# Institutional ownership type and firms' involvement in ESG activities

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## Abstract

Different types of institutional ownership can have varying effects on a firm's involvement in environmental, social, and governance (ESG) activities. We examine the effects of different types of institutional ownership in a firm on its ESG performance (proxied with the KLD score), ESG disclosure, and environmental (E) policies (both proxied with machine learning (ML) measures based on 10-K reports and conference call transcripts). Based on a sample of U.S. publicly listed companies during 2003-2022, we record a negative relation between the lagged level of institutional holdings and ESG performance scores and E and G pillars. Looking at the type of institutional owners, lagged levels of holdings by mutual funds, hedge funds, insurance companies, and financial advisers have a negative relation with the overall KLD ESG score and E and G pillars' scores while the lagged ownership of banks, pension and endowment funds (included in the group other institutional investors) have a positive relation with overall ESG score. The lagged ownership of banks is positively associated with the S pillar score while pension funds and endowments have a positive association with the G pillar score. Looking at the 10-K filings and earnings calls, we further report that the institutional owner type may influence the ESG total scores and the E, S, and G pillars differently, thereby indicating the institutional owners' important role in firms' involvement in ESG activities.

## JEL classification:

Keywords: ESG performance, ESG disclosure, ESG policies, institutional investors, ownership

#### **1. Introduction**

Institutional owners have an important role due to their possibilities to interact with the management of the company and, thereby, to potentially influence decision-making. Thus, institutional investors' preferences and opinions on environmental, social, and governance (ESG) or corporate social responsibility (CSR, which is often used interchangeably with ESG) issues may affect a company's involvement in ESG activities. Eccles et al. (2017) conducted a global survey on institutional investors' investment preferences and report findings indicating that, on average, the respondents either practice or plan to practice some level of ESG analysis in their investment decisions, thereby suggesting that the institutional investors' attitudes on ESG-related matters may be relevant.

Previous research reports mixed findings related to the link between institutional ownership and a firm's involvement in ESG. For example, some researchers observe a positive relation between institutional ownership and engagement in ESG activities (e.g. Harjoto and Jo, 2011; Dyck et al., 2019; Chen et al., 2020), some find a negative relation (Borghesi et al., 2014; Cheng et al., 2022; Dam and Scholtens, 2013), while some do not find any significant relation between the variables (Barnea and Rubin, 2010). This heated debate and mixed empirical findings on the relation between institutional ownership and involvement in ESG activities can be explained by the heterogeneity of institutional investors (such as banks, insurance companies, mutual funds, hedge funds, pension funds, advisers, etc.) that may have varying goals and different levels of influence on company's decision making (e.g., Wang et al., 2023; Fu et al., 2020; Chen et al., 2007). Further, regulatory constraints and industry effects might influence the preferences of institutional investors toward involvement in ESG activities (Reid and Toffel, 2009; Ertimur et al., 2010; Raghunandan and Rajgopal, 2022). Gillan et al. (2021) provide a recent review of research

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focusing on ESG and CSR within the field of financial economics concluding that, while there is a consensus regarding some areas of ESG-related research other results are mixed, thereby suggesting further research is important to add the understanding related to firms' ESG involvement. Moreover, Gillan et al. (2021) suggest that innovations in empirical design may be important in clarifying the effect of institutional ownership on a company's ESG involvement.

Using a sample of 42,851 firm-year observations of U.S. listed companies during the period 2003-2022, we start by analyzing how institutional investors affect firms' ESG performance, evaluated with the help of the KLD indicator. Consistent with Borghesi et al. (2014), Cheng et al. (2022), and Dam and Scholtens (2013) we find a negative relation between institutional ownership and ESG performance. In particular, our findings suggest that lagged holdings by mutual funds, hedge funds, insurance companies, and financial advisers have a strong negative relation with the KLD performance score. This result is driven by the environmental and governance pillars. We explain this negative relation between institutional ownership and ESG performance brought by institutional ownership that strengthens the channels of monitoring (Edmans et al., 2019). Moreover, in line with the classic shareholder view on CSR/ESG, firms should mainly aim to maximize shareholder value as opposed to social welfare (Friedman, 1970). Therefore, due to improved governance and monitoring roles in firms, institutional investors do not prioritize involvement in ESG activities.

Based on the ESG disclosure score calculated with the help of machine learning (ML) approach from 10-K filings, we report that E (S) pillar is negatively related to the lagged holdings by mutual funds (advisers), while the lagged bank holdings are positively related to S and G pillars. Analyzing ESG disclosure from earnings calls, we document a strong negative relation between the lagged total institutional holdings and ESG disclosure score and all pillars (E, S, and G). The

lagged holdings by insurance companies and advisers also show a negative relation with ESG disclosure score and E or S and G pillars. A specific section of the 10-K: business description (1), risk factors (1A), and management discussions section (7), as well as pre-recorded vs. questionsand-answers portions of the calls used for ESG disclosure have a different relation to institutional ownership. Our results are consistent with Tasker's (1998) and Bushee et al. (2003) who find that firms with greater institutional ownership are less likely to have conference calls or provide disclosures. Core (2001) explains this finding by stating that institutional owners prefer fewer disclosures as they are already informed about firm's activities or that institutional investors are already producing information about the firm hence more disclosure is unnecessary. We provide further evidence that the effect of different types of institutional ownership on involvement in ESG disclosure and policies is not homogeneous. Overall, the reported results indicate that ownership is a significant determinant of the firm ESG performance, disclosure, and policies and that the institutional investors' role in firms' involvement in ESG activities may be relevant.

We contribute to the existing literature in several ways. First, we contribute to the literature investigating the impact of institutional investors on firms' involvement in ESG activities (e.g. Wang et al., 2023; Borghesi et al., 2014; Chen et al., 2020), assessed with the help of different metrics - ESG performance, ESG disclosure, and ESG policies. Therefore, while previous studies mainly focus on one of the metrics, we broaden the analysis by looking at the effect institutional owners may have on different firms' ESG activities. As academics and practitioners argue that there exists significant divergence among ESG scores (Christensen et al., 2022; Berg et al., 2022), we use three different proxies to capture a firm's involvement in ESG activities. We use KLD STAT that reflects ESG performance while we apply a machine learning–based ESG disclosure score. Our machine-learning approach to measuring ESG disclosure is an important contribution

of this study. We use this approach because Kimbrough et al. (2022) claim that ESG disclosures provided directly by management can resolve ESG disagreements regarding ESG scores calculated by third parties. Moreover, the majority of the existing studies focus on ESG as an aggregate measure or on some pillars only (e.g. Chen et al., 2020; Dyck et al., 2019). This paper examines the total overall ESG measures, as well as the E, S, and G pillars separately. We argue that separating the pillars is important as in 2017 US investment professionals reported that they had included governance factors in their decisions and 45% believed that governance issues affected current share prices. Only 17% (13%) of the professionals believed that environmental (social) issues affected current share prices and that their incorporation was dependent on the sectors (CFA Institute and PRI, 2018). Particularly the role of the G pillar has been largely ignored in the existing literature that mainly looks at the governance mechanisms with traditional measures (see e.g., Gompers et al., 2003, Bhagat and Bolton, 2008; Bebchuk et al., 2009), and we aim to fill in this gap. We also contribute to the existing literature that focuses on investigating the role of institutional investors in influencing corporate policies and decision-making (see e.g., Gillan and Starks, 2000, 2003; Chen et al., 2007).

Second, we contribute to the existing literature that examines the firm ownership characteristics that may be relevant from the ESG engagement point of view (see e.g., Cheng et al., 2013; Cheng et al., 2022; Cronqvist and Yu, 2017; Chen et al., 2020) by documenting the relation between different types of institutional ownership and firm ESG performance, disclosure, and policies. Our study is one of the few (others include e.g., Gibson et al., 2020; Panicker et al., 2019; Wang et al., 2023) to recognize a mixture of different institutional ownership types, to reflect the heterogeneity of the influence of institutional investors on ESG activities. Therefore, distinguishing between different types of institutional owners and investigating them separately

allows us to map the possible links between the owner type and a company's involvement in ESG activities.

Finally, we add to the existing literature by characterizing a new benefit of public conference calls for investors (see e.g., DeLisle et al., 2021; Henry et al., 2021, and Cao et al., 2023 that use conference calls as a source for ESG-related information) and provide new insights into ESG by relying on textual analysis. The employed methodology allows examining the management's informal communication, thereby providing new information on the companies' ESG activities. We argue that looking both at 10-K filings and conference calls as sources of ESG disclosure is relevant, as the 10-K filings provide information in a comparable format, while the conference calls are less formal and may give an idea of the company's specific ESG involvement preferences.

The remainder of the paper is organized as follows: Section 2 develops a conceptual framework and testable hypotheses. Section 3 describes the sample and the construction of the variables. Section 4 explains the empirical setting and the results. Section 5 concludes.

#### 2. Literature review and hypotheses development

#### 2.1. Effects of institutional ownership on ESG performance, disclosure, and policies

Institutional investors, including pension funds, mutual funds, banks, investment advisers, and insurance companies, collectively account for more than half of all registered shares in publicly held firms (Rupley et al., 2012; Ingley and Van der Walt, 2004) and the largest owners of equity securities in the United States (Buchanan et al., 2018). Prior research claims that institutional investors may significantly impact the company's strategy and performance (Aluchna et al., 2022; Dyck et al., 2019). As institutional investors are often involved in monitoring (Nagel

et al., 2015), they may also influence a company's involvement in ESG activities (Dyck et al., 2019). It can be argued that the role of sustainable investments will become more important in the future if sustainability compliance is considered a risk management tool. Consequently, it should be in the best interests of the institutional investors to have a positive impact on their portfolio firms' ESG engagement and minimize the potential negative consequences of ESG-related costs (see e.g., Chakravarthy et al., 2014; Krüger, 2014). Due to their capacity to engage with companies, institutional investors are also viewed to be the catalysts of driving corporate transparency and disclosure related to ESG performance (Aluchna et al., 2022). Institutional owners consider ESG disclosure as an important factor in decreasing information asymmetry that further helps them to forecast future earnings and cash flows (De Klerk et al., 2015). Disregarding these arguments, previous research finds mixed results regarding the effect of institutional ownership on a company's involvement in ESG activities.

Harjoto and Jo (2011) find a positive association between institutional ownership and CSR performance explaining that by the fact that institutional investors provide effective external monitoring regarding information related to a firm's CSR engagement that follows the conflict-resolution hypothesis. Similarly, in their paper, Dyck et al. (2019) also find a positive relation between institutional ownership and environmental and social pillars by analyzing data from 41 countries. The positive relation between the institutional ownership and E and S pillars is explained by the fact that investments in environmental and social pillars are value-enhancing for companies as they provide a form of insurance against risks or product market differentiation. Therefore, these socially responsible investments are considered by investors as a long-term payoff, rather than a short-term one (Lins et al., 2017). Institutional investors may also lead to a firm's higher involvement in ESG activities because of the pressure coming from social norms and community

culture (Dyck et al., 2019). The authors conclude that the external environment, e.g., strong community beliefs in the importance of ESG issues, leads to a more significant and positive relation between the variables. Further financial motives of institutional investors play an important role in investors' push for better commitment towards ESG.

Researchers claim that performance is closely related to disclosure as the better a company's CSR performance is, the more information managers start to disclose about CSR activities to decrease information asymmetry for stakeholders (Cho et al., 2013). By surveying institutional investors, Ilhan et al. (2021) find that many institutional investors consider firms' reporting of the environmental pillar of ESG, especially related to climate risk, to be as important as financial reporting. The authors conclude that greater institutional ownership is associated with higher disclosure of carbon emissions which can be explained by two reasons. On the one hand, institutional investors are more likely to demand firms to disclose more ESG data, but on the other hand, institutional investors might be in general more likely to invest in firms with high climate risk disclosures.

Some researchers observe that companies with institutional ownership are more likely to increase their involvement in ESG performance and disclosure after disasters or crisis periods (e.g., Huang et al., 2022; Dyck et al., 2019) supporting the implication that investors' risk perception is associated with managers' decision making regarding ESG disclosure after volatile and turbulent periods.

Several researchers analyze the influence of institutional ownership on ESG policies (e.g., Gillan et al., 2010; Buchanan et al., 2018; Cheng et al., 2022). The common assumption is that if institutional owners are pro-social investors who are concerned about the increase in CSR performance, they will more likely promote CSR policies in companies they invest in. The authors

use different proxies for ESG policies, mainly based on well-established ESG performance or ESG disclosure metrics. For example, Gillan et al. (2010) aim to better understand why firms typically adopt stronger ESG policies measured with the help of KLD performance score and the extent to which the market values these decisions. They find that operating performance, efficiency, and firm value tend to increase with stronger ESG policies. Gillan et al. (2010) further observe that institutional ownership is lower for firms with higher S and G net scores. But the conclusions are conflicting based on E, S, and G strengths and concerns: firms' institutional ownership decreases in strengths and concerns for environmental and social activities, decreases in governance strengths, but increases in governance concerns. Further, Buchanan et al. (2018) examine how CSR, jointly with influential institutional ownership, affects firm value around the 2008 global financial crisis. Their evidence highlights the importance of influential institutional ownership on the CSR effects showing that change in firms' value with CSR policies is significantly negative following the onset of the crisis. The authors measure CSR policies using a proxy from the Bloomberg ESG disclosure score. Cheng et al. (2022) examine the relationship between common institutional ownership and implementation of CSR policies proxied by MSCI ESG scores. They find that common institutional ownership is negatively associated with the level of CSR policies, which supports an anti-competitive view that means that CSR drops more for firms with institutional ownership in those industries that face higher competition.

To sum up, institutional ownership may positively influence a firm's involvement in ESG/CSR activities as it mitigates concerns about overinvestments in CSR by promoting the optimal allocation of firm resources and monitoring managerial actions (Buchanan et al., 2018). By holding sizable stakes and being involved in long-term relations with companies, institutional investors play an important role in improving corporate governance (Starks, 2009) and shielding

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shareholders against value-destroying activities related to CSR engagement (Buchanan et al., 2018). However, while institutional ownership can generally be seen as a positive factor in promoting ESG disclosure and policies, there may be cases where a negative relation exists.

For example, by analyzing a sample of 11,711 firm years from 1992 to 2006, Borghesi et al. (2014) observe that firms with larger institutional ownership are less likely to enhance CSR investments. The results are explained by the fact that institutional owners, who in general are more concerned about the interest of shareholders and stakeholders, are less keen on CSR investments because at least some managers might pursue CSR investments for their own reasons which may be a perceived moral responsibility or their concerns about their careers. Dam and Scholtens (2013) investigate the effect of concentrated institutional ownership on CSR activities in European multinational firms from fifteen countries and thirty-five industries. Their results confirm that more concentrated ownership leads to worse CSR performance that the authors explain by the fact that the majority of large institutional shareholders manage funds on behalf of ultimate owners. The authors suggest that these shareholders could be stimulated to perform concerning CSR as well. Gillan et al. (2010) analyze the relation between institutional ownership and individual ESG pillars – environmental, social, and governance. The results reflect that there is no association between institutional ownership and the environmental score, while there is a significantly negative association between institutional ownership and the social and governance pillars.

This negative relation between institutional ownership and ESG activities can be explained by a number of reasons. Prior studies have shown that excessive governance monitoring can hurt firms' value (La Porta et al., 2002). Further, a high share of institutional ownership that leads to extensive intervention decreases management incentives (Guiso et al., 2015). This low level of

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management incentives and integrity may further lead to lower firm value. Additionally, institutional investors with high stakes may extract the value for their private benefits that are not shared with minority investors (Edmans, 2014). Therefore, institutional investors may decrease the value of CSR activities by stimulating conflict between shareholders. Moreover, institutional investors may influence firm information disclosure, thereby increasing information asymmetry between firms and their non-investigating stakeholders.

This discussion brings us to our hypothesis on institutional ownership and ESG involvement: H1null: Institutional ownership has no relation with a firm's ESG (E, S, and G pillars) involvement.

H1a: Institutional ownership has a positive relation with a firm's ESG (E, S, and G pillars) involvement.

H1b: Institutional ownership has a negative relation with a firm's ESG (E, S, and G pillars) involvement.

## 2.2. Effects of institutional ownership type on ESG performance, disclosure, and policies

Prior research suggests institutional investors have distinct preferences for some firm attributes and that different types of institutional investors provide different levels of firm monitoring or influence (Rupley et al., 2012). Firm institutional ownership can have a significant impact on ESG activities, as different types of institutional owners may have different priorities and incentives, and different investment philosophies and preferences when it comes to ESG issues (Chen et al., 2007). For example, institutional investors, such as pension funds and insurance companies, often have significant ownership stakes in publicly traded companies (Davis, 2008). These investors may have ESG criteria that they use to evaluate companies, and they may pressure

companies to adopt better ESG policies to improve their financial performance. Therefore, some types of institutional ownership can incentivize companies to prioritize ESG issues (Johnson and Greening, 1999).

However, different types of institutional ownership can affect the firm ESG involvement in different ways.

Banks may be interested in ESG issues for several reasons, including managing risk and improving financial performance. Banks may offer ESG-related financial products and services, such as green bonds and sustainability-linked loans, to incentivize companies to adopt better ESG policies (Kim et al., 2022). Additionally, banks may engage in shareholder activism to push for better ESG performance from the companies they invest in and, therefore, banks can also influence ESG activities through their corporate governance practices (Johnson and Greening, 1999). Banks with higher ownership in companies tend to use their voting power to encourage companies to improve their corporate governance practices and thereby improve their ESG performance (Flammer et al., 2021). Therefore, this type of institutional investors has a strong interest not only in the financial performance of the firms in which they invest but also in the strategies and activities (Smith, 1996; Gloßner, 2019). Moreover, due to increased regulations related to sustainable finance, banks may start to play an important role in promoting CSR activities and pressuring top management to improve ESG involvement (Velte, 2023).

Financial advisers may be important advocates for ESG investing, as they can influence the investment decisions of their clients. Advisers who are knowledgeable about ESG issues may recommend investments that prioritize sustainability and social responsibility. Additionally, advisers may engage in active ownership practices, such as proxy voting and shareholder engagement (Muniandy et al., 2016), to influence company behavior on ESG issues.

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At the same time, mutual funds are usually more short-term oriented and seek for profit maximization, that is why company engagement in CSR and ESG is for them of less o importance (Aluchna et al., 2022; Gloßner, 2019). Mutual funds, mainly representing short-term oriented investors, consider ESG involvement as merely an unnecessary cost. Further, Gloßner (2019) claims that short-termism of investors induces short-termism of managers that may discourage investment in costly ESG performance and disclosure. Even though the demand for responsible investments among mutual funds is growing (Bialkowski and Starks, 2016), the share of mutual funds that started to prioritize ESG factors, e.g. the ones with the investment objectives designated as "Sustainable Investment Overall" by Morningstar, is quite small (Dikolli et al., 2022). Moreover, as mutual funds usually do not engage in active ownership practices, we assume that they do not enhance a firm's involvement in ESG activities.

Similarly hedge funds may have less of a focus on ESG issues compared to other types of institutional investors, as they may be more focused on short-term profits. Hedge funds do not possess the motivation to incorporate ESG goals into the objectives of firms (Hannes et al., 2022; Barber et al., 2021). Their business model does not fit for the long horizons ESG turnaround requires but is rather focused on their short horizons as they must cater to the wishes of impatient investors who cannot freely exit and therefore opt for relatively short-term engagements (Hannes et al., 2022; Johnson and Greening, 1999). Therefore, hedge fund managers are expected to generate immediate returns for their investment rather than focus on long-term oriented ESG projects (Gloßner, 2019) and prioritize financial performance and short-term profits over ESG concerns (Panicker et al., 2019). However, some hedge fund activists seek to create financial value by influencing corporate strategy and structure and may see ESG issues as a way to create value

in their portfolio companies by improving operational efficiency, reducing risk, and enhancing brand reputation (Barko et al., 2021).

In contrast, pension funds, life insurance companies and endowment funds are normally long-term investors and hold large shares in portfolio companies (Gloßner, 2019; Ryan and Schneider, 2002). These owners are interested in long-term investments and consider social investments and disclosure not only in terms of related costs but also as a potential long-term value driver (Kim et al., 2019; Harford et al., 2018; Oikonomou et al., 2020) and can in general, be more interested in CSR disclosure (Dhaliwal et al., 2011; De Klerk et al., 2015). In their paper, Erhemjamts and Huang (2019) prove that companies with a higher percentage of long-term institutional investors have higher net ESG scores. Gillan and Starks (2007) also observe that public pension funds are among the most active institutional investors with a long horizon of their investments which allows them to benefit from costly ESG projects and actions.

Overall, different types of institutional ownership can have different impacts on the firm ESG policies - some types of ownership may prioritize ESG issues more than others and may use different strategies to incentivize companies to adopt higher ESG involvement. Based on this discussion we come up with our second hypothesis:

H2. The institutional ownership type is related to a firm's ESG involvement.

#### 3. Data and variables

#### *3.1. Data and sample*

We utilize several data sources to construct our main and control variables. The standardized databases are Thompson Refinitiv 13F, Compustat, Center for Research in Security

Prices (CRSP), I/B/E/S Academic, and MSCI ESG Kinder, Lydenberg, and Domini (KLD) STATS databases.

We also utilize unstructured data, specifically, two types of firm disclosures as source data for our ESG disclosure and Environmental policy measures constructed using machine learning techniques: annual reports (i.e., Form 10-Ks) and transcripts of earnings conference calls. The 10-K filings refer to an annual report form that the U.S. publicly listed companies need to submit and disclose information on. They are structured and written in a formal style, containing comprehensive information on various topics such as products, competitors, and strategy (Dyer et al., 2016), and provide a covering overview of the company's business and financial situation, and include the audited financial statements. In particular, we focus on items 1, 1A, and 7 of 10-Ks in our ESG disclosure and E policy data collection and analyses. Item 1 of the 10-K filings, 'Business', includes a general description of the company's main operations, products, and services. The section may also include information about relevant recent events related to the company. Item 1A, 'Risk Factors', consists of a description of the most significant risks related to the company and its operations. The risks are commonly listed in the order of importance and a part of them may be related to the operating environment or the industry while some may be unique to the company. Finally, we also look at Item 7 of the 10-K filings. This item is titled 'Management's Discussion and Analysis of Financial Condition and Results of Operations' and it gives the management the possibility to tell their views about the company, including the key challenges and business risks and how the company is addressing these. In general, the MD&A gives an overview of the business results of the past financial year and the underlying circumstances, thereby potentially providing important information about the company to the market participants.

In addition to 10-K filings, we also include conference calls in our sample. A conference call is an event where the investors can listen to the company's management team commenting on the performance of the company. The first part of the event commonly consists of an uninterrupted message from the management, followed by a discussion of the company's financials and other relevant aspects. After the comments from the management, the analysts can ask questions. The conference calls are commonly arranged every quarter, typically after a quarterly earnings announcement.

The conference calls are commonly recorded and streamed live on the internet. Thus, anyone interested can follow the event. The conference calls are an important tool for companies to bring their preferred message forward and to highlight their positive future expectations and companies use these events as a tool to bridge the information gap between executives and outside investors (see e.g., Tasker, 1998). Compared to the 10-K filings, the conference calls, on the other hand, are less scripted and consist of dialogic, spoken language. The conference calls focus primarily on firm performance, valuation, and financial outlook (Huang et al., 2018) and are often seen as a form of investor communication that firms use to supplement the information contained in their 10-K filings (Matsumoto, Pronk, & Roelofsen, 2011). Moreover, the earlier literature indicates that conference calls have important information content (Frankel et al., 1999) and that the Q&A section of the conference call can provide relevant information (Matsumoto et al., 2011; Hollander et al., 2010; Mayew & Venkatachalam, 2012).

We argue that looking both at 10-K filings and conference calls is relevant, due to the different nature of these two sources of data. Namely, 10-K filings provide information in a comparable format, while the conference calls are less formal and may give an idea of the company's policy preferences. We collected the disclosure data for the period 2003–2022. The 10-

K filings are downloaded from the Securities and Exchange Commission (SEC) EDGAR database, while the earnings call transcripts are obtained from Thomson Reuters Eikon.

#### 3.2.1. ESG performance measure

Our measure of ESG performance is based on data obtained from Morgan Stanley Capital International's (MSCI) ESG (formally known as KLD Research & Analytics) for the period 1991-2019.<sup>1</sup> This is the first ESG measure that has been widely used by researchers to measure the firm ESG/CSR performance (e. g., Tsai and Wu, 2022; Cui et al., 2018; Cho et al., 2013). The MSCI ESG measures the firm ESG activities in 13 dimensions. The first seven are related to the environment, community, diversity, employee relations, human rights, product characteristics, and corporate governance. The MSCI ESG assigns a list of strengths and concerns within each dimension. A company receives a score of 1 for the presence of each of the strengths (concerns) and 0 otherwise.<sup>2</sup> Following Kimbrough et al. (2022), we classify KLD's 80 strength and concern indicators, which can be grouped into three main ESG categories (i.e., environmental, social, and governance) among seven major qualitative issue areas: environment, corporate governance, and (five) social pillars (community, diversity, employee relations, human rights, and products). We follow Hillman and Keim (2001) and Cui et al. (2018) and for each pillar-environment, social, and governance—and the total ESG score, we sum up all strengths and subtract all concerns for each firm *i* in year *t* within each category. We standardize this measure by adding the total number

<sup>&</sup>lt;sup>1</sup> The MSCI ESG KLD STATS data set was created by KLD Research & Analytics, Inc. (KLD) in 1991. MSCI acquired KLD in 2010. The database has not been updated since 2019.

 $<sup>^2</sup>$  The last six dimensions indicate if firms are involved in controversial businesses, including alcohol, gambling, tobacco, firearms, military, and nuclear power. For each dimension, a firm gets a score of 1 if its operation is involved in the indicated controversial business and 0 otherwise. We do not include these dimensions in the analysis to avoid biasing the focus of the research.

of concerns within the category in year t (to make the measure positive) and dividing it by the sum of the total number of strengths and concerns within the category in year t.<sup>3</sup>

#### 3.2.2. ESG disclosure measures

We measure ESG disclosure at the firm-year level by computing the share of discussion in the firm's disclosure related to environment, social, and governance issues based on 10-K reports and conference call transcripts. To do this, we first parse the 10-K filings and earnings call transcripts into 128-word paragraphs. Following Huang et al. (2022), we include only those 10-K items most relevant for investors: Item 1 (Business), Item 1A (Risk Factors), and Item 7 (Management's Discussion and Analysis). From the earnings call transcripts, we include both sections (management presentation and the subsequent Q&A).

We employ FinBERT (Huang et al., 2022), a state-of-the-art large language model, to assess the probability of each paragraph belonging to one of four categories: (i) Environmental (e.g., climate change, natural capital, pollution and waste, and environmental opportunities); (ii) Social (e.g., human capital, product liability, stakeholder opposition, and social opportunities); (iii) Governance (e.g., ownership and control, board composition and duties, executive compensation, external audits, and internal controls); or (iv) non-ESG.<sup>4</sup>

The paragraph-level probabilities are averaged at the firm-year level to obtain an overall ESG disclosure measure for each firm. If the firm holds quarterly conference calls, we average the

<sup>&</sup>lt;sup>3</sup> Alternatively, as in Kimbrough et al. (2022), we compute the percentile rank of the KLD overall ESG score, and each pillar score based on the difference between strengths and concerns by year based on the entire KLD dataset. The results are the same as with the standardized measure and are not reported.

<sup>&</sup>lt;sup>4</sup> FinBERT is a refined version of Google's BERT (Bidirectional Encoder Representations from Transformers) model that adapts to the finance domain. It incorporates finance knowledge and can better summarize contextual information in financial texts. It substantially outperforms other machine learning algorithms in text classification. See Huang et al. (2022) for further details.

ESG disclosure measures of all conference calls taking place within +/- 180 days from the fiscal year-end. This approach ensures that we capture the most relevant information from both types of disclosure sources, accounting for the differences in the nature and informational value of 10-K filings and earnings conference calls.

#### 3.2.3. Environmental policy measure

In addition to measuring ESG disclosure, we also measure environmental policy commitments made by firms using a machine learning model called ClimateBERT (Webersinke et al., 2021; Bingler et al., 2022). This model was fine-tuned on environmental claims in sustainability reports, earning calls, and annual reports to identify whether environment-related discussions in firm disclosures commit to environmental actions or policies (Stammbach et al., 2022).

Environmental claims made in firm disclosures convey an intention for a material impact, such as improving the environment, which would benefit the audience of the pledge, such as consumers. We apply the environmental claim classifier to textual paragraphs in the 10-K filings and earnings calls to assign a probability that environmental actions are disclosed in the paragraph. We then compute the share of discussion in the firm's disclosure that makes environmental policy pledges at the firm-year level, similar to our approach for measuring ESG disclosure.

By measuring environmental policy commitments made by firms in their disclosures, we can get a more complete picture of a firm's dedication to taking actions that benefit the environment and evaluate their level of environmental responsibility. For example, a firm may make an environmental disclosure about its energy consumption in its annual report but not make any specific commitments to reduce its carbon footprint. In contrast, a firm that commits to an environmental policy may set targets to reduce its greenhouse gas emissions by a certain percentage or adopt specific practices to reduce its environmental impact.

#### 3.2.4. Institutional ownership data

To analyze the effect of institutional ownership on ESG performance, disclosure, and policies, we utilize the Thompson Refinitiv Institutional (13f) Holdings and the CRSP Mutual Fund databases. We focus on the percentage of shares held by institutional investors, including mutual funds, hedge funds, insurance companies, advisers, and other investment organizations, for each firm-year observation.

The Thompson Refinitiv Institutional (13f) Holdings database is the primary source of our data on institutional ownership of U.S. firms, which provides the holdings data of individual institutional investors on a quarterly frequency.<sup>5</sup> The database assigns the institutional managers into five types: (1) banks and trusts, (2) insurance companies, (3) investment companies, (4) professional investment advisers, and (5) other managers, such as pension funds and university endowments. In this paper, we test the hypotheses using the institutional holdings of all types of managers, as well as focusing on the holdings of each identifiable type, including actively managed mutual funds and hedge funds.

For the first hypothesis tests, we aggregate the institutional holdings for each firm i for the last quarter t by summing the number of shares owned by each institution and dividing it by the total number of shares outstanding at t ( $IO_{it}$ ). All institutional holdings exceeding 100% are replaced with 100% ownership.

<sup>&</sup>lt;sup>5</sup> Form 13F for general institutional holdings covers the quarter-end holdings of all institutional investment managers with the investment discretion over \$100 million in Section 13(f) securities. Securities in Section 13(f) include publicly traded equity, as well as convertible bonds and options (Agarwal et al., 2013).

To test hypothesis 2, we identify institutional holdings of mutual funds, hedge funds, banks, insurance companies, advisers, and other institutional types of managers by using the TYPECODE variable in the Thompson Refinitiv CDA/Spectrum S34 (13f) Holdings database. According to earlier studies (Koijen and Yogo, 2019), the manager type classification is not reliable starting from the last quarter of 1998, when many types were identified as "endowments and others" (5). To address this issue, we follow Koijen and Yogo (2019) and manually identify correct manager types starting in 1998.<sup>6</sup> After manually correcting the manager's types, the banks and insurance companies are assigned to codes (1) and (2), respectively, and investment companies and professional investment advisers to codes (3) and (4). Pension funds, endowments, and other managers are assigned to type code (5).

To separate holdings of mutual funds and hedge funds identified by type coded (3) in the 13f Holdings database, we identify the actively managed mutual fund holdings using the CRSP Mutual Funds database after excluding holdings of index funds, ETFs, and ETNs. We identify hedge funds among all institutional holdings in the Thompson Refinitiv CDA/Spectrum S34 (13f) Holdings database with the list of hedge funds identified by Agarwal, Ruenzi, and Weigert (2017).

Our institutional holdings' variables by type are mutual fund (*MF*), hedge fund (*HF*), bank (*Bank*), insurance company (*Insurance*), adviser (*Adviser*), and other (*Other*) that includes pension funds, endowments, and other managers.

<sup>&</sup>lt;sup>6</sup> For managers available before the last quarter of 1998, we replace the incorrect code type after December 1998 with the correct one identified before this date. If the manager code type changes over time, we use the most recent one. For instance, if the manager existed prior to 1998 and changed the code type before December 1998, we identify the code type based on the most recent code type before December 1998. Similarly, if the manager did not exist prior to December 1998, we identify the code type based on the most recent code type based on the most recent one. We also assign the code 1 to all managers containing "bank" in their name, code 2 to all managers containing "insurance" in their name, and code 5 to all managers that we can identify as pension funds and university endowments based on the manager's name.

## 3.2.5. Control variables

To account for potential confounding factors, we include various control variables in our analysis. For firm-level control variables, we use firm size, leverage, profitability, market-to-book ratio, Tobin's Q, payment of dividends and analyst coverage. These variables are commonly used in the literature on ESG and corporate finance to account for firm-specific characteristics that may influence ESG policies and disclosure practices (Borghesi et al., 2014; Dyck et al., 2019; Chen et al., 2020).

Size is calculated as Log of total assets (AT) of a firm collected from Compustat. Leverage is all debt to total assets [(DLTT + DLC)/(AT)] collected from Compustat. Profitability is return on assets [ROA, calculated as (OIBDP/AT)] collected from Compustat. Market-to-book ratio (*MB*) **Market value of assets over book value of assets**  $[(AT - CEQ + PRCC_F *CSHO)/AT]$ , collected from Compustat. Tobin's q (*TobinQ*) is market capitalization of equity plus total debt divided by total assets  $[(AT - CEQ + PRCC_F *CSHO)/AT]$  from Compustat. *Dividends* is an indicator variable that equals one if the firm has a nonzero dividend (DVC in Compustat) in year *t*, and zero otherwise. Analyst coverage (*AnalystCov*) is the log of one plus the total number of stock analysts following the firm during the year, collected from I/B/E/S.

#### 4. Empirical analyses

#### 4.1. Descriptive statistics

Table 1 reports descriptive statistics of the dependent variables: KLD measures of ESG performance and machine learning measures of ESG and E, S, and G pillars of performance, disclosure, and environmental policy.

#### <Table 1 should be here>

Figure 1 illustrates a positive trend in ESG performance and ESG disclosure through 10-Ks and earnings calls. However, the performance trend (KLD measure) is not inconsistent of the sample period with significant volatility of average ESG performance between 2010 and 2016, especially in environmental (E) and governmental (G) pillars scores (Figure 1.A.). ESG disclosure scores, based on both 10-K and earnings calls, are more monotonically increasing with significant jump in the last two years of the sample, especially in E pillar disclosure. Figure 2 shows a positive environmental policy disclosure trend, with observable jump in the last two years.

## <Figures 1 and 2 should be here>

Figure 3 dynamics of institutional ownership over the sample period with upward trend in overall average institutional ownership of the U.S. firms, mostly driven by hedge funds (*HF*) and other institutional ownership (*Other*), which includes pensions and endowments.

## <Figures 3 should be here>

Table 2 reports descriptive statistics of the main explanatory and control variables. Average institutional ownership in a firm over the sample period is 58%. The largest institutional ownership by type of an investor is, on average, is by advisers at 22%, followed by other (16%), hedge funds (14%), mutual funds (11%), banks (8%), closing by insurance companies (%).

<Table 2 should be here>

#### 4.2. Firm institutional ownership and ESG

To test hypotheses 1 and 2 on effects of institutional investors' holdings of a firm and types of institutional holdings on firm's ESG performance, disclosure, and E policies, we estimate the following baseline empirical model:

$$ESG (E, S, G)_{i,t} = \alpha + \beta (InstHoldType)_{it-1} + ESG (E, S, G)_{i,t-1} + \theta X_{it-1} + \delta_t + \gamma_i + \varepsilon_{it}$$
(1)

where dependent variable *ESG*  $(E, S, G)_{i,t}$  is one of the measures of ESG or E, S, or G pillars of performance, disclosure, or environmental policy of firm *i* in year *t*. Main explanatory variable *InstHoldType* is one of the following: all institutional holdings (*IO*), mutual fund (*MF*), hedge fund (*HF*), Bank (*Bank*), insurance company (*Insurance*), adviser (*Adviser*), and other (*Other*) that includes pension funds, endowments, and other managers, in firm *i* in year *t*,  $X_{i,t-1}$  are the firmlevel characteristics,  $\delta_t$  are industry-fixed effects (based on 2-digit SIC), and  $\gamma_t$  are year-fixed effects. In all regressions, the standard errors ( $\varepsilon_{i,t}$ ) are clustered by firm.

Table 3 reports on effects of institutional ownership on ESG performance measured with the KLD scores. Lagged total institutional ownership has a negative relation with ESG performance scores and E and G pillars. However, the effect of specific types of institutional ownership is different on firm ESG performance. Specifically, while lagged ownership by mutual funds, hedge funds, insurance companies, and advisers has a negative relation with ESG performance and E and G pillars' scores, lagged ownership by banks and other type has a positive relation with overall ESG performance score and S pillar, and G score accordingly. We explain this negative relationship between institutional ownership and ESG performance by improved corporate governance that is brought by institutional ownership (Edmans et al., 2019). Due to that and in line with the classic shareholder view on CSR/ESG, institutional owners seek for maximization of shareholder value as opposed to social welfare (Friedman, 1970). Therefore, due to improved governance and monitoring roles in firms, institutional investors do not prioritize involvement in ESG activities.

#### <Table 3 should be here>

Table 4 presents results of the institutional ownership models on ESG disclosure score collected from 10-K report using machine learning technique. Results in Panel A of Table 4 show no relation between the institutional ownership and ESG (E, S, G) disclosure in 10-Ks. However, E (S) pillar is negatively related to the lagged Mutual fund (Adviser) holdings, while the lagged bank holdings positively relate to S and G pillars. Panel B of Table 4 reports results based on the source of the information for ESG disclosure scores: Item 1 (Business), Item 1A (Risk Factors), and Item 7 (Management's Discussion and Analysis). ESG scores from Item 1 are mostly affected by the lagged bank holdings: we can see a positive relation. ESG scores from Item 1A are positively affected by the lagged insurance companies' holdings but negatively by bank holdings. Finally, total institutional holdings, including advisers and other type, are negatively related to ESG scores from Item 7. Bank holdings are still positively related to S pillar score collected from Item 7. Therefore, our results indicate that institutional owners do not support overall ESG disclosure in 10-K forms, while prioritize information disclosure about some particular ESG pillars in different sections of annual reports. We again report that the effect of institutional ownership on ESG disclosure calculated based on 10-K reports varies for different types of institutions.

<Table 4 should be here>

Results of the models of institutional holdings on ESG disclosure scores collected from earnings calls (EC), as reported in Table 5, panel A, indicate a strong negative relation between the lagged total institutional holdings and ESG total scores and all pillars (E, S, and G). The lagged holdings by insurance companies and advisers also show a negative relation with ESG EC scores and E or S and G pillars. Panel B of Table 5 reports the results of the models based on ESG scores, and each pillar scores collected from the pre-recorded portion of the call (PRE) and the questions and answers (QNA) portion of the calls. The disclosure results are mostly driven by the ESG scores from the QNA portion of the calls.

## <Table 5 should be here>

Finally, we examine the effect of institutional ownership on environmental policy disclosure in 10-Ks and earnings calls. The results are presented in Table 6. The lagged institutional holdings (*IO*) have a negative relation with environmental policies collected from both 10-Ks and earnings calls. The results mostly come from mutual fund holding, which shows the strongest negative relation to E policy disclosures in 10-Ks but not in earnings calls. No type of institutional ownership has a positive relation with environmental policy disclosure. Our results regarding ESG disclosure are in general consistent with Tasker's (1998) and Bushee et al. (2003) who find that firms with greater institutional ownership are less likely to have conference calls or provide disclosures. Core (2001) explains this finding by stating that institutional owners prefer fewer disclosures as they are already informed about firm's activities or that institutional investors are already producing information about the firm hence more disclosure is unnecessary. However, we find differences in the effect of institutional owners towards different pillars of ESG.

<Table 6 should be here>

Overall, the reported results indicate that institutional owners affect ESG performance, disclosure and policies in a different way. Being consistent with some of the previous studies, we find that overall institutional ownership has a negative relationship with ESG performance, measured with the help of the KLD score. At the same time, we observe that different types of institutional investors may affect ESG performance in a different way. While mutual funds, hedge funds, insurance companies, and financial advisers negatively influence ESG performance, banks, pension and endowments funds positively enhance ESG performance of companies they invest in. Looking at the ESG disclosure scores calculated based on 10-K filings and earnings calls, we report that the institutional owner type may significantly influence the ESG disclosure scores and the E, S, and G pillars differently, thereby indicating the important role of institutional owners in firms' involvement in ESG activities.

## 5. Conclusions

Gillan et al. (2021) provide a review of ESG-related research and conclude that, while some research questions are rather well covered, the results for other areas are mixed and further research is called for to reconcile the differences and add knowledge of ESG-related aspects. Moreover, Gillan et al. (2021) suggest that innovations in empirical design may be important in developing the understanding of ESG involvement. Consequently, this paper examines the effect of institutional ownership level on the firm's ESG involvement, particularly ESG performance (measured with the help of KLD score), ESG disclosure, and environmental policies (both measured using machine learning techniques to analyze data from 10-K filings and transcripts of earnings conference calls). We employ a sample of 42,851 firm-year observations from U.S. publicly listed firms during the years 2003-2022.

Our findings provide new evidence on the relation between institutional investors and firms' involvement in ESG activities. In particular, we document a negative relation between the lagged level of institutional holdings and ESG performance scores and E and G pillars. Moreover, our findings indicate that the institutional owner type has an impact on the relation between institutional ownership and firms' ESG engagement.

We report findings for the following institutional owner groups: mutual funds, hedge funds, banks, insurance companies, advisers, and others (including pension funds and endowments). Our findings suggest that institutional owners classified as mutual funds, hedge funds, insurance companies, and financial advisers have a negative relation with KLD ESG score and E and G pillars' scores. Banks and other institutional holders have a positive relation with the overall ESG score. The lagged ownership of banks is positively associated with the S pillar score while the category of other institutional holders, including pension funds, has a positive association with the G pillar score. Looking at the 10-K filings and earnings calls, we further report that the institutional owner type may be associated with the ESG total scores and the E, S, and G pillars, thereby indicating the institutional owners' important role in firms' involvement in ESG activities.

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Figures 1A-1C. ESG trends.







Figure 2. Environmental policy trend.





# Table 1. ESG measures' descriptive statistics.

The table reports the descriptive statistics for the ESG measures employed in this paper.
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Variable	Obs	Mean	Std. Dev.	Min	Max
ESG performance					
KLD	70,453	0.53	0.08	0.29	0.96
KLD E	70,453	0.63	0.11	0.00	1.30
KLD S	70,453	0.51	0.10	0.15	1.05
KLD G	70,453	0.42	0.11	-0.40	0.80
ESG disclosure	,				
10K					
ESG	58,812	5.63	4.75	0.00	69.00
Е	58,812	1.84	3.09	0.00	66.00
S	58,812	2.52	3.29	0.00	52.53
G	58,812	1.28	0.91	0.00	16.00
10K 1					
ESG	56,593	12.00	11.25	0.00	79.37
Е	56,593	3.68	6.68	0.00	69.44
S	56,593	5.97	8.37	0.00	77.37
G	56,593	2.35	2.02	0.00	27.67
10K 1A					
ESG	48,188	3.97	3.64	0.00	90.00
E	48,188	1.55	2.89	0.00	36.13
s	48,188	1.23	1.61	0.00	87.00
Ĝ	48,188	1.20	0.94	0.00	43.50
10K 7	- ,				
ESG	58 001	1.20	1.80	0.00	95.68
F	58,001	0.39	1.00	0.00	65 78
S	58,001	0.44	0.95	0.00	35.00
G	58,001	0.37	0.52	0.00	21 31
Earnings Calls	20,001	0.07	0.02	0100	21101
ESG	43,447	10.49	7.35	0.60	77.42
Е	43,447	2.63	3.30	0.17	49.38
S	43,447	6.90	6.03	0.20	69.23
G	43,447	1.49	0.96	0.20	30.55
Earnings Calls					
PRE					
ESG	43,445	12.24	9.95	0.50	83.75
E	43,445	2.55	4.00	0.00	61.80
S	43,445	8.69	8.47	0.00	74.00
G	43,445	1.68	1.52	0.20	37.21
Earnings Calls					
QNA					
ESG	43,173	10.10	7.22	0.00	97.00
E	43,173	2.92	3.62	0.00	85.51
S	43,173	6.20	5.63	0.00	94.00
G	43,173	1.55	1.19	0.00	35.29
E policies					
10k					
E policy	58,812	0.24	0.41	0.10	9.88
E policy 1	56,593	0.45	1.21	0.10	31.33
E policy 1A	48,188	0.17	0.16	0.09	8.40
E policy 7	58,001	0.16	0.22	0.10	8.14
Earnings Calls					
E policy	43,447	0.23	0.60	0.04	16.81
E policy PRE	43,445	0.32	1.12	0.07	35.17
E policy QNA	43,173	0.15	0.17	0.00	14.83

Variable	Ν	Mean	S.D.	Min	Q1	Median	Q4	Max
Ownership	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ю	58812	0.58	0.31	0	0.32	0.65	0.85	1
MF	58812	0.11	0.09	0	0.03	0.1	0.17	1.04
HF	58812	0.14	0.11	0	0.06	0.13	0.2	2.16
Bank	58812	0.08	0.06	0	0.02	0.07	0.12	0.64
Insurance	58812	0.02	0.03	0	0	0.01	0.02	0.83
Adviser	58812	0.22	0.14	0	0.12	0.22	0.31	2.52
Other	58812	0.16	0.13	0	0.06	0.14	0.24	3.52
Controls								
Size	58790	6.92	2.11	-1.05	5.55	6.88	8.22	15.04
Leverage	58306	0.2	0.24	0	0.04	0.14	0.3	9.21
MB	49407	5.74	525.85	-6714.96	1.16	1.92	3.46	1.10E+05

0.12

0

0

-31.68

1.06

0.02

0.69

0

2.23

0.14

1

2.3

1.42

0.08

1.61

0

12253.44

3.25

1

4.01

71.68

0.33

0.5

0.99

2.63

0.05

0.5

1.56

49408

49321

58812

58812

TobinQ

Dividend

AnalystCo

ROA

v

Table 2. Institutional ownership and control variables' descriptive statistics.

The table reports the descriptive statistics for the institutional ownership measures and the control variables employed in this paper.

#### **Table 3.** Institutional ownership and ESG performance.

The table reports the results of fixed-effects OLS regressions of institutional ownership in a firm on its ESG performance proxies. The dependent variable is one of four proxies of ESG performance: total KLD ESG score, KLD E pilar score, KLD S pillar score and KLD G pillar score. Main explanatory variables are: total institutional ownership (*IO*), mutual funds' ownership (MF), hedge funds' ownership (*HF*), banks' ownership (*Bank*), insurance companies' ownership (*Insurance*), advisers' ownership (*Adviser*), and other institutional ownership (*other IO*). Control variables (not reported in the tables for brevity) are Size, Leverage, MB, TobinQ, ROA, Dividend, AnalystCov, and lagged dependent variable. The OLS models control for year and industry fixed effects; standard errors are clustered by firm and reported in parentheses. \*, \*\* and \*\*\* indicate statistical significance at less than the 10%, 5%, and 1% levels, respectively.

KLD	ESG	ESG	Е	Е	S	S	G	G
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	-		-				-	
IO t-1	0.0056***		0.0118***		-0.0023		0.0087***	
	(0.001)		(0.001)		(0.002)		(0.002)	
MF t-1		- 0.0087***		- 0.0156***		-0.0026		- 0.0211***
		(0.0007)		(0.0130)		(0.0020		(0.005)
		-		-		(0.005)		-
HF t-1		0.0079***		0.0155***		-0.0041		0.0174***
		(0.002)		(0.003)		(0.003)		(0.005)
Bank t-1		0.0073**		0.0042		0.0110**		0.0008
		(0.003)		(0.005)		(0.005)		(0.008)
Insurance t-1		-0.0086*		-0.0122*		0.0006		- 0.0577***
insurance t 1		(0.005)		(0.007)		(0.007)		(0.017)
		-		-		-		(01011)
Adviser t-1		0.0066***		0.0102***		0.0063***		0.0001
		(0.002)		(0.003)		(0.002)		(0.003)
Other IO t-1		0.0026		0.0004		0.0029		0.0103**
		(0.003)		(0.004)		(0.004)		(0.005)
Size t-1	0.0035***	0.003/1***	0.00/18***	0.0046***	0.0044***	0.00/13***	- 0.0029***	- 0.0028***
5120 1-1	(0.0000)	(0.000)	(0.0040)	(0.0040)	(0.0044)	(0.0043)	(0.002)	(0.0028)
	-	-	(0.000)	(0.000)	-	-	(0.000)	(0.000)
Leverage t-1	0.0038***	0.0035***	-0.0011	-0.0005	0.0066***	0.0064***	-0.0007	-0.0005
-	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
MB t-1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TobinQ t-1	0.0010***	0.0010***	0.0007***	0.0007***	0.0015***	0.0015***	-0.0003	-0.0002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA t-1	0.0009	0.0007	0.0055***	0.0049***	-0.0008	-0.0009	0.0009	0.0005
Dividend t 1	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Dividend t-1	$(0.0011^{++})$	0.0008*	$(0.0019^{+++})$	$(0.0014^{++})$	(0.0003)	-0.0000	$(0.0054^{+++})$	$(0.0032^{+++})$
AnalystCov t-	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
1	0.0022***	0.0021***	0.0028***	0.0026***	0.0029***	0.0027***	0.0018***	0.0018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
KLD t-1	0.6606***	0.6592***						
	(0.009)	(0.009)						
KLD_E t-1			0.6806***	0.6798***				
			(0.009)	(0.009)				
KLD_S t-1					0.6250***	0.6242***		
					(0.009)	(0.009)		
KLD_G t-1							0.4897***	0.4881***
Testernet	0 11/7***	0 1176***	0 1202***	0 120(***	0 1120***	0 1150***	(0.008)	(0.008)
intercept	0.110/***	$0.11/6^{***}$	0.1392***	0.1396***	0.1138***	0.1150***	0.2006***	$0.2007^{***}$
N	(0.008)	(0.008)	(0.014)	(0.014)	(0.007)	(0.007)	(0.013)	(0.013)
R2	0.860	0.861	0 794	0 794	0.856	0.857	0.769	0.770
IXZ	0.800	0.001	0.794	0.794	0.650	0.007	0.709	0.770

#### Table 4. Institutional ownership and ESG disclosure from 10-K.

The table reports the results of fixed-effects OLS regressions of institutional ownership in a firm on its ESG disclosure proxies. The dependent variable is one of four proxies of ESG disclosure from 10-Ks: total ML ESG score, ML E pillar score, ML S pillar score and ML G pillar score. Main explanatory variables are: total institutional ownership (*IO*), mutual funds' ownership (MF), hedge funds' ownership (*HF*), banks' ownership (*Bank*), insurance companies' ownership (*Insurance*), advisers' ownership (*Adviser*), and other institutional ownership (*other IO*). Control variables (not reported in the tables for brevity) are Size, Leverage, MB, TobinQ, ROA, Dividend, AnalystCov, and lagged dependent variable. The OLS models control for year and industry fixed effects; standard errors are clustered by firm and reported in parentheses. \*, \*\* and \*\*\* indicate statistical significance at less than the 10%, 5%, and 1% levels, respectively.

Panel A	ESG	ESG	Е	Е	S	S	G	G
10k	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IO t-1	-0.0211	(-/	-0.0318		0.0002	(-)	0.0125	(0)
	(0.044)		(0.026)		(0.027)		(0.010)	
MF t-1	(01011)	-0.0474	(0.020)	-0.1753**	(01027)	0.1142	(01010)	0.0292
		(0.123)		(0.079)		(0.076)		(0.028)
HF t-1		-0 1544		-0.0998		-0.0407		0.0081
		(0.123)		(0.072)		(0.077)		(0.026)
Bank t-1		0.2801		-0.1672		0 3273***		0.1453***
Dalik (-1		(0.186)		(0.118)		(0.120)		(0.044)
Incurance t 1		(0.160)		0.0522		0.2067		0.0825
insurance t-1		0.2052		(0.0323)		(0.191)		(0.071)
Advisor t 1		0.0505		0.0405		0.0806*		0.0144
Adviser t-1		(0.0303)		0.0403		-0.0890		-0.0144
Other IO t 1		(0.087)		0.0026		(0.031)		0.0067
Other IO t-1		(0.116)		0.0920		-0.0234		-0.0067
C: + 1	0.0006	(0.110)	0.0100***	(0.007)	0.0000***	(0.072)	0.0002***	(0.023)
Size t-1	-0.0006	-0.0043	0.0188***	0.0207***	-0.0222	-0.0270	$(0.0082^{****})$	(0.0071
T (1	(0.009)	(0.009)	(0.006)	(0.006)	(0.005)	(0.005)	(0.002)	(0.002)
Leverage t-1	0.0350	0.0403	0.0938***	0.0926**	-0.0413*	-0.0358	-0.0216**	-0.0205**
	(0.048)	(0.048)	(0.036)	(0.036)	(0.025)	(0.025)	(0.010)	(0.010)
MB t-1	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	0.0000**	0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TobinQ t-1	-0.0001***	-0.0001***	-0.0001***	-0.0001***	-0.0000	-0.0000	-0.0000**	-0.0000**
2011	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA t-1	0.0675	0.0670	0.0483*	0.0471*	0.0076	0.0083	0.0046	0.0052
	(0.050)	(0.050)	(0.026)	(0.026)	(0.032)	(0.032)	(0.010)	(0.010)
Dividend t-1	-0.0334	-0.0408*	-0.0105	-0.0077	-0.0181	-0.0262**	0.0022	-0.0001
	(0.022)	(0.022)	(0.013)	(0.013)	(0.013)	(0.013)	(0.005)	(0.005)
AnalystCov								
t-1	0.0447***	0.0394**	-0.0277***	-0.0241**	0.0538***	0.0461***	0.0123***	0.0107***
	(0.016)	(0.016)	(0.010)	(0.010)	(0.010)	(0.010)	(0.003)	(0.003)
ESG t-1	$0.8887^{***}$	$0.8886^{***}$						
	(0.009)	(0.009)						
E t-1			0.8941***	0.8938***				
			(0.016)	(0.016)				
S t-1					0.9044***	0.9044***		
					(0.008)	(0.008)		
G t-1							0.8463***	0.8461***
							(0.013)	(0.013)
Intercept	1.2422***	1.2599***	0.7009***	0.6911***	0.4785***	0.5035***	-0.0208	-0.0147
	(0.160)	(0.158)	(0.138)	(0.135)	(0.093)	(0.091)	(0.030)	(0.031)
Ν	42851	42851	42851	42851	42851	42851	42851	42851
R2	0.872	0.872	0.892	0.892	0.893	0.893	0.787	0.787

Table 4. Cont'd.									
Panel B	ESG	ESG	Е	Е	S	S	G	G	
10K1	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
IO t-1	0.0558		-0.0483		0.0704		0.0459**		
	(0.084)		(0.046)		(0.058)		(0.019)		
MF t-1	(01001)	0 1227	(01010)	-0 1952	(01000)	0 2824*	(01017)	0.0607	
		(0.239)		(0.126)		(0.167)		(0.057)	
HE t-1		-0.2285		-0.1445		-0.0830		0.0086	
111 (-1		(0.250)		(0.144)		(0.168)		(0.052)	
Bank t 1		0.0015**		0.0411		0.6202**		0.208/***	
Dalik t-1		(0.261)		(0.212)		(0.250)		(0.008)	
Incurrence t 1		(0.301)		0.0496		(0.230)		(0.098)	
insurance t-1		(0.5760)		(0.0480)		(0.412)		-0.1452	
Advisor t 1		(0.343)		(0.273)		(0.413)		0.0015	
Adviser t-1		-0.1190		-0.0250		-0.0985		-0.0013	
Other IO t 1		(0.100)		(0.098)		(0.110)		(0.038)	
Other IO t-1		0.1657		0.1105		0.0434		(0.0231	
Controlo	v	(0.235)	v	(0.150)	V	(0.160)	V	(0.049)	
Controls	A 1 120 (***	A 1 1074***	A 0. (201***	A 0. (22.4***	A 0.5222***	A 0.5007***	A 0.0707	A 0.0000	
Intercept	1.1306***	1.18/4***	0.6301***	0.6324***	0.5323***	0.580/***	-0.0797	-0.0689	
	(0.224)	(0.218)	(0.185)	(0.181)	(0.141)	(0.143)	(0.059)	(0.059)	
N	40929	40929	40929	40929	40929	40929	40929	40929	
R2	0.911	0.911	0.918	0.918	0.922	0.922	0.826	0.826	
10K1A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
IO t-1	-0.0627		-0.0160		-0.0127		-0.0359**		
	(0.050)		(0.033)		(0.029)		(0.014)		
MF t-1		-0.2099		-0.1550		0.0079		-0.0476	
		(0.140)		(0.095)		(0.089)		(0.038)	
HF t-1		-0.0159		-0.0202		-0.0399		0.0399	
		(0.130)		(0.089)		(0.082)		(0.032)	
$\mathbf{D} = \mathbf{u} 1 \mathbf{c} \mathbf{c} 1$		0 4521*		-		0.0101		0 1050	
Bank t-1		-0.4531*		0.5382***		0.0191		0.1059	
T . 1		(0.240)		(0.155)		(0.136)		(0.074)	
Insurance t-1		1.011/**		0.9077***		-0.0726		0.0474	
		(0.424)		(0.319)		(0.193)		(0.118)	
Advisor t 1		0.0126		0.0711		0.0106		-	
Auvisei t-1		-0.0120		(0.0(1))		-0.0100		(0.027)	
Other IO t 1		(0.093)		(0.004)		(0.055)		(0.020)	
Other IO t-1		-0.0011		0.0491		0.0001		-0.0337	
Controlo	v	(0.117)	v	(0.081)	V	(0.075)	V	(0.052)	
Latencent	A 2.0402***	A 2.024C***	A 0.7510**	A 0.7240**	A 0.055***	A 0.7017***	A 0.9025***	A	
Intercept	2.0492***	2.0340****	0.7519**	0.7240**	0.0955****	0.7017***	0.8035****	0.8180***	
N	(0.415)	(0.415)	(0.310)	(0.310)	(0.249)	(0.249)	(0.120)	(0.120)	
N D2	34/01	34/01	34/01	34/01	34/01	34/01	34/01	34/01	
<u>K2</u>	0.786	0.786	0.843	0.843	0.641	0.641	0.690	0.690	
10K/	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
IO t 1	0.0045***		0.0077		- 0.0670***		- 0.0255***		
101-1	-0.0943		-0.0077		$(0.0070^{11})$		(0.0233)		
ME t-1	(0.051)	-0.0636	(0.019)	0.0114	(0.018)	-0.0747	(0.008)	-0.0110	
IVII t-1		(0.077)		(0.0114)		(0.046)		(0.021)	
HF t-1		0.0434		-0.0220		0.0532		0.0074	
111 (-1		(0.0434)		(0.042)		(0.058)		(0.019)	
Bank t-1		0.1638		(0.042)		0.1801***		(0.017)	
Dank t-1		(0.1050		(0.068)		(0.065)		(0.0292)	
Insurance t 1		(0.100)		0.0570		0.0695		0.0620	
insurance t-1		(0.127)		(0.074)		-0.0093		-0.0020	
		(0.137)		(0.074)		(0.091)		(0.039)	
Advisor t 1		-		0.0188		-		0.0003	
Adviser t-1		(0.048)		(0.026)		(0.033)		(0.011)	
		(0.040)		(0.020)		(0.055)		(0.011)	
Other IO t 1		-0.1538*		0.0134		-0.1107*		-	
0000101-1		(0.085)		(0.0154)		(0.058)		(0.021)	
Controls	v	(0.005) V	v	(0.0 <del>4</del> 3) V	v	(0.030) <b>V</b>	v	(0.021) V	
Intercent	A 0.//20***	A 0.4506***	A 0.2451***	A 0 2/78***	A 0.2320***	A 0 2441***	A 10.0086	-0.0107	
mercept	(0.006)	(0.007)	(0.075)	(0.074)	(0.059)	(0.059)	-0.0080	(0.021)	
N	(0.090)	(0.097)	(0.075)	(0.074)	(0.030)	(0.056)	(0.020)	(0.021)	
R2	0.670	0.670	0.715	0 715	0 582	0 582	147	0.600	
114	0.070	0.070	0./15	0.715	0.002	0.002	0.000	0.000	

Table 4. Cont'd.

**Table 5.** Institutional ownership and ESG disclosure from earnings calls (EC). The table reports the results of fixed-effects OLS regressions of institutional ownership in a firm on its ESG disclosure proxies. The dependent variable is one of four proxies of ESG disclosure from ECs: total ML ESG score, ML E pillar score, ML S pillar score and ML G pillar score. Main explanatory variables are: total institutional ownership (*IO*), mutual funds' ownership (MF), hedge funds' ownership (*HF*), banks' ownership (*Bank*), insurance companies' ownership (*Insurance*), advisers' ownership (*Adviser*), and other institutional ownership (*other IO*). Control variables (not reported in the tables for brevity) are Size, Leverage, MB, TobinQ, ROA, Dividend, AnalystCov, and lagged dependent variable. The OLS models control for year and industry fixed effects; standard errors are clustered by firm and reported in parentheses. \*, \*\* and \*\*\* indicate statistical significance at less than the 10%, 5%, and 1% levels, respectively.

EC	ESG	ESG	Е	Е	S	S	G	G
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IO t-1	- 0 5939***		- 0 2764***		-0.2636**		- 0 1044***	
1011	(0.141)		(0.066)		(0.111)		(0.025)	
MF t-1		0.2563	()	0.0411		0.3159		-0.0324
		(0.345)		(0.147)		(0.274)		(0.062)
HF t-1		-0.1138		-0.3333**		0.1470		0.2255***
		(0.334)		(0.147)		(0.275)		(0.068)
Bank t-1		-0.7134		-0.2376		-0.4174		-0.2049*
		(0.560)		(0.237)		(0.444)		(0.111)
Insurance t-1		-1.5778**		-0.6809**		-0.7809		-0.5454**
		(0.762)		(0.301)		(0.609)		(0.253)
Adviser t-1		0.7141***		-0.1744		-0.4609**		0.1710***
		(0.255)		(0.115)		(0.206)		(0.046)
Other IO t-1		-0.4699		-0.2242		-0.2086		-0.1409**
		(0.329)		(0.150)		(0.265)		(0.063)
Size t-1	-0.0263	-0.0336	0.0235**	0.0210*	-0.0406**	-0.0458**	0.0001	0.0012
	(0.026)	(0.027)	(0.011)	(0.011)	(0.021)	(0.022)	(0.005)	(0.005)
Leverage t-1	- 0.6959***	- 0.6880***	-0.0777	-0.0602	- 0.5849***	- 0.5909***	- 0.0857***	- 0.0959***
C	(0.132)	(0.134)	(0.067)	(0.067)	(0.106)	(0.107)	(0.022)	(0.022)
MB t-1	-0.0013*	-0.0013*	-0.0002	-0.0002	-0.0011	-0.0011*	0.0000	0.0000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
TobinQ t-1	0.1774***	0.1721***	0.0237**	0.0214**	0.1453***	0.1419***	0.0134***	0.0138***
	(0.026)	(0.026)	(0.010)	(0.010)	(0.021)	(0.021)	(0.004)	(0.004)
	-	-	-	-	-	-	-	-
ROA t-1	1.0563***	1.0509***	0.3513***	0.3650***	0.6612***	0.64/3***	0.1861***	0.1/48***
Dividend t 1	(0.229)	(0.230)	(0.096)	(0.097)	(0.184)	(0.184)	(0.035)	(0.034)
Dividend t-1	$-0.1200^{\circ}$	(0.064)	(0.0280)	(0.028)	-0.0737	-0.0070	(0.011)	(0.012)
AnalystCov t-1	0.0337	0.0134	-0.0485**	-0.0583**	0.0585	0.0461	-0.0207**	-0.0126**
Analysicov t-1	(0.052)	(0.052)	(0.023)	(0.023)	(0.041)	(0.0401)	(0.010)	(0.010)
FSG FC t-1	0.6981***	0.6980***	(0.023)	(0.023)	(0.041)	(0.040)	(0.010)	(0.010)
LSO_LC (-1	(0.008)	(0.007)						
F FC t-1	(0.008)	(0.007)	0 7335***	0 7332***				
E_EC (-1			(0.015)	(0.015)				
S EC t-1			(0.015)	(0.015)	0 7017***	0 7015***		
5_LCT1					(0.008)	(0.008)		
G EC t-1					(0.000)	(0.000)	0.4330***	0.4321***
							(0.021)	(0.021)
Intercept	5.8294***	5.8850***	3.3419***	3.3543***	2.0292***	2.0745***	0.7616***	0.7640***
-	(1.401)	(1.397)	(1.022)	(1.023)	(0.470)	(0.466)	(0.136)	(0.136)
Ν	33982	33982	33982	33982	33982	33982	33982	33982
R2	0.643	0.643	0.635	0.635	0.665	0.665	0.275	0.275

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Table 5. Cont <sup>°</sup> d.											
Panel B	ESG	ESG	Е	Е	S	S	G	G			
EC PRE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
IO t-1	-0.4076**		-0.4236***		-0.0178		-0.0083				
	(0.193)		(0.087)		(0.159)		(0.037)				
MF t-1		0.5784		-0.1277		0.7610*		0.0733			
		(0.497)		(0.204)		(0.417)		(0.101)			
HF t-1		0.5905		-0.2046		0.6034		0.2427**			
		(0.490)		(0.188)		(0.415)		(0.105)			
Bank t-1		-0.6832		-0.1712		-0.4955		-0.0890			
		(0.826)		(0.311)		(0.680)		(0.183)			
Insurance t-											
1		-1.7976		-1.2567***		-0.3817		-0.6311**			
		(1.165)		(0.435)		(0.929)		(0.322)			
Adviser t-1		-0.8161**		-0.3300**		-0.4911		-0.1301*			
		(0.362)		(0.148)		(0.307)		(0.071)			
Other IO t-											
1		-0.4258		-0.4272**		0.0100		0.0253			
		(0.470)		(0.189)		(0.398)		(0.099)			
Controls	Х	X	Х	X	Х	X	Х	X			
Intercept	5.5919***	5.6624***	3.7169**	3.7220**	1.3784*	1.4516**	0.7104***	0.7267***			
1	(2.114)	(2.109)	(1.654)	(1.657)	(0.731)	(0.722)	(0.249)	(0.249)			
Ν	33979	33979	33979	33979	33979	33979	33979	33979			
R2	0.609	0.609	0.583	0.583	0.628	0.628	0.221	0.221			
EC QNA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
IO t-1	-0.8206***		-0.2742***		-0.3733***		-0.3342***				
	(0.179)		(0.094)		(0.133)		(0.037)				
MF t-1	. ,	-0.1679		0.0016		0.1105		-0.2678***			
		(0.402)		(0.187)		(0.310)		(0.075)			
HF t-1		-0.8005*		-0.7593***		-0.1199		0.2489***			
		(0.412)		(0.214)		(0.318)		(0.080)			
Bank t-1		-0.8902		-0.4134		-0.2250		-0.4961***			
		(0.694)		(0.335)		(0.529)		(0.150)			
Insurance t-				. ,				· · · ·			
1		-2.5043***		-0.6744		-1.4899**		-0.6982***			
		(0.952)		(0.419)		(0.748)		(0.173)			
Adviser t-1		-0.6422*		0.0164		-0.4749*		-0.3725***			
		(0.330)		(0.170)		(0.250)		(0.068)			
Other IO t-				× /							
1		-0.2555		-0.0280		-0.1660		-0.3582***			
		(0.403)		(0.225)		(0.303)		(0.076)			
Controls	Х	X	Х	X	Х	X	Х	X			
Intercept	7.7941***	7.8507***	4.7797***	4.7883***	2.8548***	2.9072***	1.0202***	1.0147***			
· · · · · ·	(1.310)	(1.310)	(1.021)	(1.025)	(0.493)	(0.491)	(0.130)	(0.132)			
Ν	33749	33749	33749	33749	33749	33749	33749	33749			
R2	0.478	0.478	0.483	0.483	0.504	0 504	0.209	0.209			

## Table 5. Cont'd.

**Table 6.** Institutional ownership and environmental (E) policies from 10-K and EC. The table reports the results of fixed-effects OLS regressions of institutional ownership in a firm on its environmental (E) policy disclosure proxies. Panel A report results with E policy disclosure from 10-Ks and Panel B – E policy disclosure from earnings calls (EC). Main explanatory variables are: total institutional ownership (*IO*), mutual funds' ownership (MF), hedge funds' ownership (*HF*), banks' ownership (*Bank*), insurance companies' ownership (*Insurance*), advisers' ownership (*Adviser*), and other institutional ownership (*other IO*). Control variables (not reported in the tables for brevity) are Size, Leverage, MB, TobinQ, ROA, Dividend, AnalystCov, and lagged dependent variable. The OLS models control for year and industry fixed effects; standard errors are clustered by firm and reported in parentheses. \*, \*\* and \*\*\* indicate statistical significance at less than the 10%, 5%, and 1% levels, respectively.

Panel A	10k E	10k E	10k1 E	10k1 E	10k1A E	10k 1A E	10k7 E	10k7 E
EC E policy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IO t-1	-0.0226***		-0.0461***		-0.0106		-0.0096**	
	(0.006)		(0.017)		(0.008)		(0.005)	
MF t-1		-0.0450***		-0.1516***		-0.0339***		-0.0028
		(0.016)		(0.048)		(0.012)		(0.012)
HF t-1		-0.0356**		-0.0953*		-0.0117		-0.0124
		(0.015)		(0.053)		(0.012)		(0.013)
Bank t-1		-0.0208		-0.0176		-0.0098		-0.0004
		(0.028)		(0.086)		(0.021)		(0.016)
Insurance t-1		-0.0298		0.0028		-0.0190		-0.0119
		(0.040)		(0.109)		(0.022)		(0.019)
Adviser t-1		-0.0107		-0.0200		-0.0002		-0.0066
		(0.012)		(0.036)		(0.009)		(0.007)
Other IO t-1		0.0125		0.0665		0.0023		-0.0079
		(0.016)		(0.049)		(0.013)		(0.015)
Size t-1	0.0056***	0.0057***	0.0165***	0.0165***	0.0041***	0.0043***	0.0015	0.0014
	(0.001)	(0.001)	(0.004)	(0.004)	(0.001)	(0.002)	(0.001)	(0.001)
Leverage t-1	0.0046	0.0049	0.0318*	0.0320*	-0.0010	-0.0010	0.0088	0.0094
	(0.007)	(0.007)	(0.017)	(0.017)	(0.005)	(0.005)	(0.008)	(0.008)
MB t-1	-0.0000**	-0.0000*	-0.0000	-0.0000	0.0000	0.0000	-0.0000***	-0.0000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TobinQ t-1	-0.0000	-0.0000	0.0000	0.0000	-0.0000*	-0.0000*	-0.0000**	-0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA t-1	0.0104**	0.0101**	0.0211*	0.0209*	0.0040	0.0038	0.0031	0.0029
	(0.004)	(0.004)	(0.011)	(0.011)	(0.003)	(0.003)	(0.003)	(0.003)
Dividend t-1	-0.0047	-0.0049	-0.0102	-0.0105	-0.0033	-0.0032	-0.0023	-0.0029
	(0.003)	(0.003)	(0.010)	(0.010)	(0.002)	(0.002)	(0.002)	(0.002)
AnalystCov t-								
1	0.0030	0.0031	0.0073	0.0083	0.0008	0.0012	-0.0008	-0.0012
	(0.002)	(0.002)	(0.007)	(0.007)	(0.002)	(0.001)	(0.001)	(0.001)
E 10k t-1	0.8322***	0.8320***						
	(0.020)	(0.020)						
E = 10V1 + 1	(0.020)	(0.020)	0 9670***	0 9667***				
E 10K1 t-1			(0.012)	(0.012)				
E = 10V1A + 1			(0.013)	(0.013)	0.4240***	0 4229***		
E IUKIA I-I					(0.040)	(0.040)		
E = 10 V7 + 1					(0.049)	(0.049)	0 7449***	0 7449***
E 10K/ t-1							(0.024)	(0.024)
Intercont	0 1190**	0 1192**	0 1760**	0 1747**	0 1251***	0 1225***	0.0262***	0.0347
intercept	(0.047)	(0.047)	(0.086)	(0.083)	(0.022)	(0.022)	(0.006)	(0.006)
N	(0.047)	(0.047)	40020	40020	34761	34761	(0.000)	(0.000)
D7	42031	42031	40929	40929	0 227	0 227	42149 0 526	42149
κ <i>L</i>	0.090	0.090	0.700	0.701	0.227	0.227	0.520	0.520

Tuble of contra	
Panel B EC all EC all EC PRE EC PRE EC QNA	EC QNA
EC E policy $(1)$ $(2)$ $(3)$ $(4)$ $(5)$	(6)
IO t-1 -0.0702*** -0.1300*** 0.0012	
(0.019) (0.037) (0.004)	
MF t-1 -0.0380 -0.0749	0.0004
(0.040) (0.075)	(0.012)
(0.040) (0.075) (0.0	0.002
(0.036) (0.066)	(0.012)
Bank t-1	(0.012)
Dalik (-10.05360.052 (0.064) (0.121)	(0.019)
Insurance t-1	0.0378
(0.075) (0.147)	(0.030)
Adviser t-1	0.0072
(0.029) (0.055)	(0.009)
Other IO t-1 -0 0790** -0 1244*	-0.0083
(0.040) (0.074)	(0.010)
Size t-1 0.0169*** 0.0168*** 0.0328*** 0.0320*** 0.0016**	0.0017**
	(0.001)
Leverage t-1 0.0187 0.0216 0.0283 0.0341 0.0029	0.0031
	(0.004)
MB t-1 -0.0000 -0.0000 -0.0001 -0.0001 -0.0000	-0.0000
(0.000) (0.000) (0.000) (0.000) (0.000)	(0.000)
TobinQ t-1 -0.0026* -0.0028* -0.0062** -0.0066** 0.0011**	0.0011**
(0.001) (0.001) (0.003) (0.003) (0.001)	(0.001)
ROA t-1 0.0384*** 0.0359*** 0.0508** 0.0465** 0.0175***	0.0169***
(0.013) $(0.013)$ $(0.023)$ $(0.023)$ $(0.004)$	(0.004)
Dividend t-1 -0.0012 -0.0028 -0.0037 -0.0074 0.0052**	0.0052**
(0.007) $(0.007)$ $(0.013)$ $(0.014)$ $(0.002)$	(0.002)
AnalystCov t-1 0.0107* 0.0096* 0.0104 0.0080 0.0107***	0.0107***
(0.006) $(0.006)$ $(0.010)$ $(0.010)$ $(0.002)$	(0.002)
E EC t-1 0.5310*** 0.5310***	
(0.020) (0.020)	
(0.030) (0.030) E EC DE t 1 0 5327*** 0.5327***	
(0.030) $(0.030)$	
E EC ONA t-1 (0.050) (0.050) 0 5239***	• 0 5237***
0.323) (0.062)	(0.062)
Intercent $-0.0407 = 0.0431 = 0.0962* 0.0957* 0.0126$	0.0106
(0.028)  (0.029)  (0.055)  (0.055)  (0.012)	(0.012)
N 33982 33982 33979 33079 33749	33749
$R^2$ 0.286 0.286 0.291 0.291 0.194	0.194

## Table 6.Cont'd