A | | | | | | | | | | | | | | × | | | | | | | × |
| **SAMA** | 2017 | | | | | | | | × | × | | | | | | | | | | | | |
| **HKMA** | 2017 | | | | | | | | | | | | | | | | | | | | | |
| **SAFE** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **GIC** | 2018 | | | | | | | | | | | | | | | | | × | | | | |
| **Temasek** | 2018 | | × | × | | | | | | | | | | | | | | | | | | × |
| **NSSF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **QIA** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **PIF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **KIC** | 2017 | | | | | | | | | | | | | | | | | × | × | × | × | × |
| **AFF** | 2018 | × | × | | × | | | | × | × | | | | | × | × | × | × | × | × | × | × |
| **APF** | 2018 | | | | | | | | | | | | | | | | | | | | | |
| **BIA** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **TPSF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **KHAZ** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **NZSA** | 2018 | | × | | | | | | | × | | | | | | × | × | × | × | × | × | |
| **SGRF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **CADF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **PAIF** | N/A | | | | | | | | | | | | | | | | | | | | | |
| **SCI** | N/A | | | | | | | | | | | | | | | | | | | | | |

## Figure B. 4: Average ESG score for legal systems and stages of economic development

The figures report the average ESG score of target firms over the sample period 2004 to 2018, divided into subsamples based on economic development and legal system. See Appendix B for variable definitions.


## Table B. 9: Number of ESG scores available per year

This table reports the number of ESG scores that is available for every year (out of 7,668 target firms).

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 797 | 1,329 | 1,451 | 1,510 | 1,718 | 2,120 | 2,437 | 2,821 | 2,956 | 2,986 | 3,035 | 3,214 | 3,639 | 3,840 | 3,707 |

# Appendix C: Results

**Table C. 1: Mean change analysis of firm performance changes after first SWF investment (traditional versus ESG SWFs)**

The table presents mean changes in return on assets, sales growth, market-to-book, operating margin and capex/sales for the sample of CSR- and non-CSR-investments. The difference reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment a target experiences and Dec. 31 of the year preceding the investment. Mean difference-in-differences values are computed as the difference between the mean change for the 'CSR' or ESG minded-SWF sample and the mean change for the traditional SWF sample. Definition used: ESG SWFs (broad) consist of the PIC, KIC, FF, NZSA and APF. Columns 3 and 4 exclude the GPFG. The statistical significance is tested with t-tests and statistics are reported below the mean changes. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Traditional SWF** | **Obs.** | **ESG SWF** | **Obs.** | **Difference (1)-(2)** | **Traditional SWF** | **Obs.** | **ESG SWF (without Norway)** | **Obs.** | **Difference (3)-(4)** |
| ΔROA | (-1, +1) | 0.042% | 153 | 0.587% | 1,055 | -0.544%<br>(-0.60) | -0.275% | 788 | 2.003% | 420 | -2.277% ***<br>(-3.55) |
| | (-1, +2) | 0.533% | 150 | 0.668% | 1,021 | -0.135%<br>(-0.15) | -0.052% | 762 | 1.961% | 409 | -2.013% ***<br>(-2.90) |
| | (-1, +3) | 1.183% | 148 | 0.365% | 992 | 0.817%<br>(0.75) | -0.215% | 737 | 1.726% | 403 | -1.941% **<br>(-2.45) |
| ΔSG | (-1, +1) | 4.226% | 153 | -2.404% | 1,067 | 6.630%<br>(1.05) | -2.015% | 794 | -0.748% | 426 | -1.267%<br>(-0.30) |
| | (-1, +2) | -6.467% | 150 | -5.453% | 1,034 | -1.014%<br>(-0.15) | -6.982% | 766 | -3.017% | 418 | -3.965%<br>(-0.95) |
| | (-1, +3) | 4.822% | 149 | -7.935% | 1,003 | 12.757% **<br>(2.00) | -6.881% | 742 | -5.205% | 410 | -1.676%<br>(-0.35) |
| ΔMTB | (-1, +1) | 0.114% | 138 | 0.142% | 971 | -0.028%<br>(-0.10) | 0.160% | 717 | 0.100% | 392 | 0.059%<br>(0.30) |
| | (-1, +2) | 0.642% | 135 | 0.305% | 950 | 0.337%<br>(1.05) | 0.437% | 698 | 0.186% | 387 | 0.251%<br>(1.10) |
| | (-1, +3) | 1.198% | 134 | 0.129% | 937 | 1.070% ***<br>(3.20) | 0.336% | 687 | 0.132% | 384 | 0.203%<br>(0.85) |
| ΔOPM | (-1, +1) | 2.437% | 326 | 1.256% | 1,888 | 1.182%<br>(0.75) | 0.826% | 1,450 | 2.575% | 764 | -1.750%<br>(-1.50) |
| | (-1, +2) | 3.947% | 323 | 0.557% | 1,862 | 3.390% *<br>(1.85) | 0.607% | 1,426 | 1.908% | 759 | -1.301%<br>(-0.95) |
| | (-1, +3) | 4.737% | 321 | 1.459% | 1,838 | 3.277% *<br>(1.80) | 1.498% | 1,404 | 2.781% | 755 | -1.283%<br>(-0.95) |
| ΔCAPEXS | (-1, +1) | -2.870% | 168 | 0.211% | 1,160 | -3.083%<br>(-1.25) | -0.669% | 868 | 0.748% | 460 | -1.418%<br>(-0.80) |
| | (-1, +2) | -2.579% | 165 | 0.448% | 1,125 | -3.027%<br>(-1.05) | -0.250% | 841 | 0.643% | 449 | -0.893%<br>(-0.45) |
| | (-1, +3) | 0.166% | 162 | -0.510% | 1,095 | 0.675%<br>(0.25) | -0.955% | 812 | 0.548% | 445 | -1.503%<br>(-0.75) |

**Table C. 2: Mean change analysis of firm performance changes after first SWF investment (dependent versus autonomous SWFs)**

The table presents mean changes in return on assets, sales growth, market-to-book, operating margin and capex/sales for the sample of investments made by autonomous vs. politically dependent SWFs. the difference reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment for that target and Dec. 31 of the year preceding the investment. Year 2 and 3 are calculated in the same manner. Mean difference-in-differences values are computed as the difference between the mean change for the autonomous-SWF sample and the mean change for the politically dependent-SWF sample. Definitions used: autonomous SWFs are derived from the 2015 Truman scoreboard and score a 4 on questions 9-12 that concern governance and autonomy of managers. Column 3 and 4 exclude the GPFG, because it invests in a large part of the sample. The statistical significance is tested with t-tests and statistics are reported below the mean changes. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Dependent SWF** | **Obs.** | **Autonomous SWF** | **Obs.** | **Difference (1)-(2)** | **Dependent SWF** | **Obs.** | **Autonomous SWF** | **Obs.** | **Difference (3) – (4)** |
| ΔROA | (-1, +1) | -0.291% | 134 | 0.599% | 1,074 | -0.890% | -0.291% | 134 | 1.801% | 464 | -2.092% ** |
| | | | | | | (-0.95) | | | | | (-1.95) |
| | (-1, +2) | 0.201% | 132 | 0.681% | 1,039 | -0.480% | 0.201% | 132 | 1.747% | 452 | -1.547% |
| | | | | | | (-0.50) | | | | | (-1.35) |
| | (-1, +3) | 0.642% | 130 | 0.454% | 1,010 | 0.189% | 0.642% | 130 | 1.722% | 446 | -1.079% |
| | | | | | | (0.15) | | | | | (-0.80) |
| ΔSG | (-1, +1) | 6.000% | 133 | -2.624% | 1,087 | 8.623% | 6.000% | 133 | -2.077% | 472 | 8.076% |
| | | | | | | (1.30) | | | | | (1.10) |
| | (-1, +2) | -5.819% | 132 | -5.760% | 1,052 | -0.059% | -5.819% | 132 | -5.410% | 461 | -0.409% |
| | | | | | | (0.09) | | | | | (-0.05) |
| | (-1, +3) | 6.971% | 130 | -8.086% | 1,022 | 15.057% ** | 6.971% | 130 | -6.860% | 454 | 13.831% * |
| | | | | | | (2.30) | | | | | (1.80) |
| ΔMTB | (-1, +1) | 0.219% | 117 | 0.122% | 992 | 0.097% | 0.219% | 117 | 0.019% | 435 | 0.200% |
| | | | | | | (0.35) | | | | | (0.55) |
| | (-1, +2) | 0.847% | 115 | 0.286% | 970 | 0.560% | 0.847% | 115 | 0.087% | 429 | 0.759% ** |
| | | | | | | (1.65) | | | | | (2.00) |
| | (-1, +3) | 1.319% | 114 | 0.136% | 957 | 1.184% *** | 1.319% | 114 | 0.071% | 426 | 1.248% *** |
| | | | | | | (3.40) | | | | | (3.15) |
| ΔOPM | (-1, +1) | 2.885% | 288 | 1.265% | 1,926 | 1.621% | 2.885% | 288 | 2.302% | 848 | 0.583% |
| | | | | | | (1.25) | | | | | (0.40) |
| | (-1, +2) | 3.724% | 286 | 0.716% | 1,899 | 3.009% * | 3.724% | 286 | 1.809% | 842 | 1.915% |
| | | | | | | (1.80) | | | | | (1.05) |
| | (-1, +3) | 4.777% | 284 | 1.438% | 1,875 | 3.338% * | 4.777% | 284 | 2.801% | 838 | 1.976% |
| | | | | | | (1.95) | | | | | (1.05) |
| ΔCAPEXS | (-1, +1) | -2.724% | 145 | -0.081% | 1,183 | -2.643% | -2.724% | 145 | 0.322% | 510 | -3.045% |
| | | | | | | (-1.20) | | | | | (-1.25) |
| | (-1, +2) | -2.965% | 143 | 0.272% | 1,147 | -3.236% | -2.965% | 143 | 0.793% | 497 | -3.758% |
| | | | | | | (-1.25) | | | | | (-1.45) |
| | (-1, +3) | -4.370% | 140 | -0.277% | 1,117 | -4.093% * | -4.370% | 140 | 1.516% | 493 | -5.886% ** |
| | | | | | | (-1.65) | | | | | (-2.20) |

**Table C. 3: Mean change analysis of firm performance changes after first SWF investment (opaque versus transparent SWFs)**

The table presents mean changes in return on assets, sales growth, market-to-book, operating margin and capex/sales for the sample of investments made by highly transparent and opaque SWFs. The difference reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment and Dec. 31 of the year preceding the first SWF investment. Year 2 and 3 are calculated in the same manner. Definitions used: highly transparent SWFs score at least 11 out of 14 points for question 16-29 of Truman's scoreboard. Opaque SWFs score at most 6.5 out of 14 points for questions 16-29 of Truman's scoreboard. Column 3 excludes the GPFG, because it invests in a large part of the sample. The statistical significance is tested with t-tests and statistics are reported below the mean changes. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Opaque SWF** | **Obs.** | **Transparent SWF** | **Obs.** | **Difference (1) – (2)** | **Transparent SWF** | **Obs.** | **Opaque SWF** | **Obs.** | **Difference (3) – (4)** |
| ΔROA | (-1, +1) | | | | | 0.382% | | | | | -1.025% |
| | | 0.973% | 43 | 0.592% | 1,028 | (0.25) | 0.973% | 43 | 1.998% | 412 | (-0.60) |
| | (-1, +2) | | | | | -0.641% | | | | | -194.600% |
| | | 0.078% | 43 | 0.719% | 993 | (-0.40) | 0.078% | 43 | 2.025% | 401 | (-1.05) |
| | (-1, +3) | | | | | 1.893% | | | | | 0.684% |
| | | 2.245% | 40 | 0.352% | 966 | (0.95) | 2.245% | 40 | 1.561% | 395 | (0.30) |
| ΔSG | (-1, +1) | | | | | 6.997% | | | | | 5.806% |
| | | 4.389% | 43 | -2.608% | 1,040 | (0.65) | 4.389% | 43 | -1.418% | 419 | (0.50) |
| | (-1, +2) | | | | | 6.715% | | | | | 5.641% |
| | | 0.854% | 43 | -5.861% | 1,006 | (0.60) | 0.854% | 43 | -4.787% | 410 | (0.50) |
| | (-1, +3) | | | | | 11.796% | | | | | 10.660% |
| | | 3.491% | 41 | -8.304% | 976 | (1.05) | 3.491% | 41 | -7.168% | 402 | (0.85) |
| ΔMTB | (-1, +1) | | | | | 0.240% | | | | | 0.348% |
| | | 0.353% | 34 | 0.113% | 948 | (0.50) | 0.353% | 34 | 0.004% | 384 | (0.70) |
| | (-1, +2) | | | | | 0.247% | | | | | 0.445% |
| | | 0.542% | 33 | 0.296% | 927 | (0.40) | 0.542% | 33 | 0.098% | 378 | (0.75) |
| | (-1, +3) | | | | | 0.291% | | | | | 0.347% |
| | | 0.426% | 34 | 0.135% | 913 | (0.50) | 0.426% | 34 | 0.080% | 375 | (0.60) |
| ΔOPM | (-1, +1) | | | | | 2.189% | | | | | 1.009% |
| | | 3.439% | 70 | 1.250% | 1,849 | (0.85) | 3.390% | 71 | 2.382% | 756 | (0.35) |
| | (-1, +2) | | | | | 3.057% | | | | | 1.770% |
| | | 3.663% | 70 | 0.606% | 1,822 | (0.90) | 3.611% | 71 | 1.841% | 750 | (0.50) |
| | (-1, +3) | | | | | 3.509% | | | | | 2.160% |
| | | 4.812% | 68 | 1.304% | 1,799 | (1.00) | 4.742% | 69 | 2.583% | 746 | (0.55) |
| ΔCAPEXS | (-1, +1) | | | | | -0.279% | | | | | -0.678% |
| | | -0.528% | 45 | -0.250% | 1,133 | (-0.05) | -0.528% | 45 | 0.149% | 454 | (-0.15) |
| | (-1, +2) | | | | | -2.946% | | | | | -3.309% |
| | | -2.771% | 45 | 0.174% | 1,097 | (-0.65) | -2.771% | 45 | 0.538% | 442 | (-0.75) |
| | (-1, +3) | | | | | -5.805% | | | | | -7.388% * |
| | | -6.412% | 43 | -0.607% | 1,068 | (-1.40) | -6.412% | 43 | 0.969% | 438 | (-1.70) |

**Table C. 4: Mean change analysis of firm performance changes after first SWF investment (opaque versus transparent SWFs)**

The table presents mean changes in return on assets, sales growth, market-to-book, operating margin and capex/sales for the sample of investments made by transparent versus opaque SWFs. The difference reported for year 1 is the difference between the value as of Dec. 31 of the year following the investment and Dec. 31 of the year preceding the investment. Year 2 and 3 are calculated in the same manner. Definitions used: transparent SWFs are those classified with an 8 or higher in the LMI Transparency index and opaque SWFs are those classified with a 7 or lower. Column 3 excludes the GPFG, because it invests in a large part of the sample. The statistical significance is tested with t-tests and statistics are reported below the mean changes. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Transparent SWF** | **Obs.** | **Opaque SWF** | **Obs.** | **Difference (1) – (2)** | **Transparent SWF** | **Obs.** | **Opaque SWF** | **Obs.** | **Difference (3) – (4)** |
| ΔROA | (-1, +1) | 3.50% | 25 | 0.44% | 1,183 | 3.06%<br>(1.50) | 3.50% | 25 | 1.16% | 572 | 2.33%<br>(1.05) |
| | (-1, +2) | 1.09% | 24 | 0.62% | 1,147 | 0.48%<br>(0.20) | 1.09% | 24 | 1.29% | 558 | -0.20%<br>(-0.10) |
| | (-1, +3) | 0.39% | 22 | 0.48% | 1,118 | -0.08%<br>(-0.05) | 0.39% | 22 | 1.47% | 552 | -1.08%<br>(-0.40) |
| ΔSG | (-1, +1) | 12.97% | 25 | -1.99% | 1,195 | 14.96%<br>(1.00) | 12.97% | 25 | -0.38% | 579 | 13.34%<br>(0.90) |
| | (-1, +2) | 2.96% | 24 | -5.95% | 1,160 | 8.91%<br>(0.65) | 2.96% | 24 | -5.03% | 568 | 7.99%<br>(0.55) |
| | (-1, +3) | -2.44% | 22 | -6.46% | 1,130 | 4.03%<br>(0.25) | -2.44% | 22 | -2.82% | 561 | 0.38%<br>(0.00) |
| ΔMTB | (-1, +1) | -0.69% | 20 | 0.15% | 1,089 | -0.84%<br>(-1.20) | -0.69% | 20 | 0.10% | 531 | -0.79%<br>(-1.00) |
| | (-1, +2) | 0.09% | 19 | 0.35% | 1,066 | -0.27%<br>(-0.35) | 0.09% | 19 | 0.29% | 524 | -0.21%<br>(-0.25) |
| | (-1, +3) | 0.52% | 18 | 0.26% | 1,053 | 0.27%<br>(0.30) | 0.52% | 18 | 0.34% | 521 | 0.18%<br>(0.20) |
| ΔOPM | (-1, +1) | 3.29% | 79 | 1.41% | 2,135 | 1.89%<br>(0.80) | 3.29% | 79 | 2.36% | 1,053 | 0.94%<br>(0.40) |
| | (-1, +2) | 3.02% | 78 | 1.04% | 2,107 | 1.98%<br>(0.65) | 3.02% | 78 | 2.20% | 1,046 | 0.82%<br>(0.25) |
| | (-1, +3) | 3.38% | 76 | 1.82% | 2,083 | 1.56%<br>(0.50) | 3.38% | 76 | 3.29% | 1,042 | 0.09%<br>(0.05) |
| ΔCAPEXS | (-1, +1) | -0.68% | 29 | -0.36% | 1,299 | -0.32%<br>(-0.05) | -0.68% | 29 | -0.17% | 625 | -0.50%<br>(-0.10) |
| | (-1, +2) | 0.54% | 28 | -0.10% | 1,262 | 0.64%<br>(0.10) | 0.54% | 28 | 0.04% | 611 | 0.50%<br>(0.10) |
| | (-1, +3) | -2.83% | 26 | -0.69% | 1,231 | -2.14%<br>(-0.40) | -2.83% | 26 | 0.27% | 606 | -3.09%<br>(-0.55) |

**Table C. 5: Difference-in-differences analysis of longer-term performance changes after first SWF investment**

This table presents the average treatment effect (ATE) on firm's change in return on assets, sales growth, market-to-book, operating margin and capex/sales for three time windows for the sample of ESG SWF- and traditional SWF-investments. The ESG SWF-target and traditional SWF-target are matched based on propensity score with the lagged control variables: leverage, cash holdings, size, FCCR, country and industry. The difference reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment a target experiences and Dec. 31 of the year preceding the investment. Mean difference-in-differences values are computed as the difference between the mean change for the 'CSR' or ESG minded-SWF sample and the mean change for the traditional SWF sample. Definitions used: ESG SWFs consist of the GPFG, PIC, KIC, FF, NZSA and APF. Autonomous SWFs (based on Truman (2015)): autonomous SWFs score 4 out of 4 points on questions 9-12 that concern governance and autonomy of managers. Transparent SWFs (based on Truman (2015)): highly transparency SWFs score at least 11 out of 14 points for question 16-29. Opaque SWFs score at most 6.5 out of 14 points for questions 16-29. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| Panel A: ATE for time window (-1, +1) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Definition** | **ΔROA** | **Obs** | **ΔSG** | **Obs** | **ΔMTB** | **Obs** | **ΔOPM** | **Obs** | **ΔCAPEXS** | **Obs** |
| ESG SWFs | -0.475% | 590 | 6.244 % | 592 | -0.355% | 543 | 1.931% | 653 | -4.354% | 641 |
| | (-0.34) | | (1.29) | | (-1.09) | | (0.64) | | (-0.77) | |
| ESG SWFs – Excl. Norway | 1.294% | 590 | 19.705% *** | 592 | 0.051 | 543 | 3.070% | 653 | 1.338% | 641 |
| | (1.22) | | (2.57) | | (0.18) | | (1.45) | | (0.68) | |
| Autonomous SWFs | -0.660% | 590 | -2.218% | 592 | -1.010% ** | 543 | 2.123% | 653 | -1.968% | 641 |
| | (-0.16) | | (-0.31) | | (-2.24) | | (0.99) | | (-0.42) | |
| Transparent SWFs | -2.268% | 549 | -12.332% | 551 | -0.137% | 503 | 3.084% | 610 | 1.908% | 598 |
| | (-1.40) | | (-1.00) | | (-0.22) | | (0.90) | | (0.30) | |

| Panel B: ATE for time window (-1, +2) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Definition** | **ΔROA** | **Obs** | **ΔSG** | **Obs** | **ΔMTB** | **Obs** | **ΔOPM** | **Obs** | **ΔCAPEXS** | **Obs** |
| ESG SWFs | -0.910% | 579 | -3.379% | 581 | -2.226 % | 538 | 0.188% | 648 | -4.678 % | 630 |
| | (-0.87) | | (4.598) | | (-1.46) | | (0.04) | | (-0.88) | |
| ESG SWFs – Excl. Norway | 1.709% | 579 | 10.065% * | 581 | 0.047% | 538 | 4.179 % | 648 | 1.125% | 630 |
| | (1.62) | | (1.69) | | (0.17) | | (1.18) | | (0.47) | |
| Autonomous SWFs | 0.999% | 579 | -0.609% | 581 | -1.228% | 538 | 2.435% | 648 | -0.601% | 630 |
| | (0.61) | | (-0.06) | | (-1.47) | | (0.83) | | (-0.13) | |
| Transparent SWFs | -3.554% ** | 538 | -15.613% *** | 540 | 0.431% | 498 | -2.187% * | 605 | 5.198% | 587 |
| | (-2.25) | | (-3.14) | | (0.83) | | (-1.68) | | (0.77) | |

| Panel C: ATE for time window (-1, +3) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Definition** | **ΔROA** | **Obs** | **ΔSG** | **Obs** | **ΔMTB** | **Obs** | **ΔOPM** | **Obs** | **ΔCAPEXS** | **Obs** |
| ESG SWFs | -1.890% | 571 | -11.577% | 571 | -3.869% * | 533 | -0.804% | 642 | -3.699% | 621 |
| | (-1.07) | | (-1.60) | | (-1.70) | | (-0.24) | | (-1.11) | |
| ESG SWFs – Excl. Norway | 1.512% | 571 | 8.109% | 571 | -0.177 % | 533 | 2.559% | 642 | 4.899% ** | 621 |
| | (1.44) | | (1.16) | | (-0.57) | | (0.67) | | (2.376) | |
| Autonomous SWFs | 1.179% *** | 571 | -9.025% *** | 571 | -0.750% | 533 | 2.416% | 642 | 0.349% | 621 |
| | (4.28) | | (-2.71) | | (-1.41) | | (0.87) | | (0.13) | |
| Transparent SWFs | -4.074% * | 530 | -4.731% | 530 | 0.1056% | 493 | -3.233% | 599 | 2.893% | 578 |
| | (-1.81) | | (-1.18) | | (0.20) | | (-1.54) | | (0.63) | |

**Table C. 6: Regression analyses of long-term operating performance after propensity-score matching**

The table presents coefficient estimates obtained by a regression model with robust standard errors that is applied to subsamples obtained through propensity-score matching. The dependent variables are return on assets, sales growth, market-to-book ratio, operating profit margin and capex-to-sales ratio, measured as of December 31 of the third year following the first SWF investment experienced by a target. For every column, the regression is applied to the subsample of firms that experienced an investment from an (certain type of) SWF and their matched counterparts that did not experience any SWF investment. Colums 2, 4, 6, 8 and 10 correct for earlier investments of a different type of SWFs by including a dummy that picks up any SWF that is not of the type of interest. T-statistics are reported below the estimates. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

**Panel A: Firms with their first SWF investment at time *t* and matched firms without SWF investment at time *t***

| Variable | $ROA_{t+3}$ | $SG_{t+3}$ | $MTB_{t+3}$ | $OPM_{t+3}$ | $CAPEXS_{t+3}$ |
|---|---|---|---|---|---|
| | (1) | (3) | (5) | (7) | (9) |
| First SWF stake | -0.518 | 16.181 *** | -1.636 ** | -4.508 ** | 8.288 *** |
| | (-0.26) | (4.61) | (-2.11) | (-2.05) | (7.16) |
| R-squared | 0.000 | 0.001 | 0.002 | 0.000 | 0.000 |
| N | 5,875 | 5,930 | 5,578 | 7,212 | 6,094 |

**Panel B: Firms with their first ESG SWF investment at time *t* and matched firms without ESG SWF investment at time *t***

| Variable | $ROA_{t+3}$ | | $SG_{t+3}$ | | $MTB_{t+3}$ | | $OPM_{t+3}$ | | $CAPEXS_{t+3}$ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| First ESG SWF stake | -1.097 *** | -2.729 | -0.237 | 7.830 | -0.711 *** | 1.260 | -1.099 | -16.595 | -0.934 | 6.303 |
| | (-2.76) | (-0.78) | (-0.11) | (0.59) | (-4.38) | (0.84) | (-1.45) | (-1.55) | (-0.57) | (0.76) |
| Earlier non-ESG | | -3.036 ** | | 20.103 *** | | 2.101 *** | | -2.742 | | -0.726 |
| SWF investments | | (-2.52) | | (15.01) | | (75.13) | | (-1.29) | | (-0.39) |
| R-squared | 0.000 | 0.021 | 0.000 | 0.097 | 0.004 | 0.029 | 0.000 | 0.042 | 0.000 | 0.010 |
| N | 6,094 | 33 | 5,930 | 36 | 5,578 | 36 | 7,212 | 38 | 6,094 | 32 |

**Panel C: Firms with their first transparent SWF investment at time *t* and matched firms without transparent SWF investment at time *t***

| Variable | $ROA_{t+3}$ | | $SG_{t+3}$ | | $MTB_{t+3}$ | | $OPM_{t+3}$ | | $CAPEXS_{t+3}$ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| First TRANS SWF | -1.148 *** | -2.729 | -0.808 | 7.830 | -0.826 *** | 1.260 | -0.812 | -16.595 | -1.876 | 6.303 |
| stake | (-2.67) | (-0.78) | (-0.35) | (0.59) | (-4.52) | (0.84) | (-1.01) | (-1.55) | (-1.03) | (0.76) |
| Earlier non-TRANS | | -3.036 ** | | 20.103 *** | | 2.101 *** | | -2.742 | | -0.726 |
| SWF investments | | (-2.52) | | (15.01) | | (75.13) | | (-1.29) | | (-0.39) |
| R-squared | 0.001 | 0.021 | 0.000 | 0.097 | 0.005 | 0.029 | 0.000 | 0.042 | 0.000 | 0.010 |
| N | 5,875 | 33 | 5,930 | 36 | 5,578 | 36 | 7,212 | 38 | 6,094 | 32 |

**Panel D: Firms with their first autonomous SWF investment at time *t* and matched firms without autonomous SWF investment at time *t***

| Variable | $ROA_{t+3}$ | | $SG_{t+3}$ | | $MTB_{t+3}$ | | $OPM_{t+3}$ | | $CAPEXS_{t+3}$ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| First AUTON SWF | -0.830 * | -2.729 | -1.326 | 7.830 | -0.953 *** | 1.260 | -0.232 | -16.595 | -0.016 | 6.303 |
| stake | (-1.86) | (-0.78) | (-0.52) | (0.59) | (-4.93) | (0.84) | (-0.27) | (-1.55) | (-0.01) | (0.76) |
| Earlier non-AUTON | | -3.036 ** | | 20.103 *** | | 2.101 *** | | -2.742 | | -0.726 |
| SWF investments | | (-2.52) | | (15.01) | | (75.13) | | (-1.29) | | (-0.39) |
| R-squared | 0.001 | 0.021 | 0.000 | 0.097 | 0.006 | 0.029 | 0.000 | 0.042 | 0.000 | 0.010 |
| N | 8,361 | 33 | 5,930 | 36 | 5,578 | 36 | 7,212 | 38 | 6,094 | 32 |

**Table C. 7: Regression analyses of the impact of SWF investment on changes in firm value**

The table presents coefficients estimates obtained by a fixed effects model with standard errors clustered at the target firm level (model 1-3) and a pooled OLS model with robust standard errors (model 4-6) with year controls. For model 1-3, the dependent variable is the Tobin's Q ratio after one year of the SWF investment. The ESG SWF binary variable is based on the broad definition. For model 4-6, the dependent variable is the change in the target firm's Tobin's Q in the one year after it experiences its first SWF investment. Definitions used: ESG SWFs consists of the PIC, KIC, FF, NZSA and APF. Unreported control variables are: institutional ownership, HF index, size, leverage. T-statistics are reported below the estimates. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Variable** | $\mathbf{Q_{t+1}}$ | $\mathbf{Q_{t+1}}$ | $\mathbf{Q_{t+1}}$ | $\mathbf{\Delta Q_{(t, t+1)}}$ | $\mathbf{\Delta Q_{(t, t+1)}}$ | $\mathbf{\Delta Q_{(t, t+1)}}$ |
| Constant | 7.765 *** | 7.827 *** | 7.849 *** | 3.046 * | 0.388 | -0.07 |
| | (8.04) | (7.96) | (7.88) | (1.88) | (0.82) | (-0.16) |
| SWF $stake_t$ | 0.305 | | | -0.655 ** | | |
| | (1.10) | | | (-2.20) | | |
| 1% SWF ownership $dummy_t$ | | -0.039 | | | 0.025 | |
| | | (-1.24) | | | (0.16) | |
| 2% SWF ownership $dummy_t$ | | | -0.061 | | | -0.218 |
| | | | (-0.68) | | | (-0.74) |
| $\Delta Q_{(t-1, t)}$ | | | | -0.259 *** | -0.279 *** | -0.279 *** |
| | | | | (-5.17) | (-5.28) | (-5.08) |
| ESG $SWF_t$ | 0.071 | -0.018 | -0.041 | -0.163 | 0.021 | 0.061 |
| | (0.87) | (-0.44) | (-0.91) | (-0.80) | (0.16) | (0.46) |
| ESG $SWF_t$ × SWF $stake_{t-}$ | -0.320 | | | 0.645 ** | | |
| | (-1.16) | | | (2.17) | | |
| ESG $SWF_t$ (0) × 1% ownership $dummy_t$ (1) | | 0.539 | | | -0.708 *** | |
| | | (1.11) | | | (-3.53) | |
| ESG $SWF_t$ (0) × 2% ownership $dummy_t$ (1) | | | 1.015 | | | -0.886 |
| | | | (1.47) | | | (-1.59) |
| Transparency | -0.110 | 0.093 | -0.097 | -0.128 | -0.068 | -0.297 |
| | (-0.77) | (-0.66) | (-0.68) | (-0.84) | (-0.58) | (-0.99) |
| Autonomy | -0.022 | -0.022 | -0.022 | -2.920 ** | -0.460 *** | 0.226 |
| | (-1.11) | (-1.12) | (-1.15) | (-2.18) | (-2.62) | (1.12) |
| $GPFG_t$ | | | | -0.080 ** | -0.068 ** | -0.009 |
| | | | | (-2.48) | (-2.01) | (-1.58) |
| $Crisis_t$ | -0.391 *** | -0.390 *** | -0.392 *** | -1.763 | -1.864 | -1.866 |
| | (-12.28) | (-12.22) | (-12.30) | (-1.48) | (-1.46) | (-1.49) |
| Year fixed effects | Yes | Yes | Yes | | | |
| R-squared | 0.066 | 0.066 | 0.064 | 0.041 | 0.035 | 0.035 |
| N | 5,477 | 5,477 | 5,477 | 380 | 380 | 380 |

**Table C. 8: Regression analyses of SWF ownership stakes**

The table presents coefficients estimates obtained by a fixed effects model for model 1 and 2, with standard errors clustered at the target firm level, and a logit model for model 3, 4, 5 and 6, with standard errors according to the observed information matrix. For model 1 and 2, the dependent variable is the stake taken by SWFs in percentage points. For model 3 and 4, the dependent variable is a binary variable that equals 1 if the target experiences SWF ownership of 1% or higher and 0 otherwise. For model 5 and 6, the dependent variable is a binary variable that equals 1 if the target experiences SWF ownership of 2% or higher and 0 otherwise. Definitions used: ESG SWFs consists of the PIC, KIC, FF, NZSA and APF. T-statistics (model 1 and 2) and Z-statistics (model 3 to 6) are reported below the estimates. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Variable** | **% SWF Ownership$_t$** | **% SWF Ownership$_t$** | **SWF Ownership dummy$_t$ (>1%)** | **SWF Ownership dummy$_t$ (>1%)** | **SWF Ownership dummy (>2%)** | **SWF Ownership dummy (>2%)** |
| Constant | 1.763 | -3.496 | | | | |
| | (1.33) | (-1.32) | | | | |
| GPFG$_t$ | 0.677 *** | 1.016 *** | 4.252 *** | 3.552 *** | 1.853 | 1.714 |
| | (7.15) | (3.72) | (2.94) | (2.93) | (1.19) | (1.10) |
| ESG SWF$_t$ | 0.461 *** | 1.468 *** | 2.088 *** | 1.845 ** | 1.632 | 3.724 ** |
| | (7.45) | (3.13) | (5.20) | (2.39) | (0.02) | (2.28) |
| Transparency$_t$ | -1.295 | | 1.560 ** | | 0.639 | |
| (Truman) | (-1.63) | | (1.70) | | (0.70) | |
| Transparency$_t$ | | -1.553 ** | | 1.147 | | 1.497 |
| (LMI) | | (-2.53) | | (0.01) | | (0.01) |
| Autonomy$_t$ | 0.249 | 4.573 ** | | | | |
| | (0.76) | (1.88) | | | | |
| ESG$_{t-1}$ | -0.002 | -0.001 | 0.003 | 0.005 | -0.015 | -0.01 |
| | (-1.65) | (-0.93) | (0.42) | (0.65) | (-0.82) | (-0.61) |
| IO$_{t-1}$ | 0.232 | 0.068 | -0.592 | -0.603 | 1.871 | 1.727 |
| | (0.64) | (0.26) | (-0.56) | (-0.57) | (0.62) | (0.61) |
| HF$_{t-1}$ | -0.443 | -0.308 | -1.951 | -2.075 | -1.521 | -2.773 |
| | (-1.32) | (-1.18) | (-1.53) | (-1.57) | (-0.57) | (-1.15) |
| Fixed Charge | -0.005 | 0.001 | -0.01 | -0.002 | -0.050 | -0.145 |
| Coverage Ratio$_{t-1}$ | (-0.34) | (0.06) | (-0.18) | (-0.02) | (-0.22) | (-0.64) |
| Size$_{t-1}$ | -0.024 | -0.029 | -0.335 | -0.381 | 0.723 | 1.214 * |
| | (-0.47) | (-0.46) | (-1.32) | (-1.51) | (0.91) | (1.70) |
| Leverage$_{t-1}$ | -0.024 ** | -0.048 *** | 0.108 | 0.122 | -0.374 | -0.376 |
| | (-2.10) | (-2.63) | (1.10) | (1.23) | (-1.22) | (-1.49) |
| Crisis$_t$ | -0.070 | -0.080 | -0.142 | -0.109 | 0.826 | 0.615 |
| | (-0.67) | (-0.66) | (-0.35) | (-0.26) | (0.86) | (0.70) |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.1411 | 0.1764 | 0.1320 | 0.0973 | 0.2479 | 0.2943 |
| N | 2,147 | 1,898 | 1,219 | 1,083 | 245 | 309 |

**Table C. 9: Odds-ratio analyses of SWF ownership stakes**

The table reports coefficients estimates obtained by the odds-ratio option for the models 3 to 6 as specified in Table C.8. For model 3 and 4, the dependent variable is a binary variable that equals 1 if the target experiences SWF ownership of 1% or higher and 0 otherwise. For model 5 and 6, the dependent variable is a binary variable that equals 1 if the target experiences SWF ownership of 2% or higher and 0 otherwise. Definitions used: ESG SWFs consists of the PIC, KIC, FF, NZSA and APF. Standard errors are robust. Z-statistics are reported below the estimates.

| | (3) | (4) | (5) | (6) |
|---|---|---|---|---|
| **Variable** | **SWF Ownership dummy$_t$ (>1%)** | **SWF Ownership dummy$_t$ (>1%)** | **SWF Ownership dummy (>2%)** | **SWF Ownership dummy (>2%)** |
| $GPFG_t$ | 70.255 *** | 34.886 *** | 6.377 | 5.549 |
| | (2.94) | (2.93) | (1.19) | (1.10) |
| ESG $SWF_t$ | 8.069 *** | 6.330 ** | 9.837 | 4.145 ** |
| | (5.20) | (2.39) | (0.02) | (2.28) |
| $Transparency_t$ (Truman) | 4.952 ** | | 1.893 | |
| | (1.70) | | (0.70) | |
| $Transparency_t$ (LMI) | | 9.5931 | | 3.178 |
| | | (0.01) | | (0.01) |
| $ESG_{t-1}$ | 1.003 | 1.005 | 0.985 | 0.989 |
| | (0.01) | (0.65) | (-0.82) | (-0.61) |
| $IO_{t-1}$ | 0.553 | 0.547 | 6.496 | 5.627 |
| | (-0.56) | (-0.57) | (0.62) | (0.61) |
| $HF_{t-1}$ | 0.142 | 0.126 | 0.219 | 0.062 |
| | (-1.53) | (-1.57) | (-0.57) | (-1.15) |
| Fixed Charge Coverage $Ratio_{t-1}$ | 0.986 | 0.998 | 0.951 | 0.865 |
| | (-0.18) | (-0.02) | (-0.22) | (-0.64) |
| $Size_{t-1}$ | 0.716 | 0.684 | 2.061 | 3.366 * |
| | (-1.32) | (-1.51) | (0.91) | (1.70) |
| $Leverage_{t-1}$ | 1.114 | 1.130 | 0.688 | 0.687 |
| | (1.10) | (1.23) | (-1.22) | (-1.49) |
| $Crisis_t$ | 0.867 | 0.897 | 2.284 | 1.848 |
| | (-0.35) | (-0.26) | (0.86) | (0.70) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| R-squared | 0.1320 | 0.0973 | 0.2479 | 0.2943 |
| N | 1,219 | 1,083 | 245 | 309 |

**Table C. 10: Regression analyses of changes in target firms' ESG scores**

The table reports coefficient estimates obtained by a fixed effects regression model with standard errors clustered at the target firm level and firm and year fixed effects. For model 1 to 3, the dependent variable is the target firm's change in ESG score between year *t* and *t+1*, where *t* is a year that an SWF invests in the target firm. For model 4 to 6, the dependent variable is the target's firm change in ESG score between year *t* and *t+1*, where *t* is the first year that an SWF invests in the target firm. The ESG SWF binary variable excludes GPFG and the binary variable GPFG controls for GPFG's influence. Other (unreported) control variables: transparency (t and t-1), autonomy (t and t-1), percentage IO shares (t and t-1), HF index (t and t-1), crisis dummy (t and t-1), fixed coverage ratio (t), size (t) and leverage (t).

| | (1) | (2) | (3) |
|---|---|---|---|
| **Variable** | **$\Delta ESG_{(t, t+1)}$** | **$\Delta ESG_{(t, t+1)}$** | **$\Delta ESG_{(t, t+1)}$** |
| Constant | 7.714 | 6.987 | 6.987 |
| | (0.46) | (0.41) | (0.41) |
| SWF $stake_t$ | 0.180 | | |
| | (0.38) | | |
| 1% ownership $dummy_t$ | | -0.122 | |
| | | (-0.04) | |
| 2% ownership $dummy_t$ | | | 1.660 |
| | | | (0.35) |
| $\Delta ESG_{(t-1, t)}$ | -0.481 *** | -0.452 *** | -0.449 *** |
| | (-14.68) | (-9.22) | (-9.19) |
| $\Delta ESG_{(t-1, t)}$ × SWF $stake_t$ | 0.018 | | |
| | (1.30) | | |
| $\Delta ESG_{(t-1, t)}$ × 1% ownership $dummy_t$ | | 0.108 | |
| | | (1.37) | |
| $\Delta ESG_{(t-1, t)}$ × 2% ownership $dummy_t$ | | | 0.298 *** |
| | | | (3.39) |
| ESG $SWF_t$ | 0.622 | 0.782 | 0.507 |
| | (0.63) | (0.86) | (0.56) |
| ESG $SWF_t$ × SWF $stake_t$ | 0.153 | | |
| | (0.27) | | |
| ESG $SWF_t$ × 1% ownership $dummy_t$ | | -1.078 | |
| | | (-0.32) | |
| ESG $SWF_t$ × 2% ownership $dummy_t$ | | | 0.022 |
| | | | (0.00) |
| $GPFG_t$ | -0.194 | 2.151 | 1.209 |
| | (-0.12) | (0.51) | (0.24) |
| $Crisis_t$ | 2.629 * | 2.613 * | 2.626 * |
| | (1.74) | (1.73) | (1.74) |
| Firm fixed effects | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes |
| R-squared | 0.2498 | 0.2490 | 0.2508 |
| N | 1,923 | 1,923 | 1,923 |

**Table C. 11: Odds-ratio analyses of the probability being targeted by an ESG SWF**

This table examines whether firm characteristics influence the firm's probability of being targeted by an ESG SWF for the first time. Model 1 uses a pooled logit, model 2 translates the coefficient estimates into odds-ratios, obtained by the exponentiation of the coefficient estimates. Model 3 is a conditional fixed-effects model and model 4 translates the coefficient estimates into odds-ratios. The dependent variable is a binary variable that equals one if the firm is targeted by an ESG SWF for the first time and zero otherwise. Standard errors are clustered at the target firm level. Z-statistics are reported below the coefficient estimates. Broad definition of ESG SWF is used. Analyses with ESG terciles instead of ESG scores are performed and yield comparable results.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Logit** | **Odds-ratios** | **Fixed effects logit** | **Odds-ratios** |
| | **ESG SWF$_t$** | **ESG SWF$_t$** | **ESG SWF$_t$** | **ESG SWF$_t$** |
| Constant | 0.536 | | | |
| | (0.32) | | | |
| Developed$_{t-1}$ | 2.524 * | 12.475 *** | 2.444 * | 11.519 *** |
| | (1.76) | (1.76) | (1.81) | (1.81) |
| Common$_{t-1}$ | -0.634 | 0.531 | -0.6335 | 0.531 |
| | (-0.89) | (-0.89) | (-0.80) | (-0.80) |
| ESG$_{t-1}$ | -0.002 | 0.998 | 0.029 | 1.029 |
| | (-0.18) | (-0.18) | (0.53) | (0.53) |
| **Δ**ESG$_{(t-1,t)}$ | 0.005 | 1.005 | 0.037 ** | 1.037 ** |
| | (0.50) | (0.50) | (2.09) | (2.09) |
| IO$_{t-1}$ | -1.539 *** | 0.214 ** | -0.750 *** | 0.473 *** |
| | (-2.38) | (-2.38) | (-3.61) | (-3.83) |
| HF$_{t-1}$ | -0.798 *** | 0.450 *** | -0.162 | 0.881 |
| | (-3.06) | (-3.06) | (0.95) | (0.95) |
| LEV$_{-1}$ | -0.394 * | 0.821 * | -0.029 | 0.584 |
| | (-4.79) | (-4.79) | (-0.04) | (-0.04) |
| FCCR$_{t-1}$ | -0.176 | 0.838 | -0.009 | 0.969 |
| | (-1.35) | (-1.35) | (-0.02) | (-0.02) |
| Size$_{t-1}$ | 0.851 *** | 2.341 *** | -1.489 | 0.230 |
| | (5.61) | (5.61) | (-0.62) | (-0.62) |
| Cash$_{t-1}$ | -0.134 | 0.874 | 0.292 | 0.800 |
| | (-1.09) | (-1.09) | (0.43) | (0.43) |
| ROA$_{t-1}$ | 0.032 * | 1.032 * | 0.108 | 1.000 |
| | (1.84) | (1.84) | (1.00) | (1.00) |
| SG $_{t-1}$ | 0.010 | 1.010 | -0.005 | 0.974 |
| | (2.70) | (2.70) | (-0.28) | (-0.28) |
| MTB $_{t-1}$ | 0.049 | 1.050 | -0.603 | -0.854 |
| | (1.33) | (1.33) | (-0.94) | (-0.94) |
| OPM $_{t-1}$ | 0.002 | 1.002 | -0.112 | 0.909 |
| | (0.24) | (0.24) | (-1.36) | (-1.36) |
| CAPEXS $_{t-1}$ | -0.018 * | 0.983 * | 0.020 | 1.020 |
| | (-1.79) | (-1.79) | (1.06) | (1.06) |
| Year fixed effects | No | No | Yes | Yes |
| Pseudo R-squared | 0.2249 | 0.2249 | 0.8012 | 0.8012 |
| N | 1,796 | 1,796 | 390 | 390 |

# Appendix D: Robustness

**Table D. 1: Median comparisons for one, two and three years after first SWF investment (traditional versus ESG SWFs)**

The table presents median changes in return on assets, sales growth, market-to-book ratio, operating profit margin and capex-to-sales for the sample of ESG SWF investments and non-ESG SWF investments. The difference (change) reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment for a target and Dec. 31 of the year preceding the investment. Definitions used: ESG SWFs (broad) = PIC, KIC, FF, NZSA and APF. Column 3 and 4 exclude the GPFG, because it invests in a large part of the sample. The statistical significance is tested with the non-parametric rank sum test (Mann-Whitney U test) that provides z-statistics. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| Variable | Window | Traditional SWF | Obs. | ESG SWF | Obs. | z-statistic (Mann-Whitney) | Traditional SWF | Obs. | ESG SWF (without Norway) | Obs. | z-statistic (Mann-Whitney) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (-1, +1) | -0.05% | 153 | 0.33% | 1,055 | -1.85 | -0.07% | 788 | 0.85% | 420 | -4.50 *** |
| ΔROA | (-1, +2) | 0.11% | 150 | 0.46% | 1,021 | -0.70 | 0.12% | 762 | 0.85% | 409 | -3.48 *** |
| | (-1, +3) | 0.00% | 149 | 0.39% | 942 | -0.83 | -0.04% | 737 | 1.11% | 403 | -3.48 *** |
| | (-1, +1) | 1.16% | 153 | -2.99% | 1,067 | -0.79 | -0.56% | 794 | 3.03% | 426 | -2.40 *** |
| ΔSG | (-1, +2) | -1.85% | 150 | 0.32% | 1,034 | -0.87 | -1.23% | 766 | 2.94% | 418 | -2.38 *** |
| | (-1, +3) | -1.41% | 149 | -1.25% | 1,003 | 1.60 | -3.15% | 742 | 2.00% | 410 | -1.72 * |
| | (-1, +1) | -0.11% | 138 | 0.13% | 971 | -1.49 | 0.03% | 717 | 0.23% | 392 | -1.91 * |
| ΔMTB | (-1, +2) | 0.20% | 135 | 0.19% | 950 | 0.77 | 0.14% | 698 | 0.24% | 687 | -0.54 |
| | (-1, +3) | 0.44% | 134 | -0.01% | 937 | 3.26 *** | -0.02% | 687 | 0.12% | 384 | -0.81 |
| | (-1, +1) | 0.00% | 326 | 0.00% | 1,888 | -0.42 | 0.00% | 1,450 | 0.00% | 764 | -3.62 *** |
| ΔOPM | (-1, +2) | 0.00% | 323 | 0.00% | 1,862 | 0.17 | 0.00% | 1,426 | 0.00% | 759 | -3.26 *** |
| | (-1, +3) | 0.00% | 321 | 0.00% | 1,838 | 1.68 * | 0.00% | 1,404 | 0.05% | 755 | -2.33 ** |
| | (-1, +1) | 0.08% | 168 | 0.09% | 1,160 | -0.89 | 0.09% | 868 | 0.08% | 460 | -0.33 |
| ΔCAPEXS | (-1, +2) | -0.46% | 165 | 0.06% | 1,125 | -2.34 ** | -0.05% | 841 | 0.18% | 449 | -2.01 ** |
| | (-1, +3) | -0.47% | 162 | 0.13% | 1,95 | -1.82 * | -0.01% | 812 | 0.21% | 445 | -2.11 ** |

**Table D. 2: Median comparisons for one, two and three years after first SWF investment (dependent versus autonomous SWFs)**

The table presents median changes in return on assets, sales growth, market-to-book ratio, operating profit margin and capex-to-sales for the sample of autonomous and politically dependent SWFs. The difference (change) reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment and Dec. 31 of the year preceding the first SWF investment. Definitions used: autonomous SWFs are derived from the 2015 Truman scoreboard and score a 4 on questions 9-12 that concern governance and autonomy of managers. Column 3 and 4 exclude the GPFG, because it invests in a large part of the sample. The statistical significance is tested with the non-parametric rank sum test (Mann-Whitney U test) that provides z-statistics. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Dependent SWF** | **Obs.** | **Autonomous SWF** | **Obs.** | **z-statistic (Mann-Whitney)** | **Dependent SWF** | **Obs.** | **Autonomous SWF (without Norway)** | **Obs.** | **z-statistic (Mann-Whitney)** |
| | (-1, +1) | -0.22% | 134 | 0.31% | 1,074 | -1.64 | -0.22% | 134 | 0.75% | 464 | -3.03 *** |
| ΔROA | (-1, +2) | 0.08% | 132 | 0.46% | 1,039 | -0.94 | 0.08% | 132 | 0.83% | 452 | -2.11 ** |
| | (-1, +3) | -0.03% | 120 | 0.39% | 1,010 | -1.10 | -0.03% | 130 | 1.11% | 446 | -2.42 ** |
| | (-1, +1) | -3.74% | 133 | 1.10% | 1,087 | -0.70 | -3.74% | 133 | 2.74% | 472 | -1.21 |
| ΔSG | (-1, +2) | -1.62% | 132 | 0.28% | 1,052 | -0.88 | -1.62% | 132 | 1.44% | 461 | -1.46 |
| | (-1, +3) | -2.55% | 130 | -1.23% | 1,022 | 1.58 | -2.55% | 130 | 1.48% | 454 | 0.85 |
| | (-1, +1) | -0.08% | 117 | 0.12% | 992 | -1.11 | -0.08% | 117 | 0.21% | 435 | -1.19 |
| ΔMTB | (-1, +2) | 0.42% | 115 | 0.18% | 970 | 1.68 * | 0.42% | 115 | 0.22% | 429 | 1.70 * |
| | (-1, +3) | 0.65% | 114 | -0.01% | 957 | 3.50 *** | 0.65% | 114 | 0.08% | 426 | 3.14 *** |
| | (-1, +1) | 0.00% | 288 | 0.00% | 1,926 | -0.42 | 0.00% | 288 | 0.00% | 848 | -1.74 * |
| ΔOPM | (-1, +2) | 0.00% | 286 | 0.00% | 1,899 | 0.15 | 0.00% | 286 | 0.00% | 842 | -1.11 |
| | (-1, +3) | 0.00% | 284 | 0.00% | 1,875 | 1.60 | 0.00% | 284 | 0.00% | 838 | 0.38 |
| 0.38 | (-1, +1) | -0.06% | 145 | 0.09% | 1,183 | -1.63 | -0.06% | 145 | 0.09% | 510 | -1.55 |
| ΔCAPEXS | (-1, +2) | -1.04% | 143 | 0.08% | 1,147 | -3.15 *** | -1.04% | 143 | 0.21% | 497 | -3.53 *** |
| | (-1, +3) | -0.88% | 14 | 0.13% | 1,117 | -2.87 *** | -088% | 140 | 0.30% | 493 | -3.38 *** |

**Table D. 3: Median comparisons for one, two and three years after first SWF investment (transparent versus opaque SWFs)**

The table presents median changes in return on assets, sales growth, market-to-book ratio, operating profit margin and capex/sales for the sample of transparent and opaque SWFs, using the Transparency scores from Truman (2015). The difference (change) reported for year 1 is the difference between the value as of Dec. 31 of the year following the investment and Dec. 31 of the year preceding the investment. Column 3 excludes the GPFG as it invests in a large part of the sample. The statistical significance is tested with the rank-sum (Mann-Whitney U) test that provides z-statistics. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Opaque SWF** | **Obs.** | **Transparent SWF** | **Obs.** | **z-statistic (Mann-Whitney)** | **Opaque SWF** | **Obs.** | **Transparent SWF (without Norway)** | **Obs.** | **z-statistic (Mann-Whitney)** |
| | (-1, +1) | 0.50% | 43 | 0.31% | 1,028 | 0.35 | 0.50% | 43 | 0.82% | 412 | -0.80 |
| ΔROA | (-1, +2) | 0.35% | 42 | 0.46% | 993 | -0.30 | 0.35% | 43 | 0.85% | 401 | -1.20 |
| | (-1, +3) | 1.40% | 40 | 0.38% | 966 | 0.91 | 1.40% | 40 | 0.99% | 395 | 0.12 |
| | (-1, +1) | 2.81% | 43 | 1.13% | 1,040 | 0.51 | 2.81% | 43 | 2.89% | 419 | -0.08 |
| ΔSG | (-1, +2) | 5.24% | 43 | 0.16% | 1,006 | 0.66 | 5.24% | 42 | 2.24% | 410 | 0.06 |
| | (-1, +3) | 3.14% | 41 | -1.36% | 976 | 0.69 | 3.14% | 41 | 0.94% | 402 | 0.19 |
| | (-1, +1) | 0.36% | 34 | 0.12% | 948 | 1.53 | 0.36% | 34 | 0.21% | 384 | 1.29 |
| ΔMTB | (-1, +2) | 0.65% | 33 | 0.18% | 927 | 1.96 ** | 0.65% | 33 | 0.23% | 378 | 1.92 * |
| | (-1, +3) | 0.25% | 34 | -0.01% | 913 | 1.36 | 0.23% | 34 | 0.10% | 375 | 1.00 |
| | (-1, +1) | 0.01% | 70 | 0.00% | 1,849 | 1.16 | 0.00% | 71 | 0.00% | 756 | 0.24 |
| ΔOPM | (-1, +2) | 0.97% | 70 | 0.00% | 1,822 | 1.27 | 0.84% | 71 | 0.00% | 750 | 0.41 |
| | (-1, +3) | 1.68% | 68 | 0.00% | 1,799 | 1.90 * | 1.41% | 69 | 0.00% | 746 | 1.16 |
| | (-1, +1) | -0.05% | 45 | 0.09% | 1,133 | -0.05 | -0.05% | 45 | 0.09% | 454 | -0.10 |
| ΔCAPEXS | (-1, +2) | -0.25% | 45 | 0.07% | 1,097 | -1.03 | -0.25% | 45 | 0.20% | 442 | -1.34 |
| | (-1, +3) | -086 | 43 | 0.13% | 1,068 | -1.90 * | -0.86% | 43 | 0.27% | 438 | -2.25 ** |

**Table D. 4: Median comparisons for one, two and three years after first SWF investment (transparent versus opaque SWFs)**

The table presents median changes in return on assets, sales growth, market-to-book ratio, operating profit margin and capex/sales for the sample of transparent and opaque SWFs, using the Transparency scores from the LMI index (2018). The difference (change) reported for year 1 is the difference between the value as of Dec. 31 of the year following the first SWF investment and Dec. 31 of the year preceding the first SWF investment. The statistical significance is tested with the rank-sum (Mann-Whitney U) test that provides z-statistics. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| | | (1) | | (2) | | | (3) | | (4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Window** | **Opaque SWF** | **Obs.** | **Transparent SWF** | **Obs.** | **z-statistic (Mann-Whitney)** | **Opaque SWF** | **Obs.** | **Transparent SWF (without Norway)** | **Obs.** | **z-statistic (Mann-Whitney)** |
| | (-1, +1) | -0.05% | 25 | 0.25% | 1,183 | 0.21 | -0.05% | 25 | 0.49% | 572 | -0.23 |
| ΔROA | (-1, +2) | 0.25% | 24 | 0.41% | 1,147 | -0.36 | 0.25% | 24 | 0.62% | 558 | -0.70 |
| | (-1, +3) | 0.06% | 22 | 0.34% | 1,118 | -0.94 | 0.06% | 22 | 0.77% | 552 | -1.37 |
| | (-1, +1) | 8.51% | 25 | 0.63% | 1,195 | 1.51 | 8.51% | 25 | 1.81% | 579 | 1.25 |
| ΔSG | (-1, +2) | 3.16% | 24 | 0.00% | 1,160 | 0.84 | 3.16% | 24 | 0.84 | 568 | 0.57 |
| | (-1, +3) | -2.04% | 22 | -1.27% | 1,130 | 0.48 | -2.04% | 22 | 1.66% | 561 | 0.05 |
| | (-1, +1) | -0.05% | 20 | 0.12% | 1,089 | -1.24 | -0.05% | 20 | 0.18% | 531 | -1.30 |
| ΔMTB | (-1, +2) | -0.06% | 19 | 0.19% | 1,066 | -0.61 | -0.06% | 19 | 0.23% | 524 | -0.70 |
| | (-1, +3) | 0.09% | 18 | 0.02% | 1,053 | 0.30 | 0.09% | 18 | 0.18% | 521 | -0.03 |
| | (-1, +1) | 0.00% | 79 | 0.00% | 2,135 | 0.66 | 0.00% | 79 | 0.00% | 1,053 | 0.11 |
| ΔOPM | (-1, +2) | 0.00% | 78 | 0.00% | 2,107 | 0.57 | 0.00% | 78 | 0.00% | 1,046 | -0.01 |
| | (-1, +3) | 0.00% | 76 | 0.00% | 2,083 | 1.07 | 0.00% | 76 | 0.00% | 1,042 | 0.48 |
| | (-1, +1) | 0.23% | 29 | 0.09% | 1,299 | -0.13 | 0.23% | 29 | 0.07% | 625 | -0.06 |
| ΔCAPEXS | (-1, +2) | -0.27% | 28 | 0.01% | 1,262 | -0.39 | -0.27% | 28 | 0.05% | 611 | -0.48 |
| | (-1, +3) | -0.42% | 26 | 0.09% | 1,231 | -0.51 | -0.42% | 26 | 0.14% | 606 | -0.61 |

**Table D. 5: Panel vector autoregression model and Granger test for SWF ownership and ESG scores**

This table presents the results from 1) a panel vector autoregression model (VAR) (see Abrigo & Love, 2015) with year fixed effects and standard errors clustered at the target firm level and 2) a Granger causality Wald test to test the Granger-causality between SWF stakes in target firms and the ESG scores of those target firms. Significance levels are denoted as follows: * indicates significance at the 0.10 level; ** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.

| **Panel A: Panel VAR** | | |
|---|---|---|
| | **(1)** | **(2)** |
| **Variable** | **$ESG_t$** | **SWF $Stake_t$** |
| $ESG_{t-1}$ | 0.503 *** | -0.003 |
| | (25.25) | (-1.06) |
| $ESG_{t-2}$ | 0.246 ** | -0.002 |
| | (17.16) | (-1.47) |
| $ESG_{t-3}$ | 0.123 *** | 0.002 |
| | (9.79) | (1.58) |
| SWF $stake_{t-1}$ | 0.251 * | 0.079 |
| | (1.83) | (1.10) |
| SWF $stake_{t-2}$ | 0.156 | 0.011 |
| | (1.25) | (0.20) |
| SWF $stake_{t-3}$ | 0.238 ** | 0.020 |
| | (2.56) | (0.43) |
| Obs. | 21,263 | 21,263 |
| Obs. (panels) | 3,105 | 3,105 |
| **Panel B: Granger causality Wald test** | | |
| **Dependent variable** | **Independent variable** | **P > chi-square** |
| ESG | SWF Stake | 0.068 * |
| SWF Stake | ESG | 0.045 ** |