How do institutional investors improve corporate ESG performance: evidence from responsible engagements

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May 20, 2023

Abstract

Using unique data on institutional investors' in-house meetings with the firm during plant or headquarters visits, this paper examines whether institutional investors actively engage with companies on ESG issues and the impact of such responsible engagement. We use signing up for the UNPRI as a shock and find that institutional investors are significantly more proactive in their ESG engagement after making a public commitment to responsible investing. Moreover, we also find that institutional responsible engagement is associated with higher subsequent firm ESG performance, with this facilitating effect becoming more pronounced when ESG yields more benefits after the Covid-19 pandemic. Taken together, our findings provide empirical evidence that institutional investors actively engage with companies on ESG issues through private in-house meetings by voicing out their responsible concerns, which is an important factor for companies to achieve better ESG outcomes.

JEL classification: G120, G140, G170, G400.

Keywords: Institutional Investors; Shareholder Engagement; ESG; PRI; Responsible Investing; Textual Analysis

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1. Introduction

Responsible investing has received an unprecedented level of awareness globally among institutional investors, for which environmental, social, and governance (ESG) concerns are incorporated into investment processes. According to the United Nations, the asset owner signatories of the Principles for Responsible Investment (PRI) expand from the original 20 institutions in the year 2006 since the PRI was launched, to 3404 institutions by the end of the year 2021, representing $29.2 trillion assets under management from investors all over the world. The increasing prevalence of responsible investing raises questions as to whether and how institutional investors integrate ESG considerations in their investment and research process, as well as to what extent institutional investors serve as an effective mechanism to achieve subsequent changes in the underlying companies.

There are two channels through which institutional investors could conduct the responsible monitoring role and voice to the firms to fulfill the responsible investing commitment: private engagement and public activism. Private engagement involves behind-the-scene questions and communications with the firm management. Public activism involves more aggressive tactics such as proxy votes (also known as a proxy contest or shareholder proposal, e.g., Gillan and Starks (2000); Iliev et al. (2015); Iliev and Lowry (2015)) and occasionally involves extreme and hostile tactics of adversarial intervention such as public criticism and legal actions. Since activism presents to be the most expensive stage (as estimated by Gantchev (2013)) and has historically low passage rates (Gillan and Starks, 2000), it would be rational for institutional investors to engage with firms through direct communications first, and escalate into hostile public activism (or resort to exit) only if these private communicative engagements fail (Levit (2019) provides a mathematical model of shareholder activism with strategic communication). In line with this idea, shareholder proposals are extremely rare in reality, especially in non-US areas (Iliev et al., 2015). Given the scarcity, Dyck et al. (2019) adds that E&S proposals are only occasionally used as a lever to promote private negotiations. They come to the indirect conclusion, after drawing out all the other potential mechanisms, that successful engagements are predominantly private.

In fact, anecdotal evidence and surveys from practitioners have suggested that institutional investors frequently try to engage with firms through private engagements in the form of questions and dialogues. In particular, according to the survey by Deloitte (2015), approximately three-quarters of public firms in the US experienced shareholder activism most often in the form of direct communication with management. Chris Ruggeri, the managing principal of Risk Intelligence at Deloitte, points out based on her Deloitte memorandum that ongoing monitoring and proactive engagement from institutional investors "head off most serious problems and enable a swift and effective response to those that do arise" (Ruggeri, 2019). Representatives of practitioners in the investment

industry also report that they prefer private engagement with firms. In a recent survey by McCahery et al. (2016), institutional investors ranked private engagement through investment-stewardship communication as the foremost essential means to resort to, in front of proxy contests, public criticism, legal actions, or exit. (An academic survey of large institutional investors conducted by McCahery et al. (2016) documents that, 63% respondents report they have engaged in direct dialogues with management behind the scenes; in addition, such private engagements are frequently used and have a high success rate, which stands in stark contrast to adversarial activist tactics.) Blackrock, one of the largest institutional investors, states in their report that engagement is "a key mechanism for providing feedback or signaling concerns to companies" (BlackRock, 2022). As a whole, private engagement with firm management is an important, if not the most important, mechanism for institutional investors to monitor the firm, as argued by various practitioners and industry experts (Roundtable, 2022).

Despite the anecdotal evidence, there is a lack of systematic knowledge and empirical evidence on how and to what extent institutional investors engage with companies on ESG issues, as well as the impact of institutional responsible engagement on firms' ESG performances. The few related studies that pioneered in this field employ proprietary data to look into one specific institution and offer insightful findings (Becht et al., 2009; Carleton et al., 1998; Dimson et al., 2015), while the extent to which their conclusions can be generalized is unclear, especially in the context of ESG-related engagement. Compared to the rich literature examining institutional investors' monitoring role through activism tactics, the extant literature on engagement is much less. In practice, however, as analyzed above, activism occurs in rare cases and reflects a failure to engage with the management.

The potential reason behind the lack of systematic empirical examination lies in the fact that many of these responsible engagements occur behind the scenes – unless institutions publicly express their opinion toward a company's ESG activities or investments, which is rarely the case. The empirical challenge is that the investors' private responsible engagements with firms are largely not observable. Addressing this question through archival research methods is hard because many engagements may take place in private communications, making their observation and measurement difficult.

In this study, we help penetrate the black box and shed light on the existence and prevalence of institutional investors' responsible engagement channel by exploiting a unique disclosure requirement for firms listed on SZSE in China, which provides comprehensive records on institutional investors' dialogues with the company management team during plant or headquarters visits. The data is unique and affluent in that it provides detailed contents of the engagement, including questions raised by the visiting institutions and correspondent answers provided by the company's management. We use linguistic classification algorithms well-developed in computer science to capture ESG-

related questions and define a visit as a responsible engagement if participating institutions have raised ESG-related questions. Table A1 in the appendix provides an excerpt of the original engagement record excerpt and illustrates how ESG questions are captured to empirically define the event as a responsible engagement.

While the idea to capture responsible engagement is fairly intuitive, there is still a potential endogeneity problem: whether the responsible engagement we observe is proactive engagement initiated by institutional investors or passive dialogue solicited by firms. Moreover, investors may choose to engage firms that may self-improve ESG scores purposefully. In other words, it is a selection behavior instead of voicing out ESG concerns. This is a common problem faced by studies on the responsible engagement of institutional investors with firms. In this paper, we exploit our data granularity at the firm-institution-time level and address this endogeneity concern utilizing institutional investors' transitory status of signing the United Nations Principles for Responsible Investment (UNPRI). Specifically, we use the institutions' UNPRI signature as exogenous shocks which isolate the increase in their motivation of proactive responsible engagement from the latent change in firms' ESG awareness and solicitation. This is similar to the recent research by Kim and Yoon (2023). We find significant and robust evidence that institutional investors engage more actively in ESG-related research after they publicly commit to responsible investing by signing the UNPRI, whereas the ESG scores of firms that have received responsible engagements and were visited by these UNPRI institutions barely changed. The results validate the appropriateness of our proxy of institutional investors' responsible engagement in a visit-level setting.

Having validated the appropriateness of our proxy of institutional investors' responsible engagement, we proceed with analyses to examine to what extent institutional engagement serves as an effective mechanism to achieve subsequent changes in the underlying companies. Using a sample of 14,843 firm-year observations during the period of 2012-2021, we find robust evidence that institutional responsible engagement is associated with subsequently better firm ESG performances, in terms of both ESG comprehensive scores and real outcomes in the three environmental, social, and governance aspects. More institutional responsible engagement is associated with better improvements in ESG scores, with a regression coefficient of 0.0094 and a t-statistic of 4.22. This engagement is also pronounced for the leveling effect, where responsible engagement is associated with firms with higher ESG scores.

We also examine the real implications of ESG improvements with responsible engagements by inspecting the three pillars of environment, social, and governance. We find that responsible engagements are significantly and positively related to firms' environmentally friendly products and the probability of being commended by the government for environmentally good behaviors. Moreover, institutional investors' ESG concerns are also related to higher donations to society and more public education programs to the

community from a social perspective. Finally, firms set up more employee beneficiary programs like employee stock ownership and have higher dividend payout ratios to their shareholders after receiving more responsible engagements. These are all new and direct evidence complementing Dyck et al. (2019) by revealing the real consequences of institutional investors' influence on corporate social responsibility. Our society really benefits from the unobserved action of these responsible investors.

We also document the facilitating effect of institutional responsible engagement on firm ESG performance is more pronounced when the company needs financing and when ESG yields more salient financial benefits after the Covid-19 pandemic.

The mechanism behind this engagement is a bit different from Broccardo et al. (2022), as we are considering a special case where a large fraction of the investors do not have interests or voting rights in the firms that they engage. We take advantage of the phenomenon that Chinese firms have a strong tendency to issue new stocks after IPO (and never payout dividends), and we show that firms with more refinancing demands improve ESG performance more significantly. We conjecture that firms that have higher demands of refinancing need to take responsible engagements more seriously, and if they don't, there is a high probability that institutional investors stop subscribing to their newly issued stocks. This mechanism is essentially a voice-or-exit where investors can influence firms by threatening to exit the refinancing, as compared to the voice-vs.-exit. This mechanism is also consistent with the empirical findings that firms with higher liquidity in hand improve ESG performance more significantly.

We demonstrate that our main result is robust and interpretations are qualitatively similar. We show that the main result is significant after controlling for various variables that proxy for investor attention. Besides, we decompose investor total engagement into two parts, including responsible engagements and non-responsible engagements. Regression results show that non-responsible engagements are negatively associated with improvements in CSR performance. This implies that the investor's voice had a negative effect when it pressures firms only for financial returns while ignoring corporate social responsibility. Their inattentiveness also does not pay off higher investment returns, as there is an insignificant difference between the two types of engagements. This is another piece of evidence that shows the dark side of investors' engagements when they are unaware of the importance of impact investing.

Finally, we use propensity-score matched samples of responsibly engaged firms as treated groups and non-responsibly engaged as control groups. For separate robustness tests, we also address the concern about manipulation of ESG words by defining different sets of keywords that are related to the topic of ESG and reperform the analysis. Overall, empirical results are largely the same.

To the extent of our knowledge, our study contributes to the literature in the following aspects.

First, we contribute to the literature on the responsible roles played by institutional investors by providing direct systematic evidence of their responsible engagement activities. Extant studies on the responsible roles played by institutional investors generally look into their portfolio holdings (Di Giuli and Kostovetsky, 2014; Dyck et al., 2019; Gibson et al., 2020; Gibson Brandon et al., 2022; Kim and Yoon, 2023; Starks et al., 2017) and the empirical evidence on whether responsible investors invest responsibly are mixed and inconclusive. However, according to the theoretical framework given by Broccardo et al. (2022), if the majority of investors are even slightly socially responsible, voice achieves better outcomes than portfolio reallocation (exit). Challenges for empirical studies lie in the fact that most institutional engagements are largely unobservable since they take place privately (Kim and Yoon, 2023) and do not necessarily escalate into pulling investment back and exiting the firm (Fink, 2022; Krueger et al., 2020). The few extant empirical studies examine the engagement channel using the proprietary data of a single institution (Becht et al., 2009; Carleton et al., 1998; Dimson et al., 2015), though the extent to which this evidence generalizes is unclear. Our evidence is therefore important in providing a generalizable view of institutional investors' stated responsibilities, actual behaviors, and the consequences on firms. The widespread use of private engagement with firms on ESG issues that we document among our data universe highlights the fact that institutional investors play a more active role in ESG courses than would be inferred from observational portfolio holdings only.

2. Institutional background, theoretical analysis and research hypothesis

2.1. Institutional investors' private responsible engagement with companies

To shed light on the existence and prevalence of institutional investors' responsible engagement channel, we exploit the unique disclosure requirement for firms listed on SZSE in China, which provides exclusive and systematic records on institutional investors' dialogues with the company management team during plant or headquarters visits. The Article 41 of the "Guideline of Investor Relations Management" by Shenzhen Stock Exchange (SZSE) requires that listed companies should arrange the investor reception activities properly so that visitors may better understand the companies' business and operational situations, though companies should not disclose material nonpublic information to participants during the visits. Since August 2012, listed companies have been required to complete a standard report template to disclose the date, venue, attendees, and a brief summary of the dialogue between the visiting institutions and the

firm management. We obtain all these investor reception records from Aug. 2012 to Dec. 2021. Table 1, Panel A provides the summary statistics of these records of our sample. There are 66,897 raw filling records over the sample period, covering over 90% of all firms listed in SZSE in total. For each year, over a thousand firms are covered with institutional investors' visiting activities, accounting for approximately 50%-80% of all firms listed in SZSE. The total number of visit activities each year is quite stable, and not correlates much with the bull and bear of the market but rather reflects the capacity of visiting behaviors.

There are at least two advantages of the setting that we use to examine institutional investors' responsible engagements. First, although institutional investors can engage with companies in a variety of ways (e.g., conference calls after the earnings announcement, publicly disclosed letters to management, or investor roadshows), the direct two-way dialogue with the management team during the visit trip held at the company plant or headquarters serves as a disparate channel of private engagement on a conversational, negotiable and constructive basis. Personal interactions and two-way communication are especially effective for mitigating information asymmetry and improving alignment between managers and investors (Chapman et al., 2022), given the trust and confidence developed through these interactions. As the survey by Deloitte put it, "A high level of engagement and two-way communication help establish credibility, …, that management has the shareholders' interests at heart, and provides crucial feedback on issues many investors are concerned about" (Deloitte, 2015). Moreover, different from other communication channels such as conference calls (Bushee et al., 2011; Rennekamp et al., 2022) and investor open day (Kirk and Markov, 2016), our setting of dialogue during a corporate visit more effectively captures the proactive engagement initiated by institutional investors, which is crucial in understanding the monitoring role played by institutional investors. Conference calls are generally convened by the company itself (Cohen et al., 2020), scheduled in advance to be held right after earnings announcement date or material information events, and are regulated to be hosted in public information exchanges. Engagement via corporate visits is initiated by institutional investors in general rather than firms and can take place on all working days throughout the year in a flexible and proactive manner. Such engagement is generally not publicized in advance and the dialogue hardly goes public unless the companies are regulated specifically to disclose the content.

This also brings to the second advantage of our setting – the data is unique and affluent in that it provides the detailed content of the engagement, including questions raised by the visiting institutions and correspondent answers given by the company's management (an excerpt for illustration is provided in Appendix A). It allows us to directly gauge institutional investors' private engagement in firm ESG commitment, and isolate responsible engagement in ESG-specific issues from other financial or operational

issues. We take advantage of textual analysis algorithms to develop direct measures of institutional investors' responsible engagement based on questions they raise during their corporate visits. Specifically, we use the classification algorithms well developed in computer science to identify ESG-related questions. Following Luccioni and Palacios (2019), we manually specify a set of seed words related to the three aspects of ESG, feed these seed words to the Word2vec algorithm to retrieve the thirty closest words in the text using cosine similarity, and obtain a full-fledged ESG dictionary. In the empirical section, we show that our results are robust to different word sets and yield similar interpretations. Detailed descriptions of seed words are provided in Appendix B. Finally, a visit is classified as an ESG-related engagement if participating institutions have raised at least one ESG-related question.

We detail the theoretical analysis of public commitment made by UNPRI signatory institutions and responsible engagement in the next section, followed by our research hypothesis.

2.2. Public commitment to UNPRI and responsible engagement

We utilize the transitional signatory status of United Nations Principles for Responsible Investment (UNPRI) by institutional investors whose footprint has been disclosed by any firms listed in SZSE, China, as a quasi-natural experiment to investigate their responsible engagement.

Institutional investors have reputational motivations to join the PRI initiative. In the past decade, sustainability and responsible investing have received a tremendous amount of popularity among the largest asset owners in the world. There has been a growing awareness of the need for institutional investors to be or appear to be responsible with ESG issues, either to cater to the preference of the source of funds (Kim and Yoon, 2023) or to fend off the increasingly heated public condemnation of disregarding the social interest to make money and focus on yields. As Larry Fink, the Chairman, and CEO at BlackRock CEO, put it in his annual letter (Fink, 2022), "We focus on sustainability… because we are capitalists and fiduciaries to our clients". In order to suit the preferences and needs of the source of capital, an increasing number of institutional investors in the asset management industry take action to transform themselves into responsible investors. The Principles for Responsible Investment (PRI) is the largest responsible investor initiative worldwide (Gibson Brandon et al., 2022) backed by the United Nations. The PRI initiative has a reputation effect, especially for institutions in developing countries like China. Becoming a PRI signatory is often advertised on the homepage of the institution's website, and is always viewed as positive news reported by the media press. Therefore, public declaration of becoming the PRI signatory would in general gain the institution a good reputation to attract funds, especially funds from large responsibility-

sensitive asset owners such as pension funds. In this regard, signing UNPRI could serve as a delegated pro-social behavior, which can build the institution a good and responsible reputation and suit themselves to the taste of the wider range of capital sources. In addition, China is undergoing an essential period of development transition toward sustainability in the recent decade, and financial institutions are important players to handle the sustainable mission in the capital market. The Chinese government unveils its 2030 Agenda for Sustainable Development at UN Headquarters and is working continuously to enhance environmental protection, social welfare, and corporate governance. Financial institutions in China have strong motivations to respond to the call and build good reputations toward responsible investing in the face of political considerations, given the appointment and promotion of executives in major financial institutions in China are politically charged in large part. Consistent with this idea, over our sample period, the Chinese institutions are getting conscious of the importance of sustainable investment gradually and signed the UN-PRI one after another by different periods.

On the other hand, however, since the implementation of PRI principles is mainly voluntary, the signatory status is an indicator of institutions' stated commitment to responsible investment Dyck et al. (2019). Whether institutions that state to be responsible truly engage responsibly with firms demands closer investigation. There are several reasons why institutions choose not to dedicate their effort to ESG-related research, despite gaining them a reputation. Aside from monetary costs of up to millions per year, dedication to ESG has significant non-monetary costs including more time spent by fund managers and analysts and increased compliance risk with more thorough and frequent communications with companies. Additionally, the benefits of ESG dedication can be difficult to quantify, which complicates a reliable cost-benefit analysis to warrant regular ESG engagement. Last, certain asset owners concern that the fund managers are distracted by ESG-related research at the expense of professionalism and excess returns. Such concerns could undermine the incentive to work hard on ESG fulfillment.

Taking the analysis together, while a responsible statement sounds good, whether institutions who state publicly to be responsible truly engage responsibly with firms and incorporate ESG considerations in their research and investment process is open to empirical investigation.

Extent studies in this field look into institutional investors' portfolio holdings and calculate the portfolio ESG scores to examine the responsible role played by institutional investors (Di Giuli and Kostovetsky, 2014; Dyck et al., 2019; Gibson et al., 2020; Gibson Brandon et al., 2022; Kim and Yoon, 2023; Starks et al., 2017) and the empirical evidences on whether responsible investors invest responsibly are mixed and inconclusive. In this regard, we note that institutional investors' stock holdings reflect the results of voting with their feet (exit), not direct engagement efforts. As long as institutional investors proactively engage with firms on corporate ESG matters, they have at least

to some extent fulfilled their ESG responsibilities, and don't necessarily always escalate into portfolio re-allocations. In line with this, Broccardo et al. (2022) analyze theoretically the relative effectiveness of exit and voice(engagement) strategies, and conclude that "if the majority of investors are even slightly socially responsible, voice achieves the socially optimal outcome." BlackRock also pointed out in its annual CEO letter (Fink, 2022) that it does not divest or simply pass carbon-intensive assets, but rather engages with companies in these sectors to transform their business. Krueger et al. (2020) survey 439 respondents who work in institutions throughout the world and document that they consider "engagement, rather than divestment, to be the better approach". On top of that, the portfolios reported periodically could be a quite noisy representation of an institutional investor's underlying decisions to commit to responsible investment. Portfolio decisions to buy in or exit a firm not simply reflect an institutional investor's ESG considerations, but also reflect 1) alpha performances, 2) liquidity issues, and 3) window dressing under mandated disclosures, in which 1) and 2) would bias against finding the investor incorporating responsible considerations, while 3) would bias for finding it. In this paper, our measure of institutions' actual commitment to responsibility through private ESG engagement overcomes this challenge, which we match the UNPRI signatories with and investigate whether institutions truly reinforce responsible engagement or simply pay an annual fee for sounding good.

Based on the aforementioned institutional background and theoretical analysis, we formulate the following competitive hypotheses:

Hypothesis 1a. Institutional investors engage more actively in ESG-related research after they publicly commit to responsible investing by signing the UNPRI.

Hypothesis 1b. Institutions sign the UNPRI simply to cater to the popularity of ESG but fail to engage more actively in responsibility-related research in practice.

2.3. Impact of responsible engagement on firms

Given institutional investors proactively engage with companies on ESG matters, actual improvement occurs only if two forces are combined: institutional investors are indeed putting pressure on change, and companies are indeed pressured to recognize ESG and take action to improve. For institutional investors, active responsible engagement is one thing, and it's another whether the pressure will actually be exerted to bring about change. Making real changes to improve ESG performance requires an investment of resources on the corporate side – in the face of uncertain economic benefits. The concern of companies, and institutional investors, is whether it's worth trading off wealth for social benefits and whether they are willing to replace short-term gain for long-term performance improvements.

Being ESG good could either come at the expense of value or be value enhancing ac-

cording to the valuation framework (Cornell and Damodaran, 2020). There is an ongoing debate over social responsibility versus profitability for corporate purposes. A large literature has explored this topic and it remains an open debate with supportive evidence on both sides (Cheng et al., 2014). On the one hand, firm investment in ESG improvements diverts funds that could be used for other financially productive investments (Gollop and Roberts, 1983). According to the corporation purpose theory pioneered by the economist Milton Friedman, companies should focus on profitability rather than on social responsibility (Friedman, 2007). Evidence suggests that expenditures on ESG improvements may not be recovered through increased sales, and come at the expense of firm value (Di Giuli and Kostovetsky, 2014). On the other hand, improving ESG standing could also create a payoff for firms (Awaysheh et al., 2020), either by delivering higher profitability in the long run through branding and reputation effects (Chien and Peng, 2012; Fink, 2020; Pedersen et al., 2021; Ruf et al., 2001; Servaes and Tamayo, 2013), or by lowering risk and cost of capital through refraining regulatory and legal costs (Karpoff et al., 2005) and attracting a greater pool of shareholders (Dyck et al., 2019; Kim et al., 2018).

On the institutional investors' side, exerting real pressure on firms to "do things right" has advantages and disadvantages. On the one hand, by nature, institutional investors own substantial shares of equities in the market (Dimson et al., 2015, 2013; Mattison et al., 2011), and their long-term holdings are not only exposed to firms' short-period financial performances but also exposed to firms' environmental and social externalities (Bénabou and Tirole, 2010; Chava, 2014; Dimson et al., 2015; Mattison et al., 2011). In this regard, it is in the interest of these long-term institutional investors to care about the ESG-related external risks of investee companies. For example, according to the survey of large institutional investors by McCahery et al. (2016), investors who choose to intervene report that they care more about ESG than short-term issues. As BlackRock CEO Fink (2020) mentioned in his letter on social responsibility, "Capitalism has the power to shape society and act as a powerful catalyst for change". Martin and Moser (2016) provide evidence in experimental markets that both investors and managers value environmental-friendly investments for non-pecuniary benefits. On the other hand, institutional investors in the asset management industry are also subject to periodical performance races and a high degree of competition (Coates IV and Hubbard, 2007; Cremers et al., 2016; Khorana and Servaes, 2012), and have motivations to not actually exert responsible pressures on firms to undertake ESG activities that do not necessarily generate profits (Cornell and Damodaran, 2020; Gibson et al., 2020). After all, for institutional investors, relevance to investment performance is the most frequent motivation behind ESG engagement (Amel-Zadeh and Serafeim, 2018), and they are unwilling to give up financial benefits to invest in environmentally sustainable projects (Larcker and Watts, 2020). For these reasons, the consequence of institutional responsible engagement on subsequent firm ESG improvement remains unclear. Based on the above analysis, we propose the following

competitive hypotheses regarding the impact of responsible engagement by institutional investors on firms' subsequent ESG performances:

Hypothesis 2a: Ceteris paribus, institutional investors' private responsible engagement positively improves firms' future ESG performances.

Hypothesis 2b: Ceteris paribus, institutional investors' private responsible engagement fails to impact firms' future ESG performances.

Furthermore, the outbreak of the Covid-19 pandemic serves as a shock that affects the financial value of firms' ESG performances (Broadstock et al., 2021), where ESG performances could be beneficial to institutional investors by providing insurance on their portfolios against event risk (Albuquerque et al., 2020; Dyck et al., 2019; Lins et al., 2017; Servaes and Tamayo, 2013). If ESG engagements are largely driven by their relevance to investment performance (Amel-Zadeh and Serafeim, 2018), i.e. if financial motivations are important, institutional investors would push for firms' ESG performance and force through policy changes especially after the outbreak of the pandemic, since the optimal level of value-maximizing responsibility has arguably increased. Therefore, we expect in H3 that the facilitating effect of institutional responsible engagement on subsequent firm ESG performance would become more pronounced after the Covid-19 pandemic when ESG yields financial benefits.

Hypothesis 3: The impact of institutional engagement on firms' ESG performance is stronger following the Covid-19 pandemic when the optimal level of value-maximizing responsibility has arguably increased.

3. Data and methodology

3.1. Research data and main variables

We compile a comprehensive dataset of institutional investors' private engagement in ESG issues with Shenzhen Stock Exchange (SZSE) firms through corporate visits. We manually collect all the original corporate visit filings disclosed on Shenzhen Stock Exchange (SZSE) official information platform from August 2012 to December 2021. We extract information on firms that were paid visits to, and all the institutions listed on visit filings.

For institutional investors, we match institutions based on their name that appears on the UNPRI with RegEx. We also match their institutional types such as sell-side brokerage, mutual funds, qualified foreign investors, etc., with detailed information from WIND.

For firms, we match their financial characteristics with financial data from CSMAR. Additionally, we also match two pieces of ESG-related information by their stock codes.

The first ESG-related information is the ESG composite score, which is obtained

from Huazheng ESG ratings provided by Huazheng-Securities Index Information Service (Shanghai) Co. Ltd. Huazheng[1] acquires information from annual reports, corporate social responsibility reports, and third-party sustainability reports for all firms listed in China, at annual frequency. The index is widely used in previous research on the ESG performances of Chinese firms (Chen and Xie, 2022; Li et al., 2022; Zhang and Liu, 2022). The second ESG-related information is firms' real ESG outcome indicators and firm ESG contentiousness indicators, which are obtained from the CNRDS database. We provide a detailed description of the variables we use in the appendix. Our final sample consists of 2336 distinct firms from 2012 to 2021.

[Insert Table 1 near here]

Panel A of table 1 reports the text-based institutional responsible engagement measure with the granularity at both firm-institution-year levels ($InstRspEngg$) and firm-year levels ($RspEngg$). In each visit, participating institutions could ask various questions related to firms' operations, financial performance, ESG issues, etc. The text-based measure is derived from the bag-of-words approach, which is used in our main analysis. We first define a set of seed words that are related to the three aspects of sustainability from low carbon, and corporate governance, to social responsibility, and use a pre-trained word-to-vector model to span an ESG dictionary. The pre-trained model is obtained from the Tencent AI lab[2], with 200-dimensional vector embeddings for Chinese characters. More specifically, this model has over 12 million Chinese words and phrases and is capable of spanning accurate ESG-related words. In the appendices, we provide detailed training results with different seed words.

We then classify ESG-related questions from visit filings using the derived ESG dictionary and define a visit as an ESG-related engagement if participating institutions have raised any ESG-related questions. In this regard, we can gauge ESG engagement by two granularities. The first granularity is on the institution-firm-year level, which examines responsible engagements from the institutional investors' perspective. This measure captures ESG engagements conducted by an institution to the firm during the year and has 479,945 observations. We compute this measure by aggregating the number of responsible visits an institute pays to a firm in a year. On average, an institution makes 0.52 responsible engagements with the firm each year, with a standard deviation of 0.65. The most responsible institution paid 3 ESG engagements to a firm in a year. For the second granularity, responsible engagement is aggregated at a firm-year level across all involved

[1]This rating system fully draws on the core of international ESG experience by including 3 first tier pillars of environmental, social, and governance, 1-second tier themes, 44 tier key issues, 80 fourth tier indicators, and over 300 underlying items.

[2]Researchers can visit the corpora at the URL: https://ai.tencent.com/ailab/nlp/en/embedding.html. This pre-trained corpus model has a wide range of data collection and vocabulary building, capable of generating desired similar words.

institutional investors. This firm-year sample has 14,843 observations. On average, a firm receives 3.38 responsible engagements from all institutional investors in a year, with a standard deviation of 5.05 times. The highest concerned firm receives 19 responsible engagements in a year.

In figure 1, we show the responsible engagements as well as total engagements over the year. The blue line with triangles denotes the total engagements during the whole sample period and the red line with circles denotes responsible engagements. We show that the responsible engagements take place over the twelve months of the year. The total number of engagements does not correlate with the bull and bear of the market but rather reflects institutional investors' visiting behaviors. This is an important comparison with the earnings conference calls which are generally convened by the firm after earnings announcements, as some firms would issue new ESG projects or sustainable prospectus in their annual report. By showing that responsible engagements take place around the calendar, we rule out this potential concern. Moreover, responsible engagements roughly take up less than half of all engagements.

[Insert Figure 1 near here]

Panel B of table 1 displays firms' ESG-related variables. The first panel reports firms' ESG composite scores that are obtained from Huazheng Securities. We convert the original ESG ratings to numeric values following Dyck et al. (2019) from 1 to 9, where 1 represents the lowest rating cohort and 9 is the highest. We also calculate the ESG score changes as $DeltaScore$. In the sample, the highest-performing cohort increases the score by 2 points, whereas the lowest decreases by 3. This is a rather rigorous rating system as no firm earns the highest score.

In the next set of rows, we examine a set of real-outcomes indicators. The indicator variables include real outcomes including whether a firm has issued environmentally friendly products $EPRODUCT$, whether it has received environmental commendations by the state $ECOMMEND$, the number of donations $DONAT$, whether the firm has issued education programs to the community $EDUPRGRM$, whether the firm has set up employee beneficial projects $EMPBNFT$, and the dividend payout per share DPS. This set of indicators is normally considered responsible behaviors by the firms. In the next set of rows, we report summary statistics of whether the firm lacks an ESG-disclosure system $NoDisc$, whether it has been penalized by the government because of environmental violations $EMVNTPENAL$, whether the firm has been involved in employment disputes or litigation $EmpDispute$, whether the firm has accounting misconduct like fraud or intended accounting omissions $ACCTVIO$, whether it has been involved in product disputes $PRODDISPUT$. Detailed variable definitions are presented in Appendix table B1.

Panel C reports summary statistics on other firm-level characteristics. The first set of

variables includes market capitalization, analyst coverage, and institutional ownership, which capture the information needs from institutional investors to the firm. The second category includes more commonly used financial performance variables such as leverage ratio, Tobin's Q, the Kaplan-Zingales financial constraint index (Kaplan and Zingales, 1997), profitability ratio, tangibility ratio as measured by firms' tangible assets over total assets, and free cash flow per share. A detailed description of the variables is attached in Appendix table B1. All variables are winsorized at 2.5% from both tails.

3.2. Empirical methodology

We use a difference-in-differences specification to assess the relation between public commitment to UNPRI and responsible engagement by institutional investors as proposed in hypothesis H1, based on the following regression set-up:

$$InstRspEngg_{i,l,t} = \alpha + \beta(PRI \times PostSigned)_{l,t} + \gamma'_{i,l,t} Control_{i,l,t} + \zeta_i + \xi_l + \mu_t + \varepsilon_{i,l,t} \quad (1)$$

In equation (1), the dependent variable, $InstRspEngg_{i,l,t}$, represents institutional investor l's private responsible engagements to firm i in year t. To construct the variable for this panel regression, we aggregate the visit-level data onto firm-institution-year observations. We also accordingly construct a dummy variable $DInstRspEngg_{i,l,t}$ indicating whether the institutional investor l has taken any responsible engagement to the firm i during year t. The independent variable of interest is the PRI signatory status variable, $(PRI \times PostSigned)_{l,t}$, an interaction dummy variable that equals to one in the years after institutional investor l publicly commit to responsible investment by signing the UNPRI, and zero otherwise. The coefficient β_1 therefore indicates the impact of UNPRI commitment on institutional responsible engagement. A positive and significant β_1 suggests that joining UNPRI exerts a positive effect on the degree of ESG engagement for the signatory institutions (as H1a predicts), while a non-significant β_1 indicates that the UNPRI signatories cater to the popularity of ESG but fail to truly engage more in ESG-related research in their practical investment process (as H1b predicts). The difference-in-differences estimation technique allows us to control for omitted variables. We include vectors of institutional-investor-specific dummy variables, ξ_l, and vectors of industry-specific dummy variables, ζ_i, to control for time-invariant, unobserved institution characteristics and industry characteristics that may affect institutional ESG engagement. We also include year-specific dummy variables μ_t to control for trends of institutional responsible engagement over time, such as awareness of responsibility nationwide, the popularity of ESG investment among all institutions, changes in the rules and regulations of the exchange, etc. Furthermore, we include a set of ESG contentiousness variables in the regressions. We conjecture that if the firm has more ESG-related

disputes, then the institutional investors would naturally be more concerned about these issues and raise more ESG questions. In order to obtain more robust conclusions, we two-way cluster the standard errors by industry and year levels in our estimation, that is allowing for correlation in the error terms within clusters. In robustness checks, we confirm significance of our results using boot-strapped standard errors.

To examine H2, we follow Dyck et al. (2019) by regressing firms' ESG performance on institutional investors' private responsible engagement, the institutional ownership, as well as a slew of control variables. The main regression specification is as follow:

$$ESGPerformance_{i,t^+} = \alpha + \beta_1 RspEngg_{i,t} + +\beta_2 IO_{i,t} + \gamma'_{i,t} Control_{i,t} + \zeta_i + \mu_t + \varepsilon_{i,t} \quad (2)$$

In equation (2), the dependent variable $ESGPerformance_{i,t^+}$ represents firm i's subsequent ESG performance following year t. We adopt two sets of variables to examine the ESG performances in our empirical tests. The first set captures the composite ESG performance score, where we translate the original Huazheng ESG ratings to the range between one and nine, with a higher score indicating better ESG performance. We use both the level of the rating grades ($Score$) and its change ($DeltaScore$) as the dependent variable, and control for the lagged score in all regressions. The second set of dependent variables captures the real ESG outcomes in the three environmental, social, and governance aspects: whether a firm has issued environmentally friendly products $EPRODUCT$, whether it has received environmental commendations by the state $ECOMMEND$, the number of donations $DONAT$, whether the firm has issued education programs to the community $EDUPRGRM$, whether the firm has set up employee beneficial projects $EMPBNFT$, and the dividend payout per share DPS. This set of indicators is normally considered responsible behaviors by the firms.

The independent variable of interest, $RspEngg_{i,t}$, represents the ESG engagements that firm i receives from all institutional investors for the given year t. We derive this measure by summing up the number of ESG-related visit engagements across all institutional investors. In addition, following prior studies on the determinants of firm ESG performances, we include the institutional ownership $IO_{i,t}$ and a set of firm characteristics as control variables in the regression model. We also include year and industry fixed effects, μ_t and ζ_j respectively, in the regression.

We then test the moderating effect hypothesis in H3 using Eq. (3), where we regress firms' forthcoming ESG performance score on the responsible engagement from institutional investors by the end of the calendar year ($RspEngg_{i,t}$), a post-covid dummy variable ($PostCovid_t$), their two-way interaction $(RspEngg \times PostCovid)_{i,t}$, as well as a slew of control variables including the year and industry fixed effects:

$$
\begin{aligned}
ESGPerformance_{i,t^+} = \alpha &+ \beta_1 RspEngg_{i,t} + \beta_2 PostCovid_t \\
&+ \beta_3 (RspEngg \times PostCovid)_{i,t} \\
&+ \gamma'_{i,t} Control_{i,t} + \zeta_j + \mu_t + \varepsilon_{i,t}
\end{aligned} \tag{3}
$$

In equation (3), the coefficient β_3 of the two-way interaction term $PostCovid \times RspEngg$ is designed to examine whether and to what extent the firm's ESG performances associated with the institutional responsible engagement (i.e. the relationship between $ESGPerformance$ and $RspEngg$) are higher after the covid-19 pandemic arrival ($PostCovid$ =1) compared to pre-covid-19 days ($PostCovid$=0). If covid-19 pandemic plays a role after which the optimal level of value-maximizing responsibility has arguably increased, we expect the interaction term to have a positive sign.

4. Main results

4.1. Commitment to UN-PRI and responsible engagement by institutional investors

We begin by examining whether institutional investors' commitment to responsible investment leads to more green visits and more intensive responsible engagements, and the determinants of responsible engagements. Regression results of equation 1 are displayed in table 2, where the dependent variables in columns 1 to 3 are the number of the institution responsible engagements and the independent variables in columns 4 to 6 are the dummy variable that indicates the institution responsible engagements.

[Insert Table 2 near here]

Regression results show that the interaction variable enters positively and significantly at the 1% level in all six regressions, indicating that announcing signing the UNPRI substantially increases the institution's responsible engagement with firms in its investment research process. In column 3, the regression coefficient is 0.0175 with a t-stat of 5.22, and the coefficient in column 6 is 0.0691 with a t-stat of 9.30. This suggests that after signing the manifesto, the probability of engaging in responsible visits increases by 6.69%. The magnitude and significance of the coefficients do not decrease by a large margin as we include various control variables in the regression from columns 1 to 6. Importantly, the variables that measure investor coverage and holding interests are insignificant in columns 2 and 3, implying that this measure is not associated with common attention-related variables.

In the last set of control variables, we examine the relationship between contentiousness on ESG issues and responsible engagements. Regression results show that institutional concern is largely associated with CSR opacity. If the company does not have a clear CSR reporting system, institutional investors tend to raise more questions. Moreover, increasing employee disputes also increase with responsible engagements. As for measures that are not associated with ESG disputes such as accounting standard violations or product disputes, the relationship is insignificant. Interestingly, the regression coefficients for environmental penalties in the bottom line are significantly negative, with a coefficient of -0.0693 with a t-statistic of -1.98.

Overall, regression results show that institutional investors do pay more visits after they signed up for the UNPRI manifesto. We use this result as an identification strategy to examine whether institutional investors' preference for responsible firms change and rule out the alternative story that it is investors that are selecting responsible firms and asking them questions instead of pushing firms to be more responsible.

We follow an event study framework to examine the change in institutional investors' preferences and behaviours. The regression equation is as follows.

$$ESGVar. = \alpha + \sum \beta_\tau \times 1(t = \tau) \times (\tau \neq -1) + \gamma'_{i,t} Control_{i,t} + \delta_i + \xi_l + \mu_t + \varepsilon_{i,t} \quad (4)$$

The dependent variable $ESGVar.$ is either institutional investors' responsible engagements or firms' ESG scores that were responsibly engaged. On the right-hand side, the event is investor j signed the UNPRI manifesto and t corresponds to the number of years before or after the signed year. The reference year 0 indicates the end of the investor's first signature year. We include firm financial variables and information needs variables same as 1, and control for the firm fixed effect δ_i, the institutional investor fixed effect ξ_l, and year fixed effect μ_t. Given our sample period is from 2012 to 2021, the sample only covers periods in which the time period is not earlier than -5 nor later than 5.

[Insert Figure 2 near here]

Our main objective is to compare the estimated β coefficients, which are expected to differ significantly for these two figures. For the first regression where the dependent variable is responsible engagements, we expect to see an upward trend in coefficients following the results in table 2. However, when we substitute the dependent variable as ESG scores, we expect to observe insignificant coefficients around zero, indicating institutional investors do not purposefully select the good-performing firms after their signature of the UNPRI manifesto.

In figure 2, the figures show contrasting results. For subfigure A, the responsible engagement increased by more than 2% in the first year, and this result peaks at year

2 around 5%. Admittedly, this figure is not perfect as the time dummy at year -5 is significantly negative with estimated coefficients around -0.02. However, the overall trend after the UNPRI signature is quite natural and consistent.

On the contrary, in subfigure B, where we substitute the dependent variable as firms' ESG scores, the estimated coefficients are largely insignificant. The only significant time dummy is at year zero, as we condition the sample as firms that have received responsible engagements, which leads to a mechanically significantly positive result.

The contrasting results in different subfigures suggest that institutional investors do not select firms that may improve their ESG scores. Investors, though obliged to invest more responsibly, exert pressure on the board members and management teams from firms with different levels of ESG performance.

4.2. Do responsible engagements improve firms' ESG performance?

After validating institutional investors' sustainable concerns, we examine the effect of responsible engagements on firms' ESG performance. In particular, we do not only examine the improvements in ESG scores but also real outcomes that are related to the three pillars of ESG.

We test hypothesis H2 formulated in section 2 by running regression 2, where we examine both the change effects and the level effects on institutionally responsible engagements. The results are shown in table 3.

[Insert Table 3 near here]

Regression results in the first rows show that responsible engagements have a significantly positive impact on corporate ESG performance in table 3. In column 3 where the dependent variable is the change in ESG scores, the regression result is 0.0094 with a t-statistic of 4.22. Note that the regression coefficients are significant whereas the institutional ownership is insignificant, with a coefficient of 0.0008 and a t-statistic of 0.03. This proves to be a new mechanism beyond the traditional shareholder activism theory that our result is not driven by investors' self-interest but their real environmental concerns.

Moreover, this result is also driven by investors' attention, especially when we control for the number of total engagements in the regressions. The coefficient in front of total engagements is -0.0009, with a t-statistic of -1.97. It suggests that investors' visits usually come with lower ESG performance. In the robustness analyses, we also decompose the non-responsible engagements from these two variables, and it is in line with our main results.

In column 6 where the dependent variable is the ESG score of firms, the regression coefficient is also significantly positive, with a regression result of 0.0102 and a t-statistic of 4.59. This result is robust as we control for firm-lagged ESG scores, suggesting that

institutional investors' engagement is quite persistent, and their concern is concentrated on the high-performing firms. The result does not contrast subfigure B of figure 2, as the regression table explores the leveling effects in a long equilibrium and the event study examines institutional investors' purposeful selection after their UNRPI signature.

Since the ESG score is a comprehensive evaluation of corporate responsibility performance, we decompose the scores from the three pillars of ESG with different real indicators. For the real outcomes of environmental issues, we use two variables including whether the company has issued environmentally friendly products $EPRODUCT$ and whether it has been commended by the state because of superior environmental achievements $ECOMMEND$. For social responsibilities, we use the logarithmic value of firms' donation to society $DONAT$ and whether it has promoted educational programs to the community $EDUPRGRM$. Finally, for the governance prospect, we examine whether the firm has set up employee beneficial projects or common shareholding projects $EMPBNMFT$ and the dividend per share paid to the shareholders DPS.

Similar to equation 2, we regress the real indicators of corporate ESG performance on investors' responsible engagements. The regression results are displayed in table 4.

[Insert Table 4 near here]

Regression results suggest that for real indicators of all three aspects, the coefficients are all significantly positive, as higher engagement is associated with higher environmental performance, better social responsibility awareness, and more beneficiary corporate governance structures. Admittedly, we are selecting a small portion of all the real indicator variables, and the regression results for some of the variables are insignificant. This does not weaken our finding, as the evaluation of corporate ESG performance is a rather comprehensive one. If the firm has outstanding performance in some of these aspects, then it is usually considered to be a responsible firm. In other words, firms do not need to be perfect to receive recognition from society.

Next, we examine the third hypothesis that the impact of institutional engagement on firms' ESG performance is stronger following the Covid-19 pandemic when the optimal level of value-maximizing responsibility has arguably increased.

To do so, we add a time dummy that denotes time after the covid and interacts with this dummy variable with institutionally responsible engagements. We hold other dependent and independent variables fixed following equation 2 and control for industry fixed effects. We double-clustered the standard errors at industry and year levels. The regression results are displayed in table 5.

[Insert Table 5 near here]

In table 5, the coefficients in front of the interaction term are significantly positive for columns 3 and 6 and becomes more significant once we control for other financial

characteristics. This result suggests that the facilitating effect of institutional responsible engagement on subsequent firm ESG performance would become more pronounced after the Covid-19 pandemic when ESG yields financial benefits. Moreover, the time dummy variable that denotes Covid-19 is insignificant.

4.3. Mechanism

When institutional investors raise ESG-related questions to the board or management teams, they are essentially exerting pressures and implicitly pushing firms to be more responsible. Given that there exist strong commitments to invest sustainably owing to the UNPRI as shown in previous sections, it is natural to inspect the incentives and behaviors from the firms' perspective. In this game where the two players making their moves, the investors need to incentives firms to take the responsible engagements more seriously. Otherwise, firms can just simply ignore the ESG-related questions and focus on high-pollution businesses that may lead to higher profits (in the short run).

This is especially a concern when institutional ownership is less important in our case. For the more traditional mechanisms, investors can promote firms' ESG performance through active management if they have a large portion of stock shares or even controls over the board members. They can threaten managers to cut emissions by firing them or influence the remaining shareholders by dumping their current holdings. This is a take-it-or-leave-it offer for the governance mechanism. However, the regression coefficient of average institutional ownership in table 3 is insignificant, which suggests there may be an alternate mechanism that drives our main results.

One possible mechanism is related to an interesting phenomenon in the Chinese stock market. In the Chinese A-share market, most firms seek refinancing opportunities and are stingy with dividend payouts. In that sense, investors can threaten the firm by not subscribing to their refinancing stocks.

We test this mechanism by examining the refinancing of firms. In particular, we look into the equity refinancing of listed firms in the stock market. We calculate the refinancing amount by summing up changes in share capital and capital reserves and adjusting for undistributed profits within shareholders' equity. We add a variable that denotes the equity refinancing amount of the firm and interact this variable with institutionally responsible engagements. We conjecture that firms with higher refinancing demands, have lower bargaining power and would take responsible engagements more carefully. Thus, we expect to observe a significantly positive coefficient on the interaction term. Regression results are displayed in table 6.

[Insert Table 6 near here]

In table 6 columns 1 and 2 where the dependent variable is changing in ESG scores,

we can see that firms subject to higher equity financing needs significantly improve their ESG scores with responsible engagements. The coefficient in front of the interaction term is 0.0016, with a t-statistic of 2.34. Moreover, the refinancing variable itself is insignificant in both columns.

In columns 3 to 4 where we substitute the dependent variable as the ESG score, regression results are largely the same. The deterrence is stronger for firms relying heavier on outside investors and the refinancing needs itself is not correlated with better ESG performance.

This set of results provides robust evidence for our previous conjecture. Firms respond to the engagements because they fear the exit of refinancing failure, hence pointing out the importance of the UNPRI programs that facilitate institutional investors to invest more responsibly. In other words, the UNPRI project really works, especially in the Chinese stock market, a developing market that was once considered to be slow to adopt the notion of impact investment.

The incentive to refinance does not promote firms' ESG performance alone. In reality, firms need to refurnish their manufacturing equipment and adopt cleaner production technologies so as to be less carbon-intensive. This requires the firm not to be financially constrained and to have spare cash flow at hand.

To examine this additional test, we include the cash reinvestment ratio in the regressions. This variable is the firm's net cash flow from operating activities scaled by net fixed assets and other adjustments and is obtained from the CSMAR database. This variable measures firms' free cash that is used for equipment reinvestments. We interact this variable with institutionally responsible engagements, and the regression results are displayed in table 7.

[Insert Table 7 near here]

Regression results suggest that for firms with higher cash reinvestment ratios, the effect of institutional responsible engagement on corporate ESG score improvements is larger. In column 3 where the dependent variable is the change in ESG score, the coefficient in front of the interaction term is 0.0017 with a t-statistic of 5.62. Moreover, the cash reinvestment ratio alone is also significantly positive, with a coefficient of 0.0012 and a t-statistic of 3.98. This contrasts the regression result for the free cash flow per share variable in the bottom line, which has a significantly negative coefficient of -0.04. The contrasting evidence suggests that cash flow alone is not a good predictor of firms' ESG performance. Firms need to invest in possibly new technologies and equipment so as to become more responsible, or at least perceived to become responsible.

5. Further analyses and robustness analyses

Potential concerns over our main results may be that our responsible engagement measure is not accurate and is highly clustered with ESG scores on the industry level. Another alternative hypothesis may be that investors invest in firms with promising financial performance in the first place, and these financial well-being firms are less financially-constrained to be more sustainable. More importantly, in many cases, firms' financial status may be highly correlated with their ESG scores, which may drive our main results in table 3. We examine the robustness of our empirical results with multiple tests in the following subsections.

5.1. Non-responsible engagements

Engagements, which are essentially on-site visits paid by institutional investors to the firms, are a strong proxy for investor attention. When an investor makes engagements with the board or management teams, she may usually raise many questions related to daily operations, the firm's business perspective, and responsible concerns in our case. The main variable we use defines a visit as a responsible engagement as long as there is an ESG-related question. This may be arbitrary and introduce a lot of noise in this measure. There could be more than 50 questions raised in a single visit and only 1 question is related to firms' ESG planning.

To address this potential concern, we define a non-responsible engagement variable that is computed by subtracting the number of responsible engagements from total engagements. This measure examines the part that is utterly irrelevant to firms' ESG performance. We regress firms' ESG performance on this variable and remain other control variables unchanged as in the equation 2, and the result is displayed in table 8.

[Insert Table 8 near here]

As table 8 shows, in column 3 where the dependent variable is the change in ESG performance, the coefficient is significantly negative, with coefficients of -0.0071 and a t-statistic of -4.29. This contrasts the positive results in the main results, suggesting that institutional ESG inattentiveness makes firms perform worse. The result is also robust where the dependent variable is the ESG score in column 6, with a coefficient in front of the variable of interest -0.0080 and a t-statistic of -5.65.

The opposite coefficients provide strong evidence for our hypothesis that institutional investors can induce firms to behave more responsibly by raising ESG-related questions. The reasoning is that if investors exert non-ESG pressure on firms, they are basically chasing financial performance, especially in the short run. This induces the board and management teams to focus on operations and ignore their climate responsibilities. This

effect may be more pronounced for the heavily polluting industry as adopting green technology may be costly and detriments corporate earnings.

on top of that, the regression coefficient in column 4 is significantly positive and becomes negative when we control for other significant investor attention variables like analyst coverage and firm size. This alleviates the concern that our main result is driven by investor attention, as attention itself does not make a huge difference in firms' ESG performance. More simply put, actions speak louder than words, and the action in our case is institutional investors' responsible engagement.

5.2. Responsible engagements and financial performance

Moreover, we show that the results are not driven by firm profitability. Besides, examining firm financial performance provides another incentive for institutional investors. The main results would be more convincing if the profitability or stock returns should be at least not eroded by responsible engagements.

To validate this concern, regress firms' financial performance on institutional investors' private engagements. We include three different measures on the left-hand side of the formula following our main empirical setting as equation 2. The first dependent variable we use is the annual stock return on the current year t. As Carpenter et al. (2021) shows, the price informativeness of the Chinese stock market is incredibly informative, and taking the current year's stock return is essentially making fair predictions of firms' future performance. Another reason is that institutional investors in China are long perceived to have relatively shorter holding periods. The second and third dependent variables are firms' future return on equity and return on assets in year $t + 1$. In each regression, we control for current years' ROA and ROE, respectively. We remain other variables and fixed effects unchanged, and the regression results are shown in table 9.

[Insert Table 9 near here]

In table 9, the results are insignificant for both responsible engagements and non-responsible engagements. In columns 1, 3, and 5 where the independent variable of interest is responsible engagements, regression shows that there is no significant relationship between responsible engagements and firms' financial performance. Institutions do not earn higher investment returns because of active engagements, and firms do not have higher profitability ratios. This result is largely the same for non-responsible engagements in columns 2, 3, and 6.

5.3. PSM matching results

We also use the propensity score matching method to generate a balanced sample. We define the treated firms as firms that have at least received one responsible engagement,

and the control group as firms that have not received any responsible engagement. We match the treated firms and control firms based on financial characteristics that are controlled in equation 2 with the nearest neighbouring method. The matching ratio is set as 1, as each treated firm is matched with a control firm. This reduces our sample to an observation number of 5560, where 2780 firms are the treated observations and the rest are the control observations. As shown in the appendices, the matched samples of treatment and control firms are not very different, except for the number of total engagements.

We perform the same regression in our main results with this matched sample, and the regression results are displayed in table 10.

[Insert Table 10 near here]

Regression results in table 10 show that responsible engagement significantly improves corporate ESG performance with a coefficient of 0.0091 and a t-statistic of 3.33. This impact is also significant for the levelling effect in column 6 with a coefficient of 0.0095 and a t-statistic of 3.53. In sum, using matched results produce an equally significant result.

5.4. Results with different bag-of-words

One potential concern with the bag-of-words approach is that the word sequence is largely ignored and is prone to be manipulated by the dictionary (Loughran and McDonald, 2016). This is especially a concern where our ESG dictionary is generated by a Word2vec machine learning model. In many scenarios, the empirical results change drastically as the seed word changes.

To address this concern, we use various seed word sets to generate the ESG dictionary for the bag-of-words identification method, and the seed word sets are illustrated in the appendices. We perform the main empirical estimation with responsible engagement variables identified with different ESG dictionaries. WB1 uses the original seed word set that generates empirical results in our main analysis. WB2 to WB4 uses smaller seed word sets to identify responsible engagements. Regression results are shown in table 11.

[Insert Table 11 near here]

In table 11, regression results show that the impact is consistently significant for responsible engagements identified by four different ESG dictionaries. For columns 1 to 4, the regression coefficient ranges from 0.0094 to 0.0204 with a t-statistic as high as 9.24. Most importantly, when we use the responsible engagement spanned by the smallest (or the most stringent) ESG dictionary, the effect is the most prominent. This suggests that

our empirical methodology is quite robust and the engagement effect may be even higher as we use a more refined identification strategy.

6. Conclusion

Some conclusion.

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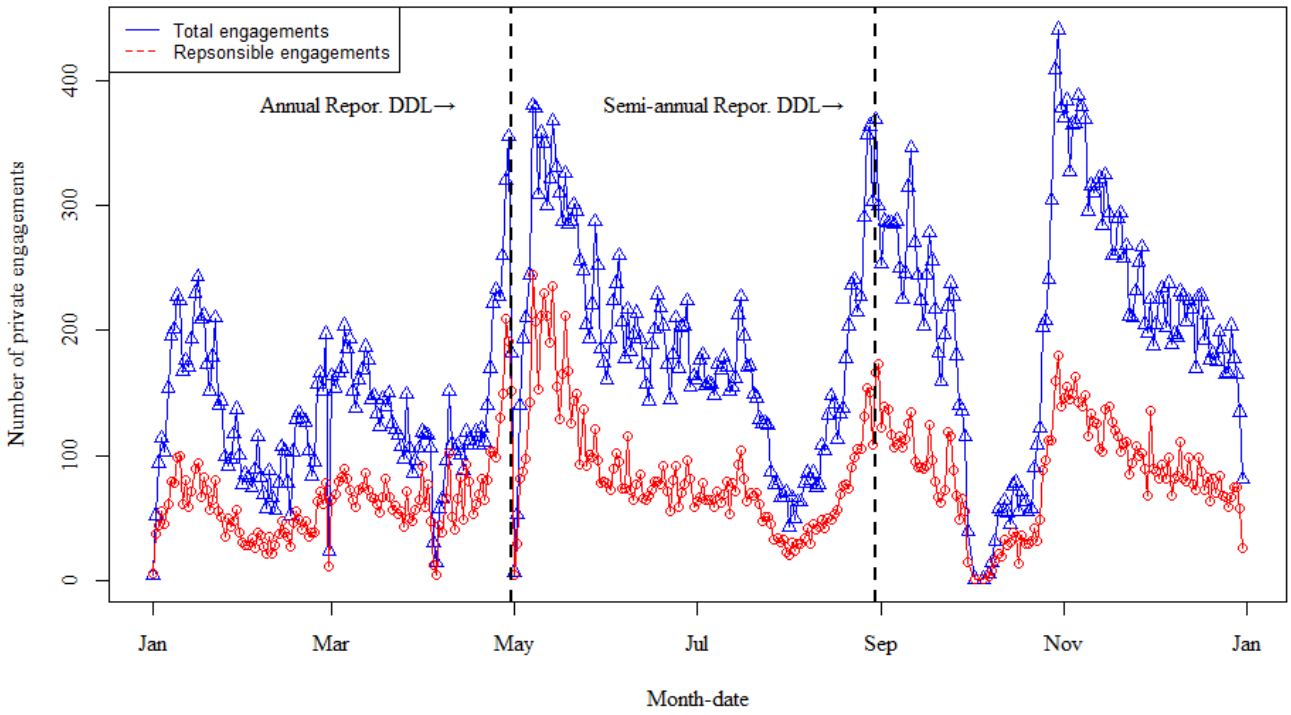
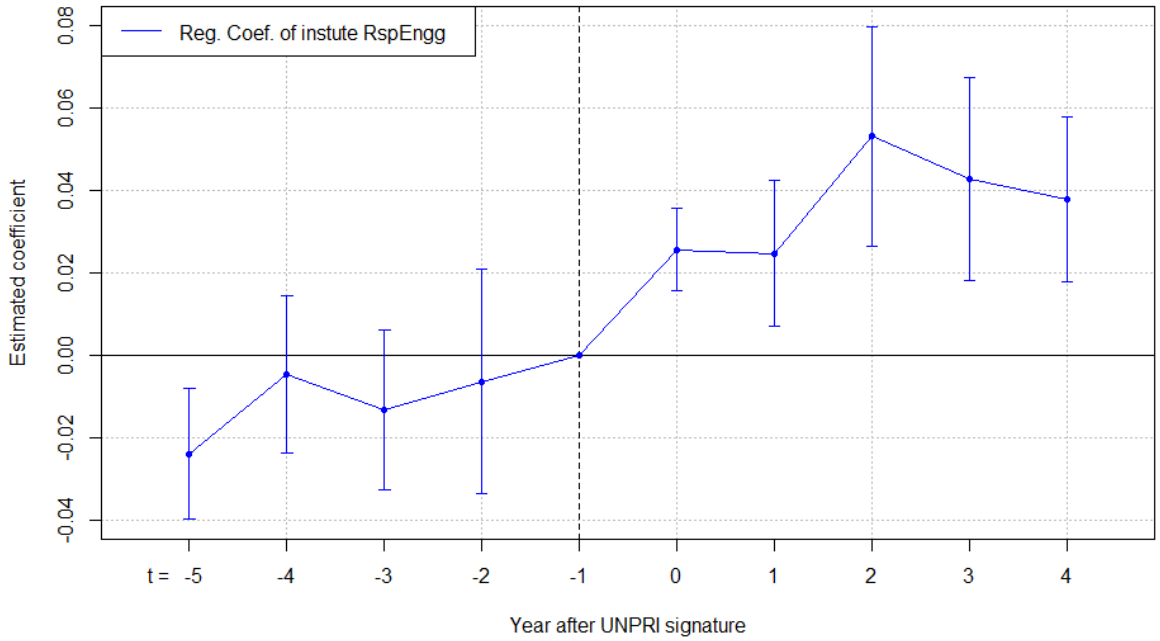
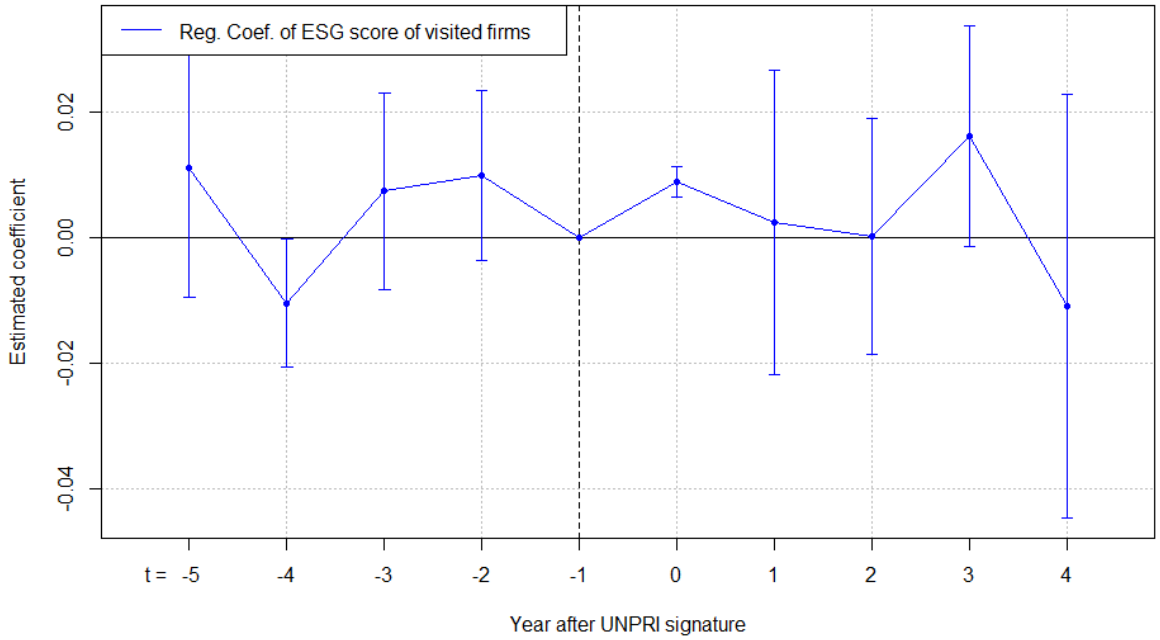


Fig. 1. Private engagements distribution. We differentiate responsible engagements from normal engagements. The blue line with triangles denotes the total engagements all firms receive during our sample period and the red line with circles denotes responsible engagements.



Subfigure A: Responsible engagements



Subfigure B: ESG score of firms that receive responsible engagements

Fig. 2. Institutional investors' responsible engagement and their selections. This figure plots the β_τ coefficients estimated from an event study regression in equation 4. The dependent variable in subfigure A is the number of responsible engagements an institution investor pays to a firm in a year, and the dependent variable in subfigure B is the ESG score of firms that receive responsible engagements from investors. The sample includes investors that have signed the UNPRI manifesto and the ones who do not.

Table 1: Summary Statistics

Panel A: Institutional engagement								
	N	MEAN	SD	Min	25th	Med	75th	Max
Responsible engagement at firm-institution-year level								
InstRspEngg	479945	0.52	0.65	0	0	0	1.00	3.00
InstDRspEngg	479945	0.45	0.50	0	0	0	1.00	1.00
Responsible engagement aggregated at firm-year level								
RspEngg	14843	3.38	5.05	0	0	1	4.00	19.00
DRspEngg	14843	0.73	0.44	0	0	1	1.00	1.00
Panel B: Firm ESG performance data								
	N	MEAN	SD	Min	25th	Med	75th	Max
ESG composite evaluation scores at firm-year level								
Score	14751	4.05	1.15	1	3	4	5.00	8.00
DeltScore	13852	-0.05	0.89	-3	-1	0	0.00	2.00
ESG real outcome indicators at firm-year level								
EPRODUCT	14843	0.10	0.29	0	0	0	0.00	1.00
ECOMMEND	14843	0.05	0.21	0	0	0	0.00	1.00
DONAT	14843	0.77	1.90	0	0	0	0.00	15.78
EDUPRGRM	14843	0.13	0.33	0	0	0	0.00	1.00
EMPBNFT	14843	0.11	0.32	0	0	0	0.00	1.00
DPS	14843	0.14	0.26	0	0.00	0.06	0.16	10.00
Contentiousness on ESG issues at firm-year level								
NOCSR	14843	0.13	0.33	0	0	0	0.00	1.00
EMVNTPENAL	14843	0.00	0.03	0	0	0	0.00	1.00
EMPDISPUT	14843	0.01	0.12	0	0	0	0.00	1.00
ACCTVIO	14843	0.00	0.07	0	0	0	0.00	1.00
PRODDISPUT	14843	0.00	0.04	0	0	0	0.00	1.00
Panel C: Other firm-level characteristics								
	N	MEAN	SD	Min	25th	Med	75th	Max
Information needs at firm-year level								
MKTCAP	14827	15.69	0.92	14.07	15.02	15.56	16.20	18.56
ANACOV	14843	7.53	9.71	0	0	4	11.00	43.00
IO	14843	0.36	0.24	0.00	0.14	0.36	0.56	0.87
Financial performance at firm-year level								
LEVERAGE	14834	3.74	3.20	1.08	1.85	2.62	4.32	19.80
TOBINQ	13361	2.18	1.32	0.88	1.33	1.77	2.54	8.50
KZ	13361	0.67	2.34	-6.21	-0.68	0.95	2.27	5.71
ROE	14834	0.05	0.17	-1.04	0.03	0.07	0.11	0.36
TANT	14832	0.19	0.14	0.00	0.08	0.16	0.27	0.63
FCFPS	14842	-0.26	1.19	-5.48	-0.62	-0.08	0.28	3.28

This table reports summary statistics of the main variables used in this paper. Panel A reports the responsible engagement, which is constructed based on the questions raised during institutional visits using textual analysis with the bag-of-words algorithm, where the RspEngg denotes the number of responsible engagements and DRspEngg is a dummy variable that indicates responsible engagements. Panel B reports three types of ESG indicators including evaluation scores, real outcomes, and contentiousness. Panel C reports other firms' financial characteristics. The sample consists of 479945 firm-institution-year observations and 14843 firm-year observations between 2012 and 2021. All variables are winsorized at 1% from both tails.

Table 2: UNPRI signature and institutional responsible engagement

Dep. Var.=	Intensity of Resp. Engg *RspEngg*			Existence of Resp. Engg *DRspEngg*		
	(1)	(2)	(3)	(4)	(5)	(6)
PRI×PostSigned	0.0165**	0.0166***	0.0175***	0.0663***	0.0698***	0.0691***
	(2.81)	(4.92)	(5.22)	(7.66)	(9.58)	(9.30)
MKTCAP		0.0424**	0.0422**		0.0694**	0.0691**
		(2.62)	(2.62)		(2.91)	(2.90)
IO		0.0252	0.0251		0.0412	0.0411
		(0.51)	(0.51)		(0.57)	(0.56)
ANACOV		-0.0002	-0.0002		0.0016*	0.0016*
		(-0.47)	(-0.46)		(2.00)	(2.00)
LEVERAGE		-0.0025	-0.0025		-0.0053	-0.0052
		(-0.85)	(-0.84)		(-1.41)	(-1.41)
TOBINQ		-0.0164**	-0.0163**		-0.0116**	-0.0116**
		(-3.15)	(-3.18)		(-4.42)	(-4.69)
KZ		0.0054	0.0054		0.0048	0.0049
		(1.14)	(1.15)		(0.72)	(0.72)
ROE		0.0519	0.0518		0.0703*	0.0699*
		(1.76)	(1.76)		(1.98)	(1.98)
TANT		-0.0488	-0.0482		-0.0743	-0.0736
		(-0.88)	(-0.88)		(-0.99)	(-0.99)
FCFPS		0.0232***	0.0232***		0.0322**	0.0321**
		(5.04)	(5.02)		(3.43)	(3.42)
NOCSR			0.0072**			0.0038
			(4.15)			(1.07)
EMPDISPUT			0.0612**			0.0535*
			(2.48)			(2.02)
ACCTVIO			-0.0004			0.0017
			(-0.10)			(0.15)
PRODDISPUT			0.0070			0.0209
			(0.48)			(0.98)
EMVNTPENAL			-0.0693*			-0.0817*
			(-1.98)			(-2.23)
Year FE	T	T	T	T	T	T
Instit FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
R2 Adj.	0.069	0.079	0.079	0.035	0.053	0.053
Observations	477314	448041	448041	477314	448041	448041

This table reports institutional investors' responsible engagement in firms after they signed the UNPRI. The dependent variable is either the number of investors' engagement RspEngg or a dummy variable that indicates institutional investors' responsible engagement. The independent variable of interest is an interaction term that indicates the signature of the UNPRI. We include a set of control variables including information needs, financial performance, and contentiousness on ESG issues. We include institution, industry and year-fixed effects in the regression. We also double-cluster standard errors at both industry and year levels. We report t-statistics in the brackets. (Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 3: Main results: Responsible engagement and ESG performance

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	0.0066**	0.0111***	0.0094**	0.0338***	0.0123***	0.0102**
	(4.49)	(5.95)	(4.22)	(11.62)	(6.95)	(4.59)
IO		-0.0185	0.0008		-0.0331	-0.0061
		(-0.71)	(0.03)		(-1.65)	(-0.29)
MKTCAP		0.0926***	0.0601**		0.1002***	0.0667**
		(5.13)	(3.76)		(5.32)	(4.98)
ANACOV		0.0080***	0.0067***		0.0091***	0.0079***
		(17.74)	(15.91)		(14.59)	(18.46)
TOTVST		-0.0012**	-0.0009*		-0.0012**	-0.0009*
		(-3.09)	(-1.97)		(-2.98)	(-1.96)
LEVERAGE			0.0018			0.0036
			(0.53)			(1.06)
TOBINQ			-0.0140			-0.0233**
			(-1.56)			(-2.81)
KZ			-0.0347***			-0.0377***
			(-6.03)			(-5.69)
ROE			0.4339***			0.4479***
			(11.75)			(10.46)
TANT			0.2210**			0.2508**
			(2.88)			(2.81)
FCFPS			-0.0386***			-0.0453***
			(-7.85)			(-6.31)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
Lagged Score		T	T		T	T
R2 Adj.	0.010	0.154	0.175	0.095	0.486	0.482
Observations	13852	12283	11697	14751	12283	11697

This table reports the effect of institutional investors' responsible engagement on corporate ESG performance. The dependent variable includes two ESG performance indicators, the first is the change in ESG scores from year $t-1$ to year t that indicates ESG performance improvements. The second is the ESG performance level *Score*. The independent variable of interest is the number of responsible engagements a firm receives in a year. We include a set of firms' control variables in the regression, including the number of total engagements (visits) and lagged ESG scores. We control for industry fixed effect and year fixed effect in the regression. We also double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 4: Institutional engagement and corporate real ESG indicators

Dep. Var.=	EPRODUCT	ECOMMEND	DONAT	EDUPRGRM	EMPBNFT	DPS
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	0.0052***	0.0038**	0.0355***	0.0059***	0.0027**	0.0054**
	(8.75)	(3.94)	(7.57)	(4.95)	(3.47)	(4.65)
IO	0.0270	0.0105	-0.1086	0.0084	0.0583***	0.0255
	(1.54)	(0.83)	(-0.92)	(0.39)	(5.14)	(1.47)
MKTCAP	0.1168***	0.0553***	0.8888***	0.1353***	0.0331**	0.1190***
	(8.50)	(6.60)	(10.48)	(9.98)	(3.98)	(10.11)
ANACOV	0.0009	0.0012*	0.0139**	0.0018*	0.0031**	0.0010
	(1.23)	(1.85)	(2.76)	(2.01)	(4.71)	(1.42)
TOTVST	-0.0004***	-0.0002*	-0.0014*	-0.0003**	-0.0003**	0.0001
	(-6.14)	(-1.84)	(-2.02)	(-2.27)	(-2.46)	(0.43)
LEVERAGE	0.0002	-0.0001	-0.0016	-0.0009	-0.0090**	-0.0004
	(0.10)	(-0.10)	(-0.16)	(-0.51)	(-4.28)	(-0.29)
TOBINQ	-0.0239***	-0.0143**	-0.1414**	-0.0276***	0.0121*	-0.0220**
	(-5.17)	(-3.70)	(-4.12)	(-5.95)	(2.19)	(-3.64)
KZ	0.0054	0.0010	0.0223	0.0048*	-0.0470***	0.0031
	(1.67)	(0.59)	(1.14)	(1.92)	(-10.67)	(1.04)
ROE	-0.0307	-0.0127	-0.0216	-0.0109	0.0431	-0.0010
	(-1.63)	(-1.81)	(-0.16)	(-0.68)	(1.35)	(-0.05)
TANT	0.0574	0.0892**	0.4545	0.0486	-0.0636	-0.0055
	(1.33)	(3.19)	(1.64)	(1.09)	(-1.54)	(-0.13)
FCFPS	0.0138**	0.0080***	0.0998***	0.0177**	0.0110	0.0122**
	(3.48)	(6.90)	(5.07)	(4.53)	(1.67)	(3.18)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
R2 Adj.	0.169	0.124	0.266	0.186	0.385	0.186
Observations	13361	13361	13361	13361	13361	13361

This table examines the impact of institutional investors' private responsible engagement on firms' real ESG indicators from all three aspects. For the real outcomes of environmental issues, we use two variables including whether the company has issued environmentally friendly products $EPRODUCT$ and whether it has been commended by the state because of superior environmental achievements $ECOMMEND$. For social responsibilities, we use the logarithmic value of firms' donation to society $DONAT$ and whether it has promoted educational programs to the community $EDUPRGRM$. For the governance prospect, we examine whether the firm has set up employee beneficial projects or common shareholding projects $EMPBNMFT$ and the dividend per share paid to the shareholders DPS. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels. (Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 5: Institutional engagement and the outbreak of Covid-19

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	0.0071***	0.0032	0.0023	0.0094***	0.0049*	0.0037
	(5.50)	(1.64)	(1.27)	(12.73)	(1.96)	(1.37)
PostCov	-0.1629*	-0.0678	-0.0170	-0.1591*	-0.0573	0.0009
	(-2.22)	(-1.14)	(-0.31)	(-1.97)	(-0.90)	(0.02)
RspEngg × PostCov	0.0052	0.0129**	0.0109**	0.0043	0.0124**	0.0102**
	(1.83)	(4.72)	(4.40)	(1.39)	(3.67)	(2.89)
IO		-0.0113	0.0020		-0.0236	-0.0030
		(-0.34)	(0.07)		(-0.85)	(-0.13)
MKTCAP		0.0734**	0.0518**		0.0787**	0.0569**
		(3.04)	(3.09)		(3.02)	(3.65)
ANACOV		0.0094***	0.0080***		0.0106***	0.0092***
		(11.20)	(9.22)		(11.83)	(13.26)
TOTVST		-0.0019**	-0.0016**		-0.0019**	-0.0016**
		(-4.26)	(-3.73)		(-4.26)	(-3.79)
LEVERAGE			0.0026			0.0042
			(0.66)			(1.09)
TOBINQ			-0.0270*			-0.0355**
			(-1.98)			(-2.69)
KZ			-0.0295**			-0.0329**
			(-4.16)			(-4.10)
ROE			0.4539***			0.4658***
			(12.85)			(11.94)
TANT			0.1775*			0.2091*
			(2.15)			(2.25)
FCFPS			-0.0335***			-0.0403**
			(-5.17)			(-4.74)
Indus FE	T	T	T	T	T	T
Lagged Score	T	T	T	T	T	T
R2 Adj.	0.125	0.149	0.170	0.466	0.482	0.478
Observations	12287	12283	11697	12287	12283	11697

This table examines do institutional investors' responsible help firms improve ESG performance following the Covid pandemic. We include additional interaction term in the regressions by multiplying a time dummy that indicates the outbreak of Covid-19 with institutional investors' responsible engagement a firm receives. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 6: Mechanism: Responsible engagements with equity refinancing

Dep. Var.=	DeltScore		Score	
	(1)	(2)	(3)	(4)
RspEngg	0.0089**	-0.0221	0.0099**	-0.0158
	(3.33)	(-1.53)	(3.68)	(-1.62)
EQTFNCING	-0.0039	-0.0089	-0.0080	-0.0121
	(-0.68)	(-1.51)	(-0.98)	(-1.76)
RspEngg*EQTFNCING		0.0016**		0.0013**
		(2.34)		(3.09)
IO	-0.0045	-0.0049	-0.0139	-0.0143
	(-0.14)	(-0.16)	(-0.50)	(-0.51)
MKTCAP	0.0611**	0.0590**	0.0737**	0.0720**
	(3.91)	(3.89)	(4.46)	(4.40)
ANACOV	0.0066***	0.0066***	0.0079***	0.0079***
	(37.61)	(45.74)	(14.64)	(14.68)
TOTVST	-0.0008*	-0.0008*	-0.0009*	-0.0009*
	(-2.01)	(-2.01)	(-2.23)	(-2.23)
LEVERAGE	0.0030	0.0028	0.0034	0.0032
	(0.79)	(0.73)	(0.95)	(0.89)
TOBINQ	-0.0184	-0.0181	-0.0287**	-0.0285**
	(-1.77)	(-1.72)	(-2.56)	(-2.52)
KZ	-0.0319***	-0.0323***	-0.0358***	-0.0361**
	(-5.44)	(-5.43)	(-5.05)	(-5.02)
ROE	0.3180	0.3128	0.3105	0.3063
	(1.83)	(1.81)	(1.50)	(1.48)
TANT	0.2615**	0.2564**	0.2657**	0.2615**
	(3.16)	(3.13)	(3.02)	(2.99)
FCFPS	-0.0340***	-0.0345***	-0.0402***	-0.0406***
	(-211.73)	(-37.12)	(-6.70)	(-6.62)
Year FE	T	T	T	T
Indus FE	T	T	T	T
Lagged Score	T	T	T	T
R2 Adj.	0.169	0.169	0.460	0.460
Observations	9583	9583	9583	9583

This table examines the effect of institutionally responsible engagements on corporate ESG performance conditional on firms' equity refinancing behavior. We add an equity refinancing variable that indicates the amount of equity financing and interacts this term with firms' responsible engagements. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 7: Responsible engagements with cash reinvestment

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	0.0066***	0.0115***	0.0093**	0.0338***	0.0127***	0.0101**
	(4.82)	(5.76)	(4.11)	(11.08)	(6.67)	(4.44)
CASHRI	0.0011	0.0006	0.0012**	-0.0022**	-0.0004	0.0003
	(1.09)	(0.99)	(3.98)	(-3.66)	(-0.53)	(0.61)
RspEngg × CASHRI	0.0012	0.0017**	0.0017***	0.0042***	0.0019**	0.0018**
	(1.34)	(4.00)	(5.62)	(7.12)	(3.97)	(4.99)
IO		-0.0207	0.0011		-0.0353	-0.0059
		(-0.77)	(0.05)		(-1.68)	(-0.28)
MKTCAP		0.0939***	0.0597**		0.1019***	0.0665**
		(5.31)	(3.71)		(5.51)	(4.91)
ANACOV		0.0079***	0.0067***		0.0090***	0.0079***
		(16.54)	(15.70)		(14.37)	(17.93)
TOTVST		-0.0013**	-0.0009*		-0.0013**	-0.0009*
		(-3.34)	(-1.97)		(-3.29)	(-1.96)
LEVERAGE			0.0018			0.0035
			(0.53)			(1.07)
TOBINQ			-0.0138			-0.0232**
			(-1.56)			(-2.81)
KZ			-0.0346***			-0.0375***
			(-6.14)			(-5.77)
ROE			0.4417***			0.4540***
			(11.83)			(10.65)
TANT			0.2165**			0.2471**
			(2.80)			(2.75)
FCFPS			-0.0400***			-0.0465***
			(-10.02)			(-6.76)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
Lagged Score		T	T		T	T
R2 Adj.	0.010	0.153	0.176	0.093	0.487	0.482
Observations	13751	12188	11697	14642	12188	11697

This table examines the effect of institutionally responsible engagements on corporate ESG performance conditional on firms' firm's cash reinvestment ratio. We add a cash reinvestment variable that indicates the firm's net cash flow from operating activities scaled by net fixed assets and other adjustments. We interact this term with firms' responsible engagements. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 8: Non-responsible engagement and ESG performance

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
NonRspEngg	0.0003	-0.0082***	-0.0071**	0.0019**	-0.0094***	-0.0080***
	(0.96)	(-5.29)	(-4.29)	(2.72)	(-7.07)	(-5.65)
IO		-0.0184	0.0008		-0.0331	-0.0061
		(-0.71)	(0.04)		(-1.66)	(-0.29)
MKTCAP		0.0942***	0.0615**		0.1020***	0.0682***
		(5.13)	(3.91)		(5.29)	(5.22)
ANACOV		0.0081***	0.0068***		0.0092***	0.0080***
		(18.20)	(15.78)		(14.83)	(18.73)
TOTVST		0.0072***	0.0063**		0.0084***	0.0072***
		(5.15)	(4.56)		(6.84)	(5.99)
LEVERAGE			0.0018			0.0036
			(0.54)			(1.07)
TOBINQ			-0.0148			-0.0241**
			(-1.67)			(-2.96)
KZ			-0.0350***			-0.0379***
			(-5.96)			(-5.62)
ROE			0.4363***			0.4503***
			(11.79)			(10.52)
TANT			0.2209**			0.2507**
			(2.87)			(2.80)
FCFPS			-0.0380***			-0.0448***
			(-8.02)			(-6.41)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
Lagged Score		T	T		T	T
R2 Adj.	0.009	0.153	0.175	0.078	0.486	0.482
Observations	13852	12283	11697	14751	12283	11697

This table examines the effect of institutional non-responsible engagements on corporate ESG performance. This variable is computed by subtracting the number of responsible engagements from total engagements. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 9: Responsible engagements and financial performance

Dep. Var.=	RET_t		ROE_{t+1}		ROA_{t+1}	
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	-0.0025		0.0001		0.0000	
	(-1.61)		(0.42)		(0.37)	
NonRspEngg		0.0024		-0.0001		0.0000
		(1.68)		(-0.31)		(-0.55)
IO	0.0480*	0.0480*	0.0234**	0.0234**	0.0052	0.0052
	(1.90)	(1.90)	(2.43)	(2.44)	(1.40)	(1.40)
MKTCAP	-0.0900**	-0.0902**	0.0053	0.0054	0.0018	0.0018
	(-3.01)	(-3.04)	(1.33)	(1.33)	(1.04)	(1.05)
ANACOV	0.0035	0.0035	0.0015***	0.0015***	0.0008***	0.0008***
	(1.59)	(1.59)	(7.54)	(7.39)	(7.72)	(7.58)
TOTVST	0.0009**	-0.0015	-0.0001	0.0000	0.0000	0.0000
	(3.87)	(-1.14)	(-1.11)	(0.06)	(-0.31)	(0.27)
LEVERAGE	0.0006	0.0006	-0.0032***	-0.0032***	-0.0011**	-0.0011**
	(0.31)	(0.31)	(-5.70)	(-5.71)	(-2.67)	(-2.67)
TOBINQ	-0.0223**	-0.0222**	0.0151***	0.0150***	0.0088**	0.0088**
	(-3.27)	(-3.29)	(5.70)	(5.71)	(4.94)	(4.95)
KZ	-0.0107**	-0.0107**	-0.0162***	-0.0162***	-0.0091***	-0.0091***
	(-3.12)	(-3.09)	(-7.42)	(-7.41)	(-7.77)	(-7.76)
TANT	0.0902	0.0901	0.0728**	0.0728**	0.0385***	0.0385***
	(1.46)	(1.46)	(4.41)	(4.41)	(5.33)	(5.32)
FCFPS	0.0003	0.0002	0.0024	0.0024	0.0011	0.0011
	(0.06)	(0.05)	(0.92)	(0.93)	(1.75)	(1.76)
ROE	0.1207**	0.1205**	0.2434***	0.2435***		
	(2.67)	(2.67)	(9.44)	(9.47)		
ROA					0.2754***	0.2754***
					(5.84)	(5.85)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
R2 Adj.	0.361	0.361	0.173	0.173	0.280	0.280
Observations	13361	13361	11167	11167	11167	11167

This table examines the firm's financial performance and responsible engagements. The dependent variables we use are the annual stock return on the current year t and the firms' future return on equity and assets on year $t+1$. We also control the current year's ROE or ROA in each regression. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 10: Engagement effect with PSM samples

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
RspEngg	0.0064**	0.0098**	0.0091**	0.0299***	0.0106**	0.0095**
	(4.27)	(3.67)	(3.33)	(10.90)	(4.07)	(3.53)
IO		-0.0045	0.0029		0.0003	0.0092
		(-0.23)	(0.11)		(0.02)	(0.33)
MKTCAP		0.0709***	0.0523**		0.0675**	0.0515**
		(5.38)	(4.29)		(4.32)	(4.20)
ANACOV		0.0096***	0.0076***		0.0113***	0.0096***
		(7.94)	(7.41)		(6.98)	(7.12)
TOTVST		-0.0012**	-0.0008		-0.0011**	-0.0007
		(-2.39)	(-1.49)		(-2.34)	(-1.29)
LEVERAGE			0.0057**			0.0066**
			(2.38)			(2.53)
TOBINQ			-0.0006			-0.0117
			(-0.05)			(-1.31)
KZ			-0.0406***			-0.0478***
			(-7.88)			(-10.37)
ROE			0.4400***			0.4294***
			(9.74)			(12.38)
TANT			0.2747**			0.3481**
			(2.61)			(2.96)
FCFPS			-0.0469***			-0.0599***
			(-5.33)			(-5.90)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
Lagged Score Ctrl		T	T		T	T
R2 Adj.	0.005	0.124	0.148	0.082	0.486	0.502
Observations	5560	5560	5560	5560	5560	5560

This table reports the effect of institutional investors' responsible engagement on corporate ESG performance with PSM-matched samples. We define the treated firms as firms that have at least received one responsible engagement, and the control group as firms that have not received any responsible engagement. We match the treated firms and control firms based on financial characteristics that are controlled in equation 2 with the nearest neighbor method. The matching ratio is set as 1, as each treated firm is matched with a control firm. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Table 11: Repsonsible engagements with different ESG word bags

Dep. Var.=	DeltScore				Score			
NLP method	WB1	WB2	WB3	WB4	WB1	WB2	WB3	WB4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RspEngg	0.0094**	0.0101**	0.0109**	0.0204***	0.0102**	0.0108**	0.0117**	0.0205***
	(4.22)	(4.46)	(3.78)	(9.24)	(4.59)	(4.65)	(4.17)	(7.78)
IO	0.0008	0.0009	0.0004	-0.0024	-0.0061	-0.0059	-0.0065	-0.0091
	(0.03)	(0.04)	(0.02)	(-0.10)	(-0.29)	(-0.29)	(-0.31)	(-0.41)
MKTCAP	0.0601**	0.0599**	0.0614**	0.0567**	0.0667**	0.0666**	0.0682**	0.0635**
	(3.76)	(3.75)	(3.75)	(3.37)	(4.98)	(4.98)	(4.96)	(4.45)
ANACOV	0.0067***	0.0067***	0.0067***	0.0069***	0.0079***	0.0079***	0.0079***	0.0082***
	(15.91)	(15.16)	(14.10)	(13.62)	(18.46)	(17.73)	(16.83)	(20.01)
TOTVST	-0.0009*	-0.0010*	-0.0008	-0.0011**	-0.0009*	-0.0010*	-0.0008	-0.0010**
	(-1.97)	(-2.03)	(-1.65)	(-2.70)	(-1.96)	(-1.96)	(-1.60)	(-2.33)
LEVERAGE	0.0018	0.0018	0.0018	0.0014	0.0036	0.0036	0.0036	0.0032
	(0.53)	(0.54)	(0.54)	(0.43)	(1.06)	(1.07)	(1.08)	(0.95)
TOBINQ	-0.0140	-0.0137	-0.0140	-0.0136	-0.0233**	-0.0230**	-0.0234**	-0.0231**
	(-1.56)	(-1.51)	(-1.55)	(-1.40)	(-2.81)	(-2.75)	(-2.77)	(-2.64)
KZ	-0.0347***	-0.0347***	-0.0344***	-0.0339***	-0.0377***	-0.0377***	-0.0373***	-0.0369***
	(-6.03)	(-6.02)	(-5.99)	(-6.13)	(-5.69)	(-5.68)	(-5.69)	(-5.88)
ROE	0.4339***	0.4336***	0.4327***	0.4326***	0.4479***	0.4478***	0.4467***	0.4473***
	(11.75)	(11.81)	(11.89)	(11.40)	(10.46)	(10.51)	(10.51)	(10.15)
TANT	0.2210**	0.2227**	0.2192**	0.2217**	0.2508**	0.2525**	0.2488**	0.2512**
	(2.88)	(2.88)	(2.89)	(2.97)	(2.81)	(2.81)	(2.82)	(2.91)
FCFPS	-0.0386***	-0.0388***	-0.0386***	-0.0389***	-0.0453***	-0.0455***	-0.0453***	-0.0455***
	(-7.85)	(-7.86)	(-7.85)	(-7.46)	(-6.31)	(-6.35)	(-6.39)	(-6.08)
Year FE	T	T	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T	T	T
Lagged Score	T	T	T	T	T	T	T	T
R2 Adj.	0.177	0.177	0.177	0.178	0.482	0.482	0.482	0.482
Observations	11697	11697	11697	11697	11697	11697	11697	11697

This table reports the effect of institutional investors' responsible engagement on corporate ESG performance with responsible engagement variables generated with various ESG dictionaries. We first define four sets of seed words as shown in the appendices, and use each word set to generate an ESG dictionary. WB1 uses the original seed word set that generates empirical results in our main analysis. WB2 to WB4 uses smaller seed word sets to identify responsible engagements. We include a set of control variables and fixed effects as in table 3, and double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)

Appendix A. Institutional engagement and responsible investors

A.1. Example of institutional responsible engagement

The transcript example is obtained from the CNInfo website, which is one of the most authoritative information disclosure platforms in the Chinese stock market. We select the investor on-site visit record of Jinyuan Shares, a cement manufacturing company, and report the question types identified by our ESG dictionary. We translate the original Chinese filings into English and report the type of each question. To be more specific, we identify whether the question contains ESG-related words in the ESG dictionary. Then, we determine this visit as an ESG visit as there is more than one ESG question.

For example, an institutional investor raised the following question: "Does this year's environmental inspection have any impact on the company's cement business?" The firm replied, "The production and operation of the company's cement business are normal, and the environmental protection inspection has caused the price of sandstone aggregate, the main raw material of the company's commercial concrete business, to increase." (The fourth Q&A) This is perceived as investors' concern over environmental risks.

In other examples, investors would ask questions like "Is there any ESOP plan?" that is related to corporate governance, or "Will the firm develop a smart monitoring trafficking system that promotes an intelligent city?" which is related to the social aspect for other firms listed in the SZSE.

[Insert Table A1 near here]

A.2. UNPRI signature with major institutional investors

We also report major institutional investors that have signed the UNPRI manifesto. Listed investors in table A2 include large Mutual funds companies like E Fund and Harvest Fund, Insurance Companies like Ping An China and Taikang Insurance, and even sell-side brokerages like Orient securities and Great Wall securities. Half of the major institutional investors enter the UNPRI before 2019.

[Insert Table A2 near here]

Table A1: On-site visit transcript example

Stock code	000546.SZ	Stock abbreviation	Jinyuan shares
Record Form of Investor Relations Activities of Jinyuan Cement Co., Ltd.			
No.: 2017-001			
Types of IR Activities	Site visit		
Names of participating units and personnel	Southwest Securities (Shen Meng) GF Securities (Xu Bilong, Qiu Changwei) SDIC UBS (Li Yanrong) Guotai Junan (Xu Qiang, Han Jiarui, Shao Xiao) Southern Fund (Yin Li) Jiutai Fund (Lin Bochuan, Tang Xiao, He Xin) Harvest Fund (Chen Liming) Bank of Communications Fund (Huang Kai) Shenwan Hongyuan (Liu Xiaoning, Dai Mingyu, Gao Lei)		
Time	9-Nov-17		
Place	Company meeting room		
Receptionist	Board secretary and securities affairs representative		
Main Contents of Investor Relations Activities			
Question	Answer		Is responsible questions?
1. How is the company's acquisition project Jiangxi New Gold Leaf Business Co., Ltd. achieving profit this year? Are there plans for expansion?	The current production and operation of New Gold Leaf are normal, and its three-year profit commitment is 323 million net profit after deducting non-existing expenses. It strives to fulfil the profit commitment. New Golden Leaf currently has no expansion plans.		F
2. What is the current project progress of Guannan Jinyuan Environmental Protection Technology Co., Ltd. and Jiangsu Jinyuan New Material Technology Co., Ltd.?	Guannan Jinyuan has entered the stage of trial production, and Jiangsu Jinyuan New Materials strives to start trial production as soon as possible .		F

Table A1 Cont'd

Question	Answer	Is responsible questions?
3. What is the current progress of the newly acquired Shanghai Huayu Environmental Technology Co., Ltd., Chongqing Zhongsi Runhe Environmental Technology Co., Ltd. and Sichuan Tianyuanda Environmental Technology Co., Ltd.?	Xuzhou Hongyu Environmental Technology Co., Ltd., a subsidiary of Shanghai Huayu Holdings, has obtained the environmental impact assessment approval; Zhongsi Runhe has obtained the investment project record; Tianyuanda has obtained the investment project record and passed the technical review meeting of the Environmental Engineering Evaluation Center of Sichuan Province .	T
4. Does this year's environmental inspection have any impact on the company's cement business?	The production and operation of the company's cement business are normal, and the environmental protection inspection has caused the price of sandstone aggregate, the main raw material of the company's commercial concrete business, to increase.	T
5. What is the main disposal mode of the company's hazardous waste disposal business?	The company's hazardous waste disposal business mainly includes resource utilization and harmless disposal. The comprehensive utilization of resources refers to the extraction or transformation of various hazardous (solid) wastes into usable resources, energy and other raw materials by means of recycling, processing, recycling, and exchange. Jiangxi New Gold Leaf Company and Jiangsu Jinyuan New Materials, which are controlled by the company, are resource regeneration enterprises specializing in the comprehensive utilization of general industrial solid waste and hazardous waste. Harmless disposal refers to incinerating hazardous (solid) waste and using other methods to change the physical, chemical and biological characteristics of industrial solid waste to reduce or eliminate its hazardous components. Professional harmless disposal enterprise.	T
6. In addition to hazardous waste disposal, what layout does the company have in the environmental protection industry?	The company's environmental protection industry will focus on the development of industrial hazardous (solid) waste harmless and resource-based co-processing business; at the same time, the company will actively research and promote the development of other environmental protection businesses, such as medical waste disposal, kitchen waste disposal, etc., and strive to become the bigger and stronger Main business of environmental protection.	T
7. What are the core talents of the company's hazardous waste business?	The company has introduced and gathered a group of middle and high-end talents who are engaged in the environmental protection industry earlier in China, especially the technology and management of comprehensive utilization of resources, professional incineration and co-processing of cement kilns, and formed a core backbone in three aspects of industry, business and technology team. Among them, there are more than 10 doctors or professors and senior engineers; more than 20 technical personnel with intermediate professional titles. A group of authoritative experts in the industry were specially hired as company consultants to assist the company in grasping the development direction of the hazardous (solid) waste industry, participating in the formulation of business strategies, and solving technical problems in the process of project construction, production and operation .	T
8. What plans does the company have for the co-processing of hazardous waste in cement kilns?	The company has set up a number of environmental protection project companies in various provinces across the country, seeking to cooperate with qualified cement companies to implement cement kiln collaborative disposal of hazardous waste projects .	T

Table A2: Major institutional investors' UNPRI signature time

Institute name	Institute Type	Signature year
Greenland Financial Holdings	Private Equity	2014
China AMC	Mutual Fund	2017
E Fund	Mutual Fund	2017
Penghua Fund	Mutual Fund	2018
Harvest Fund	Mutual Fund	2018
Bosera Fund	Mutual Fund	2018
Southern Fund	Mutual Fund	2018
Warburg Fund	Mutual Fund	2018
China Life Insurance	Insurance Company	2018
Ping An Insurance (Group) Company of China	Insurance Company	2019
China Merchants Fund	Mutual Fund	2019
Morgan Stanley Huaxin Fund	Mutual Fund	2019
Orient Securities	Sell-side Brokerage	2019
Dacheng Fund	Mutual Fund	2019
Yinhua Fund	Mutual Fund	2020
First Capital Securities	Sell-side Brokerage	2020
China Universal Fund	Mutual Fund	2020
AEGON-Industrial Fund Management	Mutual Fund	2020
XY Investment	Mutual Fund (Quant)	2020
CCB Fund	Mutual Fund	2021
ICBC Credit Suisse Fund	Mutual Fund	2021
SDIC UBS Fund	Mutual Fund	2021
China Europe Fund	Mutual Fund	2021
Taikang Insurance Group	Insurance Company	2021
China Canada Fund	Mutual Fund	2021
Huatai Securities Asset Management	Mutual Fund	2021
HFT Fund	Mutual Fund	2021
Great Wall Securities	Sell-side Brokerage	2021
Guoyuan Securities	Sell-side Brokerage	2021
GF Fund	Mutual Fund	2021
Hillhouse Investment	Insurance Company	2021
China Pacific Insurance	Insurance Company	2021
Allianz Insurance Asset Management	Insurance Company	2021

Appendix B. Supplementary definitions and results

B.1. Main variable definitions

We present detailed definitions of the main variables used in table B1. In the third column, we summarize the data source of these variables. The responsible engagement variables are computed from investor visits filings, which are obtained from the WIND. Firm ESG scores are obtained from Huazheng ratings. Firms' real ESG performance data is obtained from the CNRDS database. Finally, the financial performance data is obtained from the CSMAR database.

[Insert Table B1 near here]

B.2. Definition of the seed word sets

We design several seed word sets that are used to generate different ESG dictionaries to identify responsible questions and therefore, responsible engagements. The first seed word set is used in the main analysis and it is the largest one. The size of the second to fourth seed word set shrinks, respectively. We use seed words to generate an ESG dictionary with a pre-trained machine-learning model called Word2vec.

In unreported results, we tried an interesting Deep-learning-based method to classify questions as responsible or non-responsible. This Prompt model is essentially a simpler version of the famous ChatGPT that automatically gives classification results and is very clever at making predictions.

[Insert Table B2 near here]

B.3. Supplementary results

The independent variable in our main analysis is the number of responsible engagements a firm receives in a given year. Similarly, we define an indicator function that denotes whether a firm has received any responsible engagement in that year (the *DRspEngg* variable) and perform regression in the table B3. The regression results are largely the same.

[Insert Table B3 near here]

Table B1: Main variable definitions

Variable	Definition/Measurement	Source
Responsible engagement		
InstRspEngg	institutional investors' total responsible engagements to a firm in a given year. ESG-related visits(questions) are identified with the bag of word approach.	WIND
RspEngg	The number of responsible engagements a firm receives from institutional investors in a given year.	WIND
ESG composite evaluation scores		
Score	ESG performance score converted from Huazheng ESG ratings. Scores range from 1 to 9 that correspond to C to AAA respectively.	Huazheng
DeltScore	Firms' change in ESG score from year t to year t+1.	Huazheng
Firm ESG performance data		
EPRODUCT	Whether the company has developed or applied an innovative product, device, or technology that is beneficial to the environment. For missing values, we fill in the blanks with 0, and this approach applies to all the data obtained from the CNRDS data base.	CNRDS
ECOMMEND	Whether the company has received a commendation or other positive ESG commendation from the government.	CNRDS
DONAT	Total charitable donations.	CNRDS
EDUPRGRM	Whether the company has behaviors that support education, such as establishing schools, donating to the Hope Project, subsidizing poor students, etc.	CNRDS
EMPBNFT	Whether the company has very good retirement and other welfare programs for its employees.	CNRDS
DPS	Dividend payout per share.	CNRDS
Contentiousness on ESG issues		
NOCSR	Whether the company has incomplete or bad CSR disclosure.	CNRDS
EMVNTPENAL	Whether the company is penalized for environmental issues.	CNRDS
EMPDISPUT	Whether the company has recently paid substantial fines or civil damages due to violations of employee health and safety guidelines, or the company has been involved in major health and safety disputes.	CNRDS
ACCTVIO	Whether the company has violated accounting practices.	CNRDS
PRODDISPUT	Whether the company has recently been involved in major disputes or regulatory actions due to product or service safety issues, and has paid a large amount of fines or civil compensation.	CNRDS
Information need		
MKTCAP	Market capitalization.	CSMAR
ANACOV	Analyst coverage.	CSMAR
IO	Firm's average institutional ownership.	CSMAR
Financial performance		
LEVERAGE	Firms' leverage ratio as asset over debt.	CSMAR
TOBINQ	Firm's total market capitalization over book asset.	CSMAR
KZ	Firm's financial constraint following Kaplan & Zingales (1997).	CSMAR
ROE	Return on Equity.	CSMAR
TANT	Firm's tangibility ratio as measured by tangible assets over total assets.	CSMAR
FCFPS	Free cash flow per share.	CSMAR

Table B2: Definition of different seed word sets

Bag-of-words Approach	
Group	Seed word set (in English)
WB1	Low-carbon, energy saving, circular development, environmental protection, sustainable, environmentally friendly, ecology, pollution, low pollution, emission reduction, energy consumption, green environmental protection, green ecology, green development, low pollution, social responsibility, public welfare, social responsibility, company Governance, Dividends, Shareholding Structure
WB2	Low-carbon, energy-saving, circular development, environmental protection, sustainable, environment-friendly, ecology, low pollution, social responsibility, craftsmanship, social responsibility, corporate governance, dividends, equity structure
WB3	Green ecology, low-carbon, energy saving, environmental protection, sustainability, social responsibility, public welfare, social responsibility, corporate governance, dividends, equity structure
WB4	Green and low-carbon, energy saving, and emission reduction, social responsibility, public welfare, social responsibility, corporate governance, dividends, equity structure

This table reports the set of seed words used to generate different bag-of-words. The original word set is expanded from Luccioni and Palacios (2019) (the WB1), and the second to fourth-word sets shrink by size.

Table B3: Responsible engagements with an indicator variable

Dep. Var.=	DeltScore			Score		
	(1)	(2)	(3)	(4)	(5)	(6)
DRspEngg	0.0647**	0.0910***	0.0749***	0.2559***	0.1050**	0.0814**
	(4.50)	(9.18)	(9.17)	(6.06)	(4.38)	(4.57)
IO		-0.0115	0.0067		-0.0251	0.0004
		(-0.45)	(0.28)		(-1.23)	(0.02)
MKTCAP		0.0942***	0.0616**		0.1019***	0.0684***
		(5.12)	(3.84)		(5.35)	(5.16)
ANACOV		0.0082***	0.0069***		0.0094***	0.0081***
		(16.40)	(13.45)		(13.94)	(16.31)
TOTVST		-0.0004	-0.0002		-0.0003	-0.0002
		(-1.13)	(-0.65)		(-0.83)	(-0.50)
LEVERAGE			0.0022			0.0040
			(0.67)			(1.21)
TOBINQ			-0.0155			-0.0249**
			(-1.69)			(-3.13)
KZ			-0.0344***			-0.0373***
			(-5.92)			(-5.63)
ROE			0.4405***			0.4551***
			(12.41)			(10.74)
TANT			0.2175**			0.2470**
			(2.94)			(2.84)
FCFPS			-0.0371***			-0.0438***
			(-7.76)			(-6.27)
Year FE	T	T	T	T	T	T
Indus FE	T	T	T	T	T	T
Lagged Score		T	T		T	T
R2 Adj.	0.009	0.153	0.174	0.085	0.486	0.481
Observations	13852	12283	11697	14751	12283	11697

This table reports the effect of institutional investors' responsible engagement on corporate ESG performance following empirical design in the main analysis. The dependent variable includes two ESG performance indicators, the first is the change in ESG scores from year $t-1$ to year t that indicates ESG performance improvements. The second is the ESG performance level *Score*. The independent variable of interest is an indicator function of whether the firm has received responsible engagements in that year. We include a set of firms' control variables in the regression, including the number of total engagements (visits) and lagged ESG scores. We control for industry fixed effect and year fixed effect in the regression. We also double-cluster standard errors at both industry and year levels.(Significance level: * for 0.1, ** for 0.05, and *** for 0.001)