The Responsible Investment Practices of the World's Largest Government Sponsored Investment Funds

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A thesis submitted to the Faculty of Graduate and Post-Doctoral Affairs in partial fulfillment of the requirements for the degree of

M.A.

In

International Affairs

Carleton University,
Ottawa, Canada

Abstract:

In this thesis, I evaluate the role of agent related (e.g.: assets under management, type of fund) and structure related (e.g.: strength of civil society) factors on the likelihood that government sponsored investment funds (GSIF) will adopt responsible investment practices. I submit these two sets of theories to empirical scrutiny through a large-n analysis of the responsible investment practices of a newly assembled database of 158 GSIFs spanning 48 countries across all continents. I conclude that the structure and agent related explanations are both significant in explaining the likelihood that a GSIF will adopt responsible investment; both sets of explanations are not mutually exclusive.

Acknowledgments

The idea for this thesis took shape over the course of my Master, after gaining initial exposure to the fascinating and rapidly changing universe of responsible investment. I would like to thank Dr. Tessa Hebb for receiving me in her office in October of 2010 for a conversation that would trigger our research collaboration on responsible investment. I would also like to thank Professor Jean Daudelin for the genuine interest he takes in his students' research ideas and his rigorous questioning that always improved the quality of my research. The support of Professor Dane Rowlands in conducting the quantitative analysis section was also essential. Finally, I would like to thank all those who supported me over the course of my writing in Ottawa, Bolivia, Toronto and Vancouver.

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List of Abbreviations:

AUM: Assets under management

CalPERS: California Public Employees Retirement System's

CPPIB: Canada Pension Plan Investment Board

EPI: Environmental Performance Index

ESG: Environmental, social and governance

GEPF: Government Employee's Pension Fund

GPFG: Government Pension Funds Global (Norway)

GSIF: Government-sponsored Investment Fund

IMF: International Monetary Fund

RI: Responsible Investment

SRI: Socially Responsible Investing

SWF: Sovereign Wealth Fund

UNEP-FI: United Nations Environmental Program – Finance Initiative

UNPRI: United Nations Principles for Responsible investment

1. Introduction

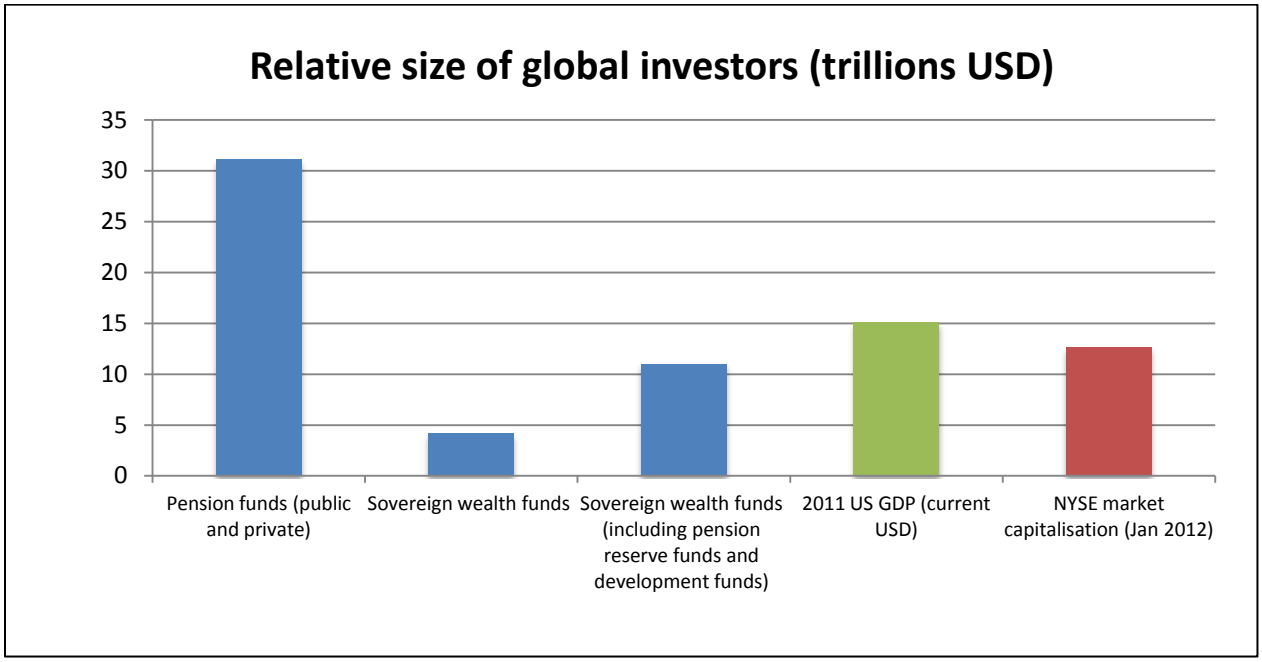
This thesis studies the factors that increase the propensity of government-sponsored investment funds (GSIF) to integrate environmental, social and governance (ESG) considerations, into their investment decision-making process. Over the last 30 years, the increased utilization of financial markets as a repository of national and personal savings has led to a domination of the financial markets by large institutional investors (Gray 2009). The most important class of institutional investors are public pension funds given their broad constituencies and their long-term investment horizon (Clark and Hebb 2005). In recent years, another class of GSIF has also emerged in global finance, sovereign wealth funds (SWF). Indeed, at the end of 2010, pension funds (public and private) were the most important class of global investors with $31.1 trillion assets under management (AUM) whereas sovereign wealth funds cumulated $4.2 trillion assets under management ($11 trillion assets if we include pension reserve funds and development funds[1]) (The City UK Research Centre 2011). The aggregate of the funds managed by these two classes of investors thus amounts to more than the gross domestic product of the US economy ($15.094 trillion in 2011) or the market capitalization of the world's largest stock exchange, the New York Stock Exchange ($12.265 trillion in January 2012).

Since the early 2000's, an increasing number of GSIFs, namely, public pension funds and sovereign wealth funds have been taking an active ownership approach, through mechanisms

[1] Public pension reserve funds are funded with assets set aside to meet a government's future entitlement liability obligations to its citizens (e.g.: New Zealand's Superannuation Fund, Ireland's National Pensions Reserve Fund). Development funds allocate funds toward national socio-economic development projects (e.g.: Malaysia Development Berhad, or Kazakhstan's Samruk Kazyna). Some domestic development funds may also transition into international investment (e.g.: Singapore's Temasek) (The City UK Research Centre 2011, Sovereign Investment Lab 2012)

such as shareholder engagement with corporate boards, proxy voting or divestment, towards corporate performance on environmental issues (e.g.: increased carbon disclosure, sustainable use of resources such as water) and social issues (consultation with communities, worker's treatments and rights, etc.) (Deutsche Bank 2012). This approach departs from the socially

Chart 1:



Source: World Federation of Exchanges, World Bank, The City UK

responsible investment (SRI) movement which had taken root in the 1960's and has remained a relatively marginal segment of the investment industry as it was essentially a value based approach which stemmed from religious belief (Glack 2010). In 2003, a key finding from the UNEP Finance Initiative's Asset Management Working Group was that there is "agreement among analysts that environmental, social and corporate governance (ESG) issues affect long term shareholder value…and in some cases, those effects may be profound" (Deutsche Bank 2012). The term responsible investment was subsequently coined to describe an investment

approach that considers ESG issues out of a belief that long term risk adjusted returns will be higher[2]. Among the public investors that have been at the fore of such an approach, we notably find the California Public Employees Retirement System's (CalPERS) ($220 billion AUM), Sweden's AP Funds ($137billion AUM) and Norway's Government Pension Fund-Global (GPFG) (US$656B AUM), a SWF investing surpluses from Norway's oil riches abroad.

This thesis seeks to understand the specific conditions that increase the likelihood that the international consensus on the merits of sustainable development can feed into the investment considerations of financial vehicles that are meant to serve collective needs (e.g.: public pension funds and sovereign wealth funds). This work thus adheres to suggestions that government sponsored investment vehicles can play a role in advancing values such as human rights (Ghahramani 2011), climate change protection (Reiche 2010), or environmental and social issues (Van Der Zee 2012, Sethi 2005) and international codes and conventions[3] (Ambachtseer 2011) that fall under the broad banner of sustainable development. The topic addressed by this thesis is relevant to policymaking because it links one of the most important class of financial asset owners, public pension funds and sovereign wealth funds, to the paradigm of sustainable development which is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations 1987). Indeed, Richardson (2011) suggests that the next logical step in the evolution of SWFs would be to give them an explicit task to invest in a sustainable fashion.

[2] For empirical support on this position, see the following: Gompers, Ishii and Metrick 2003, Ammann, Oesch and Schmid 2011, Bauer, Eichholtz and Kok 2010, Core, Guay and Rusticus 2006, Jo and Maretno 2011, Bebchuk, Cohen and Wang 2010, Al-Tuwayijri, Christensen and Hughes 2004, Guenster 2011, Semenova and Hassel 2008, Edmans 2011, Richard, Murthi and Kiran 2007, Fu and Shan 2009, Huselid 1995, Landier and Nair 2008.

[3] For example, investors are embedded as stakeholders in the Extractive Industry Transparency Initiative

In this paper, I will empirically test the importance of agency related vs structural factors in determining the likelihood that a GSIF will adopt a responsible investment policy. Following a literature review that will provide theoretical grounds, this argument will be put to empirical scrutiny using two research questions:

- Why have adoption rates of responsible investment policies by GSIFs varied across and within jurisdictions?
- What factors have shaped GSIFs perception about the legitimating value of such an initiative?

The literature review will lay out theoretical explanations that have been advanced along with the empirical support explaining the reasons that drive institutional investors to adopt responsible investment. Two broad sets of explanations are advanced: firstly, the agent-centered arguments, which use the investor as the unit of analysis and stipulates that investors adopt responsible investment out of rational motives as a mean of securing better risk-adjusted long term returns. This interpretation rests mainly on the universal owner hypothesis, which stipulates that large, diversified portfolio owners own cross sections of the economy (Hawley and Williams 2000, Hawley and Williams 2007). Their large equity positions, usually held in the form of minor ownership stakes across hundreds of companies scattered across the globe, notably means that their portfolios are exposed to costs linked to negative externalities like environmental damage. For example, a portfolio holding causing excessive greenhouse gases, overusing water and making unsustainable use of natural resource may affect the ability of another company held in the portfolio to operate profitably thus undermining the long term risk adjusted returns of universal owners (Trucost 2011). As a result, this hypothesis suggests that corporations should actively engage with corporations in order to minimise negative externalities. Nonetheless, this

agent-centered rationalistic framework makes abstraction of the impact of political-economic institutions in which GSIFs evolve. A second theoretical current considers structure-centered explanations and accounts for the role of national political economic institutions in the adoption of responsible investment policies for GSIFs. This theoretical stream factors the importance attributed by nations to environmental and social issues along with the ability of civil society to feed their values in to the public policy process (Cole 1989, Baron, Jennings and Dobbin 1988, Guillen 1994, Prakash and Potoski 2006).

In order to capture the multiplicity of approaches which institutional investors are making use of as it relates to responsible investing (e.g.: proxy voting, corporate engagement on ESG issues, disinvestment over alleged violation of international conventions), I qualitatively evaluate the largest public pension funds and sovereign wealth funds' investment mandates and policies in order to grade their degree of commitment to responsible investment (RI) principles. By considering the level of disclosure as a proxy for commitment to RI, through an evaluation of internal fund policies, this thesis will provide a finer analysis than it would by solely segmenting signatories to the United Nations Principles for Responsible Investment (UNPRI) which is what has been done in the few existing large-n empirical studies, such as the work by Bianchi, Drew & Walk (2010). For example, a binary segmentation restricted our understanding of a fund's level of activism over ESG issues (e.g.: whether the fund factors ESG factors into proxy voting, whether it engages with corporate boards and whether it excludes corporations from their investment portfolios…) and thus, our ability to link structure and agent linked variables to variation in a GSIFs commitment to RI.

To investigate the research question, I will analyse a large sample of responsible investment policies, looking at 158 public investors: 48 sovereign wealth funds and 110 public

pension funds spanning 47 countries across every continent. This methodology will borrow elements from comparative political analyses and yield inferences regarding the most important factors that have led to the adoption of responsible investment policies by GSIFs. The statistical analysis is performed using ordered probit regression function in Stata, the statistical software package.

This thesis will proceed as follows. Section two will give an overview of the importance of GSIFs in the global economy. Section three will define the concept of responsible investment, locate it within a broader historical context and relate it to GSIFs. It also reviews the literature on responsible investment in order to identify the factors that drive the adoption of responsible investment policies. Section four derives hypotheses from the literature review. Section five explains the data and methodologies that are used to perform the analysis. Section six will report the findings of the statistical analysis of the six models tested. Finally, the conclusion will review the findings, their limitations along with their implications for the continued integration of sustainable development considerations into the global financial sphere.

2. Government Sponsored Investment Funds in the Global Economy

This section will outline the evolution, role and importance of GSIFs in the global economy. Investors, alongside corporations, are at the core of the capitalist system. There is a wide variety of investment funds. For our purposes, investors can be divided among private and public agents: among private investors, we find mutual funds, insurance funds, financial institutions along with private sector and corporate sponsored pension funds. Among public investors, or GSIFs, we find public sector pension funds, along with an increasing number of sovereign wealth funds.

2.1 Sovereign Wealth Funds

Sovereign wealth funds are government-owned investment funds that manage part of the assets of states. Their precise importance in the global economy has been a matter of debate due to the varying definitions of what constitutes a SWF, and the limited disclosure provided by some SWFs. Nonetheless, recent estimates of assets under management have varied between $2.9 trillion and $4.2 trillion at the end of 2010. This figure increases to $11trillion in AUM if we include pension reserve funds and development funds in our definition of SWFs (The City UK Research Centre 2011).

The International Forum of Sovereign Wealth Funds, the official representative body of SWFs defines an SWF as such: a "special purpose investment funds or arrangements, owned by the general government. Created by the general government for macroeconomic purposes, SWFs "hold, manage, or administer assets to achieve financial objectives and employ a set of investment strategies which include investing in foreign financial assets" (Sovereign Investment Lab 2012, 8). The IMF has identified five types of SWFs based on their main objective:

stabilization funds, savings funds, reserve investment corporations, development funds and contingent pension reserve funds. Stabilization funds' primary objectives are to insulate the economy against volatility in commodity prices, 2) savings funds which aim to convert non-renewable assets into a diversified portfolio so as to mitigate the effects of Dutch disease[4] and generate benefits for future generations, 3) reserve investment corporations, which seek to increase the return on reserve assets, 4) development funds, which fund socio-economic projects or promote industrial development to raise output growth, and 5) contingent pension reserve funds, which provide (from sources other than individual pension contributions) for contingent unspecified pension liabilities on the government's balance sheet. Ashby Monk (2009) defines a SWFs as "government-owned and controlled (directly or indirectly) investment fund that has no outside liabilities or beneficiaries (beyond the government of the citizenry in abstract) and that invest their assets, either in the short or long term, according to the interests and objectives of the sponsoring government" (Monk 2009, 464).

There has also been the suggestion that some SWFs are used by governments in order to advance political goals (Kirshner 2009). Nonetheless, fears that SWFs were destroying national flagship companies, taking over national resource and national infrastructures have subsided with the creation of the International Working Group of SWFs, co-chaired by the IMF, and the adoption of the Generally Accepted Principles and Practices for SWFs, the Santiago Principles (Yi-Chong 2012). Indeed, it has been found that "through their actions and communications,

[4] Dutch disease refers to the negative macroeconomic consequences associated with a large increase in a country's export revenues. It is usually associated with natural resource booms which lead to an influx of foreign currency which raises incomes and demand for domestic goods, pushing up prices of domestic goods and making them more expensive than foreign imports. Furthermore, it causes the real exchange rate to appreciate. The resulting effect is a loss in the ability of the non-resource export sector to be competitive (Ebrahim-Zadeh 2003).

many SWFs managed to reassure country authorities and financial markets that their investment decisions were driven by financial risk-return considerations" (Das, et al. 2011, 15). Furthermore, an important consideration is that these investment vehicles are not necessarily controlled by national governments; they may also be controlled at the sub-national level (e.g.: Alberta Investment Management Corporation, Abu Dhabi Investment Agency).

2.2 Public Pension Funds

Public pension funds provide retirement income to the public and/or to state employees and are generally funded through mandatory contributions. There are two main types of public pension funds: sovereign pension funds and public worker's pension funds. Sovereign and non-sovereign (e.g.: provincial, sub-national) public pension funds originate from policy decisions as a result of demographic trends in developed countries that called for mechanisms to serve the financial needs of ageing populations (Hawley, Kamath and Williams 2009). The population is not direct a beneficiary of an obligation from these pension funds (e.g.: Canada Pension Plan Investment Board, La Caisse de Dépôt et Placement du Québec), unlike public or private workers' pension plans. Thus, the relation of sovereign pension funds to their beneficiaries is mediated by the state (Hawley, Kamath and Williams 2009). Public worker's pension plans are also national and sub-national in nature and they may be set up to manage the retirement savings of single professions (e.g.: Ontario Teacher's Pension Plan) or public sector workers as a whole (e.g.: CalPERS). These two types of public pension funds share the feature of having been set up through legislative action. The proximity of pension funds to the public administration or politicians however varies a great deal across jurisdictions leading some pension funds to be more at risk of 'politicisation'.

Public pension funds and sovereign wealth funds share a number of similarities. Unlike private investors such as mutual funds or investment banks, public pension funds are in fact beholden to particular governments whether it be at the nation-state or sub-national level (Gray 2009). As a result, state-mandated investors are subject to the particular preferences, goals and objectives underlying decision making within their respective domestic authority structure, decision making which is not insulated from the public judgment (Moravcsik 1997, Dixon and Monk 2012, Gray 2009). Furthermore, both SWFs and public pension funds tend to be long-term, conservative global investors. Nonetheless, there are differences in their relation to government and their liability structure. Firstly, public pension funds, although government sponsored, tend to be at arm's length from the state as reflected in the composition of the board of directors, which is generally independent. Secondly, unlike SWFs, whose funding comes from trade imbalances or resource earnings, public pension funds manage contributions from state employees, employers and/or contributions from taxpayers which may then provide a basic benefit to retired contributors. Thirdly, the beneficiaries (directly or indirectly) of these pension funds are public workers, retirees or taxpayers, not the state as is the case with SWFs (Chhaochharia and Laeven 2009). On the whole, assessments of independence[5], transparency, and good governance[6] have given better scores to public pension funds than SWFs (Truman 2008, Hawley, Kamath and Williams 2009).

[5] Degree to which funds make investment decisions independent of state interference, mission clarity
[6] Governance relates to decisions that define expectations, grant power or verify performance. IN the financial context, this can refer to the role of managers of the investment mechanism, who sets its policy and how these policies are executed.

2.3 The rise of government sponsored investors in the global economy

The rising importance in GSIFs in recent years can mainly be attributed to an increase in the number of SWFs. Indeed, in 2010, SWFs (including sovereign investment funds such as pension reserve funds and development funds) held $4.2 trillion ($11 trillion) worth of AUM, thus more than tripling their assets evaluated at $1 trillion in 2000 (Dixon and Monk 2012) and only $500 million in 1990 (Datz 2009). Indeed, in 2010 alone, nearly 20 governments mostly from emerging economies, considered or decided to establish a SWF (UNCTAD 2011).

Two major drivers explain the surge in the number of SWFs: firstly, the economic growth led by developing countries like Brazil, India and China has resulted in a tripling of world oil prices between 2002 and early 2008 thereby increasing foreign financial assets of oil producing countries, many of which are developing countries, and enabling them to set up investment funds. Secondly, large non-oil based current account surpluses have been accumulated in developing countries like China or Vietnam through trade surpluses. Governments wishing to earn higher returns on foreign exchange reserves shifted some of these assets into SWFs (Hawley, Kamath and Williams 2009). When compared against other classes of investors, this can make SWFs appear rather minor in global financial markets. Indeed, SWFs overall size remains behind pension funds ($31.1 trillion in 2010), mutual funds ($24.7 trillion) and insurance funds ($21.6 trillion) (The City UK Research Centre 2011). Nonetheless, their recent growth has been particularly important relative to other investor classes and this growth is likely to further increase their weight in the global economy in years to come (Butt, et al. 2007).

Although there has been a growth in the number of SWFs in recent years, their creation dates back as far as the 19th century. A broadly encompassing definition of SWF would trace the

creation of the oldest SWF in the American state of Texas in 1854. The Texas Permanent School Fund is a land grant fund which, unlike most SWFs thatmanage monies for general governmental purposes, manages state funds for specific state and local public institutions (Rose 2011). This fund was valued at $24.4 billion at the end of 2011. Little attention has been paid to US-based sub-national sovereign wealth funds because they do not raise the international relations issues that foreign funds have in recent years (Rose 2011). Indeed, the Kuwait Investment Authority, established in 1953, is often credited as the first national sovereign fund with other important SWFs such as Singapore's Temasek and the Abu Dhabi Investment Authority originating from the 1970's (Butt, et al. 2007, Yi-Chong 2012).

Pension fund assets have undergone phenomenal growth since the end of World War II and are now the largest global investors with $31.1 trillion AUM. In the United States, in 1950, US pension funds held 0.3 percent of corporate equity, figure which increased to 22.9 percent in 2006 (among which are foreign pension funds and SWFs) with similar trends observable in Canada and the UK (Rydqvist, Spizman and Strebulaev 2011).

The emergence of pension funds stems from the post WWII economic, political and demographic configurations. The economic and demographic growth along with increased state sector employment and unionized workers led to a growth in the coverage of pension recipients and by extension, growth in the assets of pension funds. Pension fund asset growth, for much of the 20th century, was concentrated in Anglo American economies (e.g.: US, UK, Australia, Canada, and Ireland). In continental European countries such as France, Germany and Italy, the pension sector was largely a non-funded, pay as you go system where benefits were provided by the state and were paid directly out of current taxes. In contrast, in the funded system, prominent in Anglo American countries, contributions are invested towards meeting the benefit (Clark

2000). Nonetheless, continental European countries such as France and Spain are moving toward funded pensions arrangements, thus moving closer to an Anglo-American style financial capitalism (Dixon 2008).

The proliferation of SWFs in recent years along with the sustained importance of pension funds has thus confirmed the dominance of these actors in global financial markets. As a result of this weight, these actors are bound to play a key role if the paradigm of sustainable development is to be integrated in global finance. Indeed, governments across the world have paid increasing attention to issues of environmental and social sustainability notably since the 1992 Rio Summit (Deutsche Bank 2012). The tie existing between governments and GSIFs could push the latter class of actors toward the integration of increasing consideration for environmental and social sustainability and ultimately, a shift in paradigm in the global financial sphere. The literature review will help identify which, among agent and structure related factors, have driven investors generally and GSIFs specifically, to become responsible investors.

3. Literature Review – Linking responsible investment to GSIFs

3.1 What is responsible investment?

This thesis will focus on the determinants of GSIFs adoption of responsible investment policies. Before formulating hypotheses and reviewing the relevant literature, a clarification of the concept of responsible investment along with its application and diffusion among GSIFs are necessary. Although a universally accepted definition of the term is still elusive, in this paper, I define responsible investment as "the integration of environmental, social and governance (ESG)[7] considerations into investment management processes and ownership practices in the belief that these factors can have an impact on financial performance, in particular over the medium to longer term" (Mercer 2007, Deutsche Bank 2012).

Accordingly, responsible investment is a way for investors to take into account the corporate social responsibility of the companies they invest in (Cox and Schneider 2010, Hockerts and Moir 2004, Sievanen, Rita and Scholtens 2012), and indeed, advance the CSR agenda (Solomon and Solomon 2004). CSR is the principle that society has expectations for corporate processes that extend beyond traditional economic and legal expectations (Cox and Schneider 2010). As a result, firms should consider the impact of their corporate activities on stakeholders which are "any individual or group likely to be affected either positively or negatively, in the short or long term, by corporate activities, policies or decisions" (Cragg 2001, 6). Corporate social responsibility is observed in individual corporate initiatives that go beyond

[7] Examples of environmental considerations include environmental auditing, commitment to stakeholder involvement, commitment to addressing climate change impact, biodiversity protection measures and more. Social considerations include, but are not limited to human rights policies, supply chain labour practices, health and safety considerations for employees. Finally, governance considerations include the structure and independence of the board, disclosure of executive remuneration (Say on pay) and anti-bribery policies.

their legal requirements. More importantly, it has been implemented internationally through voluntary codes of conduct developed collectively by businesses, business assocations, governments and civil society. This has expanded significantly since the early 1990's such that over 300 voluntary codes now govern most global corporate sectors (Zades 2001, Vogel 2008)

Responsible investment essentially emerged at the beginning of the 21st century in an attempt to reconcile sustainability considerations with profit maximization. Modern portfolio theory, a development of the second half of the 20th century, has been the norm for mainstream financial actors such as pension funds, insurance funds, mutual funds and investment banking and it essentially implied a focus on the maximization of total returns of diversified investments at various levels of risk (Lydenberg 2007). In parallel, between the 1960's and mid 1990's, there existed a current, albeit marginal, of ethically or socially driven investors. Religious organizations were at the root of these value-driven investment strategies which excluded companies on the basis of the ethical principles of the investors (Glack 2010). These principles could range from avoiding companies involved in war efforts and the production of unethical goods such as alcohol or cigarettes. The ethical investing movement increasingly came consider aspects such as social, ethical and environmental behavior as the concept of sustainability was taking root, notably with the impetus of the Rio Summit of 1992 (Deutsche Bank 2012).

Responsible investment formally emerged as a concept in 2003 through the initiative of the United Nations Environment Program's Finance Initiative (UNEP-FI). Despite a lack of consensus over terms such as "responsible" or "ESG" which are embedded in regulative, normative and social institutions (Scott 2001, Sorsa 2008), partial agreement emerged and rallied investors from every continent around the UN-backed Principles for Responsible Investment (UNPRI). The UNPRI is an "internationally agreed framework to assist the global investment

industry incorporating ESG issues into the investment decision making process" (Bianchi, Drew and Walk 2010, 306). It is sponsored by the United Nations and the signatories are asset owners, investment managers and professional service partners. The relevance of ESG issues to long-term financial returns and to society's long term benefit are the central motivating factors of the PRI framework. This articulation has allowed institutional investors operating under a traditional fiduciary duty framework to become PRI signatories[8]. The voluntary nature of the PRI along with the lack of a unique implementation framework has resulted in a "varied and wide distribution of practical responses to the PRI" (UNCTAD 2011). Indeed, different strategies are employed by investors to signal their consideration of ESG issues: 1) negative and/or positive screening of companies or sectors; b) sustainability focused investment strategies; c) innovations in ESG screens and metrics; d) revised best-of-sector approaches; e) thematic investment; and f) new shareholder networks aimed at company engagement and corporate governance activism (UNCTAD 2011). Furthermore, investors may use proxy voting and engagement with corporate boards in order to signal their concern regarding ESG issues (Hebb 2008).

What distinguishes the RI from past movements such as ethical investing is the ever increasing adherence to RI on the part oflarge institutional investors such as pension and sovereign wealth funds because of an increased interest in the risks and opportunities presented by extra-financial corporate performance (Deutsche Bank 2012). Large public pension funds

[8] Fiduciary duties "are duties that common law jurisdictions impose upon a person who undertakes to exercise some discretionary power in the interests of another person in circumstances that give rise to a relationship of trust and confidence". Pension funds, who manage plan beneficiaries pensions, have a fiduciary duty toward plan beneficiaries. In this context, there was debate as to whether the consideration of ESG factors in investments decisions constituted a breach of fiduciary duty because it constituted a deviation from the pursuit of profit maximization at the expense of social responsibility. Although this is still a point of contention, particularly in the US, the Freshfields Report (2005) argued that ESG considerations does not violate the duty as long as they are motivated by proper purposes and do no adversely affect the financial performance of the entire portfolio.

such as CalPERS, or Sweden's AP Funds were early adopters of investment strategies, which relied on new criteria (ESG) that were not previously considered to be financially relevant in investment decision-making (Gray 2009). As of April 2012, over 1000 investment institutions were PRI signatories with AUM of approximately US$ 30 trillion (UNPRI 2012). Among the world's 100 largest pension funds, almost half were disclosing some responsible investment indicators (without necessarily being PRI signatories) in 2009. Furthermore, 27 funds, accounting for 42 per cent of the total AUM of the top 100 funds, had a strong disclosure of RI indicators (UNCTAD 2011).

3.2 Why have investors adopted responsible investment?

Given the increasing buy-in from large institutional investors, such as GSIFs, into the tenets of responsible investment, an analysis of the drivers and root causes behind the adoption of such policies becomes a compelling project. The review of the literature touches on the scholarship that is particularly relevant to our 2 research questions: 1) why have adoption rates of responsible investment policies by GSIFs varied across and within jurisdictions and 2) what factors have shaped GSIFs perception about the legitimating value of such an initiative? The literature review will provide the existing answers to this question by looking at two explanation nodes: firstly, the actor centered rationalistic node, also known as the business case, which treats investors as utility-maximizing actors and which looks at investors as the fundamental unit of analysis and secondly, a structural approach which ascribes particular behaviours to wider social structures in which the agent is located.

3.2.1 Agent centered reasons for adopting responsible investment

The agent-centered explanations for adopting responsible investment focus mainly on two elements on which I elaborate below: firstly, large investors such as GSIFs adopt responsible investment because their size warrants it and secondly, their liability structure affects the emphasis which they will put on risk management (including ESG risks) in their investment operations.

The agent-centered explanation for adopting responsible investment ties in to risk minimization considerations by institutional investors who are particularly exposed to negative ESG externalities because of the large size of their portfolio. In particular, it is suggested that large asset owners such as GSIFs are 'universal owners'. The universal owner theory suggests that large investors are diversified across and within all asset classes thus owning a slice of the whole economy and market through their portfolios (Lydenberg 2007, Hawley and Williams 2000). These asset owners must consider negative externalities because "nothing is external to a global shareowner" (Gjessing and Syse 2007). Their market presence effectively restrains their ability to "exit" when dissatisfied with corporate performance (Coffee 1991). As a result, it has been argued that investors' increasing recognition of their market dominance and systemic exposure has led them to recognize the importance of regard for the long term risks stemming from environmental, social and governance factors in their portfolio and choose 'voice'[9] in order to address such issues with corporate management (Hebb 2008).

Central to this interpretation is the long-term investment horizon of large institutional investors such as GSIFs. The temporal structure of pension funds results in sensitivity toward the

[9] Albert Hirschman (1970) argued that members of organisations have two possible responses when they perceive a decrease in quality or benefit: they can exit from the relationship; or they can voice their concern to attempt to change what dissatisfies them.

long term value of holdings because it must be able to provide benefits for its members in the distant future (Hebb 2008). For these funds, discounting the future can pose serious risks to the value of their holdings as demonstrated by the case of climate change. If economic development is affected by climate change, this may lower stock returns and undermine the ability of pension funds to fulfill their return objectives. Thus, it is in their interest to minimize risks tied to their long-term investment horizons (Mansley and Dlugolecki 2001).

According to this proposition which links investor size and long term investment horizon, the adherence to responsible investment is based on the belief that companies that consider ESG standards through corporate social responsibility and sustainability linked initiatives, will add value to an investment portfolio over time by reducing risk across all asset classes for investors (Center for Corporate Citizenship 2007). For example, Williams (2004) has argued that British institutional investors became involved in the Extractive Industry Transparency Initiative because it would reduce corruption in host countries, increase social and political stability and in turn, reduce the financial risks to portfolio companies. Investors may also value firms with labour friendly practices because they were found to outperform comparable firms on productivity, profitability and value creation (Faleye and Trahan 2006). Indeed, there is empirical evidence that strong corporate performance on E,S and/or G shows a positive link to market and/or accounting based financial out- performance. Empirical evidence of this pattern has been found for strong corporate performance on governance [10], environmental[11], social[12] or all three factors (Landier and Nair 2008). A Deutsche Bank Study (2012) which reviewed the

[10] See (Gompers, Ishii and Metrick 2003, Ammann, Oesch and Schmid 2011, Bauer, Eichholtz and Kok 2010, Core, Guay and Rusticus 2006, Jo and Maretno 2011, Bebchuk, Cohen and Wang 2010)
[11] See (Al-Tuwayijri, Christensen and Hughes 2004, Guenster 2011, Semenova and Hassel 2008)
[12] See (Edmans 2011, Richard, Murthi and Kiran 2007, Fu and Shan 2009, Huselid 1995)

literature argued that "ESG best in class focused funds should be able to capture superior risk-adjusted returns if well executed" but it also pointed to studies which see neutral (Cortez, Silva and Areal 2009, Bauer, Koedijk and Otten 2005) or negative (Heinkel, Kraus and Zechner 2001, Galema and Scholtens 2008) association between financial performance and strong ESG indicators in corporations.

In line with the 'universal owner' thesis, empirical studies have found the size of pension funds to be related to pension funds' responsible investments (Cox and Schneider 2010, Sievanen, Rita and Scholtens 2012, Bianchi, Drew and Walk 2010). Nonetheless, these studies focus on pension funds and/or investors in OECD countries, thereby foregoing the analysis of sovereign wealth funds along with the wider social structures in which GSIFs are located. This will be important in assessing whether responsible investment is guided more by its structural (institutional, societal) context than by a narrower rationalist agent-centered conceptualisation.

A fundamental challenge linked to the 'universal owner' theory is that there are inherent difficulties associated with developing a strategy where everything is internal (Gjessing and Syse 2007). For example, Norway's GPFG, which holds the equity of nearly 8000 companies, tends to focus voting activities with regards to best practice corporate governance on the world's 500 largest companies. Furthermore, specific issues in the active ownership strategies have been identified[13] (Clark and Monk 2010). Therefore, organisations such as GSIFs face important constraint related to time, expertise and institutional capacity thus limiting the feasibility of a

[13] The NBIM focuses on active ownership in 6 areas: 1) equal treatment of shareholders, 2) shareholder influence and board accountability, 3) well-functioning, legitimate and efficient markets, 4) children's rights, 5) climate change, 6) water management.

strategy where investors would attempt to internalise all negative externalities produced by corporations within their portfolios.

The agent-centered, rationalistic approach implies that investors subscribing to RI principles are utility maximizing agents. It is an extension of neoclassical economic theory with its assumption of rational action and profit maximizing motivations (Brown, Vetterlein and Roemer-Mahler 2010). Nonetheless, the sole consideration of instrumental motives as the rationale for being a responsible investor fails to capture important dimensions of the evolution of responsible investment. It does not enable us to adequately capture the timing of the emergence of RI and the variation in scope and depth of RI policies across and within jurisdictions. For example, Aguilera et al. (2006) argue that investors may be acting rationally in their consideration of ESG, but that this explanation fails to explain why investors in the UK are more inclined to perceive the importance of such considerations relative to their American counterparts. Aguilera et al. (2006) lends significance to an investor's relational motives (conforming to emerging norms) and moral motives, thus pointing to the importance of grounding investor in a wider social structure.

The second element in the agent centered view of investors which may have an impact on likelihood to adopt responsible investment is the type of fund considered (public or private, sovereign wealth fund or pension fund), along with fund governance considerations and transparency.

There is an important diversity of funds which can be categorized as GSIFs and this could have an incidence on the likelihood of adopting a responsible investment policy. As described earlier, GSIFs encompass sovereign wealth funds, sovereign pension funds and public

employees' union plans. Furthermore, given the wide variety of SWFs, the label does not adequately capture the various investment styles, organisational structures and missions (IRRC 2009). Aside from research pointing to the higher likelihood of public pension funds (vs private pension plans) to adopt responsible investment strategies (Sievanen, Rita and Scholtens 2012), there is a lack of empirical studies assessing the impact of fund type on likelihood of being a responsible investor. Nonetheless, conceptual frameworks have been advanced. A fundamental difference between pension funds and sovereign wealth funds is that the former have designated beneficiaries, are ruled by the principles of fiduciary duty and have well-defined time horizons (Clark 2000). Indeed, sovereign pension funds scored higher than SWFs on Truman's (2010) assessment of structure, governance and accountability and transparency. As an extension of these propositions, we can explore whether a fund's liability type affects the likelihood that it will adopt an RI policy. The liability structure of pension plans (disbursements are made to plan beneficiaries) makes them more exposed to the public eye than SWFs, which have no direct liabilities to the population. Furthermore, risk management is more important at pension plans than SWFs, because pension entitlements, in the case of the former, are reliant upon a fund's performance (Clark and Knight 2009). This factor could translate into increased consideration for a risk-based approach to ESG.

Few empirical studies have analysed the drivers behind responsible investment practices of sovereign wealth funds, with the exception of studies assessing motivations for responsible investment at Norway's Government Pension Fund Global (Foldal 2010, Clark and Monk 2010, Reiche 2010, Tranoy 2009) and studies comparing the integration of ESG issues across a small sample of SWFs (IRRC 2009, Van Der Zee 2012). Hawley et al (2009) argue that there has been a higher uptake of responsible investment by sovereign pension funds (SPFs) than SWFs as a

result of their "universal owner like portfolios" which has increased their concerns over ESG issues. Thus, SWFs are not thought to have the same fiduciary-like obligation to confront elements of corporate governance considering environmental and social issues on a performance basis. Nonetheless, Hawley (2009) posits that SWFs "from more open and democratic nations will in the long-run contribute to the development of the governance, environmental and social elements of responsible investment" (Hawley, Kamath and Williams 2009, 378) thus leaving the observer to ask if a democratic regime is not a more important determining factor than fund type with regards to responsible investing. The analysis performed in this thesis will provide elements of answer to this question.

The analysis of government sponsored investment funds is relatively unique given their state mandates to act in the realm of financial markets where private agents are portrayed as utility-maximisers. Thus, certain characteristics of the agent can also be linked to elements of the structural context. For example, publicly managed pension funds in countries with poor governance tend to produce worst returns (Carmichael and Palacios 2004). Truman (2008) assesses the structure, governance and accountability and transparency of 44 SWFs, 34 non-pension funds and 10 pension funds and the lowest rankers are countries which systematically rank low on country level indicators on democratic governance and transparency indicators[14]. Given that societal contexts with stronger traditions of acknowledging the relevance of environmental and social issues in public policy tended to increase the likelihood of financial institutions adopting the Equator Principles[15] (Wright 2010), it would be relevant to see if GSIFs

[14] The lowest ranking funds on this index are from the following countries: Iran, Venezuela, Oman, Sudan, Brunei Darussalam, UAE, Qatar.

[15] The Equator Principles are a private governance schemes whereby banks commit to the review of environmental and social impact in the projects they agree to finance.

with weak transparency and governance scores are less likely to adopt responsible investment principles in their investment practices as this has not yet been addressed in the literature.

3.2.2 Structural motives for the adoption of RI policies

According to the structural approach investors are part of a wider social environment and their behaviour can be influenced by the rules, norms, culture and institutions that prevail in that particular environment. Indeed, investors do not exist in a vacuum; rather, they operate in institutional contexts that create barriers and opportunities (Gjolberg 2009). The literature considering the impact of structural factors on the likelihood that investors will consider ESG issues is in its early stages and has looked to the CSR literature on the importance of national context for theoretical grounding. This is justifiable given the loose connection between CSR and RI; CSR is directly connected to the ESG performance of the firm and responsible investment entails a consideration of ESG performance in investment decisions (Scholtens and Sievanen 2012).

It has been hypothesised that an investor's institutional context would affect the likelihood of adopting responsible investment criteria. Institutional theory stipulates that firms are embedded in different institutional settings and that these firms' structures and actions will be shaped by conformity to normative standards established by institutions external to the firm (Wright and Rwabizambuga 2006). Institutions refer not only to formal organizations' such as governments, NGOs or corporations, but also to norms, incentives and rules. They enable predictable interactions "that are stable, constrain individual behaviour and are associated with shared values and meaning" (Matten and Moon 2008). Changes in societal values, or norms, were shown to affect the development of the socially responsible investor movement in

Scandinavia. The local strength of environmentalism and concern for international development and CSR pushed Scandinavian investors to integrate such concerns within investment practices (Bengtsson 2008). Sandberg et al (2009) finds that country specific regulations, institutional setting along with the emergence of the UNPRI drove the emergence of responsible investment in Scandinavian countries. Pointing to the lack of specificity with regards to defining institutions in the latter study, Scholtens and Sievanen (2012) assess the relevance of legal institutions, labour market institutions and political institutions on the prevalence of SRI in four Nordic countries but do not find a clear association. Howver, these studies use the size of the SRI industry as their dependent variable thus failing to specifically address the mechanism that may link RI to GSIFs.

Legal context has been seen both as a barrier and an enabler to responsible investing. Focusing on Anglo-American pension funds, Woods and Urwin (2010) argue that a persistent lack of clarity regarding the parameters enabling the integration of responsible investment within the fiduciary duty framework, along with "a tendency for courts and commentators to equate prudence[16] with adherence to the status quo" continues to dissuade funds from adopting such investment strategies. In the UK, France, Germany, and Denmark, laws require pension fund managers to disclose howthey consider environmental and social factors in their investment making decisions; this has encouraged pension funds to pay increased attention to these criteria (Williams and Conley 2005, Juravle and Lewis 2009). Aguilera et al. (2006) distinguishes between the different institutional environments in the US and UK, suggesting that NGOs are

[16] The duties of loyalty and prudence are tied to fiduciary duty. The duty of loyalty requires trustees to act in the best interest of the beneficiaries. The duty of prudence requires trustees to exercise prudence, care and diligence in managing funds for beneficiaries. Prudent management has been equated with managing in accordance with modern portfolio theory (Woods 2011)

more involved in British corporate governance systems and that legislative measures such as the UK's *Pensions Act 1995*[17] have resulted in a higher concern over ESG issues by British investors relative to their American counterparts. Cox & Schneider (2010) demonstrate that legal and regulatory environments affect both pension fund responsible investing and the perceived legitimacy of social performance among corporations.

Most studies (Bengtsson 2008, Sandberg, et al. 2009, Aguilera, et al. 2006) fail to provide an empirical investigation of the impact of institutional factors with a structurally informed framework of analysis, with the exception of Scholtens (2012). The literature on CSR has been more systematic in this regard. For example, the impact of domestic institutions on the prevalence of CSR has been analysed through Hall & Soskice (2001)'s Varieties of Capitalism framework. In empirical analyses comparing liberal market economies (LME) with coordinated market economies (CME), Jackson & Apostolakou (2010) and Kinderman (2009) find that LMEs scored higher on CSR dimensions because firms in countries with less institutionalized solidarity were more likely to use CSR as a way to make up for missing regulation. Larger cross-country comparative assessments have also been performed to observe linkages between national political economic institutions (Gjolberg 2009, 2009), along with dimensions of national cultural values (Ringov and Zollo 2007), to observed CSR performance. Skouloudis & Evangelinos (2012) try to develop a CSR measurement framework which can be applied in any country of the world but this has yet to undergo empirical test. Thus, the CSR literature looking at cross-country context, though not without its limitations, is ahead of the responsible investment literature although it remains predominantly focused on Western countries and larger

[17] Declares that investors must produce a written statement of investment principles which must cover 'the extent (if at all) to which social, environmental or ethical considerations are taken into account in the selection, retention and realization of investments' (Woods and Urwin 2010)

emerging countries. Nevertheless, the indirect link between RI and CSR enables us to borrow elements from structural frameworks which have been advanced.

Studies on responsible investment have yet to empirically analyse the impact of national context on the likelihood that GSIFs will adopt RI policies. Rather, studies have focused on OECD countries and on the size and composition of the SRI industry in a small number of markets. Nonetheless, the vast majority of SWFs are located outside of OECD countries.

In an analysis on the rate of adoption of the Equator Principles[18], Wright & Rwabizambuga (2006) look at private financial institutions across the globe and suggest that higher adoption rates among Western European and North American banks relative to those based outside of these markets are notably a consequence of institutional contexts where environmental and social responsibility impacts corporate reputation, thus increasing strategic motivation for adopting such a code of conduct. Their empirical analysis consists in assessing political, civil and human rights, and high bureaucratic competence and quality of public service delivery as proxies for societal contexts "with relatively strong traditions of acknowledging the relevance of environmental and social issues in public policy and corporate practice (Wright 2010:106). This frame of analysis could also be applied to institutional investors as it relates to responsible investing because analysis outside of OECD markets is very limited. Avendao and Santiso (2009) found that SWFs were more likely to originate from autocratic regimes and Van Der Zee (2012) found that only 22% of sovereign wealth funds had adopted some form of responsible investment policy, and only 6 were signatory to the UNPRI. Nonetheless, none of

[18] The Equator Principles is a risk management framework for assessing environmental and social risk in Project Finance transactions. The Principles are adopted by financial institutions and are applied where total project capital costs exceed US$10 million. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making (Equator Principles 2011).

these studies assessed the association between institutional factors and likelihood of adopting a responsible investment policy.

Institutions and legitimacy

The adoption of responsible investment among GSIFs also ties in to the role of these institutions as legitimacy seekers. Legitimacy usually refers to considering the actions of an entity as "desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions" (Suchman 1995, 574). It is embedded in social systems that make the purposes and goals of an institution justifiable to relevant societal audiences (Weber 1994). In democratic societies, the state owes its legitimacy to public participation in the decision making process (Clark and Monk 2010).

Unlike private investors such as mutual funds or investment banks, GSIFs are in fact beholden to particular governments whether it be at the nation-state or subnational level (Gray 2009). As a result, GSIFs are subject to the particular preferences, goals and objectives underlying decision making within their respective domestic authority structure, which is not insulated from the public judgment (Dixon and Monk 2012, Moravcsik 1997). Thus, the relation of an SWF or a public pension fund to its institutional environment such as the government or civil society is different from that of a corporation because it is a creation of the state. This could explain why public pension funds have been pioneers and the most activist in pension fund responsible investment (Cox and Schneider 2010, Sievanen, Rita and Scholtens 2012).

The view of public pension funds as legitimacy seeking actors has essentially been analysed through single case studies, mostly focusing on Norway's Government Pension Fund Global (GPFG). Indeed, the GPFG challenges boundaries between private investment and public responsibility for environmental and social standards (Backer 2009, Clark and Monk 2010). In

this regard, Clark and Monk (2010) look at the GPFG to argue that political support for the GPFG and its ethical standards are based upon the representation of public interests in investment decision making. Thus, the GPFGs "legitimacy is reliant upon the political process more so than its functionality if measured in terms of the risk adjusted rate of return" (Clark and Monk 2010:3).

A similar logic can be transposed to fund adoption of the UNPRI. International private initiatives such as the UNPRI are not under the helm of any state and can't resort to a sovereign authority as a source of rulemaking (Gray 2009). Nonetheless, public pension funds and sovereign wealth funds are in fact state mandated actors. As state creations that may be held accountable by the public, these investors are partly driven by their concern for social legitimacy (see Clark and Monk 2010). The social legitimacy of state-mandated investors may be likened to a corporation's social license to operate and it has become a necessity for these investors which are central actors in the global economy (Valor 2005).

Thus, on the whole, there is a gap in the literature assessing agent-centered motivations and structural context motivations to the likelihood of adopting responsible investment. Some theoretical propositions (e.g.: universal owner, legitimacy seeking) have been advanced but there has been a lack of empirical analysis linking these propositions to large samples of evidence. Where empirical analyses have been performed, it was often restricted to OECD markets (Sievanen, Rita and Scholtens 2012), did not distinguish between private and public investors (Bianchi, Drew and Walk 2010), did not explicitly consider the differences among SWFs and public pension funds and did not go beyond a binary segmentation of funds with regards to responsible investment practices (Bianchi, Drew and Walk 2010). In addition, there has been no attempt to link structural factors in the fund's environment to its likelihood of adopting

responsible investment. This thesis sets out to bridge this gap in the literature through hypotheses derived from theoretical propositions which will enable us to assess which factors, among agent-centered or structure-centered explanations, enable us to understand the conditions under which GSIFs are likely to adopt responsible investment policies.

4. Hypothesis Development

The hypotheses developed below draw on the literature review, which distinguished between agent-centered and structure-centered motivations for investors adopting responsible investment. Furthermore, and are guided by the thesis' research questions: firstly, why have adoption rates of responsible investment policies by GSIFs varied across and within jurisdictions? Secondly, what factors have shaped GSIFs perception about the legitimating value of responsible investment? Below each hypothesis, I discuss the methods utilised in order to obtain the operationalization of each dependent variables that will figure in the quantitative analysis for which more discussion is provided in the next chapter.

4.1 Agent-centered hypotheses

The first proposition originates from the agent-centered view of GSIFs as rational agents who will adopt responsible investment as a result of their universal owner status which stipulates that investors should consider ESG issues on the basis of higher risk adjusted return over the long run. According to this view, universal owners, categorised as such according to their size and diversified portfolios, own a representative sample of the market and thus have a rational interest in minimizing corporate behaviours that generate negative externalities (Hawley, Kamath and Williams 2009). Accordingly, I derive the following hypothesis linking investor size to the likelihood of being a responsible investor:

H1: The likelihood that a GSIF will adopt a responsible investment policy is positively related to the size of its AUM

The size of assets under management in billions of US dollars (*aum*) of each fund was taken from sources ranging from official websites, the SWF Institute along with Pensions &

Investments/Towers Watson index on the top 300 pension funds in the world. Furthermore, a logarithmic variable for AUM (*logaum*) was created in order to assess whether the propensity of investor to engage in responsible investment increases at a diminishing rate above a certain threshold of assets under management.

Secondly, the agent-centered explanations for the adoption of responsible investment also enable us to formulate a hypothesis that differentiates among two large types of GSIFs: public pension funds and sovereign wealth funds. The liability structure of pension plans (disbursements are made to plan beneficiaries) makes them more exposed to the public eye than SWFs that do not have direct liabilities to the population. In addition, risk management is more important at pension plans than SWFs, because pension entitlements, in the case of the former, are reliant upon fund performance (Clark and Knight 2009). This factor could translate into increased consideration for a risk-based approach to ESG. Thus, I advance the following hypothesis:

H2: The liability structure of public pension funds makes them more likely to adopt responsible investment policies than SWFs.

In order to test this proposition, I enter a dummy variable (*swf1*), 1 for sovereign wealth funds, 0 for public pension funds.

4.2 Structure-related hypotheses

The agent-centered hypotheses make abstraction of the impact of the structural context in which the GSIF is located. Drawing on comparative political economy, the literature has found that the national institutional context is a key variable in the prevalence and type of CSR and responsible investing (Gjolberg 2009 ab, Kinderman 2009, Scholtens and Sievanen 2012,

Sandberg, et al. 2009). To the extent that institutional investors are tied to governments, they must also operate under an imperative of legitimacy in the eyes of the citizenry. Wright (2006) found that societal contexts with traditions of acknowledging the relevance of environmental and social issues in public policy and corporate practice increases the likelihood that banks will adopt the Equator Principles, a private governance schemes whereby banks commit to the review of environmental and social impact in the projects they agree to finance. Furthermore, countries with high CSR scores are found to share several political-economic features such as extensive social and environmental public policies (Gjolberg 2009). Since GSIFs all share a more or less proximate rapport to the state, pressures for strong social and environmental public policies may also translate into pressures for the GSIF to consider sustainability aspects in its investments. Accordingly, I derive the following hypothesis:

H3: GSIFs are more likely to adopt responsible investment policies in institutional contexts where extensive social and environmental public policies have been implemented.

This third explanatory variable is constructed using the 2012 Environmental Performance Index (*EPI*) developed jointly by the Yale University Center for Environmental Law & Policy and the Columbia University's Center for International Earth Science Information Network. The index ranks countries "on performance indicators tracked across policy categories that cover both environmental public health and ecosystem vitality" (Yale University 2012). In order to account for the large number of US Public Pension funds in the sample (see section on *Data and methods*) and the impact of individual state considerations for sustainability, I also use a US state-level index on environmental performance created by Forbes magazine (Wingfield and Marcus 2007). This index was chosen over others such as the GREEN or FREE indices because it is the most recent indicator on US State environmental performance and it uses measures

comparable to those found in the EPI: carbon footprint, air quality, water quality, hazardous waste management, policy initiatives and energy consumption (Konisky and Woods 2012). The variable, which harmonises national level environmental performance with US state level performance (*epi*), uses the Forbes index to weigh US state performance relative to other countries. In this measure, the best US state (Oregon) score is weighed such that it equals the EPI score of the best OECD country (Switzerland). For the lowest ranking US states (Indiana and Alabama), the same number of points is deduced as the number of points that are added for the best US state. Because this measure has serious limits in terms of validity, I also tested the data using EPI national scores for all US funds.

In institutional contexts where firms are highly exposed to public criticism ranging from the media to NGOs, these movements have the power to affect corporate reputation (SustainAbility; UNEP 2001). Indeed, in societal contexts where there is strong exposure to media or NGO criticism, firms are found to make more efforts with respect to CSR (Gjolberg 2009). Societal structures that are tolerant of public criticism will favour the involvement of civil society in public debates. The involvement of civil society in the public policy process is for instance identified as an element that led the Norway's GPFG to adopt its innovative responsible investment mandate (Bengtsson 2008). This enabled the GSIF to legitimate itself and uphold its reputation as an institution that is in tune with Norwegians' values (Clark and Monk 2010). Therefore, I submit this structural context proposition to empirical scrutiny with the following hypothesis:

H4: GSIFs are more likely to adopt responsible investment policies in institutional contexts where civil society has a strong involvement over public decision-making

I operationalize this proposition using the 2011 Voice and Accountability index from the World Bank Governance Indicators. The Voice and Accountability indicator (*voice&account*) "reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media" (Kaufmann, Kraay and Mastruzzi 2010, 4). The indicator is based on several hundred variables "obtained from 31 different data sources, capturing governance perceptions as reported by survey respondents, non-governmental organisations, commercial business information providers, and public sector organizations worldwide" (Kaufmann, Kraay and Mastruzzi 2010, 2). The estimate of governance ranges from a score of -2.5 (weak) to 2.5 (strong).

The number of funds that have already adopted RI policies in the same jurisdiction as the GSIF is also related to structural setting. A GSIF evolving in a setting where numerous other asset managers (public and/or private) are responsible investors may generate a reaction from the GSIF who might be concerned about lagging behind non-GSIF investors and thereby, lose part of its legitimacy toward the citizenry and their values given its embedded relation to the state. Indeed, Wright and Rwambizambuga (2006) suggested that institutional contexts where environmental and social responsibility affect corporate reputation increase the likelihood that banks will adopt a voluntary initiative on environmental and social standards for project finance. Thus, if the same pressure applies for funds and responsible investment, it can be expected that GSIFs are more likely to adopt principles that are at least as strong as those adopted by private institutions. Therefore, I expect the following:

H5: GSIFs are more likely to adopt responsible investment policies in institutional contexts where non-GSIF asset owners have already adopted such principles.

I operationalize this hypothesis by calculating the number of asset owner UNPRI signatories (excluding the GSIF being observed) in the country where the fund is based. This indicator (*prisign*) however needs to be interpreted cautiously because of the direction of causality; a GSIF could have driven smaller asset owners to sign on to the UNPRI thus following the lead of the GSIF. Alternatively, it could be that UNPRI signatory asset owning institutions based in a specific country increased awareness and pressure on the country's GSIF to follow suit.

The final structure related hypothesis relates to country wealth. I will hypothesise the expected relationship between country wealth and the likelihood that a country's GSIF will adopt responsible investment. Attempts at linking responsible investment to country wealth have been very limited in the empirical literature, notably because many of the studies linking RI to structural factors look at a small sample of evidence, generally from OECD countries. I hypothesise that GSIFs evolving in richer countries will have more means to invest resources into responsible investment and into contracting the adequate expertise to roll out such an initiative. Therefore, the following hypothesis is formulated:

H6: GSIFs evolving in richer countries are more likely to adopt responsible investment policies.

GDP per capita is considered both linearly (*gdpcap*) and squared (*sqgdpcap*). The GDP per capita data, gathered from the International Energy Agencies' database, is for the year 2009 and is measured in purchasing power parity adjusted US dollars. GDP per capita could have an impact on the dependent variable because richer countries generally have more means at their disposal to uphold strong environmental and social standards, which in turn may translate into a greater willingness to adopt responsible investment criteria. The squared term will demonstrate

whether a bell shaped or U-shaped relationship exists between country wealth and likelihood of adopting RI.

4.3 Residual explanations

I also test whether country population size has an impact on the likelihood that a GSIF will adopt RI policies. Smaller populations result in a closer contacts between the citizenry and the government, and by extension, the GSIF. Thus, the implied relationship is that a smaller population increases the likelihood that citizens will demand that the state looks after their environmental and social well-being. This proposition is derived from a theory formulated by Jean-Jacques Rousseau, who wrote: "Almost all small states, republics and monarchies alike, prosper, simply because they are small, because all their citizens know each other and keep an eye on each other, and because their rulers can see for themselves the harm that is being done and the good that is theirs to do and can look on as their orders are being executed" (Rose 2006, 6). Montesquieu also hypothesised a similar relationship. He wrote: "In a large republic, the common good is sacrificed to a thousand considerations; it is subordinated to various exceptions; it depends on accidents. In a small republic, the public good is more strongly felt, better known, and closer to each citizen; abuses are less extensive, and consequently less protected." (Rose 2006, 7)

The hypothesised relationship has been tested on a country's institutional quality by Rose (2006). Although no relationship was found in that context, it is tested here based on the theoretical grounds presented above.

H7: GSIFs evolving in smaller countries are more likely to adopt responsible investment policies.

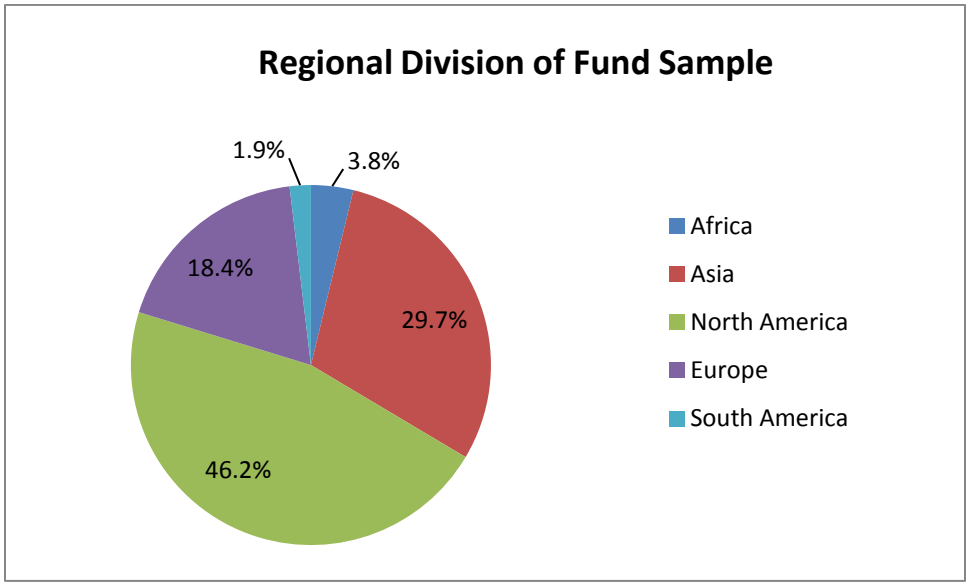
Population is assessed linearly (*pop*) and squared *(sqpop).* The population measurements are from 2009 and they are taken from the International Energy Agency's website database.

Finally, I add a dummy variable (*us1*) to determine the impact which US funds have on the model given that they make up 37% of the sample observations (59 out of 158).

5. Methodology and data

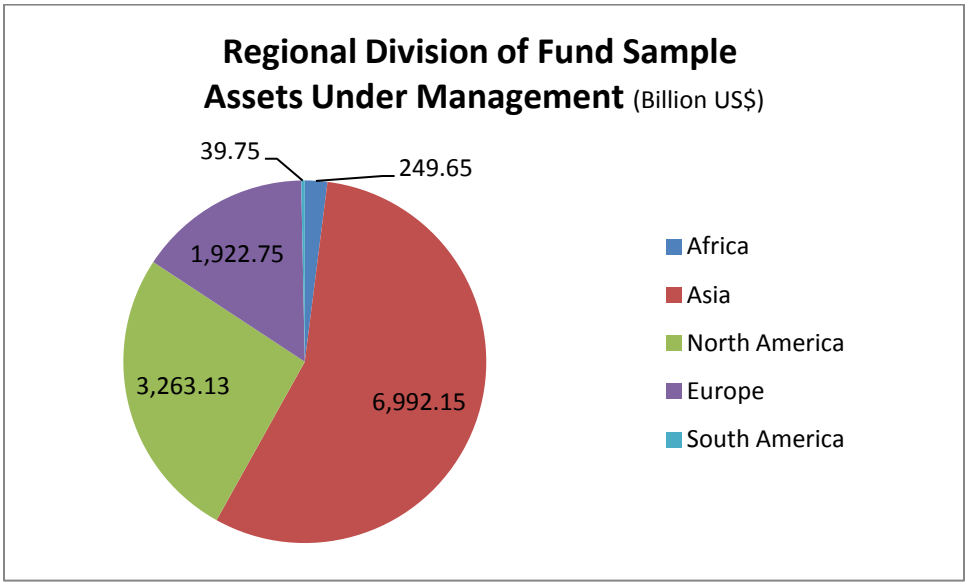
To investigate the hypotheses developed in the last section, I compare the adoption rates of responsible investment policies of 158 GSIFs across 47 countries. The concept of GSIF is a broadly encompassing definition of investors with ties to the state. This class of financial actors includes investors such as the CPPIB that manages monies on behalf of the Canada Pension Plan so that the latter can pay benefits to Canadian citizens, sovereign wealth funds such as the China Investment Corporation, sovereign pension reserve funds such as Australia's Future Fund all the way to sub-state public employee retirement funds such as Ontario's Teachers Pension Plan (OTPP). To be included in this sample, GSIFs must invest a portion of their portfolio in equities, as the current concept of responsible investment applies principally to this class of assets. This sample includes countries at different levels of development, and in all continents (see *annex 1* for the list of selected funds).

Chart 2:



Source: Author's calculations

Chart 3:



Source: Author's calculations

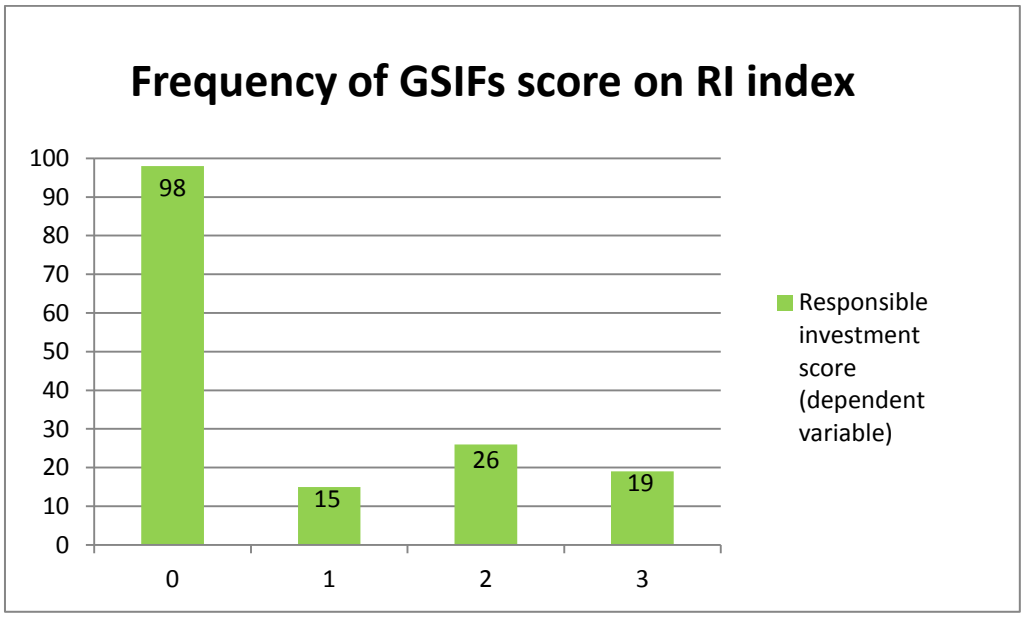
The selection of the observations has been as inclusive as can be in order to reduce the likelihood of selection bias and of having too many explanatory variables for too few observations. The sample includes 48 SWFs established before 2012 with assets under management above $1B and investment in equities (public or private), along with the world's 110 largest public pension funds. Data on the largest pension funds was obtained from the Pensions & Investment/ Towers Watson 300 Analysis (Towers Watson 2012). The sample selected enables a divide between two groups on the basis of whether or not the fund in question has, or does not have a commitment to some form of responsible investment policy. The analysis seeks to demonstrate that a fund's choice with respect to a responsible investment policy is related to the hypothesized agent-related or structural factors.

The dependent variable measures a fund's disclosed commitment to responsible investment policies on a 4 level grading scale (*RIscore*). I use disclosure as a proxy for assessing the strength of responsible investment policies because it has been argued that investors who take

a genuine interest in responsible investment will likely ensure that their consideration of ESG would be accessible to the public at large (Bianchi, Drew and Walk 2010). Indeed, even the SWFs of less democratic regimes (e.g. China) or least developed countries (e.g. Angola) produce detailed annual reports of their SWFs operations.

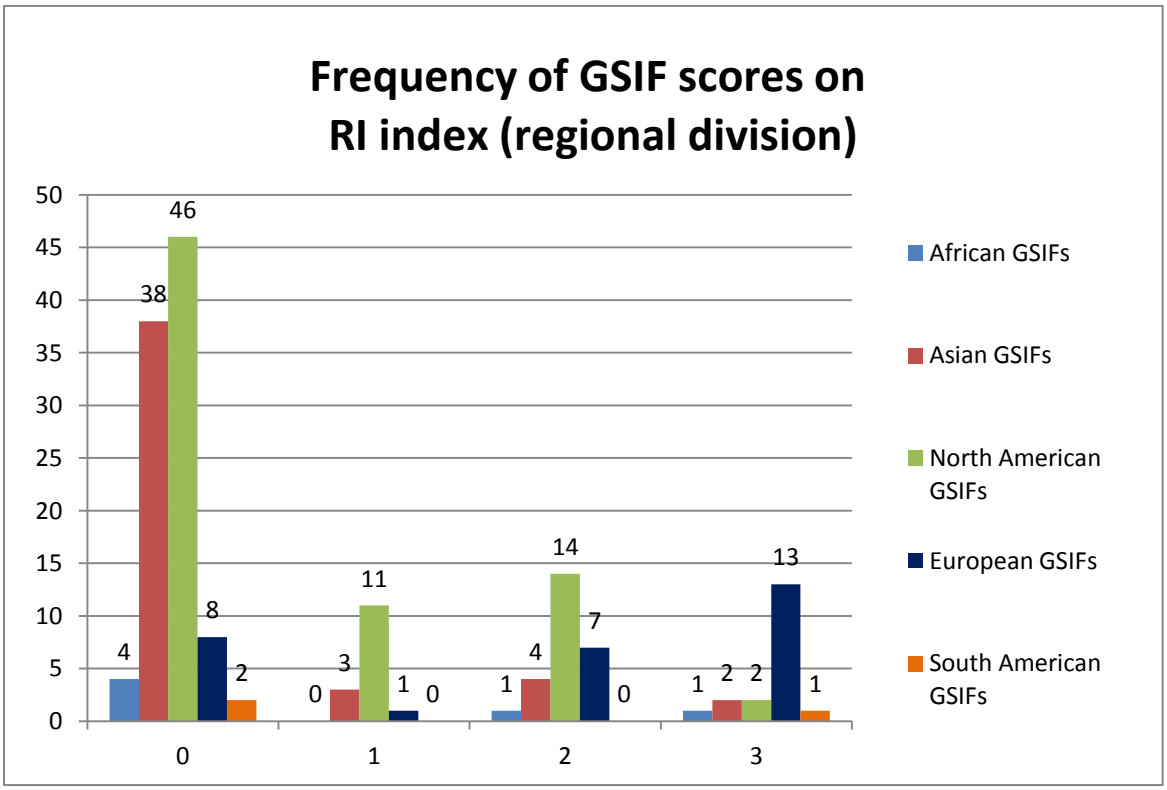
I have developed a grading scale that considers the extent of RI criteria internalization within investment activities: 0 means that investors do not disclose any consideration of environmental, social or governance factors at all within their investments or that they explicitly mention that they do not consider ESG issues into their investment policy. A score of 1 indicates that a GSIF states a vague and imprecise consideration for ESG issues without having a corporate engagement strategy or a proxy voting policy that signals their stand on ESG matters. A score of 2 means that the GSIF has an explicit policy stating how ESG issues are considered in their investment portfolio and that they have proxy voting guidelines signalling an active stance on ESG issues. Furthermore, these funds have a corporate engagement policy whereby they may enter into dialogue with corporate management in order to signal concerns over ESG issues to management and demand action. Finally, a score of 3 signifies that the GSIF has all the elements of a fund that has a score of 2 but they also have an explicit policy of exclusion of companies based on unsatisfactory performance on environmental and/or social factors or relevant international conventions that the country subscribes to (strong activism). The evidence for scoring individual funds was gathered through data that was compiled from publicly available sources such as legislative statutes, official websites and annual reports outlining investment mandates and policies (see *annex 1* for list of funds with responsible investment score).

Chart 4:



Source: Author's calculations

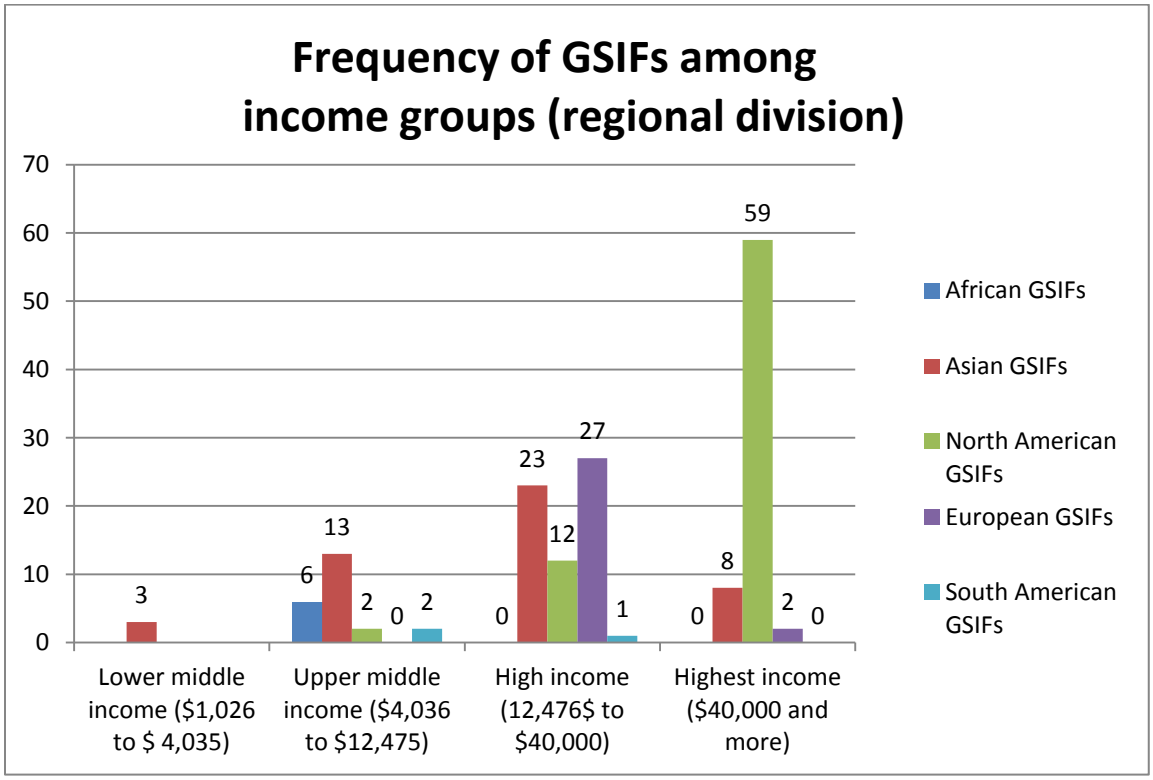
Chart 5:



Source: Author's calculations

In the sample of GSIFs selected for this analysis, approximately 38% of funds (60 funds) displayed a form of commitment to responsible investment (score of 1-2-3 on RI index). European and North American funds made up 80% of these observations. European funds were the most numerous funds with a score of 3; they made up for 68% of funds in this category. As for North American funds, they made up 61% of the funds that display a low to mild degree of commitment to responsible investment (i.e.: score of 1 and 2). Interestingly, 10 of the 11 funds with a score of 1 are from the US, with only 1 fund based in Canada. However, only 5 of the 14 funds with a score of 2 come from the US, with the remaining 9 being based in Canada. 9 (out of 47) Asian funds scored between 1 and 3 on the RI index. The UAE's Mubadala Development Company is the only UAE fund to display a form of commitment to environmental and social issues, through its participation in the Abu Dhabi Sustainability Group. Singapore's Temasek and Malaysia's Khazanah are the other two Asian funds to score a 1 on the RI index. Among the four Asian funds with a score of two, we find Korea's National Pension Fund and the Teacher's Pension Fund, Thailand's Government Pension Fund and Taiwan's Labour Pension Fund. Finally, the two Asian funds with a score of 3 are Australia's Future Fund and the New Zealand Superannuation Fund. Thus, funds coming from North America and Europe are the most likely to have a responsible investment policy. The independent variables selected will attempt to provide an explanation as to why we observe this pattern.

Chart 6:



Source: Author's calculations, World Bank

With regards to income group classifications, the 159 observations that compose the sample have a heavy bias toward high income countries. Using the Word Bank income group classifications, no GSIF in the sample originated from lowest income countries (income below $1,026), 3 funds were part of the lower middle income category ($1,026-$4,035), 23 funds were from upper middle income countries, 63 were part of the high income group ($12,476-$40,000) and 69 were part of an income group I created, the highest income group ($40,000 and more). This latter category was created so as to better segment the observations in the sample given that a significant gap exists between a GDP per capita of $12,476 and one above $40,000. We find the most regional diversity of funds in the high income group (23 Asian funds, 12 North

American funds and 27 European funds). The highest income group is dominated by US funds (59) and funds from Arab gulf countries.

The empirical analysis thus sets out to observe variation in the adoption of responsible investment policies through the agent and structure-related variables described above. The methods for performing such a comparison draw on insights from comparative politics which allows "a focus on analytical relationships among variables validated by social science, a focus that is modified by differences in the context in which we observe and measure those variables" (Kohli, et al. 1995, 11). The analysis will be performed using a large-n methodology. The primary focus of this particular method is on the relationship between independent and dependent variables at a global level of analysis, and where the extensive coverage of countries allows for stronger inferences (Landman 2003).

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
RIscore	158	.7848101	1.107828	0	3
Aum	158	78.91639	153.9806	1.2	1394.87
swf1	158	.3037975	.4613586	0	1
epi	156	57.05718	10.42465	32.94	76.69
voice&account	158	.6974683	.9442821	-1.84	1.63
prisign	158	12.36709	9.600527	0	34
pop	158	1.89e+08	2.61e+08	398920	1.34e+09
gdpcap	158	33597.08	13026.32	832.18	73196.38
us1	158	.3734177	.4852497	0	1

The regression model employed for my analysis is ordered probit regression. This enables me capture the impact of the 4 ordinal outcomes of the dependent variable, which take

on the values of 0, 1, 2 or 3. Probit models assume a cumulative standard distribution and it is typically estimated using a maximum likelihood technique. The maximum likelihood estimation technique selects the set of values of the model parameters that maximizes the likelihood function. The general formulation of the ordered probit equation is as follows:

$$y^* = x'\beta + \varepsilon$$

where y^* is the latent variable, x is a matrix of explanatory variables and β is the vector of equation parameters to be estimated. The ε term represents the error term in the proposed equation. The statistical analysis was performed using the oprobit function of STATA, the statistical software package.

There are several shortcomings associated with this research design. Firstly, the data selected assesses all of the world's SWFs with assets over $1B, but time and resource constraints have limited the sample size for pension funds to 110. This restriction results in an important domination of developed country pension funds in the data sample. Thus, the conclusions that will be reached from this study will emphasize the fact that they are probably more representative of the world's largest GSIFs. A second shortcoming is the relatively small sample size to perform a large-n analysis. Nonetheless, similar empirical methods have been employed for a sample size of 100 investors (Bianchi, Drew and Walk 2010). Thirdly, a higher level of abstraction discounts the particularity of each funds' unique governance structure. Quantitative fund governance indexes have been developed for SWFs and national public pension funds (see: Truman 2008, Souto & Musalem 2012) but the use of these indexes in this statistical analysis would have reduced the sample size too much to allow for the conduct of a rigorous statistical analysis. Finally, the data gathered is a snapshot that reflects the RI policies in effect between

June and November 2012. Therefore, the results will not offer a sense of the evolution of adoption of RI policies across countries and the indication of which independent variables had an effect on adoption across time.

6. Findings and Interpretation

The following section will report 6 models that test the hypotheses that were developed earlier. Model 1 is the best fit model using all the sample observations[19]. Model 2 builds on Model 1 by assessing the impact of fund type on the likelihood of adopting an RI policy thus testing hypothesis 2. The variable "*swf1*", a dummy variable, is used to capture this effect. Model 3 is equal to model one but it removes population outliers China and India that are the host country for 5 and 1 funds respectively. Model 4 uses Model 1 as a foundation and removes the "*prisign*" variable originating from hypothesis 5 given the uncertain direction of the causal link tied to the variable. This enables us to see if the Model can withstand the loss of this variable and maintain a relatively good fit. Model 5 uses Model 1 as a foundation and controls for the role of US funds in the sample by inserting the "*us1*" dummy variable. Finally, Model 6 removes US funds and the population variable from model 1 to see how my hypotheses fare without the population variable whose theoretical grounding is uncertain. US funds are removed from this model because of the variation of RI score within the sample of US funds. The results will be presented in the order in which the hypotheses were presented, i.e.: firstly, the agent-related variables and secondly, structure-related variables. Subsequently, the overall model fits will be commented on along with further tests that were performed to ensure the validity of the findings.

[19] In total, 156 observations were maintained in the model because there was no data on the EPI for two observations (Bahrein and Timor Leste-which both scored 0 on the RI index)

Table 2. Results of the regressions of the responsible investment scores using 6 estimating models						
Variable/ Model	Model 1[a]	Model 2	Model 3	Model 4	Model 5	Model 6
logaum	0.21882	0.25671	0.28127	0.21449	0.27275	0.13484
	(2.10)**	(2.35)**	(2.55)**	(2.10)**	(2.49)**	((1.13)
swf1		0.41893				
		((1.29)				
epi	0.01604	0.01925	0.0183	0.01304	0.0192	-0.00383
	(-1.24)	((1.45)	(-1.42)	((1.01)	((1.48)	(-0.2)
voice&account	0.97656	1.10438	1.11394	1.36485	1.09552	1.02187
	(3.64)***	(3.84)***	(4.05)***	(5.30)***	(3.97)***	(3.73)***
prisign	0.06877	0.07039	0.07019		0.06928	0.04554
	(3.29)***	(3.31)***	(3.21)***		(3.20)***	(2.31)**
gdpcap	-0.00013	-0.00014	-0.00016	-0.00011	-0.00017	-0.00007
	(-3.17)***	(-3.31)***	(-3.75)***	(-2.53)**	(-3.72)***	(-1.88)*
sqgdpcap	1.71E-09	1.77E-09	1.90E-09	1.47E-09	1.97E-09	1.15E-09
	(2.90)***	(3.01)***	(3.14)***	(2.28)**	(3.22)***	(1.98)**
pop	-8.46E-09	-8.12E-09	-2.61E-08	-5.15E-09	-1.79E-08	
	(-4.92)***	(-4.67)***	(-3.68)***	(-3.59)***	(-3.99)***	
sqpop	5.11E-18	4.86E-18	6.04E-17	2.40E-18	1.16E-17	
	(2.30)**	(2.21)**	(2.81)***	((1.02)	(2.57)**	
us1					2.28957	
					(2.32)**	
# of observations	156	156	150	156	156	97
Pseudo R^2	0.2851	0.2901	0.2941	0.2512	0.3024	0.2699

a: The z-statistics appear in parentheses below the coefficient estimate
* Significant at the 5% level, two tailed test
** Significant at the 2.5% level, two tailed test
***Significance at the 1% level, two tailed test

The first agent-related variable to be evaluated is the size of assets under management. The size of assets under management was tested both linearly (*aum*) and logarithmically (*logaum*) and it was in the latter case that statistical significance was found. The *logaum* variable's significance (2.5% level) along with its positive coefficient, as expected theoretically, suggests that as the AUM of GSIFs gets larger, the more likely they are to be responsible investors; however this effect levels off as GSIFs grow in size. In other words, more AUM results in more RI but this rate diminishes as the GSIFs become larger. This observation would tend to lend credence to the universal ownership hypothesis that stipulates that larger asset owners who own cross sections of the economy are more likely to be concerned about ESG

issues given that the negative environmental or social externalities of one of their holdings could negatively affect the returns of another portfolio holding over the long term. The *logaum* variable was significant at the 2.5% level consistently across 5 of the 6 models.

The second agent-related variable hypothesised to have an impact on the likelihood that a GSIF will adopt an RI policy was fund type. This hypothesis was tested through the inclusion of a dummy variable (*swf1*) that gives a score of 1 to SWFs and 0 to pension funds. The resulting coefficient estimate for *swf1* cannot be accepted as statistically significant event at the 10 percent significance level (though it is significant at a much weaker significance cut off of 20 percent) thus pointing to the weakness of the variable in predicting whether a GSIF is more likely to implement RI. Furthermore, the sign of the coefficient suggests that SWFs are more likely to have RI policies than public pension funds. This runs counter to the hypothesised relationship that suggested that public pensions would be more inclined to manage financial, ESG and other risks than SWFs given their more explicit liability structure and time horizon for producing returns. The lack of statistical significance across numerous tests with different variable combinations resulted in the exclusion of *swf1* from model 1, the core model, and by extension, subsequent models that used model 1 as their base.

We now turn to structure related variables. It was found that the impact of a country's environmental performance on the likelihood of GSIFs adopting RI policies was not statistically significant unlike what was expected under hypothesis 3. There was a lack of statistical significance whether environmental performance was assessed with all US state funds holding the fixed national EPI score or the weighted score that accounted for the strength of US state's individual environmental performance. It is this latter measure which is presented in the models.

This result suggests that a jurisdictions' overall environmental performance does not help in predicting whether this jurisdiction's GSIFs are more likely to commit to RI.

The voice and accountability indicator, used as a proxy to measure institutional contexts where civil society has a strong involvement over public decision-making, was found to be the most robust and most consistent variable across the different models. Indeed, the voice&account indicator remained statistically significant at the 1% level across all models. As expected in hypothesis 4, GSIFs based in countries with higher *voice&account* scores are more likely to have a higher score in terms the strength of their commitment to responsible investment. Governments and legislatures have a role in designing the boundaries in which GSIFs operate and GSIFs themselves need to retain legitimacy in the eyes of the citizenry, as they are institutions tied to the state. A higher voice and accountability signifies that a country has a more vibrant and empowered civil society influencing public policy process. Therefore, citizens have more avenues to voice their concerns over environmental and social issues. As a result, a high *voice&account* score increases the likelihood that a fund will adopt an RI policy.

The number of asset owner UNPRI signatories in the GSIFs' jurisdiction is also linked to the structure related factors that could drive the likelihood of adoption of RI criteria among GSIFs. In Model 1, the variable *prisign* shows significance at the 1% level and the sign of the coefficient is positive as expected. However, this variable needs to be interpreted cautiously given the unknown direction of causality between the independent (*prisign*) and dependent variable (*RIscore*). On the one hand, non-GSIF asset owner UNPRI signatories could increase the expectation that the GSIF should be at least as considerate of ESG issues as private funds given that it needs to legitimate itself in the eyes of a state's constituents. On the other hand, since the majority of the initial UNPRI signatories were GSIFs, it could be that GSIFs were the

first to implement responsible investment programs and that this has had a trickle-down effect on the private asset owning institutions of the state who wished to follow the lead of the government sponsored fund. In model 3, we test whether the model maintains predictive power by removing the variable for which causality is dubious: the number of asset owning UNPRI signatories in the country where the GSIF is based (*prisign*). The only variable to fall out of significance is *sqpop*; *gdpcap* and *sqgdpcap*'s significance reduces from the 1 percent to the 5 percent level.

The fifth variable to be tested, GDP per capita, relates to hypothesis 5 which stipulates that funds are more likely be responsible investors as country wealth increases. A significant relationship between income and RI score emerges, a relationship that is significant at the 1 percent level for both quadratic and linear terms in three out of six models including the core model (Model 1). The quadratic nature of the relationship implies that for GSIFs based in countries where GDP per capita is less than \$38,011[20], increases in the level of income are associated with lower RI scores for a country's GSIF. The minimum likelihood of obtaining higher RI scores is thus slightly above the GDP per capita sample mean of \$33,597. Once GDP per capita levels are higher than \$38,011, further increases in GDP are associated with increasing levels of RI for GSIFs. This result indicates that GSIFs that are part of the highest country income group (\$40,000 and more) are more likely to have RI policies as income increases. Nonetheless, this is not clearly illustrated in the observations. Indeed, the first country above the \$38,011 mark is the United States, whose 59 funds have a mild degree of adherence to responsible investment. Ten US funds had a score of 1, which means that their commitment to RI was vague and imprecise, and five US funds scored 2, thus meaning that they displayed a larger commitment to the consideration of ESG issues as evidenced by their proxy voting guidelines or

[20] Minimum likelihood figure resolved using Model 1 coefficients for gdpcap and sqgdpcap with the – b/2a formula.

their corporate engagement policies. Only one US fund, California's CalPERS, scored a 3 on the RI index[21]. This leaves the majority of US funds, 43 out of 59, with no commitment to RI. Moving up the income ladder, we find funds from Qatar, Kuwait, Brunei and Singapore; these had no commitment to RI. The only two funds from highest income countries to have the highest RI scores were from Luxembourg and Norway. The quadratic relationship stipulates that as country wealth increases, state-controlled investment funds are less likely to adopt RI until reaching the $38,000 mark, after which adherence to RI increases.

In model 4, we check for the effect of US funds by inserting a US fund dummy in the model. Testing for this effect is relevant given that US funds make up 37.3 percent of our fund sample (59 US funds out of 158 GSIFs). The US fund dummy variable is indeed significant at the 5 percent significance level and the coefficient is positive. This means that a fund based in the US increases the likelihood that it will consider RI in its investments. Nonetheless, as stated earlier, it appears that US funds are skewed toward lower levels of RI scores.

In model 6, US funds along with the population variable are removed from the analysis. Removing US funds reduces our sample size to 97 observations but it increases country diversity in relative terms. Population is removed because of the weaker theoretical justification for the variable. Removing the two population variables thus enables us to see how our core hypotheses fare statistically. In this version, it becomes easier to explain the quadratic relationship of country wealth with RI score. The income per capita level associated with the minimum likelihood at which a fund will adopt an RI policy now becomes $30,434. Indeed, the 6 Japanese funds, which

[21] CalPers is the most active American fund in terms of RI integration. It has recently built a separate portfolio where it buys additional shares of companies it engages on environmental, social and governance issues, a first in the world of responsible investment at large pension funds (Pensions and Investments online 2013)

are the first observations above this number, have no RI policy and subsequently, RI scores increase as country wealth increases, as the quadratic relationship would suggest.

The population variable displays an interesting pattern of significance across models. It is both in its linear and squared form. The negative coefficient of the *pop* variable (significant at the 1% level in model 1 to 5) suggests that GSIFs based out of smaller countries are more likely to enact responsible investment policies. This lends credence to my hypothesis which is derived from the theories of Montesquieu and Rousseau: a smaller population size results in a closer contacts between the citizenry and the government. Citizens have easier access to the authorities when it comes to voicing their expectations with regards to their social and environmental well being. The population level associated with the minimum likelihood that a GSIF will be a responsible investor is 827 million[22]. Only China and India have bigger populations than this figure and none of the funds based in these countries have RI policies. Given that only two funds are higher than the minimum likelihood mark of 827 million, we can mainly conclude that GSIFs RI scores diminish at a diminishing rate as population becomes larger. Nonetheless, the theoretical grounding for this observation remains relatively unclear and would need to be pursued further.

In model 3, we account for the population outliers represented by China and India (5 funds and 1 fund respectively) by removing them from the analysis to assess the impact on the overall model and on the population variable. The impact of this action on the overall model is quite modest as the pseudo R^2 coefficient remains relatively constant (0.2941) and there is no important modification in the values of the coefficients of the other variables. The minimum likelihood of having a high RI score becomes a population of 216 million and the only country

[22] Solved using –b/2a equation where a is the coefficient on the squared term of the variable and b is the coefficient on the linear term

above this mark is the United States. However, all US funds have the same population; therefore, this test cannot help us understand the variation of RI scores within US funds.

In addition to the insights provided by the analysis of individual variables, the pseudo R^2 levels yielded across the 6 models demonstrate the value of analysing the chosen variables together. Model 1, the core model, produced a pseudo R^2 value of 0.2851 and this was fairly consistent across the different models as it varied between 0.2512 (model 4) and 0.3024 (model 5). The chi-squared test statistic, which provides the probability that all coefficients estimated in the model are insignificant, is 0.000 across the different models. Again this result is encouraging because it demonstrates that the selected variables are indeed helpful in explaining at least part of the variation observed in the dependent variable.

Table3: Multicollinearity test

Variable	VIF	1/VIF
Voice&account	3.15	0.317850
prisign	2.58	0.387177
epi	1.55	0.645808
gdpcap	1.54	0.650926
pop	1.34	0.745730
logaum	1.09	0.914245
Mean VIF	1.87	

A multicollinearity test was conducted using the variance inflation factor (VIF) command of Stata in order to assess whether near perfect linear combinations existed between the independent variables. As a rule of thumb, a VIF value that is greater than 10 may merit further investigation as it could signal that some independent variables may be interacting and

potentially obscuring some of the interpretation of the coefficient estimates. In the case at hand, multicollinearity among the chosen variables is not a concern because the highest VIF value does not surpass 3.15, and are thus significantly below the mark of 10[23].

The sample of observations was also tested for heteroskedasticity, which arises if the variance of the regression error term is not constant over the sample, or is correlated with some variable. In regression analysis, basic models follow the assumption that standard errors have the same variance across all observation points. When there is heteroskedasticity, there is a risk of obtaining the wrong standard errors, and by extension, the wrong z statistics. In order to verify if heteroskedasticity could impact the statistical results, the *robust* command of Stata was run across all the models. As it turns out, changes in the coefficients, z scores and significance levels were not important enough to affect the findings reported earlier.

[23] The population and squared population variables along with the GDP/capita and GDP/capita squared variables would be highly correlated. Thus, they are omitted from the table.

Table 4: Model 1 test using robust standard errors command

Ordered probit regression — Number of obs = 156
Wald chi2(6) = .
Prob > chi2 = .
Log pseudolikelihood = -120.33671 — Pseudo R2 = 0.2851

RIscore	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
voice&accoun	.976564	.3325433	2.94	0.003	.3247911	1.628337
Pop	-8.46e-09	1.48e-09	-5.70	0.000	-1.14e-08	-5.55e-09
Sqpop	5.11e-18	1.37e-18	3.72	0.000	2.41e-18	7.80e-18
Prisign	.0687769	.0197205	3.49	0.000	.0301253	.1074284
Gdpcap	-.0001335	.0000533	-2.50	0.012	-.000238	-.000029
Sqgdpcap	1.71e-09	6.90e-10	2.48	0.013	3.61e-10	3.07e-09
Epi	.0160436	.0137631	1.17	0.244	-.0109317	.0430188
logaum	.218827	.1121004	1.95	0.051	-.0008858	.4385397
/cut1	.2566329	1.001117			-1.705521	2.218787
/cut2	.6953125	1.005507			-1.275445	2.66607
/cut3	1.807084	1.008667			-.1698675	3.784036

I also report the average of the marginal effects yielded by the baseline model, Model 1. The marginal effect is the derivative (i.e.: the slope) of the independent variable's coefficient value in the prediction function and it was computed using the *margins* command of Stata. One of the particularities about running the average marginal effects function with ordered probit regression is that the signs of the oprobit coefficients can be opposite from marginal effect signs (Greene and Zhang 1997) Indeed, the derivatives obtained in our analysis through the marginal effect function have opposite signs from the oprobit coefficients for each of our variables thus requiring some care in interpreting the derivatives in our model. The reason for this apparent inconsistency is that when a change in a dependent variable pushes the predicted value of the dependent variable across different dependent variable categories, it simultaneously increases the probability of one category and decreases the probability of another, the weighted effect of which may differ from that expected on the basis of the sign of the estimated coefficient.

Table 5: Average Marginal Effects

```
. margins, dydx(*)

Average marginal effects                        Number of obs   =        156
Model VCE    : OIM

Expression   : Pr(score2==0), predict()
dy/dx w.r.t. : va2011 pop sqpop aspri gdpcap sqgdpcap highepi logaumb
```

	dy/dx	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
voice&accoun	-.2343338	.0588682	-3.98	0.000	-.3497134	-.1189542
Pop	2.03e-09	3.67e-10	5.53	0.000	1.31e-09	2.75e-09
Sqpop	-1.23e-18	5.22e-19	-2.35	0.019	-2.25e-18	-2.02e-19
Prisign	-.0165035	.0049346	-3.34	0.001	-.0261752	-.0068318
Gdpcap	.000032	9.68e-06	3.31	0.001	.0000131	.000051
Sqgdpcap	-4.11e-10	1.37e-10	-3.00	0.003	-6.80e-10	-1.43e-10
Epi	-.0038498	.0030525	-1.26	0.207	-.0098326	.002133
logaum	-.0525092	.0245819	-2.14	0.033	-.1006889	-.0043294

Finally, the probit function was also utilised to perform a sensitivity test on the results. In order to satisfy the binary coding condition, I attributed a score of 1 to all the observations that have a score of 1-2-3 on the RI index and a score of 0 to the observations that had a 0 on the RI index utilised in the ordered probit analysis. As it turns out, the ordered probit tests yielded a better model fit than the probit model, thus lending additional validity to the coding methodology developed in this paper.

On the whole, the models presented above enable the formulation of novel claims linking theory to empirical evidence. In the comparison between the importance of agent related and structure related (political economic institutions) on the likelihood of a GSIF adopting a

responsible investment policy, both explanations receive empirical support. Our strongest observation across models is a strong civil society and free press with the ability to have input in terms of the decisions taken by governments (for example through public media campaigns, feeding input through appearances in front of legislative committees) increases the likelihood that a country's GSIFs will adopt policies that link environmental and social sustainability to their investment portfolios. This observation ties in to the importance for state-linked institutions to legitimate themselves in front of societal audiences or else face criticism due to the institution's inability to operate in tune with citizens' values. Indeed, if state institutions owe their legitimacy to public participation in the decision making process in democratic countries (Clark and Monk 2010), GSIFs adopt RI in reaction to this need. The *prisign* variable also lends credence to the importance for GSIFs to use responsible investment as a mechanism for legitimacy because if an increasing number of non-GSIF investors (e.g.: mutual funds, private pension plans) start to value RI, the GSIF could be portrayed as a laggard in terms of linking sustainable development to finance, which would again impact its legitimacy in front of societal audiences. I also find evidence of a U-shaped relationship between RI scores and two variables: GDP per capita and population. I have suggested that smaller population size results in a closer rapport between the citizenry and the government. Citizens can voice their expectations with regards to their social and environmental well being more easily because of this proximity to the authorities. Nonetheless, the theoretical grounding of the population variable's statistical significance remains to be entirely uncovered. As for the GDP per capita variable, the minimum likelihood of having a higher RIscore stands at $38,000. Given that an important cluster of funds with high levels of RI have a GDP per capita that is slightly inferior, but close to 38,000, this

may indicate that other features correlated with GDP per capita are leading to the adoption of RI. Indeed, a correlation observed in a multiple regression may not hold true as a simple correlation.

The regression analysis also lends credence to the hypotheses linked to agent-related characteristics. The universal owner hypothesis receives support in our analysis. More specifically, large funds with globally diversified portfolios and long term investment horizons would seem to have an enlightened interest in being responsible investing so as to reduce negative externalities at one end of their portfolio affecting other investments in their portfolio. Indeed, as funds get larger, they are more likely to become responsible investors, although this relationship happens at a diminishing rate. These results help establish that both structure and agency related factors are relevant in determining the likelihood that GSIFs will adopt responsible investment; both sets of explanations are not mutually exclusive. The likeliest funds to adopt RI thus seem to be those with the most AUM which are based in countries with a strong ability of civil society to pressure the policy process.

7. Conclusion and implications:

This paper examines the factors that increase the likelihood that a GSIF will adopt a responsible investment policy along with the factors that shape the legitimating value of such an initiative. The large-n, ordered probit statistical analysis was conducted by developing a database of 158 GSIFS across 47 countries spanning all continents. The main findings are as follows. Among the agent-centered hypothesis, I found that GSIFs with more AUM are more likely to have stronger RI policies; no association was found between liability structure and RI policies. Secondly, among structure-centered explanations, the strongest association that was found with the likelihood of adopting an RI policy was that countries where citizens and civil society have avenues to participate in the public policy process along with a free press are more likely to lead GSIFs to adopt RI policies. Indeed, the GSIFs of highest scoring countries on this index (Switzerland, Scandinavian countries, Australia, New Zealand, the Netherlands along with Canada) tend to have strong responsible investment policies. This result also suggests that these funds, that all share a degree of accountability to governments and by extension, citizens, may be adopting responsible investment policies as a way to legitimate themselves as institutions that are in tune with citizen's values and expectations. Nonetheless, the findings did not find a strong association between a country's environmental performance and the likelihood that the fund will adopt responsible investment. One of the challenges with the environmental performance measurement used in this thesis is that it considers more than the simple stringency of environmental regulation because data which solely focused on this matter was patchy at best. An association was also found between the GSIFs likelihood of adopting RI and the number of PRI signatories present in the country although the causality of this finding needs to be further explored. A U shaped relationship was also found between the strength of RI policies and

country wealth and population size. As a result, structure and agent related factors are both relevant in explaining the emergence of responsible investment; they should not be opposed as mutually exclusive in subsequent empirical analysis.

Some implications emanate from these observations. Given that large pools of money administered by GSIFs are emerging at a fast pace across the world, it is important to understand how this analysis can guide us in ensuring that the largest number of funds adopt responsible investment policies in order to solidify the link between sustainable development and global finance. Firstly, in the United States, where an important pool of the world's largest pension funds are concentrated, responsible investment has yet to make the headway it has in other Anglo-Saxon countries (e.g.: Australia, Canada, UK) or in Scandinavian countries (e.g: Denmark, Norway, Sweden). Given the relatively high score of the US on the voice and accountability indicator, structured and sustained pressure by citizens, NGOs and public sector employee unions on policymakers and funds could lead to more widespread adoption of RI policies.

A second implication relates to the emerging wave of sovereign wealth funds across the world. Since many of the funds that are emerging are based in resource rich developing countries (e.g.: Papua New Guinea, Mongolia, Angola, Gabon) where the tradition of public participation in the policy process and the freedom of the press may not be as far-reaching as in more consolidated democratic societies, the driving justification for these funds to adopt responsible investment may be by outlining that the size of their assets under management puts them in the category of universal owners and justifies a responsible investment policy on grounds of the business case. For example, the Mudala Development Company, an SWF based in the United Arab Emirates, a country with a low score on the voice and accountability indicator, joined the

Abu Dhabi Sustainability Group, a forum made up of the government and private companies aiming to adopt and report on environmental and social sustainability linked management practices. Cases like this suggest that funds may be convinced to consider responsible investment in settings where public participation in the policy process is low. Furthermore, although new funds are principally emerging in developing countries with lower income levels, the empirical results demonstrate that lower income countries can still implement responsible investing, as many poorer countries have large funds and therefore have the financial means to develop an expertise in responsible investment (e.g.: South Africa's GEPF, Brazil's FUNCEF).

There are certain limitations to the empirical analysis performed in this paper. Firstly, the sample size was relatively limited as a result of time constraints; the findings thus focus on a sample of the largest funds across the world. This resulted in a heavy bias toward US based GSIFs. Secondly, the results provide a snapshot of RI adoption rates in 2012; they do not explain the dynamics that could help uncovering the patterns of RI adoption over a 10 year period. This could be useful in explaining how the landscape of RI adoption is likely to move in years to come. Thirdly, the large-n analysis discounted fund specific factors, such as governance models; the findings would thus benefit from further studies making use of a mixed approach including quantitative and qualitative methods. Fourthly, the inclusion of a number of funds based in developing countries reduced the scope of data sources. For example, data on the state of socially responsible investors, available through foras such as Canada's Social Investment Organisation, or Europe's European Social Investment Forum is simply not available in countries like Timor-Leste or Angola. Finally these data sources may have existed in certain countries but were not accessible as a result of language barriers.

The empirical findings provided in this paper identify further research avenues in order to better understand what affects the likelihood that a GSIF will adopt responsible investment policies. First, the current analysis fails to adequately explain the significant variation in the rate of adherence to responsible investment by US funds; this puzzle could be explored. I tried to capture this dimension by building a US state level environmental performance variable to enable US state comparison with national comparisons of environmental performance for other funds, but this approach did not yield significant results. Further research could also assess whether there has been a neighbourhood effect in the spread of responsible investment across time. For example, it could be relevant to take data on the initial PRI signatories and assess whether the pattern of global RI adoption has expanded systematically over time to neighbouring countries. This could occur as a result of the bilateral exchanges and transactions that may exist in the governmental and financial spheres facilitating an exchange of best practices for GSIF investments. The impact of the private versus public nature of a fund in the likelihood of adopting responsible investment is also a relevant empirical question that has not been addressed by this paper or in past research. Finally, a mixed approach linking quantitative evidence to case-study analysis could better uncover the relationship that exists between fund governance and the likelihood of adopting RI.

In conclusion, this paper's novel findings established a link between theory and empirical evidence on the factors that increase the likelihood that government sponsored investment funds will enact policies that consider ESG issues within their investment portfolio. The findings provide some insights regarding the role of national political economic institutions along with fund specific factors that determine the likelihood that funds will be responsible investors. These novel findings were obtained through the development of a unique database of public pension

funds and sovereign wealth funds across the world along with a scoring methodology which enabled a finer degree of analysis than a dichotomous outcome. This thesis will thus serve in advancing the literature on the factors driving the adoption of responsible investment by GSIFs along with the larger topic of linking sustainable development to global finance.

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9. Annex 1: List of selected Public Pension Funds and Sovereign Wealth Funds

PUBLIC PENSION FUNDS								
Country	**AUM ($B)**	**Name of the fund**	**Score**	**Responsible investment policy**	**ESG voting**	**Engagement on ESG**	**Exclusions**	**UNPRI**
Brazil	25.55	FUNCEF	3	y	y	y	y	y
Canada	18.31	BC public service	2	y	y			y
Canada	16.57	BC teachers	2	y	y			y
Canada	27.15	BCIMC	2	y		y		y
Canada	15.13	Canada post	1	y				
Canada	158.67	CPPIB	2	y	y	y		y
Canada	39.54	Hospitals of Ontario	3	y	y	y		y
Canada	159.00	La Caisse de dépôt et placement du Québec	2	y	y	y		y
Canada	19.24	Local Authorities Pension Board	0					
Canada	54	OMERS	2	y	y	y		
Canada	15	OPSEU Pension trust	2	y	y	y		y
Canada	114.83	OTPP	2	y	y			y
Denmark	121.63	Atp	3	y		y	y	y
Denmark	21.03	Pension Danmark	3	y		y	y	y
Denmark	31.31	Sampension	2	y		y		y
Finland	18	Valtion Eläkerahasto	3	y	y	y	y	y
France	45	Fonds de réserve pour les retraites	2	y	y	y		y
Germany	13.14	Baden-Wurttembergische	0					

Germany	66.95	Bayerische versorgungskammer	2	y				y
Germany	12.82	Nordrheinische arzteversorgung	0					
India	58	Employees' provident	0					
Japan	1394.87	Government Pension Investment	0					
Japan	199.55	Local government officials	0					
Japan	27.46	National pension association	0					
Japan	104.99	National public serivce	0					
Japan	118.36	Pension fund association	0					
Japan	75.80	Public school employees	0					
Japan	11.58	Tokyo municipal government	0					
Kuwait	54	Public Institute for Social Security	0					
Luxemburg	11.79	Fonds de compensation et de sécurite sociale	3	y	y	y	y	
Malaysia	153.89	Employees Provident Fund	0					
Malaysia	24.86	Retirement fund-kwap	0					
Mexico	22.99	Pensionisste	0					
Netherlands	320.36	ABP	3	y	y	y	y	y
Netherlands	150.48	PFZW	3	y	y	y	y	y
Philippine	13	Government service insurance	0					
Portugal	11.49	FEFSS	0					
Singapore	159.79	Central provident fund	0					
South Africa	112.05	Government Employees Pension Fund	3	y	y	y		y

South Korea	313.98	National pension	2	y	y	y		y
South Korea	11.56	Teachers pension	2	y	y			y
Spain	85.25	Fondo de reserva seguridad	0					
Sweden	30.52	AP 1	3	y	y	y	y	y
Sweden	30.84	AP 2	3	y	y	y	y	y
Sweden	32.00	AP 3	3	y	y	y	y	y
Sweden	29.99	AP 4	3	y	y	y	y	y
Sweden	13.99	AP 7	3	y	y	y	y	y
Switzerland	35.22	Bundes pensionskasse	0					
Switzerland	22.15	Bvk des kantons Zurich	0					
Switzerland	14.14	City of Zurich	3	y	y	y	y	y
Switzerland	14.96	Pensionskasse Basel staats	0					
Taiwan	44	Labor Pension fund	2	y	y			
Taiwan	15.91	Public sector pension fund	0					
Thailand	16.34	Government Pension fund	2	y	y			y
UK	48	Royal Mail	2	y	y	y		y
UK	12.98	West Midlands metro	2	y		y		
UK	13.37	West Yorkshire	2	y		y		
US	25.34	Alabama retirement	0					
US	18.39	Alaska retirement	0					
US	27.80	Arizona state retirement	0					
US	11.71	Arkansas teachers	0					
US	139.53	California state teachers	2	y	y	y		y
US	220.64	CalPERS	3	y	y	y	y	y
US	22.40	Connecticut retirement	2	y	y	y		y
US	12.75	Federal reserve employees	0					

US	281.36	Federal retirement thrift	0					
US	120.84	Florida state board	0					
US	12.79	Georgia employees	0					
US	48	Georgia teachers	0					
US	10.58	Hawai employees	0					
US	10.98	Idaho public employees	0					
US	24.81	Illinois municipal	0					
US	13.21	Illinois stateboard	2	y	y			y
US	13.43	Illinois state universities	0					y
US	33.47	Illinois teachers	0					
US	25.71	Indiana public employees	0					
US	21.44	Iowa public employees	0					
US	11.87	Kansas public employees	0					
US	13.47	Kentucky retirement	0					
US	13.47	Kentucky teachers	0					
US	12.29	Louisiana teachers	0					
US	34.30	Maryland state retirement	2	y	y			y
US	46	Massachusetts PRIM	2	y	y			
US	53	Michigan retirement	1		y			
US	48	Minnesota state board of investment	1		y			
US	19.37	Mississippi employees	0					
US	26.73	Missouri public schools	0					
US	23.16	Nevada public employees	0					
US	68.49	New Jersey	0					
US	11.32	New Mexico public employees	0					
US	133.83	New York State Common	0					

US	12.07	New York State Deferred Compensation	0					
US	79.18	New York state teachers	1	y	y			
US	75.35	North Carolina	0					
US	11.00	Ohio police and fire	0					
US	70.40	Ohio public employees	0					
US	59.37	Ohio State Teachers	0					
US	56	Oregon public employees	1		y			
US	26.53	Pennsylvania employees	0					
US	47	Pennsylvania school employees	1					
US	24.88	South Carolina retirement	0					
US	35.19	Tennessee consolidated	0					
US	16.82	Texas county and district	0					
US	23.91	Texas employees	1	y	y			
US	17.85	Texas municipal retirement	0					
US	101.63	Texas Teachers	0					
US	21.87	Utah state retirement	0					
US	51	Virginia retirement	1		y			
US	63.08	Washington state board	0					
US	76.50	Wisconsin investment board	1	y		y		

SOVEREIGN WEALTH FUNDS										
Country	**AUM ($B)**	**Name of the fund**	**Score**	**Origin**	**Year of origin**	**Responsible investment policy**	**ESG voting**	**Engagement on ESG**	**Exclusions**	**UNPRI**
Angola	5.00	Fondo Soberano de Angola	0	Resource (r)-oil	2012					
Australia	78.20	Future Fund	3	non-commodity	2006	y	y	y	y	y
Azerbaijan	32.70	State oil fund of the republic of Azerbaijan	0	r-oil	1999					
Bahrein	9.10	Mumtalakat Holding Company	0	non commodity	1980					
Botswana	6.90	Pula Fund	0	r-diamonds and minerals	1994					
Brazil	11.30	Sovereign Fund of Brazil	0	non commodity	2008					
Brunei	30.00	Brunei Investment agency	0	r-oil	1983					
Canada	15.90	Alberta Heritage Savings Trust fund	2	r-oil	1976	y	y			y

China	5.00	China Africa Development Fund	0	non-commodity	2007					
China	482.00	China Investment Corporation	0	non commodity	2007					
China	134.50	National Social Security Fund	0	non commodity	2000					
China	567.90	Safe Investment Corporation	0	non commodity	1997					
China-HK	293.30	Hong Kong Monetary Authority Investment Portfolio	0	non-commodity	1993					
France	28.00	Strategic Investment Fund	2	non commodity	2008	y	y	y		y
Iran	40.00	Oil Stabilisation Fund	0	r-oil	1999					
Ireland	30.00	National Pensions Reserve Fund	2	non commodity	2001	y	y	y		y
Italy	1.40	Italian Strategic Fund	0	non-commodity	2011					
Kazakhstan	61.80	Kazakhstan National Fund	0	r-oil	2000					
Korea	43.00	Korean Investment corporation	0	non commodity	2005					
Kuwait	296.00	Kuwait Investment Authority	0	r-oil	1953					

Libya	65.00	Libya investment authority	0	r-oil	2006					
Malaysia	36.80	Khazanah Nasional	1	non-commodity	1993	y				
Mexico	6.00	Oil Revenue Stabilisation Fund	0	r-oil	2000					
New Zealand	13.50	New Zealand Superannuation Fund	3	non-commodity	2003	y	y	y	y	y
Norway	656.20	Government Pension Fund Global	3	r-oil	1990	y	y	y	y	
Oman	8.20	State General Reserve Fund	0	r-oil and gas	1980					
Qatar	85.00	Qatar Investment Authority	0	r-oil	2005					
Russia	149.70	National Wealth Fund	0	r-oil	2008					
Saudi Arabia	532.80	Saudi Arabian Monetary Agency	0	r-oil						
Singapore	247.50	Government Investment Corporation of Singapore (GIC)	0	non commodity	1981					
Singapore	198.00	Temasek Holdings	1	non commodity	1974	y				
South Africa	4.00	Royal Bafokeng Holdings	2	r-mining	2006	y		y	y	
Timor Leste	11.10	Petroleum fund of Timor Leste	0	r-oil and gas	2005					

Triniad and Tobago	2.90	Heritage and stabilisation fund	0	r-oil	2000					
UAE	627.00	Abu Dhabi Investment Authority	0	r-oil	1976					
UAE	13.00	Dubai International Capital	0	r-oil	2004					
UAE	65.30	International Petroleum Investment Company	0	r-oil	1984					
UAE	70.00	Investment Corporation of Dubai	0	r-oil	2006					
UAE	9.00	Istithmar World	0	r-oil	2003					
UAE	53.10	Mubadala development company	1	r-oil	2002	y		y		
UAE	1.20	RAK Investment Authority	0	r-oil	2005					
US	2.50	Alabama Trust Fund	1	r-oil and gas	1986	y				
US	40.30	Alaska Permanent fund	0	r-oil	1976					
US	14.30	New Mexico State Investment Council	0	non commodity	1958					
US	25.50	Texas-Permanent School Fund	0	r-oil	1854					

US	13.10	Texas-Permanent University Fund	0	r-oil	1876					
US	5.60	Wyoming-Permanent Wyoming Mineral Trust Fund	1	r-minerals	1974	y				