Nijmegen School of Management
Department of Economics and Business Economics
Master's Thesis Economics (MAN-MTHEC)

Socially Responsible Institutions and Corporate Social Responsibility

By Pim van Gilst (s1028328)

Nijmegen, 30 June 2024

Program: Master's Program in Economics
Specialisation: Financial Economics
Supervisor: dr. L.M. Metzger (Laura)

Radboud Universiteit

Abstract

Socially Responsible Investing (SRI) has become a part of mainstream investment decision making. However, while their goal is to enable the green economic transition and pressure management of the companies in which they invest to improved CSR-performance, little is known about their actual impact on those social and environmental parameters. This study is an attempt to provide more insight into the relationship between socially responsible investors and CSR-performance by examining the question whether *socially responsible institutional investors influence the CSR-performance of portfolio companies*? Using a unique manually constructed dataset of 1,629 European listed companies with 13,382 unique institutional investors this study answers the question by analyzing the data using Fixed Effects models with robust standard errors. Endogeneity and causality concerns plague this line of research. To mitigate this, an instrumental variable approach is applied among other robustness tests. While no causal relationship is claimed this study finds support for a positive relationship between socially responsible investors and CSR-performance of the companies in which they invest.

Content

1 Introduction

Socially Responsible Investing (SRI) has become a part of mainstream investment decision making (Uzoski, 2020). In fact, SRI exploded in popularity over the past decades with $35 trillion in global assets in 2020 and is expected to grow to $50 trillion in assets under management globally by 2025 (GSIA et al., 2022). To meet the increasing demand of clients for sustainable investments an increasing number of institutional investors have committed to including environmental, social and governance (ESG) factors in their capital allocation process (Chen et al., 2020). One example is the Netherlands largest pension fund "Stichting Pensioenfonds ABP" who announced in 2021 that they would stop investing in producers of fossil fuels due to reports of the International Energy Agency (IEA) and the United Nations Climate Panel (IPCC) (Stichting Pensioenfonds ABP, 2021), resulting in a 15 billion euro divestment. Whether such sustainable investment strategies have a positive impact on the social and environmental impact of a company has not yet been agreed upon in the literature (Kölbel et al., 2020).

The commonly stated goal of socially responsible investors is to enable the green economic transition (Hartzmark & Shue, 2023). Finding its origin in ethical investing where investors avoided companies involved in the production of alcohol, tobacco, weapons and gambling (Renneboog et al., 2008), SRI developed into an investment strategy for investors who prefer affecting company Corporate Social Responsibility (CSR) performance (Sparkes & Crowton, 2004). At the same time, companies have realized the value of CSR and its importance to be competitive in current markets (Kiron, 2012). Expectations are high for sustainable investing, yet little is known about the actual impact socially responsible investors have on social and environmental parameters (Kölbel et al., 2020).

Despite the increase in popularity of SRI for investors and their promise of impact, it remains unclear whether socially responsible investors can induce any real consequences for CSR behavior (Oehmke & Opp, 2019; Heath et al., 2023). To that end, this study aims to provide a better understanding of the link between socially responsible investors and CSR-performance by examining the following question: *Do socially responsible institutional investors influence the CSR-performance of portfolio companies*?

Ownership of the listed companies has for the most part changed from being owned directly by individuals to being owned by large institutions (Klettner, 2021). This study focusses on institutional ownership for several reasons. Firstly, literature assumes that institutions are better able to influence company behavior because, compared to individual investors, they have more experience and resources (Velte, 2022). Secondly, most sustainable investors that have signed the United Nations Principles for Responsible Investment (UN PRI) or similar networks like Ceres Investor Network on Climate Risk and Sustainability are institutional investors (Kordsachia et al., 2021). This implies that institutional investors demand more information on CSR practices compared to non-institutional investors and are more likely to pressure management to improve CSR-performance (Velte, 2022). Thirdly, the special stewardship function of institutions increases the likelihood of institutional investors to be socially responsible investors because they invest money on behalf of others (Velte, 2022, Klettner, 2021). Finally, today institutions own the bulk of the world's equity capital and can thus exert greater influence and power compared to other shareholders, and can be expected to be aware of stakeholder concerns surrounding sustainability (Chen et al., 2020; Dyck et al., 2019; Glossner, 2019; Velte, 2022). These general assumptions made throughout literature provide a basic hypothesis to justify this research: *Institutional ownership is positively related to CSR-performance*.

Following Dyck et al. (2019), Gibson et al. (2019), Glossner (2019), Kordsachia et al. (2021) and Velte (2022) socially responsible institutional investors are identified by their signatory status to the United Nations Principles for Responsible Investment (UN PRI). Signatories commit themselves, among other principles to active ownership and incorporating ESG issues in their investment decisions (UN PRI, 2006).

According to Hirschman (1970) there are two ways for institutional investors to influence company behavior: exit and voice strategies. A 'voice' strategy, or shareholder activism, requires direct interaction with company management and is thus dominantly explained by agency theory (Velte, 2022). Institutional investors fulfil an important monitoring role in corporate governance and have been found to be active owners who enforce good corporate governance and influence corporate behavior (Klettner, 2021; Velte, 2022). Generally resulting in a positive impact on CSR performance (Barkó et al., 2021; Kölbel et al., 2020). The second hypothesis this study examines is therefore: *Socially responsible institutional ownership is positively related to CSR-performance*.

However, greenwashing remains a real possibility. Heath et al. (2023) for example does not find any significant relationship between socially responsible investors and CSR-performance.

Additionally, Brandon et al. (2022), find no significant relationship between UN PRI signatories and improved CSR-performance in the United States (U.S.).

An 'exit' strategy that socially responsible institutional investors can employ is a more indirect mechanism. The theoretical models argue that socially responsible institutional investors can achieve such impact through selling their shares, lowering share prices to attract buyers and thus creating an increase in cost of capital for the company in the future (Pless, 2023; Heinkel et al., 2001; Beltratti, 2005; Van der Beck, 2023). In other words, by affecting the financial condition of a company, socially responsible investors are theoretically able to impact company behavior. Previous research has shown that financial conditions are an important part in the CSR performance of company (Hartzmark & Shue, 2023; Hong et al., 2012; Xu & Kim, 2021) and that socially responsible investors have been able to affect these financial conditions (Nguyen et al., 2024; Pless, 2023; Hong et al., 2012). Therefore the final hypothesis of this study is that: *Socially responsible institutional ownership is positively related to CSR-performance through the financial condition of a company.*

To empirically explore the hypotheses this study applies a Fixed Effects model with robust standard errors to address potential heteroskedasticity concerns following (Glossner, 2019; Heath et al., 2023; Dyck et al., 2019). A unique dataset is used consisting of 1,629 European listed companies. Using company-year fixed effects captures any time-invariant company characteristics. Inherent to this research (Kordsachia et al., 2021) this study suffers from major endogeneity and causality concerns. In addition to the properties of the fixed effects model, the inclusion of disaggregate measures of CSR-performance, the comparison with non-socially responsible institutional counterparts, and the disaggregation of institutional investors into different types, further attempts are made to mitigate these concerns and provide robustness. By employing an instrumental variable analysis on the main hypothesis of interest (hypothesis two), the results can be interpreted with more certainty. However, due to these prominent concerns this study does not claim to measure any causal relationships.

The study finds significant evidence for a positive relationship between socially responsible investors and CSR-performance of European companies by providing results that support the first two hypotheses. These findings suggest that socially responsible investors do live up their promise of actively engaging with management to improve CSR-performance. The study does not find any support for the third hypothesis. Suggesting that socially responsible institutional investors are unable to affect financial conditions enough to affect CSR-performance.

This study contributes to the literature in several ways. Firstly, it provides insights into a market that is under-researched. Most studies surrounding the influence of institutional investors who practice social responsibility through SRI strategies focusses exclusively on US companies (Kordsachia et al., 2021). This study focusses on European listed companies because in Europe sustainable investing is more broadly practiced, environmental norms of the institutions investor base are stronger (Dyck et al., 2019) and Europe has more support and impulses in the legislative agenda (Folque et al., 2021; Kordsachia et al., 2021). Secondly, the overwhelming majority of the financial literature uses Environmental, Social, and Governance (ESG) or CSR related measures whilst very few studies analyse ESG or CSR measures as the dependent variable. Therefore, there is little known about what drives changes in a company's CSR-performance (Kölbel et al., 2020). In addition, this study contributes to the literature that investigates how institutional ownership affects CSR performance. To this date most studies looks into how CSR influences institutional ownership in a company and very few investigate how institutional ownership influences CSR performance (Dyck et al., 2019).

The remainder of this study is structured as follows. Section 2 discusses the concepts of SRI and CSR to provide a useful context and a theoretical background while discussing the literature. Section 3 describes the data and methods used to examine the hypotheses. Section 4 provides the results and analysis to mitigate endogeneity and causality concerns. Section 5 discusses the results, their implications, limitations and suggestions for future research. Finally, section 6 concludes the findings of this study.

2 Literature

2.1 Socially Responsible Investing & Corporate Social Responsibility Background

To understand the influence of socially responsible institutional investors on CSR-performance of companies it is important to understand what SRI and CSR entail. This section provides a short background on both.

Today Socially Responsible Investing (SRI) has become a mainstream form of investing. However, to date there does not exist one agreed upon definition of SRI (Martini, 2021; Sparkes & Crowton, 2004). SRI encompasses a range of activities such as (exclusionary, best-in-class, norms based) screening, sustainability themed investing, community investing, integration of ESG factors, corporate engagement and shareholder activism (Martini, 2021; Uzoski, 2020). It is important to confine the phenomenon of SRI because it has significantly changed over the years (Martini, 2021). A development that has fundamentally changed the ability of SRI to influence corporate social behavior (Sparkes & Crowton, 2004).

The foundation of SRI was laid down in the 1500s through the introduction of an investment strategy that involved the deliberately opting not to invest in companies that did not align with personal values, or ethical investing (Fulton et al., 2012). The exclusionary practice of avoiding companies involved in the production of alcohol, tobacco, weapons and gambling by religious movements (Renneboog et al., 2008) evolved to include corporate social and environmental behavior of companies in the 1960s (Fulton et al., 2012). Investors became more aware of the consequences of their investments due to a series of social campaigns like the anti-war movement (Renneboog et al., 2008) and started to prefer affecting companies' adoption of corporate social responsibility rather than keeping their portfolios clean (Sparkes & Crowton, 2004). During the 1990s and the 2000s investors started to incorporate Environmental, Social and Governance (ESG) factors into their investment decisions as well as the key development of best-in-class screening approaches. These developments resulted in in a new type of risk and return driven investor who adopts ESG factors: the socially responsible investor (Fulton et a., 2012). Pressure from this new type of investor, combined with legislative compulsion marked the start of large scale incorporation of SRI by institutional investors. Companies have to take note of their most powerful (institutional) investors, resulting in greater influence of SRI on the financial market and the economy as a whole (Sparkes & Crowton, 2004).

'SRI' and 'sustainable investing' are overarching terms used today to capture investment activities that take ESG factors into account (Fulton et al., 2012: Uzoski, 2020). In other words, socially responsible (SR) investors are investors who aim to promote socially and environmentally sound corporate behavior (Renneboog, 2008).

The awareness by investors of the consequences of their investments in the 1960s and the largescale adoption of SRI by institutional investors drove the widespread application of Corporate Social Responsibility (CSR) as stakeholders demanded more transparency in performance beyond the financial aspects (Fulton et al., 2012; Sparkes & Crowton, 2004). CSR refers to the idea that in addition to their economic and legal obligations, companies have a certain responsibility to society (Glossner, 2019). CSR includes a large number of subjects like corporate governance, employee relationships, customer relationships, environmental management, philanthropy, and community involvement (Fulton et al., 2012). Throughout the remainder of this study, CSR-performance refers to the performance of companies in these areas. Companies have realized the value of CSR and view sustainability as a necessary component to be competitive in the current market (Kiron, 2012). The problem of myopic managers reducing CSR-performance to increase short term profits and incurring costs now to improve stakeholder relations; generate long term financial benefits and reduce company risk still exists (Glossner, 2019; Bénabou & Tirole, 2009).

2.2 Theoretical Background

This section provides a theoretical background to the how and why of SR institutional investing and how it relates to SR institutional ownership.

Hirschman (1970) identified two main strategies for institutional investors to induce change in a company: exit and voice strategies. Whenever an institutional investor is dissatisfied with management, they may choose to employ an exit strategy and leave the company. On the other hand, the institutional investor might hold on to their investment and pressure management through active monitoring (voice strategy). The distinction between 'exit' and 'voice' strategies is made throughout the literature. These have transformed with time into 'screening practices' (reallocation of capital investments that do not align with investors criteria to investments that do) and 'shareholder activism' (direct engagement with company management) as the two main strategies of socially responsible investors (Kölbel et al., 2020; Marti et al., 2023).

Institutional investors who employ a voice strategy (engaging in shareholder activism) try to change company behaviour through direct interactions with company management. Agency theory and the monitoring function of institutional owners predominantly explain the relationship between institutional investors and CSR-performance (Velte, 2022). The principal-agent relationship between institutional investors and company management originates from the delegation of decision-making authority from the institutional owners to company management. The information asymmetry and conflicts of interest between them, resulting in moral hazards and self-serving actions, can only be resolved by implementing monitoring and incentive alignment-mechanisms (Kordsachia et al., 2021). Institutional investors represent a key monitoring tool as part of external corporate governance through (Kordsachia et al., 2021; Shleifer & Vishny, 1986; Velte, 2022). Classical agency theory argues that CSR-performance investments come at the expense of value positive net present value projects and thus destroys shareholder value (Jensen & Meckling, 1976). Compared to private investors, institutional investors have been found to behave as active owners. By engaging in shareholder activism, superior information acquisition skill and management monitoring, institutional investors enforce quality corporate governance and significantly influence strategic company decisions (Alda, 2019; Klettner, 2021; Velte, 2022). Institutional investors are predominantly active behind the scenes in negotiations with management to achieve their goals and not through public channels like shareholder proposals (McCahery et al., 2016; Velte, 2022; Barkó et al., 2021)

Assuming that institutional investors perform a key active monitoring role for company management and excel more in this role than other investors, as suggested by the principal-agent theory described above, it can be hypothesized that, in light of this study, institutional ownership has more influence on CSR-performance of a company than private investors would have. The assumption can be empirically verified by examining the following hypothesis:

H1: *Institutional ownership is positively related to CSR-performance.*

Building on the assumption that institutions are positively related to CSR-performance by influencing strategic company decisions, their unique characteristics may affect their incentives monitor and affect corporate decision-making practices (Kordsachia et al., 2021). While classical agency theory regards institutional investors as a homogenous group, recent literature suggests that institutions are in fact a heterogeneous group with different levels of monitoring quality of CSR-performance (Klettner, 2021; Chent et al., 2020; Kordsachia et al., 2021; Velte, 2022).

There are several motives for institutional investors to commit themselves to SRI and to improve a company's CSR-performance. Firstly, the number of individual capital providers that demand sustainability commitments have rapidly increased over the past years (Chen et al., 2020; Uzoski, 2020). Willing to forego financial performance, these investors derive utility by investing preference for social responsibility (Heinkel et al., 2001; Gollier & Pouget, 2014; Van der Beck, 2021). Secondly, as fund managers are commonly rewarded for increasing the value of assets under management, it is crucial for them to attract more fund flows (Brown et al., 1996). SRI commitments are proven to attract substantial fund flows that comes with the benefit of showing greater growth, more persistence, and less performance sensitivity (Chen et al., 2020). Thirdly, many institutional investors use risk management motives to explain SRI activities (Dyck et al., 2019). Supported by a growing body of literature that provides empirical evidence that ESG-related concerns form concrete sources of risk for investors (Martini, 2021), both companies and investors are realizing that climate change creates real risk that can threaten operational and financial performance (Pless, 2023). Institutional investors often hold positions for a longer period of time exposing them to potential negative externalities and increasing their incentive to push for improved CSR-performance (Chen et al., 2020; Dyck et al., 2019). Some socially responsible investors are motivated to incorporate ESG criteria in their investments to improve their returns and to lower their risk, other are motivated to genuinely contribute to sustainable development (Camilleri, 2020). Whatever the motive for sustainable investing, it is important to investigate the impact SR institutional investors have on a company's CSR performance (Heinkel et al., 2001).

Riedl and Smeets (2017) found that, when it comes to improving CSR-performance, social preferences and social signalling are more important than financial motives in guiding SRI decisions. A common method to identify SR institutional investors is through their signatory status to the UN PRI (Dyck et al., 2019; Gibson et al., 2019; Glossner, 2019; Kordsachia et al., 2021; Velte 2022). UN PRI signatories commit themselves to six principles with regards to sustainability to act in the best long-term interest of their beneficiaries (UN PRI, 2006):

1. Incorporate ESG issues into investment analysis and decision-making processes.
2. Be active owners and incorporating ESG issues into ownership policies and practices.
3. Seek appropriate disclosure on ESG issues by the entities in which they invest.
4. Promote acceptance and implementation of the principles within the investment industry.

5. Work together to enhance the effectiveness of signatories in implementing the principles.
6. Report on their activities and progress towards implementing the principles.

The growth of investor organizations such as the UN PRI provide evidence for shareholder activism to be an important mechanism to influence company behaviour (Dyck et al., 2019). The main goal of SR institutional investors is to pressure management into better CSR-performance to create a positive impact on the environment and on society (Marti et al., 2023). Signatories to the UN PRI are assumed to be intrinsically motivated to improve CSR-performance (Velte, 2022).

Further identification of heterogeneity among institutional investors can be made based on the nature of institutional investor types. Brickley et al. (1988) separates institutional investors into three different types, based on their sensitivity to pressure of a company's management to agree with their voice on controversial issues. *Pressure sensitive* institutional investors like insurance companies and banks, and non-bank trusts tend to be passive and gray due to conflicts of interest caused by business relations. *Pressure resistant* institutional investors that are more active in their monitoring are public pension funds, mutual funds, endowments, and foundations. Finally, there are *pressure indeterminant* institutions like private pension funds, brokerage houses, investment counsel firms, miscellaneous financial service firms, and unidentified institutions who reside somewhere in the middle between passive and active monitoring.

Based on the motives for institutional investors to engage in SRI and intrinsic motivations of UN PRI signatories to improve CSR-performance, this study assumes that SR institutional investors are active owners who engage in shareholder activism. Therefore, to empirically examine whether this assumption holds true for the SR institutional investors of European listed companies, the second hypothesis for this study is the following:

H2: *SR institutional ownership is positively related to CSR-performance*.

The possibility that SR institutional investors do not engage in shareholder activism to improve CSR-performance is a real possibility as engaging with portfolio companies and pushing for change in corporate behavior is likely to be much more expensive than pure portfolio selection (Heath et al., 2023). Their sustainability portfolio could simply be a mere product to capitalize on investor demand for fund flows (Chen et al., 2020). In that case these SR institutional investors would be either "greenwashing" or "impact washing" (Heath et al., 2023).

While there is strong evidence that shareholder activism is an effective mechanism for institutional investors to trigger improvements in CSR-performance (Kölbel et al., 2020), there is no consensus regarding the impact that SRI can make through screening strategies. Many SRI strategies are in fact a form of exclusionary screening practices (Heinkel et al., 2001; Uzoski, 2020), directing capital away from firms with a lower CSR performance (Hartzmark & Shue, 2023; Uzoski, 2020). No matter which screening strategy is applied, they all result in the exclusion of securities from the institutional investors investment universe (Barnea et al., 2005). Through standard asset pricing models, investor preferences for certain assets can influence asset prices (Fama & French, 2007). Investors who sell their shares of a company lower the share prices to attract buyers and thus create a situation for the company in which it faces higher cost of capital (Pless, 2023). There is a growing amount of research that shows that sustainable investors have already succeeded in raising the cost of capital for firms that are perceived unsustainable compared to firms that are perceived sustainable (Hartzmark & Shue, 2023; Chava, 2014).

It seems theoretically intuitive that screening practices, in which companies reallocate capital, impact a company’s CSR-activities. However, it poses a more fundamental question (Mørck et al., 1990): To what extent do the decisions of the SR institutional investors influence the real economy?

Using equilibrium models, theoretical studies have attempted to measure the influence of exclusionary screening practices on the CSR performance of companies (Beltratti, 2005; Heinkel et al., 2001). These theoretical models provide evidence for an imbalance in stock allocation between investor portfolio’s that is large enough to impact the cost of capital of these companies in the future and their investments in CSR (Beltratti, 2005; Heinkel et al., 2001). However, empirical evidence for the impact of screening practices is much less reliable because only parts of the mechanism have been studied separately, but not yet as a whole (Kölbel et al., 2020).

Van der Beck (2023) set out to answer the question how much prices must change in order to create impact. Proving that through buying pressure on overweighted shares, socially responsible investors have been successful in creating large enough price changes to make other investors rebalance their portfolio’s during the past five years. This result is supported by a case study on a sovereign wealth fund by Nguyen et al. (2004) who found that ESG related announcements negatively affect share prices, although short lived.

According to Pless (2023) the study by Berk and Van Binsbergen (2021) is one of the most comprehensive studies to date on the impact of socially responsible investors on cost of capital to change company activity. Berk and Van Binsbergen (2021) find that, according to their model, which uses current data, the impact on cost of capital is too small to meaningfully alter the investment decisions of a company. As one of the few studies that attempts to link sustainable investing to CSR-performance this research is part of why there is a lack of consensus about the effectiveness of screening practices today. According to Berk and Van Binsbergen (2021) investors should make up at least 80% of the investable wealth to result in a more than 1% change in the cost of capital for the market when using a divestment strategy.

According to Hartzmark and Shue (2023) the effectiveness of screening practices depends on a company's response to changing financial conditions. Only in the past few decades has there been a widespread application of research on the impact of financial conditions on CSR-performance. This most likely due to the lack of theoretical models that include financial constraint and the recent availability of micro data (Carreira & Silva, 2010). Adding to the strand of literature, Hong et al. (2012) investigate whether financial constraints drive CSR performance. Using two measures of corporate concerns and strengths in the context of ESG and a variety of measures for financial constraint, they show that firms who are less financially constrained have a better impact on social and environmental parameters. Establishing a causal link between firms that are less financially constrained and a firm's CSR-performance, they find that regardless of the motive for CSR, less financially constrained firms invest more in CSR-performance. This evidence is supported by Tian and Lin (2019) who provide evidence that under strong regulations, companies will keep investing more in CSR-performance while they face poor financial conditions. Xu and Kim (2021) confirm that firms who are more financially constrained decrease their CSR-performance by increasing their emissions, showing that firms actively trade off the costs of improving CSR performance against potential legal liabilities. Campbell et al. (2011) provide evidence that financial constraints affect real economic activity by investigating the negative shocks to internal financing constraints.

While most studies confirm the positive effect of good financial conditions on the CSR-performance of companies, Hartzmark and Shue (2023) provide more grim evidence on how SR institutional investors are pursuing better CSR-performance. By investigating the difference in impact elasticity between the CSR-performance of companies classified as "brown" and "green" they find that the sustainable investment movement could have a counterproductive impact on the environment should the investors succeed in raising capital costs sufficiently. In addition, while "brown" companies show a higher sensitivity to SRI, socially responsible investors mainly select already "green" companies to invest in. This is a result that is supported by Gollier and Pouget (2014) who find that investing in unsustainable firms is required for those firms to become more sustainable and adhere to the criteria. Oehmke and Opp (2019) investigate the heterogeneity between institutional investors, showing that the impact a SR institutional investor can achieve depends on their mandate. Funds who only invest in, and thus reward, firms that are "clean" do not make any impact.

The literature discussed provides plenty of evidence that the screening strategy is an important mechanism to SR institutional investors to achieve better CSR-performance. However, as mentioned earlier, there is no empirical research yet that studies the indirect relationship between SR institutional investors and CSR-performance through the financial condition of a company. To empirically examine the importance of the screening strategy this study makes an attempt at providing evidence for such an effect by studying both direct relationships and the indirect relationship. Based on the theoretical models and anecdotal empirical evidence of the two direct relationship, the following final hypothesis is examined:

H3: *SR institutional ownership is positively related to CSR-performance through the financial condition of a company.*

The literature provides conditions under which shareholder activism and screening strategies are more effective in altering the quality of a company's activity (Kölbel et al., 2020). Firstly, for both strategies, the larger the number of shareholders that follow the same strategy the more effective the strategy becomes (Gollier & Pouget, 2014; Heinkel et al., 2001). Secondly, the investment horizons of the investors that implement the screening strategy needs to be long enough to alter levels of CSR-performance (Gollier & Pouget, 2014). Thirdly, the credibility of the investors implementing the screeningf strategy needs to be good (Goullier & Pouget, 2014). Fourth, for both strategies, companies are more likely to improve their activities when the cost of reform are lower. Decreasing their cost of capital can thus encourage companies to improve their CSR-performance (Heinkel et al., 2001). Finally, the influence of screening strategies by investors on prices is higher for companies whose returns are weakly correlated with the market portfolio and thus are not easily substitutable (Fama & French, 2007; Heinkel et al., 2001).

3 Methodology

3.1 Data

Data on CSR-performance is obtained from the Refinitiv ESG metrics database. This database differs from the conventionally used Kinder, Lydenberg, Domini & Co. (KLD) database used for research on CSR. Although the KLD database is the most used database for related studies, compared to the Refinitiv database it is not nearly as comprehensive because it covers fewer companies, fewer variables, has significantly less coverage outside of the U.S., and does not have any summary measures for CSR (Harrison et al., 2023). In addition, Refinitiv provides a broad range of fundamental financial data of over 115,000 companies in over 120 countries for up to 40 years (Refinitiv, 2024). Therefore, Refinitiv is used to gather all the company level data required for this study. The company level data is used to construct the financial constraint measures and are used for the control variables. To determine the composition of institutional ownership of the European listed companies', shareholder ownership information is obtained from Refinitiv as well. Refinitiv provides comprehensive global share ownership and profiles data that records all shareholders owning at least 0.0001% of total shares outstanding in a particular year (Refinitiv, 2024), resulting in a detailed overview of all shareholders and the shareholder types. Data on SR institutional investors is gathered directly from the UN PRI signatory directory. The UN PRI signatory directory provides the names and the date of signing for the investors who have singed the principles (UN PRI, 2006).

The time frame of this study encompasses the years 2003 up to 2022. All data gathered is available at a yearly frequency. An overview of the key variables and their definitions can be found in Table 1 (Appendix A). The most important ones are explained below.

3.1.1 CSR-performance

The literature captures CSR-performance using a variety of different parameters. By far the most common parameter used is greenhouse gas emissions (Chava, 2014; Hartzmark & Shue, 2023; Kacperczyk & Peydró, 2021). However, this study aims to provide a more detailed insight into the relationship between socially responsible investors and CSR-performance because CSR entails much more than just a company's environmental impact (corporate governance, employee relations, customer relations, environmental management, philanthropy, and community involvement (Fulton et al., 2012)). Therefore, in addition to the overall CSR-performance measure (*ESG*) that captures the combined scores of companies, this study aims to provide a more detailed insight into the relationship between SR institutional investors and CSR-performance by following the footsteps of prior studies disaggregating the measure and including three parameters that Refinitiv provides: (i) an environmental score (*EnvironmentalScore*) that is based on the three underlying environmental category scores resource use, emissions and environmental innovation, (ii) a social score (*SocialScore*) that is based on the four underlying social category scores community, human rights, product responsibility and workforce, (iii) a governance score (*GovernanceScore*) that is based on the three underlying governance category scores CSR strategy, management and shareholders. The Refinitiv scores are advantageous because a proper assessment requires both positive and negative impacts (Brest & Born, 2013). However, it is important to acknowledge that CSR-performance measures lack objectivity and reliability because these measures are based on self-reported data, making them susceptible to greenwashing and information overload (Velte, 2022).

3.1.2 Socially Responsible Institutional Ownership

Following in the footsteps of Dyck et al. (2019), Gibson et al. (2019), Glossner (2019), Kordsachia et al., 2021, and Velte (2022), the institutional investors who signed the UN PRI are classified as SR institutional investors. Operationalizing their preference for sustainability through their commitment to closely monitor the sustainability practices of companies. Specifically, the total percentage of shares outstanding owned by institutional investors is collected to calculate the general measure of institutional ownership (*InstOwnership*). The measure SR institutional ownership (*InstOwnershipPRI*) is created by collecting the 5,349 names of UN PRI signatories and manually matching them to the 13,382 unique institutional investors for European listed companies. The remainder of the institutional investors who are not signatories to the UN PRI are classified as non-socially responsible (non-SR) institutional investors (*InstOwnershipNonPRI*) and represented by the remaining percentage of shares owned by institutional investors. The use of UN PRI signatories as SR institutional investors is not without its limitations as some studies, like Brandon et al. (2022), find that signatories do not live up to their promises in the U.S., but do in Europe.

Studies that focus only on institutional ownership are too narrow in their validity and do not recognize the heterogeneity of different types of institutions as they differ in their monitoring role

(Velte, 2022). Refinitiv identifies fifteen different types of institutional investors, six of which (Bank and Trusts, Insurance Companies, Hedge Funds, Investment Advisors, Pension Funds, and Private Equity) are included in this study to capture the heterogeneity of institutional investors. Table 3 (Appendix B) shows that the remaining SR institutional investor types, on average, do not own more than one percent and are therefore not included in the analysis.

To test whether the use of the shareholder activism is an effective mechanism one would ideally use a comprehensive database on both public and private engagements between investors and company management. Unfortunately, to this date, no such database exists (Dyck et al., 2019). As the most effective engagement with management occurs behind closed doors, such data is not publicly available and can only be acquired in collaboration with the respective institutions (see Barko et al., 2021). There are a few commercial data providers who gather sufficient public shareholder activism data, which would include shareholder proposals (successful, unsuccessful or withdrawn) and voting tallies (Dyck et al., 2019). Unfortunately these could not be accessed.

3.1.3 Financial Condition

Financial conditions play an important role in determining the level of investment into CSR-performance (Heinkel et al., 2001). Some indicators that have been used are interest coverage, credit ratings, expected default frequency, leverage, dividend dummies, financial returns, and the list goes on (Xu & Kim, 2021; Hartzmark & Shue, 2023). The variable to measure the financial condition that will be used in this study is the "*KZ_Index*" (Kaplan and Zingales (KZ) index). It is the most popular measure of financial constraints according to Google Scholar referencing (Farre-Mensa & Ljungqvist, 2015). Although Kaplan and Zingales (1995) used a text-based approach to classify firms into categories of financial constraint and related the classification to accounting variables through an ordered logit model, the actual index was created by Lamont et al. (2001) using Kaplan and Zingales regression coefficients. Studying whether financial constraint impedes a firm's ability to invest by relating asset returns to observable firm characteristics they find that it does. The KZ-index combines five accounting variables that are often used independently to create a single measure.

3.1.4 Control Variables

To control for other determinants of CSR-performance the literature provides a large and varying set of time varying company characteristics. Generally, these represent the financial performance and the governance performance of company (Waddock & Graves, 1997). As discussed earlier, a company's financial performance (or lack there of) might predict its ability to allocate resources to socially responsible investments (Kordsachia et al., 2021; Hong et al., 2012). Therefore, to examine the relationship of SR institutional investors and CSR-performance of a portfolio company the following control variables are included following studies on similar topics (Kordsachia et al., 2021; Gantchev et al., 2022; Liu & Xu, 2024;, Chava, 2014; Chen et al., 2020; Van Der Beck, 2021; Xu & Kim, 2021; Feng & Yuan, 2024; and Ren et al., 2022). Asset tangibility (*Tangibility*) and leverage (*Leverage*) are two measure of credit constraint that predict a company's adoption of socially responsible practices (Dyck et al., 2019; Hong et al., 2012). Companies with lower leverage and higher tangibility are able to attract more investments because they are less subject to credit constraints (Ren et al., 2020). Highly leveraged companies cannot invest as much in environmentally beneficial investments because they are subject to regular cash outflows. Capital expenditures (*CapitalExpenditures*) and Research & Development expenditures **(***ResearchDevelopmentExp***)** are two standard measures that represent company investments (Hong et al., 2012). Cash-holdings (*CashHoldings*) are included because more cash availability predicts more investments (Xu & Kim, 2021; Fen & Yuan, 2024; Gantchev, 2022). Return on Assets (*ROA*) is included to control for the impact of past performance (Ren et al., 2022). The percentage of female board members (*BoardGenderDiversityPercentage*) is included because of the positive relationship between female board representation and CSR-performance, likely caused by a higher sensitivity to sustainability (Kordsachia et al., 2021). SA-index (*SA_Index*) is the result of research by Hadlock and Pierce (2010) in which they critically evaluate methods for measuring financial constraint that are commonly used, and is an alternative measure of financial constraint.

3.2 Empirical Strategy

This subsection describes the empirical strategy applied to answer the research question of this study: Do SR institutional investors influence the CSR-performance of portfolio companies. The strategy applies three steps to answering this question. The first step is to examine whether institutional investors in general are positively related to CSR-performance. By verifying empirically that institutional investors are associated with the CSR-performance of European listed companies it justifies the empirical research in the remainder of this study. The second and third step are most relevant to answering the research question. As discussed previously the literature recognises two mechanisms through which institutional investors can pressure management into improving CSR-performance (Hirschman, 1970). The shareholder activism and screening approach. The second step is related to the shareholder activism approach and examines whether SR institutional ownership is positively related to CSR-performance as the literature predicts. Finally, the third step is related to the screening approach applied by SR institutional investors. It examines whether SR institutional ownership is positively related to CSR-performance through the financial condition of a company.

Following Glossner (2019), Heath et al. (2023), Kordsachia et al. (2021), Dyck et al. (2019), and others, this study applies a Fixed Effects model method. Using a company-year fixed effects specification these models can capture any time-invariant company characteristics that could predict its CSR-performance. In addition, to address potential heteroskedasticity problems and correlation errors, all models are estimated using robust standard errors (Alda, 2019). To further justify the use of a Fixed Effects approach Tables 9 and 10 (Appendix C) present the results for a Breusch-Pagan Lagrange Multiplier test to determine whether to use Random Effects or Ordinary Least Squares and the results for a Hausman test to determine whether to use Random or Fixed Effects. The results indicate that a Fixed Effects approach is the appropriate method.

To examine the first hypothesis whether institutional investors in general are associated with improved CSR-performance the following regression equation (model 1) is applied:

$$CSR_{i,t} = \alpha + \beta_1 InstOwnership_{i,t-1} + \beta_2 Control_{i,t-1} + u_i + v_t + \epsilon_{i,t} \qquad (1)$$

Here, $CSR_{i,t}$ denotes the CSR-performance measured by *ESG*. $Inst\_Ownership\%_{i,t-1}$ denotes the percentage of shares outstanding of a company that is owned by an institutional investor, lagged by one year. $Control_{i,t-1}$ denotes the time varying company characteristics as controls included in the analysis described in section 3.1.4. These control variables are used in all regression equations. u_i denotes the correlation of company unique errors with CSR-performance and mitigates company specific time-invariant characteristics. v_t denotes the time fixed effects that mitigate the unobservable changes over time that are constant for all companies like macroeconomic shocks (Chen et al., 2020). These fixed effects are included in all regression equations. To provide the more detailed insight mentioned earlier, the three measures *EnvironmentalScore*, *SocialScore*, and *GovernanceScore*, that together form the overall CSR-performance measure *ESG*, are also regressed on the percentage of shares held by institutional investors in the year prior. This is done for all regression equations in this study.

As discussed, literature assumes that institutional investors represent a key monitoring tool as part of external governance (Kordsachia et al., 2021). In addition, evidence suggests that institutional investors use their ‘voice’ to enforce good corporate governance and corporate behaviour (Klettner; Velte, 2022); generally resulting in improved CSR-performance (Barkó et al., 2021; Kölbel et al., 2020). Therefore, in line with the literature and evidence, a positive relationship between institutional ownership and CSR-performance is expected. To examine the second hypothesis whether SR institutional ownership is associated with improved CSR-performance the following regression equation (model 2) is applied:

$$CSR_{i,t} = \alpha + \beta_1 InstOwnershipPRI_{i,t-1}^{type} + \beta_2 Control_{i,t-1} + u_i + v_t + \epsilon_{i,t} \qquad (2)$$

Here, $InstOwnershipPRI\%_{i,t-1}^{type}$ denotes the percentage of shares outstanding of a company that is owned by institutional investors who have signed the UN PRI in the respective year, lagged by one year. While this measure of SR institutional ownership is not a measure of investor behaviour, the expectations for the relationship are based on the underlying assumption that SR institutional investors are active owners who engage with management to improve CSR-performance. Compared to other institutional investors UN PRI signatories are expected to have a stronger effect on company CSR-performance because these institutional investors commit themselves to be active owners, and engage with CSR issues individually and collectively (Dyck et al., 2019). Therefore, while not a measure of shareholder activism, it can show whether UN PRI signatories live up to their promises. These test are also performed when dividing the dataset into “green” and “brown” companies when, based on their overall CSR-performance when they enter the dataset. Knowing the different effects of SR institutional ownership on green and brown companies is crucial to understanding how companies should be targeted (Hartzmark & Shue, 2023)

To examine the third hypothesis whether a unique method is applied. Do date there is no reliable empirical research that demonstrates the relationship between screening strategies and CSR-performance. It is common for empirical research to study the different components of the mechanism (Kölbel et al., 2020). This study makes an attempt at providing more insight into the entire mechanisms by examining whether the financial condition of a company is the intervening variable that is responsible for the hypothesized positive relationship between SR institutional investors and CSR-performance by applying a path analysis.

To justify the path analysis firstly the two individual parts of the mechanism are examined. First the relationship between SR institutional ownership and a company's financial performance is examined by applying the following regression equation (model 3):

$$FC_{i,t} = \alpha + \beta_1 InstOwnershipPRI_{i,t-1}^{type} + \beta_2 Control_{i,t} + u_i + v_t + \epsilon_{i,t} \tag{3}$$

Here $FC_{i,t}$ denotes the financial condition of the company represented by the KZ-index which is expected to show a negative sign because of the hypothesized positive relationship between

Secondly, the relationship between financial performance and CSR-performance is examined by applying the following regression equation (model 4):

$$CSR_{i,t} = \alpha + \beta_1 FC_{i,t} + \beta_2 Control_{i,t} + u_i + v_t + \epsilon_{i,t} \tag{4}$$

Literature assumes that companies with higher CSR-performance are less financially constrained (Chan et al., 2017). Therefore, a negative association is expected between CSR-performance, and the KZ-index is expected.

The final step is to perform a path analysis to determine the indirect effect of SR institutional investors on CSR-performance through financial conditions. Path analysis is a methodological tool that disentangles various (causal) processes underlying a particular outcome when using quantitative data (Lleras, 2005 The strength of the path analysis comes from its estimation of a system of equations that specify all possible causal linkages between among a set of variables, can break down correlations between variables into causal and non-causal, and thus can play a vital role in hypothesis testing (Lleras, 2005).

3.2.1 Endogeneity & Robustness

Inherent to this line of research this study suffers from major endogeneity and causality concerns. There are many other factors that might drive the improvements of CSR within a company, for example consumer demand for more sustainable products and talented workforce preferences for sustainable employers (Cohen et al., 2020). If customers are willing to pay a premium for more sustainable products companies may strive to collect a monopolistic rent on producing these more sustainable products, and striving to be a more sustainable employer might help in attracting higher quality human capital (Cohen et al., 2020). Therefore, this study does not claim to present any causal relationship between SR institutional investors and the CSR-performance of the companies in which they invest, but just a correlation.

To mitigate the endogeneity and causality concerns, a number of methods are employed in this study. Frist, fixed effects models are applied that account for company and time fixed effects to mitigate the endogeneity issues to provide more robust results for, potentially more causal, interpretation (Dyck et al., 2019; Glossner, 2019). Second, independent variables of interest and control variables are lagged by one year in all fixed effects regressions to mitigate endogeneity effects due to reverse causality (Kordsacia et al., 2021). The direction of causality remains difficult to determine as well. Although the disaggregation of institutional investors into different types should help this concern remains (Glossner, 2019). Finally, to further mitigate the endogeneity concerns in the second model (2) that will present the results of main interest, a two-stage least squares instrumental variable approach is used. Following Kordsachia et al. (2021) and Feng and Yuang (2024), instrumental variables are constructed for variables of SR and non-SR institutional ownership by taking the industry-year mean. The mean is calculated without the focal company and can therefore be considered as exogeneous to the company's CSR-performance (Kordsachia et al., 2021). Summary statistics for these measures can be found in Table 4 (Appendix B)

To improve robustness for the results for the third hypothesis two more measures of financial conditions of a company are applied. First, following Hong et al. (2012) the relationship between SR institutional investors and the share price is examined as measured by the market-to-book ratio (*MarketToBookRatio*). The market-to-book ratio incorporates market opinion about the company's future cash flows and risk, and thus represents a forward-looking market valuation (Buchanan et al., 2018). Second, following Feng and Yuan (2024) the SA-index is included as a final robustness test for the financial condition.

3.3 Sample Construction & Descriptive Statistics

The sample selection process resulted in an unbalanced panel dataset. The data sample constructed by manually combining data from Refinitiv and the UN PRI directory began by identifying all companies that are listed in European countries. Refinitiv provides data for 2,554

European listed companies. For a company to be included in the dataset they had to pass two criteria. First, data on CSR-performance measures must be available. Second, data on the shareholders must be available. Respectively this resulted in the loss of 916 and nine companies, resulting in a total of 1,629 European listed companies in the dataset.

The data collected from the Refinitiv database is used to calculate the percentage of shares outstanding that the different types of institutional and different types non-institutional investors hold. By manually matching the shareholder data to the UN PRI signatory data the measure of SR institutional ownership is created. The difference between the SR institutional ownership measure for each type and the institutional ownership measure are used to determine the non-SR institiutional ownership measure. Combining the different types of institutional investors resulted in the total measure of institutional ownership. The same applies for SR institutional investors and non-SR institutional investors.

All variabels that are included in the dataset are checked for normal distributions. This resulted in the taking the natural log of almost all control variables and variables used to construct them, with the exception of age. Taking the natural log improved the distribution of the variables greatly. The maximum value of some measures of ownership exceeded 100 percent. According to Refinitiv (previously Thomson Reuters) these anomalies can exist due to local reporting requirements, corporate actions, or timing of filings (Thomson Reuters, 2016). Values that exceed 100% are replaced with 100%. Like the outliers in the institutional ownership data, all outliers are removed using the IQR method.

Table 2 (Appendix B) presents the descriptive statistics for the key variables used in this study used to examine the hypotheses. The mean percentage of shares owned by institutional investors (who own more than 0.0001%) is 28.48%, while non-institutional investors own on average 23.38%. In the sample of European listed companies, on average 9.79% of institutional investors are UN PRI signatories. The overall CSR-performance measure has a mean score of 52.68. The disaggregate measures of CSR-performance *Environmental*-, *Social*-, and *GovernanceScore* show similar means with 52.74, 55. 16, and 51.85 respectively. The financial condition (*KZ_Index*) companies who are considered non financially constraint have an index of lower than -34.88 (pctl(25)) and highly financially constraint companies have in index of higher than -27.54 (pctl(75)). Table 8 (Appendix B) provides a Pearson correlation matrix. The high correlation between the CSR-performance measures is expected. All other variables do not show any correlations that might indicate multicollinearity that could affect the hypothesis testing.

4 Empirical Findings

This section presents the results of the empirical analysis as laid out in section 3.2. First, the general relationship between institutional investors and CSR-performance is examined to form the basis for the remainder of study (Section 4.1). Then, in section 4.2, the relationship between SR institutional investors and CSR-performance is examined, and further insights into the relationship are presented in section 4.2.1. Finally, in section 4.3, the potential relationship of SR institutional investors with CSR-performance through a company's financial performance is examined. When interpreting these results it is important to keep in mind that they do not signify a causal relationship, rather just a correlation between the variables.

4.1 Institutional Ownership & CSR-Performance

Table 11 (Appendix D) presents the results of the Fixed Effects model (1) were overall CSR-performance is regressed on the one year lagged variables of interest (*InstOwnership* & *NInstOwnership*) and control variables. Columns 1 to 4 show positive relationship between institutional ownership and CSR-performance that is significant at least at the 10% level, indicating an improved CSR-performance in the following year when institutional ownership increases. The positive relation between institutional investors and CSR-performance is in support of the first hypothesis that Institutional ownership is positively related to CSR-performance**.**To further verify the robustness of these results columns 5 to 8 present the results when controlled for non-institutional investors. The positive relationship of institutional investors with CSR-performance is robust to the inclusion of non-institutional investors showing the same results with a significance at least at the 5% level. Interestingly non-institutional investors show a negative relationship with the disaggregate CSR-performance measure, *GovernanceScore*, at the 1% level significance. Suggesting that company governance is inversely affected by a larger percentage of shares held by non-institutional investors compared to institutional investors. Overall these results confirm the suggested effectiveness of institutions by agency theory, and prior findings of a positive relationship (Velte, 2022; Jensen & Meckling, 1976; Kolbel, 2020).

4.2 SR Institutional Ownership & CSR-Performance

Table 12 (Appendix D) presents the results of the fixed effects model (2) were overall CSR-performance is regressed on the one year lagged variables of interest (*InstOwnershipPRI* & *InstOwnershipNonPRI*) and control variables. Column 1 present the positive relationship between SR institutional investors and overall CSR-performance at the 1% level of significance. Columns 2 to 4 present the results for the disaggregate measures of CSR-performance. SR institutional ownership is positively related to the *EnvironmentalScore* and *SocialScore* at the 1% level significance. However, the results do not present a significant relationship of SR institutional investors with the *GovernanceScore* of the companies in which they invest. The results for the disaggregate measures of CSR-performance suggest that the positive relationship with CSR-performance is mainly driven by the positive relationship with the *Environmental*- and *SocialScore*. Previous results in Table 11 presented the positive relationship of institutional investors with the CSR-performance, and all three of its disaggregate measures, of the companies in which they invest. Table 12 (Appendix D) presents more insight into what investors drive these positive relationships by including the non-SR institutional investors (*InstOwnershipNonPRI*), while at the same time providing a robustness test for the results in columns 1 to 4. Column 5 presents a positive relationship between non-SR institutional investors and the overall CSR-performance of the companies in which they invest. Columns 6 to 8 present the results for the disaggregate measures of CSR-performance. The only disaggregate measure with which non-SR institutional investors show a positive relationship is the *GovernanceScore* at the 1% level significance. The results for columns 5 to 8 in Table 12 suggest that the SR institutional investors drive the overall positive relationship between institutional investors and the *Environmental*- and *Socialscore*, while non-SR institutional investors drive the overall positive relationship with the *GovernanceScore*.

The positive relationship presented in columns 1 to 3 are robust to the inclusion of the other non-SR institutional investors in columns 5 to 7 at the same 1% significance level. Moreover, the results presented in Table 12 support the second hypothesis that SR institutional investors are positively related to CSR-performance and show a larger effect compared to their non-SR counterparts.

4.2.1 Heterogeneity among Socially Responsible Institutional Investors

As discussed in the previously institutional investors cannot be classified as one homogenous group of investors. Depending on their nature institutions can be classified as major monitoring tools in external corporate finance (Velte, 2022). Tables 13 to 18 (Appendix D) presents the results of the fixed effects model (2) were overall CSR-performance is regressed on the one year lagged variables of interest and control variables. Here the variables of interest are the six different types of SR institutional ownership (banks & trusts, insurance companies, hedge funds, investment advisors, pension funds, and private equity). For brevity the non-SR counterparts the different types of institutional ownership are included form the start to provide additional robustness. All types of SR institutional investors show the same non-significant relationship to the *GovernanceScore* of companies in which they invest as the results present in Table 12.

Tables 13 to 18 (Appendix D) present the results for banks and trusts, insurance companies, hedge funds, investment advisors, pension funds and private equity respectively. In line with the general result that SR institutional ownership is positively related to CSR-performance all types of institutions show a positive relationship with CSR-performance and its disaggregate measures *EnvironmentalScore* and *SocialScore* whenever the relationship is significant. Compared to the other types of SR institutional owners, SR banks and trusts show a large positive relationship to the overall CSR-performance of a company at the 1% level of significance in Table 13. The disaggregate measures of CSR-performance *Environmental*- and *SocialScore* are both significant at the 1% level significance as well, where *EnvironmentalScore* shows a greater relationship. While insurance companies are expected to act similarly to banks and trusts, SR insurance companies are not positively related to the overall CSR-performance of a company. Table 14 shows that when disaggregating CSR-performance, SR insurance companies are positively related to the *EnvironmentalScore* of a company at the 10% level significance. Interestingly, it are insurance companies that do not classify themselves as SR who are positively related to overall CSR-performance and the disaggregate measures *EnvironmentalScore* and *SocialScore* at least at the 10% significance level. Table 15 presents the results for hedge funds. SR hedge funds are positively related to the overall CSR-performance of companies in which they invest. The disaggregate CSR-performance measures show that this positive relationship is driven by a positive relationship with the *SocialScore* of a company. Both measures are significant at the 5% level. Like SR banks and trusts, investment advisors are positively related to the overall CSR-performance and two of the three disaggregated CSR-performance measures at least at the 5% significance level. The positive relationship is the strongest with the *EnvironmentalScore* of the company. Compared to their non-SR counterpart, who have a positive and significant relationship with the *EnvironmentalScore*, the results in Table 16 suggest double the relationship for SR investment advisors. Compared to other institutions, pension funds are expected to have a clear motive to actively engage with management to improve CSR-performance (Velte, 2022). However, the results in Table 17 do not reflect this expectation. While non-SR pension funds have no significant relationship with the CSR-performance of the companies that they invest in, SR pension funds only have a positive relationship with the *SocialScore* at the 5% level significance. Similar to the non-SR pension funds, Table 18 presents no significant results for non-SR private equity and the CSR-performance. SR private equity, while not significantly related to the overall CSR-performance, does have a positive and significant relationship with the *EnvironmentalScore*.

Overall the results for each of the socially responsible institutional investor types is in line with the general results that the percentage of shares owned by socially responsible institutional investors is positively related to the CSR-performance of the company in which they invest. When there is a significant relationship for any of the institutional investor types it is never with the *GovernanceScore*. The results also corroborate that the positive relation is mainly driven by the positive relation between socially responsible investors and the environmental and social scores of the companies in which they invest.

Too see where institutional investors are most effective, I repeat the analysis performed to answer the second hypothesis for three classifications of companies: “green”, “brown” and “middle”. The summary statics for these subsets of data are provided in tables 19 to 21 (Appendix D). Following Chava (2014) the summary statistic provide an indication for whether SR institutional investors select themselves into higher CSR-performance companies. The summary statics provide no evidence for such screening practices, unlike Hartzmark and Shue (2023) and Oehmke and Opp (2019), because the average percentage of shares owned by SR institutional investors is higher for “brown” companies than for “green” companies.

The companies that are classified as “middle” show the same results as the results presented in the section that answers the second hypothesis. The coefficients for the significant variables differ no more than 0.016. Companies that are classified as “green” when they enter the dataset have their CSR-performance positively related to the percentage of socially responsible institutional investors. Higher than middle, higher than overall, lower than brown. Socially responsible institutional investors show a significant relationship to the overall CSR-performance of “brown” companies, just like the they do with the “middle” and “green” companies. Like for companies that are classified "green" when they enter the dataset, SR institutional investors are positively related to the disaggregate measure of CSR-performance, *EnvironmentalScore*. The relationship is larger than for companies that are already classified as "green", indicating that SR institutional investors have a bigger effect on the environmental performance of a company when they are originally performing worse, then when they are already performing well.

4.2.2 Endogeneity

As discussed previously this study is subject to major endogeneity and causality concerns and to mitigate this a two-stage least squares instrumental variable approach is used. Table 23 (Appendix E) presents the analysis for the strong instrument and the relevance test of the instrumental variables for the SR and non-SR institutional ownership relationship with CSR-performance. Columns 3 to 6 present significant coefficients of the residuals, confirming the presence of endogeneity using the Hausman-Wu test. Whether the instrumental variables used are strong instruments is presented in columns 1 and 2. The instrumental variables are strong instruments ($F > 10$) for the SR institutional ownership. However, they do not pass the strong instrumental variable test for non-SR institutional ownership ($F < 10$). Therefore, it is not included in the instrumental variable approach. The results of the positive relationship between SR institutional ownership and CSR-performance are confirmed using the instrumental variable in the fixed effects model (2), and are presented in Table 24 (Appendix E). While not including the instrumental variable for non-SR institutional ownership, the variable is included to provide added robustness.

Applying the instrumental variable test to the data subsets "green", "brown" and "middle", the positive and significant relationships between SR institutional investors and the overall CSR-performance measure and disaggregate measure *SocialScore* are confirmed for "green" and "middle" companies, while the *EnvironmentalScore* relationship is not (Table 25 to 27, Appendix E). All results are confirmed for the companies that are classified as "brown" and the relationship remains stronger.

4.3 SR Institutional Ownership & Financial Performance (Mechanism Test)

Table 28 in Appendix F presents the results for the first step of the process that aims to prove an indirect and positive relationship between SR institutional investors and CSR-performance through financial conditions. Here the financial performance measure, the KZ-Index, is regressed on the percentage of shares held by socially responsible institutional ownership. Socially responsible institutional ownership is negatively and significantly (1%) related to the KZ-Index. This implies that a higher percentage of shares owned by socially responsible institutional investors results in less financial constraint for the company. As could be expected, the relationship between the two is very small (Berk and Van Binsbergen, 2021). Institutional investors who are not classified as socially responsible do not have a significant relationship to the financial performance of the company in which they invest. Table 28 (Appendix F) confirms these results by presenting a negative relationship between the different types of SR institutional investors whenever significant. The second step of the process is reported in Table 29 in Appendix F. Here the previous year financial condition, measured by the KZ-index is used to estimate the relationship with CSR-performance. While there is no significant relationship between the previous year financial condition of a company and its CSR-performance overall, there is a significant and negative relationship with the disaggregated CSR measure *SocialScore*. The negative and significant relationship indicates that as financial constraints ease (KZ-Index goes down) the social score goes up. Unlike prior research that shows clear a clear and robust negative association of a poor financial conditions with CSR (Chan et al., 2017; …), the relationship is somewhat weak because it only relates to the *SocialScore*. The final step is to perform the path analysis to estimate an indirect effect. Table 30 in Appendix F presents the results of the path analysis of SR institutional investors on a company's CSR-performance through the financial condition of a company. "indirect_InstOwnershipPRI" represents the indirect effect of socially responsible institutional ownership. According to the path analysis there is no significant indirect relationship between socially responsible institutional ownership and a company's CSR-performance. These findings are in line with the literature that suggests that the success of such indirect effects heavily depends on the number of shareholders who participate (Gollier & Pouget, 2014; Heinkel et al., 2001). When the average percentage of shares owned by SR institutional investors is 9.79%, and Berk and Van Binsbergen (2021) predict that 80% is required to have a significant effect, this result is not that surprising. Therefore these findings do not support the third and final hypothesis.

4.3.1 Robustness

This analysis too suffers from the endogeneity and causality problem. Here in addition to the steps taking in the regressions, some additional robustness is provided by running the same tests on other measures of financial performance that indicate the ability of a company to invest. The first alternative to the KZ-Index is the market to book ratio. The results of the market-to-book ratio in the first step are included in Table 31 in Appendix G and show a similar, but very small, significant results. Indicating that socially responsible institutional investors are positively related to the market-to-book ratio. Step two and three show the same results as the KZ-Index. A higher market-to-book ratio is only positively related to the *SocialScore* and Table 33 (Appendix G) shows no significant indirect relationship. The SA-Index is also included as a robustness check. Although used as a control variable throughout this study, it is an alternative measure of financial constraint as explained in section 3.1.4. The correlation between the SA-Index and socially responsible institutional ownership is low (0.055). The relationship between socially responsible institutional ownership and the SA-Index is, like the previous two measures of financial performance, significant and small. Like in all the results throughout this study, the SA-Index is significantly and negatively related to all measures of CSR-performance in step 2. Here too, Table 34 (Appendix G) shows no significant indirect relationship. Both measure confirm the original results.

5 Discussion

5.1 Results

Making use of the unique dataset comprised from 1629 European listed companies with 32,580 observations between 2003 and 2022, the aim of this study is to answer the question whether socially responsible institutional investors influence the CSR-performance of their portfolio companies. To achieve this goal, three hypotheses are examined. The first hypothesis, whether institutional investors in general are associated with improved CSR-performance is supported by the results and forms the baseline for the remainder of this study. The results present a significant positive relationship between institutional ownership and CSR-performance. Disaggregating the overall CSR-performance into its components reveals that institutional investors are positively and significantly related to all three of the disaggregate CSR-performance measures. These results contribute to the findings of prior studies (Chava, 2014; Dyck et al., 2019; Chen et al., 2020). Chava (2014) reports a positive relationship between lower institutional and more environmental concerns. Dyck et al. (2019) finds a positive impact of institutional investors on environmental and social performance using an international sample. Chen et al. (2020) studies an

The main contribution of this study is to examine the second hypothesis that SR institutional ownership is associated with improved CSR-performance. Contrary to Heath et al. (2023) the results present a positive and significant relationship between SR institutional investors and the overall CSR-performance measure. By defining SR institutional investors as those institutions that signed the UN PRI the results are in line with research by Glossner (2019), Dyck et al. (2019), and Gibson et al. (2020). However, contrary to the results presented by Chava (2014) and Gibson et al. (2020) the results do present a positive and significant relationship between the *EnvironmentalScore* and SR institutional ownership while not providing a significant relationship with the *GovernanceScore*. Overall, these results are in line with prior studies and provide additional evidence that SR institutional investors do in fact (partially) walk the talk and generate a positive impact (Gibson et al., 2020; Kordsachia et al., 2021; Dyck et al., 2019). This study contributes to that literature by providing evidence for a similar relationship between SR institutional investors and CSR-performance for European listed companies.

To provide a more detailed insight into the relationship between SR institutional investors and CSR-performance two additional analysis are performed. Firstly, heterogeneity of SR institutional investors is examined by disaggregating institutional ownership into the six types of institutions included in the dataset. All types of institutions confirm the prior result that SR institutional ownership is positively related to CSR-performance. When there is no significant relationship between overall CSR-performance there is for either the *Environmental*- or *SocialScore*. The significance of the *Environmental*- and *SocialScore* might be explained by the human-capital theory view (Cohen et al., 2020). Investors see employees as key organizational assets and a source of sustained competitive advantage and therefore push management to improve employee satisfaction by improving workplace safety (Chen et al., 2020). Additionally, SR institutional investors still pursue financial performance. This might explain the positive relationship with the *EnvironmentalScore* as more polluting companies are associated with lower company value (Chen et al., 2020; Heinkel et al., 2001). Only the results for insurance companies appears to be contradicting to expectations as the SR insurance companies are less related to CSR-performance than their non-SR counterpart. Secondly, the relationship between SR-institutional investors and CSR-performance is compared between green and brown companies. Unlike prior research the results of disaggregating the dataset, based on the CSR-performance of company when it enters the dataset, into “green”, “brown”, and “middle” companies the observation that SR institutional investors select themselves into the ‘best performers’ is not shared in this study (Oehmke & Opp, 2019). In fact, the mean percentage of SR institutional investors is higher for companies that are classified as brown than for green companies. However, the findings on were SR institutional investors are most effective are in line with the expectations that a greater relationship is expected for companies with lower CSR-performance (Dyck et al., 2019). Comparing the positive and significant relationships of SR institutional investors with the overall CSR-performance, driven by the positive relationship with the EnvironmentalScore, of brown and green companies, the results confirm findings by prior studies that there is a stronger relationship for brown companies (Hartzmark & Shue, 2023; Oehmke & Opp, 2019).

The results up to this point have shown that there is a significant positive relationship between SR institutional investors and CSR-performance. The third hypothesis examines whether SR institutional ownership is indirectly related to CSR performance through the financial condition of a company. Contributing to the literature on whether financial constraints influence real economic activity (Campbell, 2012). To date there is no empirical research that combines the two parts of this indirect relationship (Kolbel et al., 2020). The results for the first step that examining the relationship between SR institutional investors and the financial condition of a company, show robust results that are in line with what theoretical models predict (Heinkel et al., 2001; Beltratti, 2005) and has been studied in different settings (Chava, 2014; Oehmke & Opp, 2019; Goullier & Pouget, 2014). While not a measure of capital allocation of investors, the result confirms the expectation that SR institutional investors are related to improved financial conditions of companies which confirms findings by researchers like Gantchev (2022) who show that SR investors can affect stock prices. In addition, the second step present a significant relationship between financial conditions and a company's CSR-performance. The finding that the financial conditions of a company matter for the CSR-performance appear to support the findings in earlier research that the financial conditions affect the real economic activities and in particular corporate investment (Campbell, 2012). Companies are more likely to "do good by doing well" (Hong et al., 2012). When examining the indirect relationship of SR institutional investors with CSR-performance through the financial performance channel it becomes evident that there is no significant relationship. The findings support the earlier empirical work by Berk and Van Binsbergen (2021) who find that the effect of socially responsible investors is too small to affect corporate policies on CSR-performance. The lack of an indirect relationship through the financial conditions that screening practices imply might be caused by the inability of SR institutional investors to threaten or exit companies that they do not own (Edmans et al., 2022). Additionally, while UN PRI signatories promote the collaboration when practicing SRI, they might not be coordinated enough and remain a too small group (Heinkel et al., 2001; Beltratti, 2005; Berk & Van Binsbergen, 2021; Goullier & Pouget, 2014).

5.2 Implications

This study on SR institutional ownership and CSR-performance provides valuable theoretical and practical implications. First, the positive relationship between SR intuitional investors and CSR-performance indicates that as more SR institutional investors enter the market they can contribute to the sustainability development and transition of the economy (Feng & Yuan, 2024). To this end it is important for market regulators to steer institutional investors towards an investment philosophy that encourages socially responsible development. Encouraging institutions to fully utilize their supervisory and external governance role to increase CSR-performance could greatly benefit green development. Secondly, it is important to not classify institutional investors as a homogenous group of investors. Contrary to classical principal agent theory, institutional investors should be assumed to be a heterogeneous group of investors, that differ in their preferences and nature. Primarily, a separation should be made between institutional investors and institutional investors that are intrinsically motivated to contribute to non-financial goal. Thirdly, the classical agent theory should be adjusted to incorporate risks associated with CSR like climate risk because it is apparent that institutional investors care about more than just the financial performance of a company.

The results of this study suggest some important practical implications as well. Firstly, the results imply that active owners are associated with improved CSR-performance. This indicates that SR institutional investors may be successful in pressuring management into increasing CSR efforts. This knowledge might incentivize managers to evaluate their ability to comply to shareholding engagements regarding CSR as SR institutional investor might be more inclined to use their screening and shareholder activism strategies. Secondly, European disclosure requirements are increasing and improving, like the Corporate Social Responsibility Directive (Corporate Sustainability Reporting, 2022). These improvements in the form of information that is available to institutional investors will ease the effort by institutional investors to gather the appropriate and correct information resulting in reduced costs to engage with management of companies to push them to improve their CSR efforts. This improved regulation, combined with an ongoing increase in institutional investors who sign the UN PRI, will help align the interests of stakeholders and companies.

5.3 Limitations & Future Research

The findings of this study are not without their limitations. Firstly, as previously discussed, there are significant challenges associated with this line of research surrounding endogeneity and causality concerns. It is therefore, not enough to document a significant correlation between SR institutional ownership and CSR-performance. To overcome this problem and to verify that SR institutional investors have the effect on CSR-performance that is predicted, future research must identify sources of exogenous variation between SR institutional investors (Heath et al., 2023). Additionally, to further mitigate these problems, research should make efforts to identify exogenous shocks that can be used as quasi-natural experiments. The unexpected events serve as exogeneous shocks to how important CSR-performance is to institutional investors, and can thus help identify a causal relationship between SR institutional investors and CSR-performance (Dyck et al., 2019; Kordsachia et al., 2021). A second limitation is the use of the CSR measures provided by the Refinitiv database. Although they are comparable to data provided by other databases like the KLD database, its measures of CSR-performance are based on self-reported data. Therefore, they can easily be manipulated by the companies themselves. The use of more independent measures of CSR-performance is a must for future research, as is acknowledged by Chava (2014). An example of more independent measure of CSR-performance are the Morning "star ratings" that are proven to be nearly impossible to manipulate (Heath et al., 2023). Third, a more detailed insight in different shareholder activism efforts of UN PRI signatories is warranted as current the data availability on shareholder activism efforts is very limited (Barko et al., 2021). Future research can focus on gaining this insight by for example working with proprietary datasets of SR institutional investors or researching alternative measures of shareholder activism. Finally, future research should focus on investigating the empirical relationship between SR institutional investors and CSR-performance through their relationship with a company's financial condition. While investigated theoretically, the empirical relationship has only been investigated in parts (Kolbel et al., 2020).

6 Conclusion

The continuously increasing number of institutional and individual investors who commit themselves to including environmental, social and governance factors in their capital allocation are expected to push the total socially responsible investments past $50 trillion in the upcoming years. However, while their goal is to enable the green economic transition and pressure management of the companies in which they invest to improved CSR-performance, little is known about their actual impact on those social and environmental parameters. This study is an attempt to provide more insight into the relationship between socially responsible investors and CSR-performance by examining the question whether *socially responsible institutional investors influence the CSR-performance of portfolio companies*? Are socially responsible investors living up to their promises?

Using a unique manually constructed dataset of 1,629 European listed companies with 13,382 unique institutional investors this study answers the question by analyzing the data using Fixed Effects models and a number of methods ensure robustness. This study finds that socially responsible investors are in fact significantly positively related to CSR-performance of the companies in which they invest. Examining the disaggregate measure of CSR-performance the results show that this is only the case for environmental and social parameters. These results are consistent across most types of institutional investors. In addition, it appears that investors put their effort where it needs to be by investing more in "brown" companies and showing a stronger relationship. While robust to instrumental variable analysis and other attempts to mitigate endogeneity and causality concerns these findings cannot be assumed to be causal. Unfortunately this study is unable to provide any evidence on a relationship with CSR-performance through financial channels. The empirical studies on this link are lacking while theory suggests there could be a significant impact. This provides a good start for further research. In addition, while a positively relationship is observed for all types of institutional investors the strength of the relationship differs. A better understanding into what drives these differences is warranted.

7 References

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8 Appendices

8.1 Appendix A – Variables

Variable	Definition
ESG	An overall company score based on self-reported information in the three disaggregate measures. Ranging between 0 and 100.
EnvironmentalScore	A weighted average relative rating of a company based on reported environmental information. Ranging between 0 and 100.
SocialScore	A weighted average relative rating of a company based on reported social information. Ranging between 0 and 100.
GovernanceScore	A weighted average relative rating of a company based on reported governance information. Ranging between 0 and 100.
InstOwnership	The total percentage of outstanding shares owned by institutional investors.
NInstOwnership	The total percentage of outstanding shares owned by non-institutional investors.
InstOwnerhipPRI	The total percentage of outstanding shares owned by institutional investors who singed the UN PRI.
InstOwnershipNonPRI	The difference between the percentage of oustanding shares owned by institutional investors and institutional investors who signed the UN PRI.
KZ_Index	$KZscore =$ $-1.001909 * \left(\frac{\text{Income before extraordinary items} + \text{Total depreciation and amortization}}{\text{Property, Plant, and Equipment in the previous year}}\right)$ $+0.2826389 * \left(\frac{(\text{Market capitalization} + \text{Total shareholder equity} - \text{Book value of common equity} - \text{Deferred tax assets})}{(\text{Total shareholder equity})}\right)$ $+3.139193 * \left(\frac{\text{Total long term debt} + \text{Notes payable} + \text{Current portion of long term debt}}{Total\ Capital}\right)$ $+ -39.3678 * \left(\frac{\text{Total cash dividends paid}}{\text{Property, Plant, and Equipment in the previous year}}\right)$ $+ -1.314759 * \left(\frac{\text{Cash and short} - \text{term investment}}{\text{Property, Plant, and Equipment in the previous year}}\right)$
Tangibility	Property Plant Equipment scaled by total assets
Leverage	Total debt scaled by total assets
CapitalExpenditures	Capital expenditures scaled by total assets
ResearchDevelopmentExp	Reserach and development expenditures scaled by total assets
CashHoldings	Total cash and short term investments
ROA	Net income scaled total assets.
BoardGenderDiversityPercentage	The percentage of female board members.
SA_Index	$SAscore = -0.737 * Total\ Assets + 0.043 * Total\ Assets^2 - 0.040 * Age$

8.2 Appendix B – Descriptive Statistics

Table 2: Summary Statistics of Key Variables

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
CSR-Performance Measures								
ESG	15,100	1.020	37.400	52.682	53.870	20.462	68.750	95.720
EnvironmentalScore	14,323	0.130	31.970	52.738	54.050	25.644	74.340	99.140
SocialScore	15,096	0.120	36.470	55.159	56.890	23.627	74.660	98.470
GovernanceScore	15,100	0.490	33.980	51.852	52.990	22.622	70.172	99.330
Institutional Ownership								
InstOwnership	30,807	0.000	3.742	28.479	22.284	26.249	47.470	99.903
NInstOwnership	30,848	0.000	0.027	23.377	10.131	26.467	44.500	100.000
BankandTrust	30,951	0.000	0.000	0.725	0.068	3.835	0.402	89.118
InsuranceCompany	30,951	0.000	0.000	0.326	0.000	1.868	0.030	64.168
HedgeFunds	30,944	0.000	0.445	11.483	6.499	13.901	16.751	98.315
InvestmentAdvisor	30,947	0.000	0.885	12.027	8.848	12.345	18.977	94.841
PensionFunds	30,951	0.000	0.000	1.500	0.176	3.671	1.340	87.460
PrivateEquity	30,951	0.000	0.000	0.536	0.000	3.750	0.000	76.782
SR Institutional Ownership								
InstOwnershipPRI	30,948	0.000	0.000	9.793	3.837	13.278	15.348	92.826
BankandTrustPRI	30,951	0.000	0.000	0.110	0.000	0.807	0.025	69.301
InsuranceCompanyPRI	30,951	0.000	0.000	0.083	0.000	0.671	0.000	19.276
HedgeFundsPRI	30,951	0.000	0.000	5.319	1.516	8.139	7.446	79.312
InvestmentAdvisorPRI	30,951	0.000	0.000	3.736	0.917	5.814	5.545	82.670
PensionFundsPRI	30,951	0.000	0.000	0.436	0.000	1.459	0.276	72.054
PrivateEquityPRI	30,951	0.000	0.000	0.111	0.000	1.831	0.000	76.782
Non-SR Institutional Ownership								
InstOwnershipNonPRI	30,878	0.000	2.102	18.856	13.004	19.842	28.809	99.903
BankandTrustNonPRI	30,951	0.000	0.000	0.615	0.042	3.744	0.289	89.118
InsuranceCompanyNonPRI	30,951	0.000	0.000	0.244	0.000	1.728	0.021	64.168
HedgeFundsNonPRI	30,947	0.000	0.105	6.174	2.713	9.139	7.946	88.496
InvestmentAdvisorNonPRI	30,947	0.000	0.521	8.291	5.317	9.654	12.363	94.841
PensionFundsNonPRI	30,951	0.000	0.000	1.064	0.095	3.194	0.659	87.460
PrivateEquityNonPRI	30,951	0.000	0.000	0.425	0.000	3.236	0.000	76.081

Financial Condition Measures								
KZ_Index	5,059	-34.880	-30.369	-28.995	-28.806	2.172	-27.541	-23.077
MarketToBookRatio	22,899	0.876	0.998	1.034	1.029	0.060	1.067	1.199
Control Variables								
SA_Index	25,938	-19.634	-15.979	-14.804	-14.707	1.736	-13.598	-10.029
CashHoldings	15,564	1.313	1.576	1.653	1.668	0.119	1.741	1.929
CapitalExpenditures	21,264	0.311	0.767	0.810	0.831	0.085	0.869	0.951
Tangibility	23,725	0.702	0.861	0.905	0.923	0.068	0.956	1.003
ResearchDevelopmentExp	8,764	0.618	0.767	0.809	0.821	0.069	0.858	0.995
Leverage	15,875	1.765	1.896	1.934	1.934	0.063	1.974	2.103
ROA	21,785	-0.673	1.203	1.703	1.795	0.894	2.304	4.063
BoardGenderDiversityPercentage	11,164	3.850	15.380	26.187	25.000	12.582	33.330	100.000

Table 3: Summary Statistics Not Included Institutional Investor Types

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
EndowmentFund	30,951	0.000	0.000	0.019	0.000	0.507	0.000	36.978
Foundation	30,951	0.000	0.000	0.042	0.000	0.559	0.000	22.510
GovernmentAgency	30,951	0.000	0.000	2.099	0.000	9.898	0.000	99.900
ResearchFirms	30,951	0.000	0.000	0.089	0.000	0.645	0.000	47.171
Institutions	32,580	0.000	0.000	0.011	0.000	0.704	0.000	77.270
MutualFund	32,580	0.000	0.000	0.00001	0.000	0.001	0.000	0.191
EndowmentFundPRI	30,951	0.000	0.000	0.0004	0.000	0.028	0.000	4.149
FoundationPRI	30,951	0.000	0.000	0.00001	0.000	0.0004	0.000	0.048
GovernmentAgencyPRI	32,580	0	0	0.000	0	0.000	0	0
ResearchFirmsPRI	30,951	0.000	0.000	0.008	0.000	0.199	0.000	10.008
InstitutionsPRI	32,580	0	0	0.000	0	0.000	0	0
MutualFundPRI	32,580	0	0	0.000	0	0.000	0	0

Table 4: Summary Statistics Instrumental Variables

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
InstOwnershipIM	30,951	0.000	18.201	24.044	25.797	13.970	35.143	45.436
NInstOwnershipIM	30,951	0.000	12.467	18.359	21.617	11.216	26.859	37.218
BankandTrustIM	30,951	0.000	0.000	0.483	0.501	0.440	0.714	1.583
InsuranceCompanyIM	30,951	0.000	0.000	0.133	0.000	0.184	0.288	1.051
HedgeFundsIM	30,951	0.000	6.079	9.337	9.965	5.956	14.500	20.378
InvestmentAdvisorIM	30,951	0.000	7.702	9.870	10.599	5.822	14.418	20.618
PensionFundsIM	30,951	0.000	0.000	1.045	1.052	0.901	1.818	3.227
PrivateEquityIM	30,951	0.000	0.000	0.061	0.000	0.215	0.000	2.141
InstOwnershipPRIIM	30,951	0.000	0.000	8.550	6.962	8.246	15.795	26.582
BankandTrustPRIIM	30,951	0.000	0.000	0.068	0.000	0.121	0.100	0.777
InsuranceCompanyPRIIM	30,951	0.000	0.000	0.008	0.000	0.036	0.000	0.344
HedgeFundsPRIIM	30,951	0.000	0.000	4.531	3.605	4.403	8.771	13.914
InvestmentAdvisorPRIIM	30,951	0.000	0.000	3.198	2.174	3.260	5.870	11.581
PensionFundsPRIIM	30,951	0.000	0.000	0.277	0.000	0.385	0.563	1.404
PrivateEquityPRIIM	30,951	0.000	0.000	0.007	0.000	0.052	0.000	0.857
InstOwnershipNonPRIIM	30,951	0.000	15.075	15.293	18.342	8.044	20.178	27.672
BankandTrustNonPRIIM	30,951	0.000	0.000	0.387	0.342	0.392	0.576	1.505
InsuranceCompanyNonPRIIM	30,951	0.000	0.000	0.093	0.000	0.143	0.175	1.051
HedgeFundsNonPRIIM	30,951	0.000	3.627	4.620	5.501	2.745	6.612	9.769
InvestmentAdvisorNonPRIIM	30,951	0.000	6.440	6.533	7.872	3.512	8.875	11.836
PensionFundsNonPRIIM	30,951	0.000	0.000	0.693	0.817	0.609	1.096	2.212
PrivateEquityNonPRIIM	30,951	0.000	0.000	0.033	0.000	0.143	0.000	2.131

Table 5: Summary Statistics Green Subset

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
ESG	3,473	16.610	57.820	67.370	67.580	13.414	77.600	95.570
EnvironmentalScore	3,454	1.310	53.842	66.416	69.265	19.587	82.148	99.140
SocialScore	3,473	12.340	59.990	70.828	72.830	16.614	83.780	98.470
GovernanceScore	3,473	8.980	49.930	63.402	65.560	19.201	78.460	99.330
InstOwnershipPRI	6,878	0.000	0.000	8.618	3.018	12.169	13.136	84.563
BankandTrustPRI	6,878	0.000	0.000	0.130	0.000	1.478	0.022	69.301
InsuranceCompanyPRI	6,878	0.000	0.000	0.104	0.000	0.712	0.000	13.733
HedgeFundsPRI	6,878	0.000	0.000	4.441	1.233	7.003	6.258	79.312
InvestmentAdvisorPRI	6,878	0.000	0.000	3.285	0.680	5.176	4.896	47.586
PensionFundsPRI	6,878	0.000	0.000	0.481	0.000	1.610	0.290	72.054
PrivateEquityPRI	6,878	0.000	0.000	0.173	0.000	2.699	0.000	76.782
InstOwnershipNonPRI	6,856	0.000	0.814	17.056	11.509	19.189	24.523	98.922
BankandTrustNonPRI	6,878	0.000	0.000	0.772	0.033	5.373	0.237	89.118
InsuranceCompanyNonPRI	6,878	0.000	0.000	0.139	0.000	0.788	0.013	27.751
HedgeFundsNonPRI	6,877	0.000	0.005	4.960	2.314	7.777	6.305	88.496
InvestmentAdvisorNonPRI	6,877	0.000	0.089	7.143	4.506	8.766	10.438	76.556
PensionFundsNonPRI	6,878	0.000	0.000	0.996	0.088	3.203	0.575	56.063
PrivateEquityNonPRI	6,878	0.000	0.000	0.545	0.000	3.793	0.000	76.081
KZ_Index	1,387	-34.880	-30.274	-29.092	-28.881	2.145	-27.634	-23.275
MarketToBookRatio	5,267	0.876	0.994	1.025	1.024	0.055	1.054	1.199
SA_Index	5,739	-19.632	-16.506	-15.319	-15.189	1.656	-14.045	-10.115
CashHoldings	4,014	1.313	1.580	1.652	1.672	0.117	1.741	1.916
CapitalExpenditures	5,096	0.311	0.770	0.812	0.835	0.085	0.869	0.951
Tangibility	5,540	0.704	0.880	0.912	0.927	0.064	0.960	1.000
ResearchDevelopmentExp	2,458	0.618	0.780	0.816	0.830	0.065	0.861	0.960
Leverage	4,145	1.765	1.908	1.940	1.940	0.058	1.975	2.103
ROA	4,900	-0.673	1.147	1.617	1.714	0.844	2.183	4.030
BoardGenderDiversityPercentage	2,775	3.850	16.670	27.255	27.270	12.838	36.360	75.000

Table 6: Summary Statistics Brown Subset

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
ESG	4,000	1.470	21.420	39.597	37.810	20.848	55.972	92.360
EnvironmentalScore	3,531	0.130	20.250	39.997	36.850	24.419	58.450	98.940
SocialScore	3,996	0.120	21.598	41.829	38.560	24.310	61.677	97.990
GovernanceScore	4,000	0.490	22.268	41.361	39.565	22.794	59.510	96.870
InstOwnershipPRI	6,858	0.000	0.000	10.452	4.241	13.907	16.437	89.409
BankandTrustPRI	6,859	0.000	0.000	0.114	0.000	0.509	0.035	15.235
InsuranceCompanyPRI	6,859	0.000	0.000	0.075	0.000	0.704	0.000	17.301
HedgeFundsPRI	6,859	0.000	0.000	6.016	1.781	8.937	8.432	61.496
InvestmentAdvisorPRI	6,859	0.000	0.000	3.763	0.995	5.669	5.636	75.281
PensionFundsPRI	6,859	0.000	0.000	0.395	0.000	1.351	0.271	25.019
PrivateEquityPRI	6,859	0.000	0.000	0.096	0.000	1.144	0.000	30.197
InstOwnershipNonPRI	6,847	0.000	2.805	19.229	13.422	19.665	29.909	97.144
BankandTrustNonPRI	6,859	0.000	0.000	0.500	0.055	2.180	0.345	72.700
InsuranceCompanyNonPRI	6,859	0.000	0.000	0.169	0.000	0.716	0.017	22.300
HedgeFundsNonPRI	6,856	0.000	0.214	6.799	2.959	9.628	9.242	75.085
InvestmentAdvisorNonPRI	6,859	0.000	0.875	8.682	5.615	9.546	13.379	94.841
PensionFundsNonPRI	6,859	0.000	0.000	1.330	0.102	3.999	0.777	70.971
PrivateEquityNonPRI	6,859	0.000	0.000	0.344	0.000	2.842	0.000	65.077
KZ_Index	1,073	-34.821	-30.239	-28.795	-28.609	2.181	-27.283	-23.077
MarketToBookRatio	5,355	0.876	0.995	1.031	1.025	0.058	1.064	1.198
SA_Index	6,017	-19.624	-15.742	-14.646	-14.643	1.625	-13.533	-10.029
CashHoldings	3,309	1.313	1.570	1.646	1.655	0.116	1.731	1.923
CapitalExpenditures	4,974	0.354	0.755	0.805	0.827	0.090	0.868	0.951
Tangibility	5,364	0.702	0.855	0.904	0.924	0.071	0.957	1.000
ResearchDevelopmentExp	1,747	0.618	0.755	0.803	0.815	0.069	0.850	0.965
Leverage	3,299	1.765	1.886	1.928	1.928	0.065	1.966	2.101
ROA	5,041	-0.673	1.322	1.836	1.907	0.913	2.463	4.057
BoardGenderDiversityPercentage	2,658	4.170	14.290	25.327	25.000	12.416	33.330	66.670

Table 7: Summary Statistics Middle Subset

Statistic	N	Min	Pctl(25)	Mean	Median	St. Dev.	Pctl(75)	Max
ESG	11,023	1.020	43.590	57.235	58.200	18.091	71.475	95.720
EnvironmentalScore	10,715	0.210	37.920	56.747	59.260	24.645	77.895	99.140
SocialScore	11,023	0.250	43.825	59.784	61.680	21.400	77.145	98.470
GovernanceScore	11,023	1.490	39.230	55.487	56.890	21.310	72.495	99.330
InstOwnershipPRI	20,272	0.000	0.000	9.541	3.770	12.967	14.902	92.826
BankandTrustPRI	20,273	0.000	0.000	0.119	0.000	0.945	0.025	69.301
InsuranceCompanyPRI	20,273	0.000	0.000	0.083	0.000	0.635	0.000	14.350
HedgeFundsPRI	20,273	0.000	0.000	5.043	1.452	7.773	7.084	79.312
InvestmentAdvisorPRI	20,273	0.000	0.000	3.702	0.933	5.711	5.515	59.297
PensionFundsPRI	20,273	0.000	0.000	0.468	0.000	1.560	0.290	72.054
PrivateEquityPRI	20,273	0.000	0.000	0.121	0.000	2.088	0.000	76.782
InstOwnershipNonPRI	20,226	0.000	1.990	18.643	12.772	19.843	27.999	99.903
BankandTrustNonPRI	20,273	0.000	0.000	0.702	0.046	4.336	0.298	89.118
InsuranceCompanyNonPRI	20,273	0.000	0.000	0.268	0.000	1.975	0.020	64.168
HedgeFundsNonPRI	20,272	0.000	0.109	5.848	2.661	8.738	7.387	88.496
InvestmentAdvisorNonPRI	20,271	0.000	0.453	8.010	5.164	9.525	11.743	83.489
PensionFundsNonPRI	20,273	0.000	0.000	1.045	0.098	3.072	0.654	87.460
PrivateEquityNonPRI	20,273	0.000	0.000	0.461	0.000	3.359	0.000	76.081
KZ_Index	3,742	-34.880	-30.471	-29.129	-28.915	2.115	-27.727	-23.224
MarketToBookRatio	15,675	0.876	0.998	1.030	1.027	0.057	1.062	1.199
SA_Index	17,264	-19.634	-16.256	-15.082	-14.968	1.716	-13.863	-10.054
CashHoldings	10,993	1.313	1.581	1.656	1.674	0.119	1.745	1.929
CapitalExpenditures	14,871	0.311	0.769	0.811	0.831	0.082	0.867	0.951
Tangibility	16,524	0.702	0.865	0.905	0.923	0.066	0.955	1.000
ResearchDevelopmentExp	6,683	0.618	0.773	0.812	0.823	0.068	0.860	0.995
Leverage	11,490	1.765	1.901	1.937	1.936	0.062	1.976	2.103
ROA	14,714	-0.673	1.179	1.656	1.761	0.878	2.248	4.063
BoardGenderDiversityPercentage	8,442	3.850	16.670	26.439	25.000	12.633	35.290	100.000

Table 8: Pearson Correlation Matrix

	ESG	Environme	SocialScor	Governanc	InstOwner	NInstOwn	CashHoldi	CapitalExp
BoardGen	0.207	0.119	0.255	0.127	0.114	0.008	-0.019	-0.054
ROA	-0.062	-0.091	-0.029	-0.039	0.020	-0.053	-0.021	-0.028
Leverage	0.144	0.124	0.116	0.127	0.126	-0.041	0.070	-0.079
SA_Index	-0.481	-0.491	-0.400	-0.268	-0.076	0.158	-0.353	-0.021
ResearchD	0.131	0.074	0.143	0.085	-0.028	-0.094	0.160	-0.036
Tangibility	0.077	0.130	-0.004	0.065	-0.024	0.014	-0.104	0.133
CapitalExp	-0.020	-0.020	-0.007	-0.029	-0.025	-0.095	-0.018	1
CashHoldi	0.198	0.251	0.160	0.059	-0.115	-0.013	1	-0.018
NInstOwn	-0.120	-0.095	-0.095	-0.092	-0.651	1	-0.013	-0.095
InstOwner	0.105	0.042	0.076	0.144	1	-0.651	-0.115	-0.025
Governanc	0.689	0.344	0.402	1	0.144	-0.092	0.059	-0.029
SocialScor	0.874	0.643	1	0.402	0.076	-0.095	0.160	-0.007
Environme	0.827	1	0.643	0.344	0.042	-0.095	0.251	-0.020
ESG	1	0.827	0.874	0.689	0.105	-0.120	0.198	-0.020

-0.087	0.038	-0.046	0.066	-0.066	1
-0.074	0.211	0.132	-0.154	1	-0.066
-0.165	0.067	-0.052	1	-0.154	0.066
-0.152	0.015	1	-0.052	0.132	-0.046
-0.330	1	0.015	0.067	0.211	0.038
1	-0.330	-0.152	-0.165	-0.074	-0.087
0.133	-0.036	-0.021	-0.079	-0.028	-0.054
-0.104	0.160	-0.353	0.070	-0.021	-0.019
0.014	-0.094	0.158	-0.041	-0.053	0.008
-0.024	-0.028	-0.076	0.126	0.020	0.114
0.065	0.085	-0.268	0.127	-0.039	0.127
-0.004	0.143	-0.400	0.116	-0.029	0.255
0.130	0.074	-0.491	0.124	-0.091	0.119
0.077	0.131	-0.481	0.144	-0.062	0.207
Tangibility	ResearchD	SA_Index	Leverage	ROA	BoardGen

8.3 Appendix C – Breusch-Pagan & Hausman Test

Table 9: Breusch-Pagan Langrange Multplier Test

	statistic	p.value	parameter	method	alternative
1	c(chisq = 4635.92866423736)	c(chisq = 0)	c(df = 1)	Lagrange Multiplier Test - (Breusch-Pagan)	significant effects

Table 10: Hausman Test

	statistic	p.value	parameter	method	alternative
1	c(chisq = 128.461628385241)	9.61914474718237e-23	c(df = 10)	Hausman Test	one model is inconsistent

8.4 Appendix D – Fixed Effects Regression Results

Table 11: Fixed Effects Regression Hypothesis 1

	Dependent variable:							
	ESG	EnvironmentalScore	SocialScore	GovernanceScore	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InstOwnership	0.100***	0.100**	0.082*	0.131***	0.105***	0.118***	0.098**	0.104**
	(0.032)	(0.045)	(0.044)	(0.045)	(0.033)	(0.043)	(0.044)	(0.045)
NInstOwnership					0.011	0.060	0.051	-0.112***
					(0.031)	(0.047)	(0.036)	(0.043)
SA_Index	-17.581***	-18.946***	-21.548***	-9.946***	-17.308***	-18.554***	-21.200***	-9.932***
	(1.214)	(1.674)	(1.560)	(1.588)	(1.224)	(1.697)	(1.563)	(1.585)
BoardGenderDiversityPercentage	0.109***	0.047	0.157***	0.115**	0.112***	0.051	0.160***	0.116**
	(0.039)	(0.053)	(0.048)	(0.048)	(0.039)	(0.053)	(0.048)	(0.047)
CapitalExpenditures	15.624	25.465*	36.126**	-19.634	14.141	24.612*	35.488**	-23.211
	(12.412)	(13.767)	(16.404)	(19.921)	(12.148)	(13.006)	(16.162)	(19.950)
CashHoldings	-2.078	2.311	-4.068	-2.828	-1.952	2.732	-3.797	-3.287
	(3.726)	(4.868)	(5.152)	(7.056)	(3.721)	(4.863)	(5.162)	(6.915)
Leverage	1.657	-6.659	-6.630	21.233**	1.825	-6.532	-6.530	21.544**
	(5.766)	(7.635)	(7.866)	(8.438)	(5.719)	(7.536)	(7.775)	(8.510)
ResearchDevelopmentExp	15.233	38.289	1.966	4.462	15.072	38.053	2.031	3.927
	(16.830)	(24.250)	(20.041)	(21.998)	(16.867)	(24.281)	(20.134)	(21.914)
ROA	0.276	-0.379	0.527	0.808	0.248	-0.400	0.507	0.756
	(0.401)	(0.524)	(0.587)	(0.613)	(0.400)	(0.521)	(0.585)	(0.613)
Tangibility	18.335	22.281	-32.458	106.651**	20.868	24.606	-30.170	110.068**
	(35.146)	(44.714)	(45.337)	(51.148)	(35.057)	(44.637)	(45.148)	(50.380)
Observations	2,919	2,896	2,919	2,919	2,913	2,890	2,913	2,913
R^2	0.456	0.314	0.414	0.135	0.454	0.313	0.413	0.139
Adjusted R^2	0.366	0.202	0.317	-0.008	0.363	0.201	0.315	-0.004
F Statistic	232.772***(df = 9; 2504)	126.806*** (df = 9; 2488)	196.747***(df = 9; 2504)	43.429*** (df = 9; 2504)	207.701***(df = 10; 2497)	113.269*** (df = 10; 2481)	175.558***(df = 10; 2497)	40.252*** (df = 10; 2497)
Company FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p<0.1; **p<0.05; ***p<0.01

Table 12: Fixed Effects Regression Hypothesis 2

	Dependent variable:							
	ESG	EnvironmentalScore	SocialScore	GovernanceScore	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InstOwnershipPRI	0.142***	0.193***	0.170***	0.037	0.159***	0.200***	0.179***	0.084
	(0.043)	(0.059)	(0.054)	(0.065)	(0.045)	(0.062)	(0.058)	(0.067)
InstOwnershipNonPRI					0.062*	0.040	0.024	0.151***
					(0.036)	(0.052)	(0.050)	(0.050)
SA_Index	-16.330***	-16.928***	-19.758***	-10.469***	-16.507***	-17.170***	-19.851***	-10.654***
	(1.364)	(1.848)	(1.727)	(1.861)	(1.371)	(1.857)	(1.727)	(1.898)
BoardGenderDiversityPercentage	0.089**	0.022	0.130***	0.110**	0.095**	0.022	0.131***	0.130***
	(0.038)	(0.053)	(0.049)	(0.048)	(0.037)	(0.052)	(0.049)	(0.047)
CapitalExpenditures	12.849	19.689	32.164**	-16.604	12.241	19.571	31.006*	-17.388
	(12.255)	(13.677)	(16.140)	(20.387)	(12.190)	(13.771)	(16.061)	(19.665)
CashHoldings	-1.915	1.609	-3.508	-1.456	-1.772	2.803	-3.666	-2.778
	(3.723)	(4.980)	(5.159)	(7.048)	(3.730)	(4.797)	(5.200)	(7.015)
Leverage	1.321	-7.636	-7.143	22.223***	1.375	-7.132	-7.215	21.690**
	(5.771)	(7.639)	(7.839)	(8.501)	(5.761)	(7.624)	(7.836)	(8.460)
ResearchDevelopmentExp	16.560	38.677	3.297	6.716	15.534	38.006	2.660	4.563
	(16.243)	(23.546)	(19.520)	(21.476)	(16.479)	(23.635)	(19.635)	(22.071)
ROA	0.260	-0.400	0.486	0.823	0.266	-0.393	0.516	0.803
	(0.402)	(0.526)	(0.581)	(0.622)	(0.400)	(0.525)	(0.582)	(0.612)
Tangibility	16.064	21.485	-35.394	103.078*	18.134	21.956	-33.424	107.705**
	(34.735)	(44.038)	(44.099)	(52.570)	(34.645)	(44.138)	(44.328)	(51.314)
Observations	2,929	2,906	2,929	2,929	2,923	2,900	2,923	2,923
R^2	0.457	0.318	0.418	0.129	0.458	0.319	0.418	0.136
Adjusted R^2	0.367	0.207	0.321	-0.015	0.368	0.208	0.322	-0.008
F Statistic	234.905***(df = 9; 2513)	129.443*** (df = 9; 2497)	200.237***(df = 9; 2513)	41.287*** (df = 9; 2513)	211.914***(df = 10; 2506)	116.841*** (df = 10; 2490)	180.229***(df = 10; 2506)	39.318*** (df = 10; 2506)
Company FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p<0.1; **p<0.05; ***p<0.01

Table 13: Fixed Effects Regression Hypothesis 2 – Bank and Trust

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
BankandTrustPRI	0.914***	1.682***	1.181***	-0.572
	(0.314)	(0.488)	(0.376)	(0.669)
BankandTrustNonPRI	0.025	0.151	-0.115	0.011
	(0.176)	(0.323)	(0.266)	(0.242)
SA_Index	-18.110***	-19.260***	-21.856***	-11.122***
	(1.192)	(1.649)	(1.538)	(1.571)
BoardGenderDiversityPercentage	0.112***	0.054	0.155***	0.117**
	(0.039)	(0.053)	(0.049)	(0.049)
CapitalExpenditures	19.388	28.582**	39.851**	-14.679
	(12.200)	(13.184)	(16.181)	(20.191)
CashHoldings	-2.187	1.219	-3.746	-1.660
	(3.747)	(5.141)	(5.110)	(7.082)
Leverage	1.641	-7.494	-6.815	22.762***
	(5.831)	(7.728)	(7.908)	(8.470)
ResearchDevelopmentExp	21.292	46.949*	9.841	4.332
	(17.008)	(23.998)	(20.374)	(20.945)
ROA	0.298	-0.339	0.533	0.814
	(0.403)	(0.520)	(0.583)	(0.622)
Tangibility	15.757	20.697	-35.588	102.968*
	(35.798)	(44.709)	(45.167)	(52.856)
Observations	2,929	2,906	2,929	2,929
R^2	0.452	0.314	0.414	0.129
Adjusted R^2	0.361	0.201	0.317	-0.015
F Statistic	207.036*** (df = 10; 2512)	114.000*** (df = 10; 2496)	177.600*** (df = 10; 2512)	37.244*** (df = 10; 2512)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 14: Fixed Effects Regression Hypothesis 2 – Insurance Company

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InsuranceCompanyPRI	0.661	1.198*	0.825	-0.057
	(0.496)	(0.625)	(0.802)	(0.580)
InsuranceCompanyNonPRI	0.933***	0.815*	0.727**	1.031
	(0.325)	(0.423)	(0.316)	(0.672)
SA_Index	-18.389***	-19.605***	-22.152***	-11.173***
	(1.186)	(1.641)	(1.525)	(1.537)
BoardGenderDiversityPercentage	0.118***	0.060	0.163***	0.121**
	(0.039)	(0.053)	(0.048)	(0.048)
CapitalExpenditures	19.303	28.896**	40.176**	-15.587
	(12.163)	(12.952)	(16.212)	(20.499)
CashHoldings	-2.274	1.064	-3.968	-1.481
	(3.757)	(5.174)	(5.114)	(7.068)
Leverage	1.394	-7.509	-6.894	21.997***
	(5.690)	(7.631)	(7.903)	(8.103)
ResearchDevelopmentExp	20.443	43.007*	7.317	8.644
	(16.567)	(23.663)	(20.088)	(21.329)
ROA	0.340	-0.319	0.558	0.892
	(0.397)	(0.523)	(0.589)	(0.610)
Tangibility	15.156	19.664	-36.872	103.971**
	(35.539)	(44.866)	(45.162)	(52.609)
Observations	2,929	2,906	2,929	2,929
R^2	0.455	0.313	0.414	0.132
Adjusted R^2	0.364	0.200	0.317	-0.012
F Statistic	209.429^{***} (df = 10; 2512)	113.716^{***} (df = 10; 2496)	177.218^{***} (df = 10; 2512)	38.201^{***} (df = 10; 2512)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 15: Fixed Effects Regression Hypothesis 2 – Hedge Fund

	Dependent variable:

	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
HedgeFundsPRI	0.166**	0.124	0.192**	0.159
	(0.072)	(0.098)	(0.089)	(0.097)
HedgeFundsNonPRI	-0.019	-0.141	-0.070	0.182**
	(0.050)	(0.093)	(0.067)	(0.082)
SA_Index	-17.158***	-18.371***	-20.656***	-10.480***
	(1.286)	(1.774)	(1.675)	(1.671)
BoardGenderDiversityPercentage	0.093**	0.031	0.132***	0.112**
	(0.038)	(0.053)	(0.048)	(0.048)
CapitalExpenditures	15.936	25.164*	35.645**	-16.792
	(12.267)	(13.162)	(16.028)	(19.717)
CashHoldings	-2.021	1.738	-3.508	-1.863
	(3.761)	(5.027)	(5.166)	(6.961)
Leverage	2.067	-6.291	-6.115	21.802**
	(5.797)	(7.683)	(7.863)	(8.467)
ResearchDevelopmentExp	16.117	39.133*	2.830	5.716
	(16.457)	(23.744)	(19.886)	(21.499)
ROA	0.264	-0.441	0.474	0.889
	(0.406)	(0.527)	(0.586)	(0.615)
Tangibility	16.718	20.409	-35.383	107.023**
	(35.156)	(44.315)	(44.574)	(52.123)
Observations	2,929	2,906	2,929	2,929
R^2	0.453	0.313	0.415	0.133
Adjusted R^2	0.363	0.201	0.318	-0.011
F Statistic	208.287*** (df = 10; 2512)	113.942*** (df = 10; 2496)	178.336*** (df = 10; 2512)	38.528*** (df = 10; 2512)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 16: Fixed Effects Regression Hypothesis 2 – Investment Advisor

	Dependent variable:

	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InvestmentAdvisorPRI	0.222***	0.389***	0.192**	0.074
	(0.068)	(0.104)	(0.097)	(0.113)
InvestmentAdvisorNonPRI	0.066	0.150**	0.006	0.108
	(0.050)	(0.076)	(0.061)	(0.083)
SA_Index	-17.152***	-17.668***	-21.012***	-10.799***
	(1.299)	(1.769)	(1.621)	(1.801)
BoardGenderDiversityPercentage	0.107***	0.047	0.150***	0.121**
	(0.038)	(0.053)	(0.049)	(0.048)
CapitalExpenditures	13.362	17.745	35.105**	-17.363
	(12.229)	(13.246)	(16.379)	(20.178)
CashHoldings	-2.120	1.240	-3.753	-1.609
	(3.792)	(5.031)	(5.140)	(7.101)
Leverage	1.796	-6.964	-6.661	22.672***
	(5.871)	(7.737)	(7.938)	(8.511)
ResearchDevelopmentExp	16.807	38.906	3.792	6.688
	(16.421)	(23.916)	(19.772)	(21.505)
ROA	0.228	-0.472	0.485	0.776
	(0.402)	(0.521)	(0.586)	(0.620)
Tangibility	17.904	26.339	-35.929	107.169**
	(34.791)	(43.737)	(45.000)	(51.417)
Observations	2,929	2,906	2,929	2,929
R^2	0.455	0.320	0.413	0.130
Adjusted R^2	0.364	0.209	0.316	-0.014
F Statistic	209.335*** (df = 10; 2512)	117.658*** (df = 10; 2496)	176.995*** (df = 10; 2512)	37.626*** (df = 10; 2512)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 17: Fixed Effects Regression Hypothesis 2 – Pension Fund

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
PensionFundsPRI	0.618	0.602	0.959**	0.105
	(0.386)	(0.459)	(0.406)	(0.643)
PensionFundsNonPRI	0.175	-0.307	0.359	0.264
	(0.213)	(0.334)	(0.244)	(0.355)
SA_Index	-17.834***	-18.778***	-21.452***	-11.082***
	(1.266)	(1.666)	(1.579)	(1.726)
BoardGenderDiversityPercentage	0.105***	0.050	0.145***	0.113**
	(0.038)	(0.052)	(0.048)	(0.047)
CapitalExpenditures	19.898	30.002**	40.549**	-15.205
	(12.459)	(13.405)	(16.586)	(20.169)
CashHoldings	-2.273	1.280	-3.924	-1.569
	(3.646)	(5.045)	(5.044)	(7.010)
Leverage	1.898	-6.485	-6.607	22.223***
	(5.701)	(7.610)	(7.741)	(8.420)
ResearchDevelopmentExp	18.159	39.483*	5.681	7.500
	(16.515)	(23.535)	(19.908)	(21.514)
ROA	0.247	-0.453	0.468	0.842
	(0.403)	(0.517)	(0.583)	(0.617)
Tangibility	13.929	22.943	-39.166	101.177*
	(35.839)	(45.072)	(44.771)	(52.844)
Observations	2,929	2,906	2,929	2,929
R^2	0.453	0.312	0.417	0.129
Adjusted R^2	0.362	0.199	0.320	-0.015
F Statistic	208.007*** (df = 10; 2512)	113.296*** (df = 10; 2496)	179.420*** (df = 10; 2512)	37.265*** (df = 10; 2512)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 18: Fixed Effects Regression Hypothesis 2 – Private Equity

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
PrivateEquityPRI	0.309	0.660*	0.728	-0.403
	(0.446)	(0.345)	(0.457)	(0.588)
PrivateEquityNonPRI	0.037	-0.050	0.156	0.072
	(0.157)	(0.273)	(0.161)	(0.198)
SA_Index	-18.322***	-19.603***	-22.164***	-11.021***
	(1.199)	(1.656)	(1.544)	(1.561)
BoardGenderDiversityPercentage	0.114***	0.056	0.161***	0.116**
	(0.039)	(0.053)	(0.048)	(0.049)
CapitalExpenditures	19.486	28.220**	40.150**	-14.337
	(12.193)	(13.154)	(16.156)	(20.211)
CashHoldings	-2.400	1.054	-4.265	-1.614
	(3.793)	(5.225)	(5.139)	(7.040)
Leverage	1.868	-7.247	-6.798	22.847***
	(5.800)	(7.730)	(7.838)	(8.512)
ResearchDevelopmentExp	16.118	37.567	1.259	8.241
	(16.542)	(23.801)	(19.994)	(21.191)
ROA	0.296	-0.352	0.561	0.814
	(0.407)	(0.521)	(0.591)	(0.624)
Tangibility	15.237	21.374	-37.564	102.675*
	(35.736)	(44.748)	(45.326)	(52.924)
Observations	2,929	2,906	2,929	2,929
R^2	0.450	0.310	0.413	0.129
Adjusted R^2	0.359	0.197	0.316	-0.015
F Statistic	205.474*** (df = 10; 2512)	112.116*** (df = 10; 2496)	176.790*** (df = 10; 2512)	37.216*** (df = 10; 2512)

Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				$^{*}p<0.1; ^{**}p<0.05; ^{***}p<0.01$

Table 19: Fixed Effects Regression Hypothesis 2 – Green Subset

	Dependent variable:							
	ESG	EnvironmentalScore	SocialScore	GovernanceScore	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InstOwnershipPRI	0.178***	0.282***	0.129	0.079	0.170***	0.249***	0.096	0.152
	(0.062)	(0.089)	(0.083)	(0.096)	(0.065)	(0.089)	(0.081)	(0.104)
InstOwnershipNonPRI					0.001	-0.036	-0.089	0.194**
					(0.049)	(0.069)	(0.070)	(0.078)
SA_Index	-8.837***	-5.279**	-12.955***	-8.571***	-9.002***	-5.732***	-12.993***	-8.416***
	(2.052)	(2.134)	(2.920)	(3.088)	(2.071)	(2.150)	(2.930)	(3.100)
BoardGenderDiversityPercentage	0.025	-0.034	0.082	0.007	0.022	-0.049	0.070	0.036
	(0.048)	(0.062)	(0.070)	(0.083)	(0.047)	(0.060)	(0.071)	(0.082)
CapitalExpenditures	-10.075	-1.171	6.451	-30.310	-10.505	0.148	8.080	-36.878
	(14.227)	(14.189)	(20.021)	(34.922)	(14.634)	(12.906)	(22.162)	(32.254)
CashHoldings	-8.690	-6.670	-16.498*	1.439	-7.303	-1.548	-16.178	-2.074
	(6.700)	(8.978)	(9.983)	(10.153)	(6.619)	(7.476)	(10.151)	(9.500)
Leverage	14.905*	21.304*	-6.310	38.085**	15.391*	23.141*	-5.925	36.312**
	(8.887)	(12.281)	(11.159)	(16.131)	(8.865)	(12.184)	(11.126)	(15.624)
ResearchDevelopmentExp	-10.454	23.145	-17.745	-33.004	-11.169	22.546	-16.571	-36.476
	(16.383)	(27.495)	(24.521)	(33.572)	(16.748)	(27.460)	(23.944)	(33.248)
ROA	0.512	-0.523	0.763	1.311	0.503	-0.568	0.768	1.356
	(0.574)	(0.789)	(0.708)	(1.060)	(0.587)	(0.788)	(0.714)	(1.039)
Tangibility	-89.295	15.213	-188.094**	-72.135	-89.165	10.615	-194.515**	-53.930
	(73.406)	(84.671)	(85.709)	(117.736)	(72.870)	(85.083)	(87.839)	(111.879)
Observations	965	964	965	965	959	958	959	959
R^2	0.363	0.186	0.353	0.109	0.357	0.183	0.357	0.119
Adjusted R^2	0.252	0.045	0.241	-0.045	0.245	0.039	0.244	-0.036
F Statistic	51.935***(df = 9; 822)	20.835*** (df = 9; 821)	49.879***(df = 9; 822)	11.156*** (df = 9; 822)	45.332***(df = 10; 815)	18.207*** (df = 10; 814)	45.288***(df = 10; 815)	11.000*** (df = 10; 815)
Company FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Note:								*p<0.1; **p<0.05; ***p<0.01

Table 20: Fixed Effects Regression Hypothesis 2 – Brown Subset

	Dependent variable:							
	ESG	EnvironmentalScore	SocialScore	GovernanceScore	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InstOwnershipPRI	0.179*	0.307**	0.181	0.089	0.212**	0.315**	0.177	0.139
	(0.092)	(0.141)	(0.135)	(0.111)	(0.096)	(0.142)	(0.143)	(0.117)
InstOwnershipNonPRI					0.082	0.021	-0.010	0.125
					(0.063)	(0.154)	(0.122)	(0.108)
SA_Index	-22.280***	-22.788***	-24.262***	-17.012***	-22.231***	-22.789***	-24.268***	-16.938***
	(2.425)	(3.065)	(3.862)	(2.494)	(2.427)	(3.067)	(3.867)	(2.495)
BoardGenderDiversityPercentage	0.265***	0.382***	0.279*	0.099	0.275***	0.384***	0.277*	0.113
	(0.095)	(0.136)	(0.146)	(0.109)	(0.096)	(0.141)	(0.145)	(0.109)
CapitalExpenditures	25.851	48.094	57.867**	-41.554	28.378	48.717	57.558**	-37.699
	(27.347)	(42.719)	(24.791)	(47.486)	(26.668)	(42.619)	(24.228)	(46.326)
CashHoldings	3.637	7.793	2.003	9.933	4.090	7.751	1.947	10.623
	(7.833)	(12.947)	(11.916)	(12.443)	(7.806)	(12.916)	(11.996)	(12.078)
Leverage	-4.897	-10.436	4.845	-10.217	-4.771	-10.433	4.829	-10.025
	(9.959)	(10.385)	(18.858)	(11.915)	(9.925)	(10.405)	(18.872)	(11.766)
ResearchDevelopmentExp	-58.919**	-58.379	-100.311**	-8.098	-58.148**	-58.290	-100.406**	-6.922
	(29.450)	(43.994)	(46.697)	(36.987)	(29.328)	(44.011)	(46.432)	(36.779)
ROA	0.794	-1.674	0.909	2.817**	0.749	-1.678	0.914	2.748**
	(0.813)	(1.255)	(1.498)	(1.283)	(0.810)	(1.251)	(1.519)	(1.258)
Tangibility	101.856*	42.447	115.277	178.464**	105.303*	43.094	114.856	183.722**
	(58.112)	(79.853)	(89.164)	(82.706)	(58.373)	(80.266)	(90.315)	(81.221)
Observations	517	504	517	517	517	504	517	517
R^2	0.652	0.580	0.518	0.278	0.654	0.580	0.518	0.280
Adjusted R^2	0.591	0.509	0.433	0.151	0.592	0.508	0.432	0.152
F Statistic	91.529*** (df = 9; 439)	66.063*** (df = 9; 430)	52.361*** (df = 9; 439)	18.757*** (df = 9; 439)	82.620*** (df = 10; 438)	59.329*** (df = 10; 429)	47.020*** (df = 10; 438)	17.045*** (df = 10; 438)
Company FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p<0.1; **p<0.05; ***p<0.01

Table 21: Fixed Effects Regression Hypothesis 2 – Middle Subset

	Dependent variable:							
	ESG	EnvironmentalScore	SocialScore	GovernanceScore	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
InstOwnershipPRI	0.147***	0.198***	0.186***	0.017	0.164***	0.206***	0.201***	0.062
	(0.045)	(0.060)	(0.057)	(0.075)	(0.048)	(0.063)	(0.061)	(0.078)
InstOwnershipNonPRI					0.066*	0.055	0.043	0.147***
					(0.040)	(0.056)	(0.054)	(0.056)
SA_Index	-14.448***	-15.050***	-18.281***	-8.514***	-14.686***	-15.399***	-18.449***	-8.735***
	(1.417)	(2.011)	(1.791)	(2.139)	(1.433)	(2.027)	(1.794)	(2.195)
BoardGenderDiversityPercentage	0.078**	-0.026	0.118**	0.138***	0.083**	-0.026	0.121**	0.157***
	(0.036)	(0.051)	(0.047)	(0.051)	(0.036)	(0.050)	(0.048)	(0.049)
CapitalExpenditures	13.134	17.464	28.983	-7.511	11.954	16.921	27.133	-9.372
	(13.995)	(14.726)	(18.711)	(22.909)	(14.024)	(15.074)	(18.635)	(22.283)
CashHoldings	-3.845	-0.631	-5.954	-4.710	-3.736	0.855	-6.259	-6.530
	(4.037)	(5.283)	(5.590)	(8.047)	(4.074)	(4.988)	(5.637)	(8.070)
Leverage	1.700	-10.590	-11.932	32.805***	1.601	-10.009	-12.199	31.701***
	(6.714)	(9.261)	(8.383)	(9.980)	(6.710)	(9.253)	(8.376)	(9.943)
ResearchDevelopmentExp	32.414*	56.934**	26.538	6.044	30.645	55.319**	25.231	2.753
	(18.332)	(25.834)	(19.772)	(25.847)	(18.791)	(25.967)	(20.005)	(26.829)
ROA	0.158	-0.156	0.451	0.368	0.175	-0.145	0.494	0.368
	(0.436)	(0.549)	(0.610)	(0.698)	(0.435)	(0.546)	(0.610)	(0.690)
Tangibility	-4.738	14.507	-67.497	73.960	-3.367	14.800	-65.257	76.467
	(39.537)	(48.087)	(48.535)	(62.867)	(39.320)	(48.108)	(48.737)	(61.356)
Observations	2,382	2,372	2,382	2,382	2,376	2,366	2,376	2,376
R^2	0.421	0.274	0.406	0.107	0.422	0.276	0.407	0.114
Adjusted R^2	0.324	0.154	0.307	-0.041	0.325	0.155	0.308	-0.034
F Statistic	164.639*** (df = 9; 2041)	85.246*** (df = 9; 2034)	155.043*** (df = 9; 2041)	27.262*** (df = 9; 2041)	148.534*** (df = 10; 2034)	77.106*** (df = 10; 2027)	139.731*** (df = 10; 2034)	26.253*** (df = 10; 2034)
Company FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Note:								*p<0.1; **p<0.05; ***p<0.01

8.5 Appendix E – Instrumental Variable Test Results

Table 23: Hausman-Wu Test & Strong Instrumental Variable Test

	Dependent variable:					
	InstOwnershipPRI	InstOwnershipNonPRI	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)	(5)	(6)
InstOwnershipPRIIM	1.283***	-0.435**				
	(0.187)	(0.194)				
InstOwnershipNonPRIIM	0.410*	0.536**				
	(0.222)	(0.230)				
InstOwnershipPRI			1.215***	1.114***	1.438***	0.944**
			(0.250)	(0.321)	(0.313)	(0.399)
InstOwnershipNonPRI			1.467***	1.272**	2.050***	0.535
			(0.415)	(0.532)	(0.518)	(0.661)
residualsIOPRI			-1.307***	-1.152***	-1.501***	-1.134***
			(0.264)	(0.339)	(0.330)	(0.421)
residualsIONPRI			-1.438***	-1.313**	-1.913***	-0.550
			(0.423)	(0.542)	(0.528)	(0.674)
SA_Index	5.653*	-3.207	-9.654***	-10.561***	-11.059***	-4.513
	(2.995)	(3.102)	(3.069)	(3.932)	(3.831)	(4.891)
BoardGenderDiversityPercentage	0.006	-0.050	0.113*	0.202**	-0.007	0.187*
	(0.045)	(0.047)	(0.063)	(0.081)	(0.079)	(0.101)
CapitalExpenditures	8.520	-23.201	3.957	-16.989	-4.609	44.058
	(15.809)	(16.372)	(21.687)	(27.788)	(27.074)	(34.564)
CashHoldings	5.759	-9.638*	-1.848	0.798	1.076	-14.189
	(5.099)	(5.281)	(7.293)	(9.345)	(9.105)	(11.623)
Leverage	4.233	-2.978	-7.361	-6.555	-5.504	-8.650
	(7.714)	(7.989)	(10.444)	(13.383)	(13.039)	(16.646)
ResearchDevelopmentExp	34.163	-35.481	89.275***	82.077*	85.453**	77.756
	(21.671)	(22.443)	(32.552)	(41.710)	(40.638)	(51.880)
ROA	-1.225*	0.626	0.671	-0.029	0.314	2.054
	(0.645)	(0.668)	(0.876)	(1.122)	(1.093)	(1.396)
Tangibility	-13.812	-70.771*	135.847**	106.307	198.124**	53.185
	(38.736)	(40.117)	(63.192)	(80.969)	(78.889)	(100.712)
Observations	430	430	430	430	430	430
R^2	0.357	0.171	0.325	0.268	0.236	0.154
Adjusted R^2	0.055	-0.218	0.001	-0.083	-0.131	-0.251
F Statistic	16.181*** (df = 10; 292)	6.008*** (df = 10; 292)	11.612***(df = 12; 290)	8.856*** (df = 12; 290)	7.446***(df = 12; 290)	4.410*** (df = 12; 290)
Company FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Note:	$^{*}p^{<0.1;\ >**}p^{<0.05;\ >***}p<0.01$

Table 24: Instrumental Variable Test Hypothesis 2

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InstOwnershipPRI_IV	0.698***	0.636**	0.742**	0.766**
	(0.265)	(0.306)	(0.368)	(0.368)
InstOwnershipNonPRI	0.106	0.013	0.220	0.067
	(0.175)	(0.208)	(0.214)	(0.192)
SA_Index	-8.761**	-9.735**	-9.858*	-4.206
	(4.069)	(4.875)	(5.279)	(5.441)
BoardGenderDiversityPercentage	0.055	0.149	-0.085	0.167*
	(0.065)	(0.105)	(0.076)	(0.101)
CapitalExpenditures	-14.260	-33.846	-29.119	37.788
	(19.656)	(27.179)	(20.163)	(41.450)
CashHoldings	-10.612	-7.312	-10.715	-17.205
	(9.401)	(9.533)	(12.905)	(12.982)
Leverage	-9.616	-8.641	-8.538	-9.426
	(9.014)	(13.126)	(11.842)	(18.724)
ResearchDevelopmentExp	53.405	48.885	37.191	65.410
	(37.663)	(48.792)	(37.270)	(60.434)
ROA	1.201	0.462	1.028	2.237
	(0.944)	(1.380)	(1.060)	(1.402)
Tangibility	14.652	-5.839	35.064	11.473
	(70.817)	(114.229)	(64.615)	(104.591)
Observations	430	430	430	430
R^2	0.296	0.253	0.201	0.147
Adjusted R^2	-0.034	-0.097	-0.174	-0.253
F Statistic (df = 10; 292)	12.270***	9.903***	7.327***	5.030***
Note:				$^{*}p^{**}p^{***}p<0.01$

Table 25: Instrumental Variable Test Hypothesis 2 – Green Subset

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InstOwnershipPRI_IV	0.702***	0.361	0.850***	0.816**
	(0.138)	(0.268)	(0.302)	(0.405)
InstOwnershipNonPRI	-0.263*	-0.329	-0.219	-0.210
	(0.148)	(0.243)	(0.189)	(0.407)
SA_Index	-5.264	-8.132*	-4.053	-3.692
	(3.745)	(4.122)	(5.162)	(8.338)
BoardGenderDiversityPercentage	-0.048	0.058	-0.111	-0.054
	(0.049)	(0.089)	(0.090)	(0.092)
CapitalExpenditures	-36.439***	-47.662*	-43.756**	11.045
	(12.867)	(26.157)	(18.635)	(31.191)
CashHoldings	-30.529***	-17.003*	-36.719***	-40.282**
	(5.203)	(8.990)	(7.882)	(16.795)
Leverage	-44.924**	-72.712**	-34.587	-12.453
	(19.693)	(30.169)	(26.111)	(32.633)
ResearchDevelopmentExp	26.266	41.523	15.528	28.953
	(36.189)	(60.580)	(22.423)	(51.343)
ROA	2.863*	2.104	1.335	5.497
	(1.605)	(1.965)	(1.450)	(3.882)
Tangibility	342.595***	224.826**	244.296***	586.753**
	(72.169)	(106.343)	(90.129)	(242.245)
Observations	131	131	131	131
R^2	0.533	0.362	0.484	0.225
Adjusted R^2	0.169	-0.136	0.081	-0.381
F Statistic (df = 10; 73)	8.343^{***}	4.140^{***}	6.851^{***}	2.116^{**}
Note:				*p**p***p<0.01

Table 26: Instrumental Variable Test Hypothesis 2 – Brown Subset

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InstOwnershipPRI_IV	1.249*	1.943**	0.466	1.695
	(0.721)	(0.892)	(1.032)	(1.176)
InstOwnershipNonPRI	-0.200	-0.521*	0.103	-0.339
	(0.161)	(0.288)	(0.245)	(0.255)
SA_Index	-8.099	-8.094	-9.451	-3.899
	(7.590)	(9.944)	(8.714)	(12.799)
BoardGenderDiversityPercentage	0.162	0.435	0.133	-0.070
	(0.198)	(0.326)	(0.264)	(0.311)
CapitalExpenditures	176.805***	176.160***	141.263*	207.723
	(63.398)	(54.494)	(77.734)	(125.402)
CashHoldings	-9.937	18.855	-49.535	28.865
	(32.014)	(46.374)	(32.311)	(49.844)
Leverage	65.611***	97.522**	41.372	92.520
	(21.780)	(45.050)	(39.463)	(56.917)
ResearchDevelopmentExp	-476.656**	-721.913**	-172.944	-642.654**
	(194.321)	(292.434)	(265.612)	(284.807)
ROA	2.778	2.573	-2.040	8.282**
	(2.428)	(3.386)	(2.896)	(4.095)
Tangibility	-94.350	-94.586	-65.052	-95.158
	(83.923)	(130.763)	(96.777)	(184.252)
Observations	78	78	78	78
R^2	0.674	0.739	0.374	0.387
Adjusted R^2	0.477	0.582	-0.005	0.016
F Statistic (df = 10; 48)	9.917^{***}	13.600^{***}	2.862^{***}	3.024^{***}
Note:				*p**p***p<0.01

Table 27: Instrumental Variable Test Hypothesis 2 – Middle Subset

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
InstOwnershipPRI_IV	0.551**	0.405*	0.615**	0.672**
	(0.243)	(0.228)	(0.255)	(0.311)
InstOwnershipNonPRI	0.153	0.151	0.235**	0.085
	(0.218)	(0.100)	(0.112)	(0.137)
SA_Index	-9.591**	-10.530**	-12.711***	-2.320
	(4.744)	(4.166)	(4.669)	(5.703)
BoardGenderDiversityPercentage	-0.001	-0.021	-0.118	0.207*
	(0.062)	(0.080)	(0.089)	(0.109)
CapitalExpenditures	-34.048*	-55.302**	-50.027*	28.107
	(19.965)	(26.620)	(29.831)	(36.443)
CashHoldings	-12.123	-8.895	-8.709	-24.343**
	(9.342)	(8.539)	(9.569)	(11.690)
Leverage	-16.841**	-9.238	-17.330	-25.920
	(8.545)	(14.207)	(15.921)	(19.450)
ResearchDevelopmentExp	114.474***	116.815***	71.969	148.566**
	(34.865)	(42.023)	(47.092)	(57.530)
ROA	0.791	-0.167	1.572	1.008
	(0.888)	(1.140)	(1.277)	(1.560)
Tangibility	59.923	55.727	60.386	56.700
	(83.740)	(72.804)	(81.586)	(99.670)
Observations	345	345	345	345
R^2	0.281	0.211	0.220	0.148
Adjusted R^2	-0.075	-0.181	-0.166	-0.274
F Statistic (df = 10; 230)	9.009***	6.137***	6.504***	4.010***
Note:				*p**p***p<0.01

8.6 Appendix F – Path Analysis

Table 28: Fixed Effects Regressions Hypothesis 3 Part 1 & Robustness Tests

	Dependent variable:		
	KZ_Index	MarketToBookRatio	SA_index
	(1)	(2)	(3)
InstOwnershipPRI	-0.014***	0.0003**	-0.017***
	(0.005)	(0.0001)	(0.001)
InstOwnershipNonPRI	-0.005	-0.0001	0.002*
	(0.003)	(0.0001)	(0.001)
BoardGenderDiversityPercentage	-0.003	0.0001	-0.014***
	(0.004)	(0.0001)	(0.001)
CapitalExpenditures	-0.995	0.115***	1.540***
	(0.922)	(0.034)	(0.343)
CashHoldings	0.076	-0.011	-0.124
	(0.466)	(0.008)	(0.151)
Leverage	1.334*	0.024*	-0.163
	(0.773)	(0.013)	(0.198)
ResearchDevelopmentExp	-3.647***	0.036	1.200**
	(1.380)	(0.040)	(0.506)
ROA	-0.628***	0.001	0.047***
	(0.080)	(0.001)	(0.013)
SA_Index	0.222*	0.008***	
	(0.115)	(0.003)	
Tangibility	40.369***	0.014	2.265*
	(3.127)	(0.076)	(1.344)
Observations	1,245	2,839	2,931
R^2	0.389	0.045	0.573
Adjusted R^2	0.229	-0.118	0.502
F Statistic	62.729*** (df = 10; 987)	11.346*** (df = 10; 2425)	374.901*** (df = 9; 2513)
Company FE	YES	YES	YES
Year FE	YES	YES	YES
Note:			*p<0.1; >**p<0.05; >***p<0.01

Table 29: Fixed Effects Regressions Hypothesis 3 Part 2 – KZ-Index

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
KZ_Index_l1	-0.798	-0.771	-1.282**	-0.248
	(0.522)	(0.631)	(0.620)	(0.881)
BoardGenderDiversityPercentage	0.096*	0.052	0.191***	0.019
	(0.058)	(0.082)	(0.069)	(0.074)
CapitalExpenditures	5.595	5.526	24.449	-19.908
	(17.058)	(14.533)	(24.029)	(24.298)
CashHoldings	-3.831	0.049	-4.388	-6.042
	(4.912)	(9.000)	(7.222)	(10.263)
Leverage	-8.004	-13.455	-17.405	14.812
	(8.657)	(11.872)	(11.913)	(13.942)
ResearchDevelopmentExp	-0.366	12.728	-12.666	2.726
	(20.712)	(31.723)	(26.517)	(25.738)
ROA	-1.194*	-1.453	-1.534	-0.125
	(0.706)	(1.030)	(1.025)	(1.087)
SA_Index	-18.764***	-19.422***	-21.582***	-13.651***
	(1.485)	(2.386)	(2.062)	(2.211)
Tangibility	-16.220	27.542	-96.959	58.770
	(56.961)	(79.329)	(66.246)	(88.922)
Observations	1,261	1,251	1,261	1,261
R^2	0.487	0.316	0.443	0.135
Adjusted R^2	0.359	0.144	0.304	-0.082
F Statistic	106.429*** (df = 9; 1007)	51.176*** (df = 9; 999)	89.166*** (df = 9; 1007)	17.487*** (df = 9; 1007)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; >**p<0.05; >***p<0.01

Table 30: Path Analysis Hypothesis 3 Part 3 – KZ-Index

	lhs	op	rhs	est.std	z	pvalue	ci.lower	ci.upper
1	ESG	~	InstOwnershipPRI	0.177	6.214	0	0.121	0.233
2	ESG	~	InstOwnershipNonPRI	-0.022	-0.800	0.424	-0.074	0.031
3	ESG	~	KZ_Index_l1	-0.153	-3.887	0.0001	-0.230	-0.076
4	ESG	~	BoardGenderDiversityPercentage	0.170	6.364	0	0.118	0.223
5	ESG	~	CapitalExpenditures	-0.053	-1.977	0.048	-0.105	-0.0005
6	ESG	~	CashHoldings	0.039	1.306	0.192	-0.019	0.097
7	ESG	~	Leverage	0.126	4.661	0.00000	0.073	0.179
8	ESG	~	ResearchDevelopmentExp	0.169	5.766	0	0.112	0.227
9	ESG	~	ROA	-0.129	-3.886	0.0001	-0.193	-0.064
10	ESG	~	SA_Index	-0.365	-12.827	0	-0.421	-0.309
11	ESG	~	Tangibility	0.271	7.378	0	0.199	0.343
12	KZ_Index	~	InstOwnershipPRI	-0.007	-0.322	0.747	-0.049	0.035
13	KZ_Index	~	InstOwnershipNonPRI	-0.086	-4.403	0.00001	-0.124	-0.048
14	KZ_Index	~	BoardGenderDiversityPercentage	-0.048	-2.423	0.015	-0.087	-0.009
15	KZ_Index	~	CapitalExpenditures	0.014	0.735	0.462	-0.024	0.053
16	KZ_Index	~	CashHoldings	-0.041	-1.886	0.059	-0.083	0.002
17	KZ_Index	~	Leverage	0.066	3.316	0.001	0.027	0.104
18	KZ_Index	~	ResearchDevelopmentExp	-0.005	-0.252	0.801	-0.048	0.037
19	KZ_Index	~	ROA	-0.489	-26.750	0	-0.525	-0.454

20	KZ_Index	~	SA_Index	0.182	8.426	0	0.139	0.224
21	KZ_Index	~	Tangibility	0.603	34.394	0	0.569	0.638
91	indirect_InstOwnershipPRI	:=	a1* b3	0.001	0.321	0.748	-0.005	0.007
92	indirect_InstOwnershipNonPRI	:=	a2* b3	0.013	2.914	0.004	0.004	0.022
93	total_InstOwnershipPRI	:=	b1+(a1* b3)	0.179	6.246	0	0.123	0.235
94	total_InstOwnershipNonPRI	:=	b2+(a2* b3)	-0.008	-0.316	0.752	-0.061	0.044

8.7 Appendix G – Robustness Path Analysis

Table 31: Fixed Effects Regressions Hypothesis 3 Part 2 – Market-to-Book Ratio

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
MarketToBookRatio_l1	16.648	8.599	33.461**	-4.336
	(12.583)	(19.109)	(16.257)	(18.944)
BoardGenderDiversityPercentage	0.122***	0.071	0.161***	0.126***
	(0.039)	(0.055)	(0.049)	(0.048)
CapitalExpenditures	31.054***	41.806***	46.409***	-0.203
	(10.550)	(14.934)	(14.937)	(17.270)
CashHoldings	-1.422	1.394	-1.397	-2.480
	(3.783)	(5.238)	(5.192)	(6.984)
Leverage	1.279	-7.070	-7.094	21.544**
	(5.597)	(7.499)	(7.717)	(8.555)
ResearchDevelopmentExp	23.730	40.044	7.458	21.901
	(16.691)	(24.367)	(20.167)	(21.721)
ROA	-0.050	-0.661	0.060	0.681
	(0.405)	(0.548)	(0.593)	(0.637)
SA_Index	-18.297***	-19.890***	-22.123***	-10.592***
	(1.200)	(1.701)	(1.570)	(1.557)
Tangibility	13.834	16.969	-47.038	121.295**
	(35.066)	(46.426)	(46.312)	(49.763)
Observations	2,826	2,804	2,826	2,826
R^2	0.454	0.314	0.412	0.126
Adjusted R^2	0.362	0.199	0.313	-0.022
F Statistic	223.309*** (df = 9; 2416)	122.009*** (df = 9; 2400)	188.202*** (df = 9; 2416)	38.564*** (df = 9; 2416)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 32: Fixed Effects Regressions Hypothesis 3 Part 2 – SA-index

	Dependent variable:			
	ESG	EnvironmentalScore	SocialScore	GovernanceScore
	(1)	(2)	(3)	(4)
SA_Index	-18.322***	-19.636***	-22.143***	-10.987***
	(1.194)	(1.649)	(1.535)	(1.570)
BoardGenderDiversityPercentage	0.113***	0.054	0.159***	0.116**
	(0.039)	(0.053)	(0.048)	(0.049)
CapitalExpenditures	19.618	28.855**	40.268**	-14.844
	(12.199)	(13.205)	(16.217)	(20.175)
CashHoldings	-2.323	1.052	-3.996	-1.562
	(3.770)	(5.190)	(5.113)	(7.072)
Leverage	2.154	-6.577	-6.145	22.440***
	(5.811)	(7.719)	(7.896)	(8.459)
ResearchDevelopmentExp	17.311	39.892*	4.196	6.911
	(16.631)	(23.930)	(20.097)	(21.461)
ROA	0.276	-0.382	0.506	0.828
	(0.408)	(0.528)	(0.592)	(0.623)
Tangibility	15.758	21.478	-35.760	102.999*
	(35.925)	(44.993)	(45.433)	(52.839)
Observations	2,929	2,906	2,929	2,929
R^2	0.449	0.309	0.411	0.129
Adjusted R^2	0.359	0.196	0.314	-0.015
F Statistic	256.561*** (df = 8; 2514)	139.361*** (df = 8; 2498)	219.433*** (df = 8; 2514)	46.338*** (df = 8; 2514)
Company FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 30: Path Analysis Hypothesis 3 Part 3 – Market-to-Book Ratio

lhs	op	rhs	est.std	z	pvalue	ci.lower	ci.upper

1	ESG	~	InstOwnershipPRI	0.201	12.098	0	0.168	0.234
2	ESG	~	InstOwnershipNonPRI	-0.079	-4.970	0.00000	-0.110	-0.048
3	ESG	~	MarketToBookRatio_l1	-0.013	-0.672	0.502	-0.052	0.025
4	ESG	~	BoardGenderDiversityPercentage	0.125	7.717	0	0.093	0.157
5	ESG	~	CapitalExpenditures	0.030	1.611	0.107	-0.006	0.066
6	ESG	~	CashHoldings	0.056	3.286	0.001	0.023	0.090
7	ESG	~	Leverage	0.104	6.504	0	0.073	0.136
8	ESG	~	ResearchDevelopmentExp	0.149	8.822	0	0.116	0.182
9	ESG	~	ROA	-0.002	-0.148	0.882	-0.035	0.030
10	ESG	~	SA_Index	-0.443	-27.942	0	-0.474	-0.412
11	ESG	~	Tangibility	0.137	7.863	0	0.103	0.171
12	MarketToBookRatio	~	InstOwnershipPRI	0.073	4.429	0.00001	0.041	0.106
13	MarketToBookRatio	~	InstOwnershipNonPRI	-0.058	-3.753	0.0002	-0.089	-0.028
14	MarketToBookRatio	~	BoardGenderDiversityPercentage	0.016	1.020	0.308	-0.015	0.048
15	MarketToBookRatio	~	CapitalExpenditures	0.479	36.666	0	0.454	0.505
16	MarketToBookRatio	~	CashHoldings	-0.036	-2.163	0.031	-0.069	-0.003
17	MarketToBookRatio	~	Leverage	0.084	5.349	0.00000	0.053	0.115
18	MarketToBookRatio	~	ResearchDevelopmentExp	0.108	6.526	0	0.075	0.140
19	MarketToBookRatio	~	ROA	0.183	11.755	0	0.152	0.213
20	MarketToBookRatio	~	SA_Index	0.218	13.295	0	0.186	0.251
21	MarketToBookRatio	~	Tangibility	-0.126	-7.473	0	-0.160	-0.093

91	indirect_InstOwnershipPRI	:=	a1* b3	-0.001	-0.664	0.507	-0.004	0.002
92	indirect_InstOwnershipNonPRI	:=	a2* b3	0.001	0.661	0.509	-0.002	0.003
93	total_InstOwnershipPRI	:=	b1+(a1* b3)	0.200	12.100	0	0.168	0.232
94	total_InstOwnershipNonPRI	:=	b2+(a2* b3)	-0.078	-4.937	0.00000	-0.109	-0.047

Table 30: Path Analysis Hypothesis 3 Part 3 – SA-index

	lhs	op	rhs	est.std	z	pvalue	ci.lower	ci.upper
1	ESG	~	InstOwnershipPRI	0.183	11.338	0	0.151	0.215
2	ESG	~	InstOwnershipNonPRI	-0.067	-4.360	0.00001	-0.098	-0.037
3	ESG	~	SA_Index	-0.447	-30.062	0	-0.476	-0.418
4	ESG	~	BoardGenderDiversityPercentage	0.130	8.193	0	0.099	0.161
5	ESG	~	CapitalExpenditures	-0.003	-0.169	0.866	-0.033	0.027
6	ESG	~	CashHoldings	0.060	3.573	0.0004	0.027	0.093
7	ESG	~	Leverage	0.103	6.640	0	0.073	0.134
8	ESG	~	ResearchDevelopmentExp	0.153	9.392	0	0.121	0.185
9	ESG	~	ROA	0.007	0.448	0.654	-0.024	0.038
10	ESG	~	Tangibility	0.145	8.684	0	0.112	0.178

11	SA_index	~	InstOwnershipPRI	-0.017	-0.923	0.356	-0.052	0.019
12	SA_index	~	InstOwnershipNonPRI	-0.135	-8.074	0	-0.168	-0.102
13	SA_index	~	BoardGenderDiversityPercentage	-0.069	-3.906	0.0001	-0.103	-0.034
14	SA_index	~	CapitalExpenditures	-0.003	-0.203	0.839	-0.036	0.030
15	SA_index	~	CashHoldings	-0.369	-23.635	0	-0.399	-0.338
16	SA_index	~	Leverage	-0.026	-1.516	0.130	-0.060	0.008
17	SA_index	~	ResearchDevelopmentExp	-0.014	-0.782	0.434	-0.050	0.021
18	SA_index	~	ROA	0.109	6.314	0	0.075	0.142
19	SA_index	~	Tangibility	-0.195	-10.918	0	-0.230	-0.160
78	indirect_InstOwnershipPRI	:=	a1* b3	0.007	0.923	0.356	-0.008	0.023
79	indirect_InstOwnershipNonPRI	:=	a2* b3	0.060	7.798	0	0.045	0.075
80	total_InstOwnershipPRI	:=	b1+(a1* b3)	0.190	10.562	0	0.155	0.226
81	total_InstOwnershipNonPRI	:=	b2+(a2* b3)	-0.007	-0.418	0.676	-0.041	0.026