Socially Responsible Investors and Firm Investment

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Abstract

This paper examines the conditional effect of socially responsible investors (SRI) ownership on firm investments and investment efficiency. Using the signatories of Principal for Responsible Investment to identify the SRI, we approximate the ownership structure complexity by the SRI ownership of the firm. The ownership structure complexity increases the firm's investment level and reduces investment efficiency. Additional tests show this effect to be causal and robust among different sample selections. The proposed effect is weakened when the underlying firm has a more disciplined investment strategy and integrates the environment and social policies better in the investment process. The negative impact is dampened when the SRI influences the firms' investment decisions more. Our work suggests the importance of consistent guidelines for responsible investment.

JEL Classification: G15, G23, G30, M14

Keywords: Socially responsible investors, firm investment, investment efficiency, institutional investors, ownership structure

1 Introduction

Over the past two decades, socially responsible investors (SRI) have increasingly played essential roles in influencing and implementing the sustainable development policies of the underlying firms. How do the sustainability practices of socially responsible investors align with Friedman doctrine "the only social responsibility of corporations is to make money" (Friedman 1970)? Recent studies have documented heterogeneity in institutional investors' portfolio tilts towards green stocks. Pastor, Stambaugh, and Taylor (2023) found that the largest institutions tilt increasingly toward green stocks, while other institutions and households tilt increasingly brown. Furthermore, signatories of United Nation Principal for Responsible Investment (UNPRI) tilt greener. It is unclear, however, if the rise of SRI ownership significantly affects firms' investment and investment efficiency, especially given the possibility that the actual amount of ESG investing varies and is likely smaller than proclaimed by the institutions (Pastor, Stambaugh, and Taylor 2023). This paper examines the effect of heterogeneity of the SRI's ownership structure complexity on the firm investment and investment efficiency. We find that socially responsible institutional investors, who commit to sustainable development goals in their portfolio construction, tend to boost the firm investment but reduce the investment efficiency.

The empirical examination of the role of ownership complexity on the firm investment is motivated by the increasing equity shares owned by the investors who integrate the environment and social (hereafter E&S) considerations into their investment practices. The critical market participants in responsible investment are institutional investors. Both survey data Krueger, Sautner, and Starks (2020) and portfolio data Dyck et al. (2019) convince that the institutional investors pay attention to the E&S performance of the portfolio firms. This group of institutional investors strongly demands climate change risk information on the underlying firms (Ilhan et al. 2023). This type of institutional investor is referred to as the socially responsible investor (SRI).¹

¹Individual investors demonstrate their commitment to responsible investing (Choi, Gao, and Jiang 2020;

The primary initiative of responsible investment is the United Nations (UN) Principle for Responsible Investment (PRI), established in 2006. Though the U.S. institutional investors became the signatories relatively late (Gibson Brandon et al. 2022), we observed a rapid growth in the ownership structure change brought by the SRI. Using the UN PRI as the identifier of the SRI, the average socially responsible investors' ownership in U.S. firms increased from 0.39% in 2006 to 27.36% in 2021. If we track the portion of SRI ownership within the institutional investors, the ratio increased from 0.74% in 2006 to 43.18% in 2021. The ownership structure became more complicated with the rise of SRI. The complication originates from the diverged views and competing goals in the firm's management, especially given policy uncertainty on whether the responsible investment is consistent with asset managers' fiduciary duties in the U.S. (Gibson Brandon et al. 2022).

From the underlying firms' perspective, there is a mixed empirical conclusion on the relationship between implementing the E&S policies and improving firm value. From the positive effect side, empirical evidence shows that higher ESG performance (higher rating or better score) is associated with better operating performance (Borghesi, Houston, and Naranjo 2014; Liang and Renneboog 2017), higher Tobin's Q (Gao and Zhang 2015; Ferrell, Liang, and Renneboog 2016), and improvements in ROA (Iliev and Roth 2021). The required return is then expected to be low for high-profile ESG firms (Lins, Servaes, and Tamayo 2017; Bolton and Kacperczyk 2021) and high for socially irresponsible firms (Hong and Kacperczyk 2009). The increased firm value from ESG activities is built on high advertising expenses and product differentiation (Servaes and Tamayo 2013; Albuquerque, Koskinen, and Zhang 2019). This leads to the other side of the effect when the cost of expanding the ESG activities outweighs the benefit of the shareholders. Di Giuli and Kostovetsky (2014) confirm an adverse impact of changes in ESG scores on changes in ROA, where the interpretation is the benefit of the stakeholders from ESG activities being at the expense of the firm value. This

Bauer, Ruof, and Smeets 2021). In this article, we limit the scope of SRI ownership to the institutional investors for three reasons: (1) the common shares owned by the institutional investors are higher than the retail investors, (2) the institutional ownership is more accessible to track, and (3) the identification of responsible investing is feasibly easier on the institutional investors.

negative effect deteriorates with the potential agency problem associated with the spending on E&S activities (Masulis and Reza 2015; Buchanan, Cao, and Chen 2018). Gillan, Koch, and Starks (2021) have a comprehensive summary of the debate on the relationship between ESG/CSR and firm value.

The argument on the cost of ESG/CSR² promotion activities coincides with the warnings from a group of the largest U.S. asset management firms. Leading asset managers, including BlackRock, Blackstone, and T. Rowe Price, express concerns in their recent annual reports that divergent views and competing demands regarding ESG/CSR investment may damage the financial performance.³ Inconsistent goals among stakeholders, shareholders, legislators, and firm managers lead to prolonged discussions on investment decisions and potentially hurt the firm's reputation and fundraising capability. Socially responsible institutional investors may struggle to balance their sustainable development goals without dictating the company's strategy. Vanguard, the world's second-largest asset manager, resigned from the Net Zero Asset Managers initiative in December 2022. One potential reason is that the asset management firm may be "caught between the two sides of the climate change debate."⁴ The choice of socially responsible institutional investors on the portfolio firms' E&S policies is hard to make a consensus for all the relevant parties.

We examine the effect of socially responsible equity ownership on the firm investment from a different angle: the ownership structure complexity triggered by the socially responsible investors. We use the signatory of UN PRI to identify socially responsible investors, and investigate if the rise of SRI significantly impacts the firm's investment and investment efficiency. The consequential firm investment decisions have essential financial implications on the choice of socially responsible investors. We match the portfolio-level data from 13-F reporting with the UN PRI signatories and construct the firm-level SRI ownership. This SRI

²We refer to environmental, social, and governance (ESG) and corporate social responsibility as ESG/CSR interchangeably, if not otherwise denoted. When we refer to the environmental and social policies, we use E&S explicitly.

³https://www.ft.com/content/f5fe15f8-3703-4df9-b203-b5d1dd01e3bc.

⁴https://www.ft.com/content/9dab65dd-64c8-40c0-ae6e-fac4689dcc77.

ownership is the proxy of ownership structure complexity that potentially alters the firm's investment decisions due to diverged views and competing goals.

The empirical results demonstrate that SRI ownership increases the firm's capital expenditure, cash for acquisitions, and net debt issuance. Using McNichols and Stubben (2008) investment efficiency model, we find that the SRI ownership reduces the firms' investment efficiency. The efficiency reductions come from over-investment and under-investment, reflecting a more complicated investment decision process to make a consensus. This result supports the extant literature's agency problem (over-investment) argument. The SRI effect on firm investment has a marginal effect pattern, where the SRI ownership accumulates to a certain level (10% to 20% in our sample) to impact the firm's investment significantly. Additional tests convince this relation to be causal and robust in different sample selections.

We proceed with the heterogeneous effect of the firms and the SRI ownership structure that potentially affect the proposed SRI-investment relation. Our first finding on this is that firms with more disciplined investment strategies and better integrated E&S policies are less impacted by the SRI ownership structure complexity. It is advantageous for firms to have executive-level sustainability role (e.g., Chief Sustainability Officer), disclosure climate change risk in the 10-K report, and headquarter in less stringent E&S States. Additionally, the SRI-investment effect is dampened when the SRI is more influential and less diverging. The firm benefits from a more concentrated SRI ownership, measured by the SRI ownership HHI and top holdings by a few investors. Our empirical results suggest that a more consistent E&S investment guideline improves the standardization of SRI behaviors.

Our work extends the existing literature in the following ways. First, we introduce the conditional effect of responsible investment on the firm's investment level and efficiency. We provide a distinguished angle on analyzing the firm's investment from the ownership structure complexity oriented from SRI. Second, we present the heterogeneous firm and SRI ownership characteristics that impact the proposed effect of SRI on firm investment. This empirical result further leads to policy implications on reducing the regulatory uncertainty on

responsible investment and promoting consistent E&S investment policies with the investors' fiduciary duties.

The rest of the paper is organized as follows. Section 2 reviews the literature on socially responsible investments and institutional investors. We describe the data and empirical methodology in Section 3. Section 4 discusses the main empirical results and proposed mechanisms. We conclude the paper in Section 5.

2 Literature Review

2.1 Institutional Investors and ESG/CSR

In the past two decades, institutional investors demonstrated growing consideration and demand for ESG/CSR performance in their portfolio construction. In relevant surveys, Amel-Zadeh and Serafeim (2018) find that most mainstream institutional investors consider using ESG/CSR information when connected with investment performance. Client demand is among the most popular reasons for ESG/CSR information consumption. They point out that the lack of reporting standards blocks information acquisition on ESG/CSR. Krueger, Sautner, and Starks (2020) conduct surveys on climate risk perceptions. According to their analyses, institutional investors view the regulatory risks as having financial implications on the portfolio firms. Instead of divestment, socially responsible investors prefer the risk management and engagement approaches. This preference is more pronounced among more persistent and larger asset managers.

Their portfolio holdings convince the trend of the institutional investors' ESG/CSR attention. Dyck et al. (2019) highlight that institutional investors are motivated by financial and social returns in constructing their portfolios. The institutional shareholders enhance the E&S performance, concentrated in the environment where E&S issues matter. Hartzmark and Sussman (2019) document a positive inflow associated with high sustainability funds and an outflow associated with low sustainability funds. The sustainability-driven fund flows, however, do not seem to drive the fund's performance.

Mixed empirical results are provided in the debate on the relationship between institutional ownership and the portfolio firms' ESG/CSR performance. Borghesi, Houston, and Naranjo (2014) connect firm characteristics with its ESG/CSR performance and find more substantial institutional investors are less likely to invest in firms with high ESG/CSR scores. In contrast, Chava (2014) finds that institutional ownership is generally lower for firms with less promising environmental performance. Fernando, Sharfman, and Uysal (2017) break this effect down into separate ranges and conclusion that the institutional ownership is notably lower when the firm has the highest strengths or most significant concerns compared to the mid-range environment profiles. Socially constrained institutional investors (e.g., pension funds) step away from the socially irresponsible stocks (Hong and Kacperczyk 2009). Consequently, less constrained investors, including mutual funds and hedge funds, have disproportional extensive holdings in these (socially irresponsible) stocks. Chen, Dong, and Lin (2020) demonstrate the real effect of institutional shareholders on the portfolio firm's ESG/CSR performance. They find a positive connection between institutional ownership and ESG/CSR rating, whereas ESG/CSR rating decreases when the shareholders are distracted by exogenous shocks.

In this article, we take the portfolio-level data from institutional investors, who care about sustainability, and examine if the institutional ownership alters the firm investment behaviors when the CSR goals coexist with the share value maximization. We consider institutional investors having the power to influence the investment decisions of the underlying firm. However, it is unknown to the existing literature on the role of institutional investors in firm investment when they have conflicting goals.

2.2 Firm Investment and ESG/CSR

The CSR spending by firms sometimes turns into a double-edged sword. Excessive investments to improve the firm's ESG/CSR profile will likely signal agency problems. Masulis and Reza (2015) examine corporate giving as part of the ESG/CSR practice. The empirical evidence shows that corporate donation is positively related to the CEO's charity preference and is negatively related to the CEO's shareholding and corporate governance quality. Masulis and Reza (2015) identify this misuse of corporate resources for personal interests as an agency problem in ESG/CSR. As a result, the stock market negatively reacts to the announcement of "corporate philanthropic contributions". They argue this type of ESG/CSR activity does not add value to the firm. Stakeholders pressure the firm's investment decisions when the financial cost is relatively minor. The firm managers bear the pressure when the stakeholders' goal is inconsistent with the profitability goal. The agency problem emerges when the COSR policies across firms are largely heterogeneous (Cronqvist and Yu 2017). Consequently, the ESG/CSR policies and performance may result from the agency problem, instead of the interests of shareholders (Hong, Kubik, and Scheinkman 2012).

In Di Giuli and Kostovetsky (2014), the authors find a negative connection between the changes in ESG/CSR performance and changes in ROA. When the firms expand their ESG/CSR policies, the empirical evidence suggests an underperformance in the stock returns and a long-term reduction in ROA. They argue that the benefit to stakeholders from ESG/CSR is at the expense of the firm value. We take one step further and examine the consequence of ESG/CSR expansion proposed by institutional investors on the firm investment. Our empirical results suggest that institutional investors, especially those who claim to be socially responsible, lead to portfolio firms' over-investment and reduction in investment efficiency. The empirical evidence explains the long-term ROA deterioration found by Di Giuli and Kostovetsky (2014). Our work is related to Houston and Shan (2022), who find the responsible bank lending on the underlying firms' extended ESG/CSR performance. The underlying firms are more likely to borrow from lenders with similar ESG/CSR profiles.

We extend the findings in Bhandari and Javakhadze (2017) and Benlemlih and Bitar (2018) by analyzing the endogeneity of E&S policies and CSR performance caused by ownership structure complexity. We do not assume the relationship between institutional investors and ESG/CSR performance. Instead, this article argues that institutional investors who care about sustainability bring divergent views in the firm investment decision process. The main hypothesis is that ownership complexity affects the firm investment and the decision process efficiency.

2.3 Institutional Investors as Socially Responsible Investors

The Principal for Responsible Investment (PRI) was initiated by the United Nations and a group of global institutional investors, and became the agreement among institutions to construct their portfolios with sustainable development goals. Since the introduction of PRI, the number of signatory members has been increasing rapidly. At the end of 2022, there are more than 5,000 PRI participants with more than \$120 trillion in assets under management.

Signing PRI demonstrates a commitment to responsible investing, which identifies the institutional ownership paying attention to the environmental and social policies of the underlying firm. Dyck et al. (2019) use the international portfolio-level data and show that the PRI signatories improve the portfolio firms' E&S performance. These SRI investors improve the E&S performance from the regions where the belief in the importance of E&S issues is vital. Kim and Yoon (2023) focus on the U.S. mutual funds and suggest the PRI signatories fail to have better ESG/CSR scores. Liang, Sun, and Teo (2022) highlight the underperformance of PRI-participating hedge funds with poor incentive alignment.

Gibson Brandon et al. (2022) point out the heterogeneous behaviors among the PRI signatories, where the U.S. PRI signatories seem not to improve the E&S performance of the firms in their portfolio. They come up with potential reasons why the PRI signatories in the U.S. may not follow their commitment to responsible: opportunistic commercial motives, regulatory uncertainty, and the ESG market immaturity. Consequently, the SRI ownership may not be the only reason for the potential change in the firm investment. We explore the heterogeneous effect of the underlying firms' investment policy on the SRI-investment

relation. We hypothesize that firms with more disciplined investment policies and those who can integrate the E&S approaches better are less affected by the ownership complexity.

This article proposes a novel argument for misaligning the shareholders' goals from socially responsible investors. PRI signatories who agree to obey the principles may have divergent goals from the profit maximization one. In such a situation, the portfolio firm tends to increase the firm investment to fulfill multi-dimension goals from the shareholder, or swamp in prolonged discussions and debates in the investment process, causing a reduction in investment efficiency.

3 Data and Methodology

3.1 Socially Responsible Institutional Investors

We follow Gibson Brandon et al. (2022) and identify the socially responsible institutional investors using the Principle for Responsible Investment (PRI) signatory list. The PRI was initiated by the United Nations in 2006, aiming to facilitate institutional investors to address sustainable development goals in their investment process. By signing the PRI, institutional investors demonstrate their commitment to reporting their responsible investments and decision-making processes annually, with mandatory membership fees. Failure to do the mandates leads to exclusion from the signatory list.

Our empirical study focuses on the U.S. listed firms from 2005 to 2021. The sample period covers the PRI initiation and the delisting process that started in 2020. We use FactSet to match the institutional investors with the PRI signatory list. The matching process begins with automatic institute name reconciliation and proceeds with the manual connection and identification. The manual matching process requires verification from both the PRI website and the asset manager's website. When one entity and its parent company are doubly identified as the PRI signatory, we prioritize this identification from the entity level (over the parent company level). Finally, we aggregate the socially responsible investors' holdings in publicly listed U.S. firms.

Figure 1 illustrates average ownership growth from socially responsible institutional investors over the sample period. After its initiation in 2006, the socially responsible investors' ownership increased from 0.39% to 27.36% in 2021. When comparing the ownership within the institutional investor group, the proportion of common shares owned by socially responsible investors increased from 0.74% in 2006 to 43.18% in 2021. From both measures, the socially responsible investors' ownership growth was rapid from 2006 to 2016 and slowed down from 2017 to 2021.

[Insert Figure 1 about here]

In addition to the ownership level, we calculate the Herfindahl-Hirschman Index (HHI) of the socially responsible investors' ownership using individual SRI ownership data. Higher HHI reflects more concentrated ownership. Socially responsible investors are more potent in implementing sustainable development goals when the ownership is more concentrated. Similarly, we construct the top 3 and top 5 socially responsible investors' ownership to proxy the concentration of this type of investor.

3.2 Firm Investment and Other Variables

We primarily use the capital expenditure scaled by the beginning of the period net property, plant, and equipment (PP&E) to measure the firm investment. In addition, we examine the firm investment level from various dimensions. The investment level proxies include the net investment to remove the PP&E sales from capital expenditure (scaled by the total asset). This year-by-year asset growth reflects the asset accumulation speed, the cash for acquisition to measure the M&A activities, other investments covering the long-term account receivables, and net debt issuance reflecting the net debt increase and repayment.

The firm investment level is insufficient to measure if the capital input is spent efficiently. It is a challenge to determine the optimal investment level. But we can approximate the appropriate investment level based on the firm's sales growth, cashflows, and market value. This is the essential spirit of the investment efficiency model. We follow the investment efficiency model developed in McNichols and Stubben (2008) and Bae et al. (2017) and calculate the investment efficiency proxy annually. The measure is the residual value of the investment efficiency model, indicating the deviation from the predicted optimal investment level from the investment model. When the residual value is positive (negative), it is interpreted as over-investment (under-investment).

We follow the extant literature and control the firm characteristics in the regressions. The control variables include the firm size, net PP&E level, leverage ratio, EBIT scaled by the total assets, the working capital, cash holdings, the sales-asset ratio, retained earnings, return on assets ratio, and the firm's Tobin's Q. We provide the variable definition in Table A1.

We select the publicly listed U.S. firms using a sample period from 2005 to 2021, and keep the firm-year observations that contain ownership details from FactSet. The selection of the sample period is to fully cover the initiation of the UN PRI program till the most recent period (upon the completion of the empirical study). We end up with a firm-year dataset with 63,304 observations, with 5,734 unique firms in our sample.

3.3 Summary Statistics

Table 1 summarizes the main variables used in the empirical study. On the firm investment side, an average firm spends 3.9% of capital expenditure on the net PP&E level, with a standard deviation of 5.6%. The net investment (including the cash for acquisitions and other investments on top of the capital expenditure) counts for 6.7% of the firm assets on average. The mean firm grows its assets by 12.6% annually, with 1.8% cash for acquisitions, 1.2% of the other investment (including the increase on long-term account receivables), and 1.3% of net debt issuance. The investment efficiency measure has a mean close to zero and a median value of -0.113, reflecting an under-investment for over 50% of the firms in our

sample.

As for the control variales, the mean value of the socially responsible investors' ownership is 15.3%, with a median value of 7.8% and a standard deviation of 17.0%. An average firm has \$7.8 billion book value of the assets, 21.2% of the net PP&E, a book leverage ratio of 23.2%, EBIT over assets of -2.9% (with a median value of 3.5%), working capital of 20.2% of the total assets, cash of 21.2% of the firm's total assets, and Tobin's Q around 2.8.

[Insert Table 1 about here]

We calculate the (unconditional) pairwise correlation of the primary dependent and independent variables and report the correlation matrix in Table 2. The investment level has a correlation coefficient 0.236 with the investment efficiency measure. The critical variable of interest, *SRI Ownership*, is negatively correlated with the investment level and positively correlated with the investment efficiency proxy. As for other controls, the firm investment level is positively related to firm size, net PP&E, the leverage ratio, EBIT, turnover ratio, retained earnings, ROA, and Tobins' Q. The firm investment negatively correlates with working capital and cash holdings. The investment efficiency measure is positively related to EBIT, working capital, cash holdings, turnover ratio, retained earnings, ROA, and Tobin's Q. It is negatively associated with firm size, net PP&E, and leverage ratio.

[Insert Table 2 about here]

3.4 Methodology

We use panel regressions with socially responsible ownership as the key independent variable to disentangle the conditional effect of the ownership complexity on the firm investment. The regression specification is as follows

$$INV_{i,t} = \alpha + \beta \cdot \text{SRI Ownership}_{i,t} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t}, \quad (1)$$

where $INV_{i,t}$ is the investment level for firm *i* at year *t*, D_i represents the firm fixed effect, and D_t represents the year fixed effect. The coefficient of interest, γ , reflects the conditional effect of socially responsible ownership on the firm investment. We hypothesize that divergent goals from various stakeholders complicate the decision-making process. Consequently, firms raise their investments to satisfy sustainable development and share value maximization goals. In this case, γ is expected to be positive.

The primary firm investment measure (INV) is the capital expenditure scaled by the beginning of the period PP&E. We examine different aspects regarding the impact of socially responsible ownership on firm investments. We alter the dependent variables by using (1) net investment to remove the PP&E sales from capital expenditure, (2) total asset growth rate to reflect the asset accumulation speed, (3) cash for acquisition to measure the M&A activities, (4) other investments including the long-term account receivables, and (5) net debt issuance that reflects the net of debt increase and debt repayment.

We extend the analysis of the proposed relationship to the investigation of investment efficiency. An increase (or decrease) in investment level is not necessarily a negative signal to the shareholder and the firm value. Investment efficiency is a more precise measurement of how well the company deals with the investment level, conditioned on the market value, cash flows, and growth opportunities. We follow McNichols and Stubben (2008) and calculate the residual amount of the investment efficiency model. We denote this residual value as XINV to represent the abnormal investment⁵. More specifically, a positive (negative) abnormal investment is interpreted as an over-investment (under-investment) compared to the optimal investment level suggested in the model. We examine the conditional effect of ownership complexity on the firm investment efficiency using the following specification.

$$XINV_{i,t} = \alpha + \beta \cdot \text{SRI Ownership}_{i,t} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t}, \tag{2}$$

Socially responsible investors become influential when their ownership accumulates to a

⁵Detailed explanation of investment efficiency measure could be found in Appendix 1.

significant level. We search for this "significant level" by examining the marginal effect of responsible investment on firms' investment policies. We define a series of dummy values depending on the SRI ownership level. There are five levels of SRI ownership to distinguish the marginal effect. $\mathbf{1}_{(0,5\%]}$ denotes the dummy variable with value one when the SRI ownership is between 0% and 5% for firm *i* at year *t* and zero otherwise. Similarly, $\mathbf{1}_{(5\%,10\%]}$, $\mathbf{1}_{(10\%,20\%]}$, $\mathbf{1}_{(20\%,40\%]}$, and $\mathbf{1}_{(40\%,.]}$ denote the dummy values when current SRI ownership is between 5% and 10%, between 10% and 20%, between 20% and 40%, and above 40%, respectively.

Suppose the dummy value indicating higher SRI ownership is more significant. In that case, the marginal effect of the SRI ownership tends to be one of the critical determinants in the SRI-investment relation. The regression specification testing the marginal impact is shown in Eq. (3).

$$(X)INV_{i,t} = \alpha + \beta_1 \cdot \mathbf{1}_{(0,5\%]} + \beta_2 \cdot \mathbf{1}_{(5\%,10\%]} + \beta_3 \cdot \mathbf{1}_{(10\%,20\%]} + \beta_4 \cdot \mathbf{1}_{(20\%,40\%]} + \beta_3 \cdot \mathbf{1}_{(40\%,.]} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t},$$
(3)

One potential concern is whether the proposed effect is driven by time-trend or some time-dependent hidden variables. To address this endogeneity concern, we perform a parallel-trend type of regression and examine if the changes in the firm investment are associated with emerging SRI ownership. We denote *SRI Initiation* as the dummy value with value one when the firm i starts to have SRI at current year t and zero otherwise. The dummy variable *Before SRI* indicates the year before the SRI initiation. The dummy variable *After SRI* denotes the year after the SRI initiation.

Suppose the change in firm investments is driven by socially responsible ownership. In that case, we expect the coefficient of *SRI Initiation* or *After SRI* to be significant and consistent with the direction in the results from Eq. (1) and Eq. (2). Additionally, if the SRI truly drives the change in firm investments, the coefficient of *Before SRI* dummy should

not have consistent results. The regression specification is provided in Eq. (4).

$$(X)INV_{i,t} = \alpha + \beta_1 \cdot \text{Before SRI} + \beta_2 \cdot \text{SRI Initiation} + \beta_3 \cdot \text{After SRI} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t},$$

$$(4)$$

The proposed effect has heterogeneous impacts from two factors. First, firms with disciplined investment strategies integrated with sustainable development goals are less vulnerable to interruption from stakeholders with multivariate goals. Second, firms with more influential socially responsible investors are more susceptible to diverging views and competing votes in investment decision-making. We propose empirical tests to verify the heterogeneous effect of these two driving factors.

Firms with more disciplined investment strategies have more consistent investment inputs. The E&S policies from the socially responsible investors can be integrated into such investment process but are less likely to affect or replace it largely. We define a better integrated or more disciplined investment policy using multiple proxies. First, we construct the disciplined investment policy if the firm has an executive sustainability role reported in BroadEx.⁶ Second, we define the disciplined investment policy if the firm discloses climate change risk in its 10-K report. Third, we use the Red State dummy, where the firm's headquarter is located in a Red state based on the presidential election, as a proxy of having a more disciplined investment policy. We use the following regression specification to examine the heterogeneous effect of disciplined investment strategies.

$$(X)INV_{i,t} = \alpha + \beta_1 \cdot \text{SRI Ownership}_{i,t} + \beta_2 \cdot \text{SRI Ownership}_{i,t} \times \text{Disciplined}_{i,t} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t},$$
(5)

The socially responsible investors have more powerful rights to diverge the firm's existing

⁶The executive sustainability role has the title "Chief Sustainability Officer", "Chief Sustainability and ESG Officer", "Senior Director - Sustainability", or similar titles containing sustainability and ESG.

investment policy when they are more influential in the ownership structure. We measure the influential socially responsible investors in the ownership structure using three proxies: (1) the Herfindahl-Hirschman Index (HHI) on the socially responsible investors' ownership, (2) the ownership from the top 3 socially responsible investors, and (3) the ownership from top 5 socially responsible investors. For each year, we calculate the median value of these three measures cross-sectionally, and label the socially responsible investors of one firm to be "influential" when the firm's proxy is higher than this median value. Using the interaction term between socially responsible investors' ownership and the influential dummy, we perform the regression analysis to examine the heterogeneous effect of influential socially responsible investors.

$$(X)INV_{i,t} = \alpha + \beta_1 \cdot \text{SRI Ownership}_{i,t} + \beta_2 \cdot \text{SRI Ownership}_{i,t} \times \text{Influential}_{i,t} + \gamma \cdot \text{Controls}_{i,t} + D_i + D_t + \epsilon_{i,t},$$
(6)

The following section summarizes the empirical results from the above model specifications.

4 Empirical Results

4.1 Effect of Ownership Structure and Firm Investment

We use panel regression specified in Eq. (1) and estimate the baseline empirical results with firm investments as the dependent variables. The regressions results are presented in Table 3. Column (1) contains the primary dependent variable, the capital expenditure over net PP&E, and indicates that ownership complexity increases the total investment level. The coefficient of the critical variable of interest, *SRI Ownership*, is 0.01 (with *t*statistic of 5.508), reflecting a positive connection between responsible investment ownership and capital expenditure. This result is economically significant. One standard deviation increase in the SRI ownership (0.17) leads to a 17-basis-point increase in capital expenditure $(0.01 \times 0.17 = 0.17\%)$, which is 4.4% of the mean capital expenditure level (0.17% / 3.9% = 4.4%).

[Insert Table 3 about here]

As for other firm investment measures, the SRI ownership raises net investment, cash for acquisitions, and net debt issuance, but reduces asset growth rate and other investments. We interpret these results as the firms tend to increase the capital expenditure to satisfy the diversified investment goals from a more complicated ownership structure (higher SRI ownership). In particular, the acquisition activities are more active, along with increased capital expenditure, which is compensated (and likely financed) by increased debt issuance. Surprisingly, SRI ownership (conditionally) decreases the asset growth rate, which is directionally consistent with the drop in other investment items.

4.2 Effect of Ownership Structure and Investment Efficiency

Table 4 presents the estimation results using investment efficiency as the dependent variable. This result extends our understanding from Section 4.1 by informing us how SRI ownership affects firm investment efficiency. We have a statistically significant coefficient of SRI ownership on XINV, which is the deviation of the actual investment level to the model-inferred optimal investment level. The coefficient of SRI ownership on XINV is 0.103 with a high *t*-statistic (3.136). We conclude the conditional effect of the ownership structure complexity on the firm's over-investment tendency. When there are multiple investment goals than the shareholder value maximization, the firm deviates from the optimal investment level suggested from pure profitability consideration. Consequently, the firms tend to invest more than the capital input for equity-value-growth but rather satisfy a broader demand on the firm towards sustainable development goals.

[Insert Table 4 about here]

We consider the absolute value of the residual measure from the investment efficiency model, given the XINV value has a mean close to zero. For example, if a firm starts with a negative XINV, an increase in XINV (with SRI ownership) may lead to higher efficiency as the XINV is closer to zero (perfect efficiency). The absolute value avoids this concern by showing the deviation of the firm investment away from the optimal level, from both the overinvestment and under-investment sides. The results on the absolute value of XINV indicate a reduction in firm investment efficiency with increased SRI ownership, since the coefficient of SRI ownership is positively significant. We obtain the empirical results suggesting a positive connection between the ownership structure complexity and the firm's investment *inefficiency*.

We further decompose the firm investment efficiency measure and run the regressions only on over-investment (under-investment) cases, with the residual value being positive (negative). Columns (3) and (4) report the individual regression results on these two cases. We find the results are statistically significant for both over-investment and under-investment cases. This reveals the nature of the ownership structure complexity and its implication on the investment policy. On the one hand, the firm tries to satisfy the proposed goals of socially responsible investors and shareholder value maximization goals. Therefore, the firm tends to increase spending due to additional E&S policies and commit to over-investment. On the other hand, the diversified goals may potentially conflict with the profit-maximization goals. The diverging views and voting preferences from the ownership complexity lead to a more difficult consensus investment policy to be implemented. Our empirical results show both cases are plausible, as the inefficiency occurs in both over-investment and under-investment cases.

4.3 Marginal Effect of the Ownership Structure Complexity

Does the responsible investment ownership accumulate to a certain threshold before affecting the investment amount and efficiency? We answer this question by decomposing the SRI ownership into different ownership-level groups. First, we convert the SRI ownership into the SRI holding dummy. Second, we break down this SRI holding dummy into five different dummy variables, using no SRI holding as the base case. The five SRI ownership groups indicate the ownership levels of (1) between 0% and 5%, (2) between 5% and 10%, (3) between 10% and 20%, (4) between 20% and 40%, and (5) above 40%. If the coefficients from higher ownership groups tend to be more significant, we prove the marginal effect of SRI ownership on altering the investment policies of the firms. Table 5 reports the empirical estimations on these five categorical dummies.

[Insert Table 5 about here]

From Column (1), the regression results convince the hypothesis on the marginal effect of SRI ownership on firm investment input. The coefficients of dummy variables representing higher ownership have higher magnitude and statistical significance. For example, the SRI ownership in the low ownership group (between 0% and 5%) has an insignificant coefficient with a magnitude of 0.001. In contrast, the coefficient of the highest ownership group (above 40%) is 0.007 with high *t*-statistic (4.617). We observe a monotonic increase in the magnitude and statistical significance and a rise in SRI ownership.

The pattern on investment efficiency (XINV column) is less monotonic, but still indicates that the magnitude and statistical significance are higher when the SRI ownership is high. The highest reduction in investment efficiency (from over-investment) locates in the SRI ownership group of between 10% and 20%. The marginal effect of SRI ownership diminishes after a certain level (20% of the ownership) plausibly reflects the influence of the PRI concept on the firm's investment efficiency. When the SRI dominates, the firm's investment may better integrate with the growth opportunity and cashflow patterns. Overall, we obtain a consistent tendency to over-invest with the presence of the SRI in the ownership structure.

4.4 Addressing Endogeneity

We perform parallel-trend type of testing to address the endogeneity concern. Table 6 presents the regression runs with three dummy variables associated with the timing of the onset of the socially responsible investors. *SRI Initiation* is the dummy with value one when the SRI started to hold the underlying firm at the current year and zero otherwise. *Before SRI* and *After SRI* are the dummy variables indicating the year before and after the SRI initiation. This set of variables examines whether the investment and investment efficiency change is from the onset of SRI or some other hidden time-related variables.

[Insert Table 6 about here]

Column (1) of Table 6 shows that the coefficients of *SRI Initiation* and *After SRI* are positively significant, whereas the coefficient of *Before SRI* is insignificant. These results indicate the causality of the SRI holding on the investment policies. Column (2) provides a similar SRI initiation and investment efficiency pattern. The *After SRI* variable has a positively significant coefficient, consistent with the result in baseline regressions. Both *Before SRI* and *SRI Initiation* have negatively significant coefficients. This estimation result demonstrates a slight delay of ownership structure complexity in the investment efficiency.

One may argue that SRI ownership and firm investment (and investment efficiency) are driven by some firm characteristics omitted from the control variables. We address this omitted variable concern using a propensity score matched sample. We perform a probit regression using nonzero SRI ownership as the treatment effect. Each firm (within a particular year) with SRI ownership is matched with a control group firm with the closest firm characteristics to the treated firm. The propensity score matched sample is kept in the regression using *SRI Ownership* or *Has SRI Ownership* as the key independent variable. The dummy variable *Has SRI Ownership* is equal to one when the firm has nonzero SRI ownership and zero otherwise. If the SRI ownership causes the proposed effect, we expect these key independent variables to be statistically significant with a positive sign. We present

the empirical results in Table 7.

[Insert Table 7 about here]

The independent variables of interest (*SRI Ownership* and *Has SRI Ownership*) have positively significant coefficients. We obtain consistent empirical conclusions with the baseline results, indicating that the proposed effects are less likely to be caused by hidden firm fundamentals and financial factors.

4.5 Robustness Checks

Macroeconomic shocks and industry-specific features potentially drive the SRI ownership and the firm investment simultaneously. We perform robustness checks to rule out the effect of these common factors that potentially weaken the conclusion of our empirical results. There are two sets of robustness checks in our empirical testing. First, firms tend to reduce investment during stressed economic situations. We exclude the 2007-09 subprime crisis and the 2020-21 pandemic periods, and rerun the regressions using the baseline specification. Second, financial and utility firms have different investment policies and patterns than industrial firms. The E&S approaches are naturally distinguished among these firm types as well. We exclude the financial and utility firms from the sample and perform the regression analysis. Table 8 presents both robustness check results.

[Insert Table 8 about here]

We conclude that the empirical results in the above sections remain in these different settings. The coefficients' magnitude and statistical significance are highly consistent with those in the base cases. The main empirical conclusions are robust under non-stressed economic situations and industrial firms. Our empirical results are less likely affected by the period selection and firm types.

4.6 Potential Mechanisms

We explore the plausible mechanisms through which the proposed effect is established. We analyze the above results and propose two main heterogeneous effects of SRI on the firms' investment policies. First, firms with disciplined investment strategies have a better capability of integrating the E&S policies into their existing investment policies, without being disturbed by the ownership structure complexity. Second, more influential socially responsible investors have more substantial power to implement their sustainable development goals in the underlying firms. The following sections summarize the empirical results to verify our hypotheses.

4.6.1 Disciplined Investment Policies

We use three proxies to approximate the capability of one firm to integrate the E&S policies into its investment strategies to generate profits. First, firms with executive-level sustainability-related roles demonstrate better resource management capacity in integrating sustainable development goals. For example, Chief Sustainability Officer (CSO) aims to assist the CEO in supporting the sustainable development goals proposed by SRI and the firm. Second, we follow Kim, Wang, and Wu (2022) and identify the firms with climate change risk disclosure in the 10-K report. Firms with climate change risk disclosure formally are expected to have better E&S performance in the future, and institutional investors have the information demand on the E&S policies (Ilhan et al. 2023). Third, we follow Di Giuli and Kostovetsky (2014) and identify firms headquartered in Republican-leaning states. Di Giuli and Kostovetsky (2014) find that "Red State" firms spend less on corporate social responsibility and promote less on the E&S policies. Table 9 summarizes the heterogeneous effects of disciplined investment strategy on the SRI-investment relationship. d

[Insert Table 9 about here]

We are particularly interested in the interaction term between SRI ownership and dis-

ciplined investment dummy (firms with executive sustainability roles, with 10-K climate change risk disclosure, and headquartered in Republican-leaning states). The estimation results show that firms with disciplined investment strategies are less affected by the ownership structure complexity (brought by SRI). The cross-term coefficients are negatively significant, opposite to the standalone coefficient of SRI ownership. This opposite sign, along with a smaller magnitude, reveals the proposed SRI-investment relationship is weakened, but not resolved, by the disciplined and better integrated (with E&S policies) investment strategies.

4.6.2 Influential Investors

We hypothesize that SRI ownership has a more substantial impact on the firm investment when the SRI group has more power to determine the firm's investment policies. We approximate the influential investors using three proxies. We use the HHI of the SRI ownership, and we consider the SRI to be more influential when the SRI ownership is more concentrated (higher HHI). We select the top 3 and top 5 SRI ownership as the last two proxies of the influential investors. The SRI is expected to influence the owning firm's investment policies more when the top 3 or top 5 SRI ownership is higher. On each year, we calculate the median value of these three proxies. The *Influential* dummy is determined when the proxy is higher than the median value.

[Insert Table 10 about here]

In Table 10, we present the estimation results on the asymmetric effect of influential SRI on the SRI-investment relationship. The cross-term between SRI ownership and influential SRI has a negatively significant coefficient using all these proxies. Concentrated SRI ownership seems to reduce the diverging views and competing votes among complicated ownership structures. The results indicate the importance of having consistent E&S proposals from the SRI side.

5 Conclusion

In this article, we take the challenge of answering the question: how does the ownership complexity impact the firm's investment and investment efficiency? We examine ownership complexity using the conversion of institutional shareholders to socially responsible investors proxied by the UN PRI signatory list. The SRI brings competing views and diverging investment goals to the underlying firm's decision-making process.

The empirical results show that SRI ownership increases the firm investment level but reduces investment efficiency. The reduction in investment efficiency orients from both overinvestment and under-invest. We find the proposed SRI-investment relation emerges when the SRI ownership accumulates to a certain level and does not occur before the onset of the SRI. More importantly, we find the negative effect of SRI on investment efficiency is weakened when the firms cope with the integration of E&S policies on the investment strategies and when the SRI is more influential on the firms' investment decisions.

Our work documents a potential investment inefficiency associated with onboarding SRI as a form of ownership complication. We suggest that the inefficiency is dampened when if the firm develops more disciplined and better-integrated investment policies. The policy implication is that a consistent standard of sustainable development practices across SRIs contributes to investment efficiency.

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Figure 1: Figure 1 plots the average proportion of socially responsible institutional investors on the total common shares outstanding (SRI %) and the total institutional ownership (SRI/IO %). The socially responsible institutional investors are identified by United Nation's Principal for Responsible Investment signatory institute list. The sample includes the U.S. listed firms from 2005 to 2021.

Table 1: Summary statistics.

The summary statistics on firm investments, ownership structure, and control variables. The sample contains the annual data of the U.S. public firms from 2005 to 2021. Panel A reports the firm investment variables, including the capital expenditure scaled by the beginning of the period net PP&E (INV), net investment level scaled by total assets (Net Investment), total asset growth rate (Asset Growth), cash paid for acquisition (Cash for Acquisitions), other types of investments (Other Investment), net debt issuance within the year (Net Debt Issuance), and the residual value using the McNichols and Stubben (2008) investment efficiency model (XINV). Panel B reports the independent variables, including the socially responsible institutional ownership portion (SRI Ownership), the logarithm of total assets (log(Assets)), net PP&E level scaled by total assets (Net PP&E), the book leverage ratio (Leverage), earnings before interest and tax scaled by total assets (EBIT/Assets), working capital level scaled by total assets (RE/Assets), the return on assets (ROA), and the Tobin's Q measure (Tobin's Q). Table A1 defines the variables.

Variable	Ν	Mean	S.D.	P5	P25	P50	P75	P95
INV	63,304	0.039	0.056	0.000	0.004	0.019	0.048	0.148
Net Investment	63,304	0.067	0.100	-0.028	0.012	0.042	0.096	0.262
Asset Growth	63,304	0.126	0.414	-0.283	-0.038	0.048	0.167	0.765
Cash for Acquisitions	63,304	0.018	0.052	0.000	0.000	0.000	0.003	0.120
Other Investment	63,304	0.012	0.061	-0.038	0.000	0.000	0.002	0.121
Net Debt Issuance	63,304	0.013	0.087	-0.090	-0.011	0.000	0.019	0.175
XINV	63,304	0.000	0.714	-0.643	-0.299	-0.113	0.093	1.036

Panel A: Firm investment variables

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Variable	Ν	Mean	S.D.	P5	P25	P50	P75	P95
SRI Ownership	63,304	0.153	0.170	0.000	0.009	0.078	0.266	0.499
$\log(Assets)$	63,304	6.714	2.243	3.022	5.143	6.714	8.213	10.556
Net PP&E	63,304	0.212	0.252	0.000	0.021	0.100	0.316	0.787
Leverage	63,304	0.232	0.230	0.000	0.029	0.174	0.367	0.685
EBIT/Assets	63,304	-0.029	0.274	-0.565	-0.026	0.034	0.092	0.215
Working Capital	63,304	0.202	0.265	-0.067	0.000	0.120	0.360	0.751
Cash	63,304	0.212	0.249	0.005	0.035	0.106	0.294	0.811
Turnover	63,304	0.716	0.727	0.011	0.146	0.529	1.018	2.155
RE/Assets	63,304	-0.502	1.646	-4.456	-0.330	0.024	0.224	0.617
ROA	63,304	-0.056	0.274	-0.590	-0.040	0.014	0.059	0.158
Tobin's Q	63,304	2.836	1.919	1.162	1.654	2.324	3.263	6.487

Table 2: Correlations for covariates

The pairwise Pearson correlations on firm investments, ownership structure, and control variables. The sample contains the annual data of the U.S. public firms from 2005 to 2021. Table 2 reports the main variables in the empirical study, including the capital expenditure scaled by the beginning of the period net PP&E (INV), the residual value using the McNichols and Stubben (2008) investment efficiency model (XINV), the socially responsible institutional ownership portion (SRI Ownership), the logarithm of total assets (log(Assets)), net PP&E level scaled by total assets (Net PP&E), the book leverage ratio (Leverage), earnings before interest and tax scaled by total assets (EBIT/Assets), working capital level scaled by total assets (Working Capital), the cash and cash equivalents scaled by total assets (Cash), the turnover ratio measured by total sales over total assets (Turnover), the retained earnings scaled by total assets (RE/Assets), the return on assets (ROA), and the Tobin's Q measure (Tobin's Q). Table A1 defines the variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) INV	1.000												
(2) XINV	0.236	1.000											
(3) SRI Ownership	-0.065	0.010	1.000										
(4) $\log(Assets)$	0.016	-0.007	0.336	1.000									
(5) Net $PP\&E$	0.662	-0.030	-0.009	0.125	1.000								
(6) Leverage	0.103	-0.060	0.168	0.256	0.264	1.000							
(7) EBIT/Assets	0.062	0.088	0.104	0.430	0.107	0.036	1.000						
(8) Working Capital	-0.122	0.061	-0.100	-0.426	-0.266	-0.390	-0.195	1.000					
(9) Cash	-0.145	0.049	-0.119	-0.438	-0.300	-0.325	-0.413	0.758	1.000				
(10) Turnover	0.104	0.027	-0.018	-0.153	0.072	-0.037	0.207	0.083	-0.116	1.000			
(11) RE/Assets	0.072	0.065	0.141	0.502	0.123	0.012	0.714	-0.226	-0.444	0.103	1.000		
(12) ROA	0.046	0.090	0.111	0.432	0.088	-0.009	0.977	-0.178	-0.399	0.172	0.719	1.000	
(13) Tobin's Q	0.031	0.057	0.012	-0.339	-0.108	-0.280	-0.174	0.447	0.514	0.068	-0.234	-0.185	1.000

Table 3: Effect of socially responsible investors ownership on firm investments.

Table 3 summarizes the effect of socially responsible investors' ownership on firm investments. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are (1) capital expenditure scaled by the net PP&E (INV), (2) capital expenditure net PP&E sales scaled by total assets (Net INV), (3) total asset growth rate (Growth), (4) cash paid for acquisition (Cash Acq.), (5) other investments (Other), and (6) net debt issuance (Debt Iss.). The key independent variable is the socially responsible investors' ownership (SRI Ownership). The variable definition is provided in Table A1. The regression specification follows Eq. (1). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

Dep. Var.	(1) INV	(2) Net INV.	(3) Growth	(4) Cash Acq.	(5) Other	(6) Debt Iss.
SRI Ownership	0.010***	0.008*	-0.133***	0.006**	-0.008***	0.009**
	[5.508]	[1.762]	[-6.059]	[2.405]	[-2.660]	[2.049]
$\log(Assets)$	-0.001**	0.006^{***}	0.128^{***}	0.006^{***}	0.001	0.013^{***}
	[-2.266]	[4.386]	[16.841]	[8.500]	[0.732]	[11.085]
Net $PP\&E$	0.114^{***}	-0.015*	-0.448***	-0.089***	-0.035***	-0.064***
	[26.253]	[-1.911]	[-11.438]	[-20.359]	[-9.030]	[-8.909]
Leverage	-0.021***	0.028^{***}	0.149^{***}	0.029^{***}	0.013^{***}	0.226^{***}
	[-12.851]	[6.183]	[7.221]	[11.913]	[4.617]	[39.873]
EBIT/Assets	0.018^{***}	-0.001	0.028	-0.011**	-0.003	-0.056***
	[4.433]	[-0.100]	[0.485]	[-2.147]	[-0.589]	[-4.567]
Working Capital	-0.006***	-0.050***	-0.085**	-0.040***	-0.001	0.046***
	[-3.400]	[-8.270]	[-2.498]	[-12.904]	[-0.343]	[7.532]
Cash	-0.006***	-0.109***	0.227***	-0.072***	-0.018***	-0.015**
	[-3.202]	[-15.518]	[6.152]	[-20.452]	[-3.756]	[-2.236]
Turnover	0.005^{***}	-0.037***	-0.247***	-0.032***	-0.005***	-0.028***
	[7.047]	[-18.659]	[-21.429]	[-25.020]	[-5.375]	[-12.988]
RE/Assets	0.002^{***}	0.009^{***}	0.040^{***}	0.001^{*}	0.005^{***}	0.004^{***}
	[5.128]	[7.991]	[6.110]	[1.773]	[6.799]	[4.088]
ROA	-0.016***	0.026^{***}	0.736^{***}	0.019^{***}	0.017^{***}	0.049^{***}
	[-4.050]	[2.642]	[12.101]	[3.935]	[2.892]	[3.989]
Tobin's Q	0.002^{***}	0.006^{***}	0.029^{***}	0.001^{***}	0.002^{***}	0.001^{*}
	[14.009]	[13.010]	[11.399]	[7.058]	[6.464]	[1.913]
Intercept	0.025^{***}	0.097^{***}	-0.459***	0.042^{***}	0.025^{***}	-0.087***
	[6.469]	[9.307]	[-8.047]	[7.775]	[3.894]	[-9.751]
Ν	63,201	63,201	$59,\!542$	63,201	63,201	63,201
Adj. R^2	0.7110	0.2964	0.3086	0.2375	0.2967	0.1956
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Effect of socially responsible investors ownership on investment efficiency.

Table 4 summarizes the effect of socially responsible investors' ownership on firm investments. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are (1) the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV), (2) the absolute value of the residual value of the investment efficiency model (ABS(XINV)), (3) all residual values that are greater than zero (XINV>0), and (4) all residual values that are less than zero (XINV<0). The key independent variable is the socially responsible investors' ownership (SRI Ownership). The variable definition is provided in Table A1. The regression specification follows Eq. (2). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

Dep. Var.	(1) XINV	(2) ABS(XINV)	(3) XINV > 0	(4) XINV < 0
SRI Ownership	0.103^{***}	0.099^{***}	0.131**	-0.042**
	[3.136]	[3.775]	[2.276]	[-2.476]
$\log(Assets)$	0.056^{***}	-0.035***	-0.110***	0.040^{***}
	[5.150]	[-3.997]	[-5.867]	[8.134]
Net $PP\&E$	0.317^{***}	0.096^{*}	0.132	0.138^{***}
	[5.233]	[1.916]	[1.209]	[4.806]
Leverage	-0.147***	-0.043	-0.08	-0.038**
	[-4.062]	[-1.451]	[-1.262]	[-2.149]
EBIT/Assets	0.179^{**}	0.074	0.231	0.052
	[2.187]	[1.119]	[1.520]	[1.315]
Working Capital	0.005	-0.012	-0.064	-0.002
	[0.083]	[-0.287]	[-0.648]	[-0.057]
Cash	-0.172***	0.016	-0.005	-0.087***
	[-2.699]	[0.310]	[-0.039]	[-2.945]
Turnover	-0.004	-0.097***	-0.245***	0.050***
	[-0.210]	[-6.796]	[-7.829]	[6.231]
RE/Assets	0.074***	0.039***	0.052**	0.011**
	[7.104]	[4.795]	[2.466]	[2.149]
ROA	0.023	0.019	0.104	-0.027
	[0.271]	[0.288]	[0.655]	[-0.658]
Tobin's Q	0.013***	0.022***	0.038***	-0.010***
	[2.741]	[6.119]	[5.412]	[-3.865]
Intercept	-0.352***	0.708***	1.354^{***}	-0.646***
	[-4.158]	[10.305]	[9.167]	[-16.837]
N	62,838	62,838	29,122	33,716
Adj. R^2	0.2148	0.2890	0.4175	0.5184
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes

Table 5: Effect of socially responsible investors on firm investments: Marginal effects on the holdings.

Table 5 summarizes the marginal effect of socially responsible investors' ownership on firm investments. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are (1) capital expenditure scaled by the net PP&E (INV) and (2) the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV). The key independent variable is the dummy values depending on the socially responsible investors' ownership. The dummy values determine whether the socially responsible investors' ownership is (1) between 0% and 5%, (2) between 5% and 10%, (3) between 10% and 20%, (4) between 20% and 40%, and (5) above 40%. The variable definition is provided in Table A1. The regression specification follows Eq. (3). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

Dep. Var.	(1) INV	(2) XINV
SRI Ownership (0%, 5%]	0.001	0.135***
	[1.145]	[6.279]
SRI Ownership $(5\%, 10\%)$	0.003**	0.200***
	[2.475]	[7.998]
SRI Ownership $(10\%, 20\%)$	0.004***	0.254^{***}
	[2.916]	[9.519]
SRI Ownership $(20\%, 40\%)$	0.006^{***}	0.248^{***}
	[4.195]	[8.732]
SRI Ownership $(40\%, 100\%)$	0.007***	0.225***
	[4.617]	[7.379]
$\log(Assets)$	-0.001***	0.044^{***}
	[-2.580]	[3.971]
Net PP&E	0.113^{***}	0.315^{***}
	[26.255]	[5.203]
Leverage	-0.021***	-0.143^{***}
	[-12.811]	[-3.964]
EBIT/Assets	0.018^{***}	0.168^{**}
	[4.404]	[2.070]
Working Capital	-0.007***	-0.01
	[-3.527]	[-0.177]
Cash	-0.006***	-0.165^{***}
	[-3.127]	[-2.588]
Turnover	0.005^{***}	-0.009
	[6.934]	[-0.508]
RE/Assets	0.002^{***}	0.076^{***}
	[5.178]	[7.262]
ROA	-0.016***	0.032
	[-4.026]	[0.381]
Tobin's Q	0.002^{***}	0.013^{***}
	[14.032]	[2.801]
Intercept	0.026***	-0.265***
	[6.721]	[-3.061]
N	63,201	$62,\!817$
Adj. R^2	0.7111	0.2169
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster SE	Yes	Yes

Table 6: Effect of socially responsible investors on firm investments: Addressing endogeneity.

Table 6 summarizes the effect of socially responsible investors' ownership on firm investments with the Placebo test. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are (1) capital expenditure scaled by the net PP&E (INV) and (2) the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV). The key independent variable is the dummy values depending on the timing of the socially responsible investors' ownership initiation. The dummy variable *Initiate SRI Holding* takes the value of one when the underlying firm starts to have socially responsible investors, and zero otherwise. The dummy variable *Before SRI Holding* takes the value of one at the year after the underlying firm starts to have socially responsible investors, and zero otherwise. The dummy variable *After SRI Holding* takes the value of one at the year after the underlying firm starts to have socially responsible investors, and zero otherwise. The dummy variable After SRI Holding takes the value of one at the year after the underlying firm starts to have socially responsible investors, and zero otherwise. The variable definition is provided in Table A1. The regression specification follows Eq. (4). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

Dep. Var.	(1) INV	(2) XINV
Before SRI	0.001	-0.175^{***}
	[0.585]	[-7.691]
SRI Initiation	0.001^{**}	-0.237***
	[2.031]	[-17.351]
After SRI	0.003***	0.142***
	[4.928]	[10.201]
$\log(Assets)$	-0.001	0.044^{***}
	[-1.292]	[4.078]
Net PP&E	0.114***	0.296***
	[26.311]	[4.911]
Leverage	-0.021***	-0.152***
-	[-12.730]	[-4.238]
EBIT/Assets	0.018***	0.170**
,	[4.324]	[2.102]
Working Capital	-0.006***	-0.002
0 1	[-3.351]	[-0.041]
Cash	-0.007***	-0.150**
	[-3.276]	[-2.366]
Turnover	0.006***	-0.016
	[7.220]	[-0.946]
RE/Assets	0.002***	0.083***
	[5.095]	[7.964]
ROA	-0.016***	0.025
	[-3.974]	[0.305]
Tobin's Q	0.002^{***}	0.016^{***}
	[14.453]	[3.640]
Intercept	0.020^{***}	-0.11
	[5.018]	[-1.264]
N	63,201	$62,\!817$
Adj. R^2	0.7110	0.2302
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster SE	Yes	Yes

Table 7: Effect of socially responsible investors on firm investments: Propensity score matching.

Table 7 summarizes the effect of socially responsible investors' ownership on firm investments using the propensity score matched sample. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are capital expenditure scaled by the net PP&E (INV) and the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV). The key independent variables are the socially responsible investors' ownership (SRI Ownership) and the dummy variable on whether the firm has SRI ownership (Has SRI Ownership). The dummy variable *Has SRI Ownership* takes the value of one when the underlying firm has socially responsible investors and zero otherwise. The variable definition is provided in Table A1. The regression specification follows Eq. (4). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

	(1) INV	(2) XINV	(3) INV	(4) XINV
SRI Ownership	0.007***	0.173***		
	[3.562]	[3.336]		
Has SRI Ownership			0.004^{***}	0.032^{**}
			[7.378]	[2.382]
$\log(Assets)$	-0.003***	0.020	-0.001***	0.074^{***}
	[-4.326]	[1.289]	[-2.700]	[7.198]
Net PPE	0.145^{***}	0.229^{**}	0.122^{***}	0.362^{***}
	[23.726]	[2.286]	[24.903]	[5.466]
Leverage	-0.017^{***}	-0.053	-0.015***	-0.121***
	[-8.210]	[-0.997]	[-7.711]	[-3.165]
EBIT/Assets	0.024^{***}	0.391^{***}	-0.004	0.266^{***}
	[4.188]	[2.851]	[-0.863]	[3.580]
Working Capital	-0.004	0.055	0.004^{*}	0.113^{**}
	[-1.469]	[0.616]	[1.728]	[2.181]
Cash	-0.009***	-0.229**	-0.011***	-0.146^{**}
	[-2.982]	[-2.330]	[-4.365]	[-2.299]
Turnover	0.005^{***}	-0.043*	0.006^{***}	-0.007
	[4.916]	[-1.725]	[6.717]	[-0.396]
RE/Assets	0.001	0.056^{**}	0.002^{***}	0.026^{***}
	[1.266]	[2.368]	[4.544]	[2.939]
ROA	-0.020***	-0.096	0.000	-0.042
	[-3.485]	[-0.604]	[0.101]	[-0.555]
Tobin's Q	0.002^{***}	0.002	0.002^{***}	0.007
	[9.413]	[0.266]	[13.266]	[1.561]
Intercept	0.026^{***}	-0.117	0.022^{***}	-0.567^{***}
	[5.061]	[-0.837]	[5.546]	[-6.642]
N	34,073	33,891	34,073	33,891
Adj. R^2	0.7930	0.3170	0.7083	0.2174
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes

Table 8: Effect of socially responsible investors on firm investments: Robustness tests.

Table 8 summarizes the effect of socially responsible investors' ownership on firm investments, with alternative sample and sample period. The base sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are capital expenditure scaled by the net PP&E (INV) in Columns (1) and (3), and the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV) in Columns (2) and (4). The first two columns contain the regression results with the financial crisis (2007-2009) and the pandemic (2020-2021) periods excluded. The last two columns contain the regression results with the excluded financial (SIC 6000-6799) and utility (SIC 4900-4939) firms. The key independent variable is the socially responsible investors' ownership (SRI Ownership). The variable definition is provided in Table A1. The regression specification follows Eq. (1) and Eq. (2). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

	Exclude C	risis Period	Exclude	Fin/Util
	(1) INV	(2) XINV	(3) INV	(4) XINV
SRI Ownership	0.010***	0.056**	0.017***	0.098**
	[4.261]	[2.200]	[7.130]	[2.171]
$\log(Assets)$	-0.002**	0.069***	-0.002**	0.074***
	[-2.313]	[4.902]	[-2.523]	[5.230]
Net PP&E	0.116***	0.325***	0.119***	0.361***
	[19.881]	[4.148]	[25.561]	[5.182]
Leverage	-0.016***	-0.066	-0.018***	-0.124***
Ũ	[-7.808]	[-1.355]	[-9.639]	[-3.063]
EBIT/Assets	0.019***	0.159	0.019***	0.11
,	[3.674]	[1.613]	[4.421]	[1.251]
Working Capital	-0.008***	-0.007	-0.008***	0.022
	[-2.898]	[-0.088]	[-3.575]	[0.367]
Cash	-0.006**	-0.210**	-0.006***	-0.166**
	[-2.014]	[-2.477]	[-2.639]	[-2.334]
Turnover	0.004***	-0.03	0.005***	0.02
	[3.849]	[-1.456]	[5.653]	[1.065]
RE/Assets	0.002***	0.071***	0.002***	0.069***
	[3.228]	[5.032]	[4.525]	[6.167]
ROA	-0.017***	0.048	-0.016***	0.079
	[-3.358]	[0.471]	[-3.735]	[0.881]
Tobin's Q	0.002^{***}	0.029^{***}	0.002^{***}	0.015^{***}
	[13.207]	[4.450]	[15.043]	[3.151]
Intercept	0.026^{***}	-0.484***	0.031^{***}	-0.491***
	[5.026]	[-4.326]	[6.616]	[-4.544]
N	43,623	43,340	46,842	46,458
Adj. R^2	0.7425	0.2504	0.6775	0.1782
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes

Table 9: Effect of socially responsible investors on firm investments: Disciplined investmentpolicies.

Table 9 summarizes the relation between socially responsible investors' ownership and firm investments with the heterogeneous effect of the firms' investment policies. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are capital expenditure scaled by the net PP&E (INV) in Columns (1), (3), and (5), and the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV) in Columns (2), (4) and (6). The firms have disciplined investment policies when there is at least one executive role in sustainable development (first two columns), climate change risk disclosure in the 10-K report (middle two columns), and their headquarters are in Red states from the presidential election (last two columns). The key independent variable is the interactive term between socially responsible investors' ownership (SRI Ownership) and the disciplined investment policy dummy. The variable definition is provided in Table A1. The regression specification follows Eq. (5). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. *t*-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

	Sustainal	oility Role	10-K Di	sclosure	Red vs. I	Blue State
	(1) INV	(2) XINV	(3) INV	(4) XINV	(5) INV	(6) XINV
SRI Ownership	0.011***	0.129***	0.005**	0.105***	0.005**	0.105***
	[5.683]	[5.965]	[2.330]	[2.638]	[2.330]	[2.638]
SRI Ownership \times Disciplined	-0.004*	-0.128***	-0.003***	-0.038*	-0.003***	-0.038*
	[-1.804]	[-7.262]	[-3.004]	[-1.657]	[-3.004]	[-1.657]
$\log(Assets)$	-0.001**	0.057***	-0.000	0.053***	-0.000	0.053***
,	[-2.340]	[5.165]	[-0.628]	[4.750]	[-0.628]	[4.750]
Net PP&E	0.114***	0.317***	0.117***	0.342***	0.117***	0.342***
	[26.256]	[5.229]	[24.308]	[5.107]	[24.308]	[5.107]
Leverage	-0.021***	-0.148***	-0.021***	-0.129***	-0.021***	-0.129***
	[-12.776]	[-4.073]	[-12.267]	[-3.268]	[-12.267]	[-3.268]
EBIT/Assets	0.018***	0.180**	0.014***	0.084	0.014***	0.084
	[4.419]	[2.198]	[3.355]	[0.874]	[3.355]	[0.874]
Working Capital	-0.006***	0.004	-0.007***	0.000	-0.007***	0.000
	[-3.392]	[0.080]	[-3.314]	[0.001]	[-3.314]	[0.001]
Cash	-0.006***	-0.172***	-0.005**	-0.173**	-0.005**	-0.173**
	[-3.197]	[-2.700]	[-2.435]	[-2.472]	[-2.435]	[-2.472]
Turnover	0.005^{***}	-0.003	0.007^{***}	-0.017	0.007^{***}	-0.017
	[7.002]	[-0.186]	[8.775]	[-0.956]	[8.775]	[-0.956]
RE/Assets	0.002^{***}	0.074^{***}	0.002^{***}	0.078^{***}	0.002^{***}	0.078^{***}
	[5.149]	[7.089]	[4.278]	[6.287]	[4.278]	[6.287]
ROA	-0.016***	0.022	-0.011***	0.145	-0.011***	0.145
	[-4.033]	[0.259]	[-2.729]	[1.468]	[-2.729]	[1.468]
Tobin's Q	0.002***	0.013***	0.002***	0.023***	0.002***	0.023***
	[14.004]	[2.739]	[12.685]	[4.295]	[12.685]	[4.295]
Intercept	0.025^{***}	-0.355***	0.015^{***}	-0.364***	0.015^{***}	-0.364^{***}
	[6.514]	[-4.176]	[3.987]	[-4.168]	[3.987]	[-4.168]
N	63,201	62,838	50,851	50,531	50,851	50,531
Adj. R^2	0.7110	0.2148	0.7309	0.2268	0.7309	0.2268
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: Effect of socially responsible investors on firm investments: Influential investors. Table 10 summarizes the relation between socially responsible investors' ownership and firm investments with the heterogeneous effect of the firms' investment policies. The sample contains publicly traded U.S. firms from 2005 to 2021. The dependent variables are capital expenditure scaled by the net PP&E (INV) in Columns (1), (3), and (5), and the residual value of the McNichols and Stubben (2008) investment efficiency model (XINV) in Columns (2), (4) and (6). The firms have influential investors when their SRI ownership HHI is above the median (first two columns), the top 3 SRI ownership is above the median (middle two columns), and the top 5 SRI ownership is above the median (last two columns). The key independent variable is the interaction term between socially responsible investors' ownership (SRI Ownership) and the influential investor dummy. The variable definition is provided in Table A1. The regression specification follows Eq. (6). All regressions have firm and year fixed effects, with standard errors clustered on both the firm and year levels. t-statistics are reported in brackets. ***, ** and * indicate the coefficients are statistically significant at the 1%, 5% and 10% levels, respectively.

	SRI	HHI	Top3 I	Holding	Top5 I	Iolding
	(1) INV	(2) XINV	(5) INV	(6) XINV	(5) INV	(6) XINV
SRI Ownership	0.012***	0.135***	0.018***	0.087**	0.017***	0.090**
	[6.133]	[3.651]	[5.593]	[2.292]	[5.350]	[2.341]
SRI Ownership \times Influential	-0.003***	-0.037**	-0.008***	-0.051**	-0.008***	-0.061***
	[-2.997]	[-1.982]	[-3.171]	[-2.188]	[-2.920]	[-2.634]
$\log(Assets)$	-0.001**	0.055***	-0.001**	0.055***	-0.001**	0.055***
	[-2.407]	[4.955]	[-2.204]	[5.075]	[-2.211]	[5.085]
Net PP&E	0.114***	0.319***	0.113***	0.318***	0.113***	0.317***
	[26.286]	[5.261]	[26.236]	[5.240]	[26.242]	[5.237]
Leverage	-0.021***	-0.148***	-0.021***	-0.148***	-0.021***	-0.148***
	[-12.882]	[-4.088]	[-12.749]	[-4.078]	[-12.753]	[-4.074]
EBIT/Assets	0.018***	0.179**	0.018***	0.179**	0.018***	0.179**
	[4.424]	[2.187]	[4.414]	[2.197]	[4.421]	[2.195]
Working Capital	-0.006***	0.005	-0.006***	0.004	-0.006***	0.004
	[-3.382]	[0.092]	[-3.384]	[0.073]	[-3.378]	[0.075]
Cash	-0.006***	-0.172^{***}	-0.007***	-0.171^{***}	-0.007***	-0.171^{***}
	[-3.190]	[-2.693]	[-3.283]	[-2.682]	[-3.285]	[-2.684]
Turnover	0.005^{***}	-0.004	0.005^{***}	-0.004	0.005^{***}	-0.004
	[7.038]	[-0.224]	[7.044]	[-0.222]	[7.044]	[-0.222]
RE/Assets	0.002***	0.074^{***}	0.002***	0.074^{***}	0.002***	0.074^{***}
	[5.152]	[7.104]	[5.053]	[7.110]	[5.057]	[7.109]
ROA	-0.016***	0.023	-0.016***	0.022	-0.016***	0.022
	[-4.050]	[0.270]	[-4.026]	[0.265]	[-4.035]	[0.267]
Tobin's Q	0.002^{***}	0.012^{***}	0.002^{***}	0.013^{***}	0.002^{***}	0.013^{***}
	[13.779]	[2.619]	[13.999]	[2.725]	[14.000]	[2.727]
Intercept	0.025^{***}	-0.340***	0.025^{***}	-0.346***	0.025^{***}	-0.347***
	[6.585]	[-3.962]	[6.435]	[-4.083]	[6.438]	[-4.091]
N	63,201	62,838	63,201	62,838	63,201	62,838
Adj. R^2	0.7111	0.2149	0.7111	0.2148	0.7111	0.2148
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster SE	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 1 Investment Efficiency Measure Using Expected Investment Model

In this research, investment efficiency is measured through a residual-based method that calculates the discrepancies between actual and expected investment levels. We utilize the expected investment model proposed by McNichols and Stubben (2008) to determine whether firms are making optimal capital investment decisions. This model evaluates both over-investment and under-investment by comparing them to an estimated benchmark that signifies the efficient allocation of resources. The expected investment model is expressed as follows:

$$INV_{it} = \alpha + \beta_1 \text{Sales Growth}_{it-1} + \beta_2 \text{Leverage}_{it} + \beta_3 \text{Cash Flow}_{it} + \epsilon_{it}, \tag{7}$$

where:

- INV_{it} represents the level of investment for firm *i* at time *t*.
- Sales $\operatorname{Growth}_{it-1}$ denotes the change in sales from the previous period, which serves as a proxy for expected future investment opportunities.
- Leverage_{it} is the ratio of total liabilities to total assets, capturing the firm's debt constraints that might impact its investment capacity.
- Cash Flow_{*it*} represents the operational cash flow, indicating the liquidity available to finance investment projects.
- ϵ_{it} is the residual term, which measures deviations from expected investment levels.

Investment efficiency is defined by the residuals (ϵ_{it}) from the model as:

$$XINV_{it} \equiv \epsilon_{it}, \tag{8}$$

Positive residuals indicate over-investment, where the firm's actual investment exceeds efficiency. Conversely, negative residuals signify under-investment, implying the firm is not fully utilizing available investment opportunities.

Table A1: Variable definitions.

Variable	Definition
INV	The firm investment level measured by the capital expenditure (CAPX)
	over the beginning of the period net total property, plant, and equipment
	(PPENT).
Net INV	Capital expenditures (CAPX) minus PP&E sales (SPPE) plus cash paid for
	acquisitions (AQC) plus the increase in investments (IVCH) minus sale of
	investments (SIV), scaled by total assets (AT).
Growth	The year-over-year change in total assets (AT), scaled by total assets (AT).
Cash Acq.	The cash paid for acquisitions (AQC), from the cash flow statement, scaled
	by assets (AT).
Other	Increase in investment (IVCH) minus sale of investment (SIV), scaled by total
	assets (AT).
Debt Iss.	Debt issuance (DLTIS) minus debt repayments (DLTR) plus the change in
	short-term debt (DLCCH), scaled by total assets (AT).
XINV	The residual amount using McNichols and Stubben (2008) investment effi-
	ciency model. Appendix B describes the methodology for estimating this
	investment efficiency measure.
SRI Ownership	The ratio of the common shares owned by the socially responsible investors
	(SRI) over the total common shares. Socially responsible investors are the
	institutional investors in the United Nation's Principal for Responsible In-
	vestment (UN PRI) signatory directory. The institutional ownership data
	is from FactSet, and the socially responsible investors proportion is mapped
	with the UN PRI signatory list using the institute name.
SRI Ownership	The dummy variable with value one when the firm has SRI ownership and
	zero otherwise.
log(Assets)	Natural logarithm of total assets (AT) in billions.
Net PP&E	Net Property, plant, and equipment (PPENT), scaled by total assets (AT).
Leverage	The book value of debt $(DLC + DLTT)$ divided by total assets (AT).
EBIT/Assets	Earnings before interest and taxes (EBIT) at year-end scaled by the total
	assets (AT).
Working Capital	Current assets (ACT) minus current liabilities (LCT), scaled by total assets
Cash	Cash holdings (CHE), scaled by total assets (AT).
Turnover	Total sales (SALE), scaled by total assets (AT).
RE/Assets	Retained earnings (RE), scaled by total assets (AT).
Tobin's Q	Tobin's Q, as defined in Erickson and Whited (2012). Computed as the
	market value of assets scaled by the book value of assets (AT). The market
	value of the assets is defined as $(MVE + AT - CEQ)/AT$, where MVE is
	the common shares outstanding (CSHO) multiplied by the close price of the
	stock (PRCC) and total common equity (CEQ).