# Essays on Visual Communication and Corporate Shareholder Engagement


*Thesis submitted for the degree of*

***Doctor of Philosophy***

*by*

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June 2025

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# DECLARATION

I, Zan Li confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

# ACKNOWLEDGEMENTS

First and foremost, I would like to express my deepest gratitude to my supervisor, Prof. Pawel Bilinski and Dr. Jay Jung, for their invaluable guidance, support, and encouragement throughout my PhD journey. Their insightful feedback, patience, and expertise have been instrumental in shaping this research and helping me grow as a researcher.

I would also like to extend my sincere appreciation to the faculty of the Bayes Business School, all members of the accounting group, and my fellow PhD colleagues for their support, insightful discussions and comments on my research, and encouragement. Their feedback and collaboration have enriched my research experience and made this journey more rewarding. I am also grateful to Malla Pratt and Abdul Momin for their support and assistance in facilitating my PhD studies.

To my parents, your unwavering love, patience, and encouragement have been my greatest source of strength. Your belief in me has been a constant motivation, and I could not have reached this milestone without you.

Lastly, I would like to acknowledge all those who have contributed to my academic and personal growth during this journey. Though I may not be able to mention each one by name, please know that your support has been deeply appreciated.

**Contents**

**List of Figures**

**List of Tables**

# Essays on Visual Communication and Corporate Shareholder Engagement


## Abstract

This thesis empirically examines the impact of corporate visual communication strategies and of corporate shareholder engagement on key market participants. Corporate shareholder engagement involves a dialogue between managers and shareholders through meetings, roundtables, and shareholder surveys. In this thesis, I focus on the impact of direct communication between shareholders and the firm – corporate shareholder engagement – on (i) analyst assessment of a firm's prospects and (ii) on institutional investors' holdings. Additionally, I integrate insights from the psychology literature to investigate whether mood images (information-free graphical elements) included in an annual report influence shareholders' vote on the say-on-pay (SOP) proposals.

The thesis is based on three chapters. The first chapter examines whether mood images (information-free graphical elements) included in an annual report influence shareholder votes on the say-on-pay (SOP) proposals. We find that, on average, mood images promote heuristic decision-making and enhance shareholder voting support for the SOP proposal. However, when shareholders face cognitive dissonance due to the presence of signals that conflict with the managers' pay proposal, they evaluate the SOP proposal more critically. This, in turn, negates the positive effect that mood images have on shareholder SOP support. Our findings reveal the contingent nature of the effect of mood images on shareholder voting behavior consistent with the cognitive dissonance theory.

The second chapter examines if direct communication between a firm and shareholders to exchange information and solicit shareholder views – corporate shareholder engagement – affects analyst assessment of a firm's prospects. As a quasi-natural experiment that increases a firm's

shareholder engagement activities, we use Institutional Shareholder Services (ISS) investigation of corporate engagement activities. We find an increase in earnings forecast optimism for firms subject to ISS investigation and a reduced likelihood an analyst will terminate coverage of such firms. However, forecast accuracy decreases for these firms, which suggests actual earnings do not match up to more optimistic analyst views. The results are present only for firms subject to ISS investigation for the first time. Overall, the findings suggest that analysts consider firm corporate shareholder engagement to have a positive effect on firm performance. However, analysts overweight the impact of corporate engagement on earnings resulting in inaccurate earnings forecasts.

In the third chapter, we examine whether direct communication between a firm and shareholders to exchange information and solicit shareholder views – corporate shareholder engagement – affect institutional ownership. We answer this question using a quasi-natural experiment that increases a firm's shareholder engagement activities – the Institutional Shareholder Services (ISS) investigation of a firm's corporate engagement activities. We document that a positive shock to corporate shareholder engagement has a positive effect on institutional holdings. This effect is driven by changes in ownership by transient investors, who benefit from increased transparency and the ability to speak with the firm more directly. The effect is more pronounced for smaller firms, which typically have less developed forms of communicating with investors. Overall, the findings suggest that institutional investors consider firm corporate shareholder engagement in their portfolio allocation decisions.

# Chapter 1: Using 'mood images' in an annual report to influence shareholder Say-On-Pay votes*

**Abstract**

We examine whether mood images (information-free graphical elements) included in an annual report influence shareholder votes on the say-on-pay (SOP) proposals. We find that, on average, mood images promote heuristic decision-making and enhance shareholder voting support for the SOP proposal. However, when shareholders face cognitive dissonance due to the presence of signals that conflict with the managers' pay proposal, they evaluate the SOP proposal more critically. This, in turn, negates the positive effect that mood images have on shareholder SOP support. Our findings reveal the contingent nature of the effect of mood images on shareholder voting behavior consistent with the cognitive dissonance theory.

*Keywords*: mood image, shareholder vote, proxy advisor, cognitive dissonance

*JEL Codes*: D72, G18, G38, M12

* We appreciate helpful comments and suggestions from Aiyesha Dey, Morris Liu (discussant), Wei Jian (discussant), Daisy Wang (discussant), Sue Wright (discussant), Eric Weisbrod (discussant) and seminar participants at City, University of London, British Accounting Review Inaugural Annual Conference, British Accounting Review Global Conference, China International Conference in Finance, European Accounting Association Annual Conference, and American Accounting Association Annual Meeting. We have no conflicts of interest to declare. All errors are our own.

## 1.1. Introduction

The psychology literature has long recognized that humans associate images with feelings and emotions, which in turn influence their perceptions, attitudes, and behavior (Cho et al., 2007). Mood images — cosmetic and information-free graphical elements, such as a picture of a smiling person, a photo of a sunny day or happy children — affect individuals' attention and arouse emotional responses (Decrop, 2007).[1] Emotional responses have been linked with variations in mood and cognitive processing, and in turn with decision making.[2] Festinger (1957) proposes that cognitive consistency in signals that individuals receive, such as the consistency between a firm's reputation and images on its products, promotes feelings of content and positive mood leading to heuristic approaches to processing information and less critical decision making. Consistently, Clore et al. (2014), Bagozzi et al. (1999), and Batra and Stayman (1990) document that consumers overweight positive outcomes and underweight negative outcomes and are less critical of advertisements when they are in a good mood (e.g., prompted by colorful product adverts) and do not face conflicting signals (e.g., negative media coverage of the firm). Cognitive consistency is essential to achieve the desired effect of using mood images to promote decision making consistent with the firm's intent, e.g., promote a purchase of a product with a colorful and attractive design.

Individuals experience cognitive dissonance when they face negative or conflicting stimuli that create feelings of unease and tension. These negative emotions in turn promote a more critical and analytical approach to decision making. Cognitive dissonance motivates individuals to engage in actions to reduce the negative emotional state that entail (1) changing cognitions, which includes altering initial cognitions, developing new beliefs, attitudes, and behavior, e.g., through

[1] We include examples of mood images in Appendix A.

[2] Images influence consumer attitude (Mitchell, 1986), emotional responses to products (Chowdhury et al., 2008), purchase behavior (Madzharov and Block, 2010; Underwood and Klein, 2002), and shape perceptions of a company and its brand (Alba and Hutchinson, 1987; Keller, 2001; Zaltman and Coulter, 1995). Marketing (Chernev, 2011; Mishra and Mishra, 2011; Wansink and Chandon, 2006) and corporate brand communication (McQuarrie and Phillips, 2008; Wedel and Pieters, 2007) routinely harness the influence of mood images on consumer behavior.

information searches and analytical processing of information, and (2) adjusting the importance of the cognitions, which includes reweighing the importance of different pieces of information (Hinojosa et al., 2017). Actions aimed to reduce cognitive dissonance can lessen the effect mood images have on promoting positive mood and heuristic decision making. For example, these actions can lead to a more critical evaluation of the product, which negates the intended effect advertising has on inducing positive emotions that promote heuristic behavior and product purchase.[3]

This study builds on the cognitive dissonance theory to examine the effect of mood images through the lens of shareholder voting in the annual general meeting (AGM). We examine the say-on-pay (SOP) vote in which shareholders approve the compensation package of top management — a routine AGM vote that reflects shareholder support for the managerial team (Dey et al., 2023; Ertimur et al., 2013; Malenko and Shen, 2016). We focus on the role of mood images in the annual report.[4] We motive this choice twofold. First, the Securities Exchange Act of 1934 legally obliges companies to post annual reports on their corporate website and to distribute them to shareholders before an annual meeting. Hard copies of annual reports are also routinely distributed during the annual meeting. Thus, we can be confident that shareholders have access to the annual report when deciding on how to exercise their votes at the AGM. Second, the annual report is an important corporate marketing tool (Anderson and Imperia, 1992; Bekey, 1990; Neu et al., 1998). Firms tailor the annual report content, e.g., the use of images, to achieve strategic objectives, such as to promote positive corporate image. The strategic use of images to generate

[3] For example, consumers are more likely to critically evaluate a product and their purchase decision when a company has a negative public reputation, even if the product is accompanied by positive advertising. Consistently, Pruitt and Friedman (1986) and Chavis and Leslie (2009) document a negative effect consumer boycotts have on sales, and Hunter et al. (2008) document that Danone struggled to reduce French consumer boycott in 2001 of its products (triggered by company layoffs to reduce costs) through increased advertising, social media campaigns, and social measures aimed at workers.

[4] The annual report is a comprehensive report prepared annually for shareholders that reports on the firm's operations and financial performance over the previous fiscal year and showcases managers' strategy and vision for the future. Typically, the annual report includes (1) a letter from the president or CEO, (2) performance highlights from the preceding year, (3) financial statements and (4) performance and outlook for future years.

a positive impression of the firm can in turn influence shareholder AGM voting. Grove-Ditlevsen (2012) highlights that "visual elements are used strategically in annual reports to construct a corporate identity that is aligned with company strategy in order to position companies as attractive to investors and other stakeholders." Beattie and Jones (1992) identify the selectivity in the use of graphs in annual reports as a strategic decision to obfuscate the communication process. Nekrasov et al. (2022) find that visuals in firms' Twitter earnings announcements increase attention to the earnings news. They document that firms are more likely to use visuals in their earnings tweets when performance is favorable but less persistent, which is consistent with managerial opportunism. Importantly, there is no regulation constraining the use of mood images in an annual report. This contrasts with the 10-K filing, whose format and content is regulated by the Securities and Exchange Commission (SEC) and devoid of mood images. We expect that firms use mood images to affect shareholders' perception of the firm. This in turn can affect shareholder voting for the SOP proposal at the AGM.[5]

We conjecture that mood images in an annual report promote positive emotions and heuristic decision-making. This in turn can garner shareholder support for managerial views and proposals at the AGM. However, this positive association is subject to cognitive dissonance when shareholders receive signals inconsistent with the positive impression conveyed through the images. As the positive impression of mood images clashes with other signals shareholder receive, the resultant dissonance will evoke a more critical evaluation of managerial compensation proposals, which we predict will result in a less favorable SOP proposal support.

It is not obvious that (1) mood images will affect shareholder voting and (2) that the effect of mood images on shareholder voting will vary depending on the presence of conflicting signals. Mood images may have a limited impact on shareholder votes for at least two reasons. First,

[5] We do not claim that managers use mood images specifically to influence shareholder SOP vote. Rather, mood images create a positive image of the firm which promotes shareholder votes in line with the managerial objective, such as supporting the SOP vote. We focus on SOP because it is a routine vote across firms and time, thus not being influenced by specificity of unique votes such as on an M&A proposal.

shareholders tend to be financially sophisticated and often have a finance background or experience that is necessary to invest in capital markets (Sias et al., 2006). Furthermore, investors allocate a non-trivial amount of their wealth to stock investments and their stock selection follows significant research about the firm and the managerial team. To the extent that firm-specific knowledge informs their investment decision, shareholders would be less influenced by a firm's strategic use of mood images in the annual report. Second, prior research documents that individuals devote more attention and scrutiny to issues that they are more involved in, such as their stock investment (Dhanesh and Nekmat, 2019; Park et al., 2007; Worthington et al., 2015). Thus, it is possible that investors are not subject to a negative emotional state induced by signal inconsistency and thus, cognitive dissonance may not affect their SOP votes. This tension motivates us to examine this question empirically.

To speak about the causal effect that mood images in an annual report have on shareholder SOP votes, we utilize a quasi-natural experiment related to Institutional Shareholder Services' (ISS) investigation, which is our source of cognitive dissonance. ISS is the largest proxy advisor that provides voting recommendations to investors. Shu (2024) highlights that ISS has over 60% market share in the proxy advisory market, has over 1,600 institutional clients, and covers more than 44,000 shareholder meetings. Dey et al. (2023), Ertimur et al. (2013), and Malenko and Shen (2016) highlight the substantial influence of proxy advisors on voting outcomes. When the SOP voting support falls below the 70% threshold, ISS embarks on a qualitative review of the firm's shareholder engagement before the next meeting[6]. ISS requires the firm to showcase an effort to improve shareholder engagement in response to low shareholder voting support. At the next AGM,

[6] According to ISS's publicly disclosed U.S. Compensation Policies Frequently Asked Questions (FAQ, 2024), ISS commits to conducting an investigation for companies that receive less than 70% shareholder support on their Say-on-Pay (SOP) proposals in the subsequent annual meeting. Specifically, the policy states: "When a say-on-pay proposal receives less than 70% support of votes cast (for and against), ISS will conduct a qualitative review of the compensation committee's responsiveness to shareholder opposition at the next annual meeting." Therefore, for the firms in our sample with SOP voting support that falls just below the 70% threshold, ISS will initiate a formal investigation as part of its standard review process.

ISS evaluates the firm's engagement and can either issue a favorable SOP vote recommendation and cease monitoring of the firm or threaten to issue an unfavorable recommendation for the SOP proposal. ISS investigation, a highly visible external signal that shareholder support for the firm's compensation is low, conflicts with the positive impression promoted by the mood images in the annual report leading to cognitive dissonance.[7] ISS investigation commences after the AGM where the firm fails to reach the 70% threshold. We examine how it will affect shareholder SOP votes at the next AGM subject to the firm's use of mood images in the next fiscal year annual report.

The identification that we exploit relies on two facets. First, around the 70% threshold, receiving an ISS treatment is *random* (Dey et al., 2023). Thus, using firms just below and above the threshold as treatment and control firms, respectively, creates a quasi-random sample of firms with *similar* (observable and unobservable) characteristics that differ only with respect to the ISS investigation.[8] Thus, any changes in shareholder voting behavior in treated compared to control firms are only due to the randomized assignment of the ISS treatment, not due to omitted correlated variables. This allows us to causally link shareholder voting behavior with the use of mood images in treated compared to control firms.

Second, ISS monitors shareholder engagement and responses to shareholder queries, but not the content of an annual report or the firm's use of mood images. Thus, we should *not* observe a difference in the treatment firms' and control firms' use of mood images in annual reports, a result we confirm. We also do not find that treatment assignment changes future propensity of

[7] ISS investigation focuses on shareholder engagement and does not evaluate if managerial compensation is justifiable. Further, ISS investigation does not necessarily lead to an 'against' recommendation at the next AGM and can result in increased engagement and transparency that can promote higher SOP support. SOP votes are not binding and there is no SEC penalty for low voting support or low engagement with shareholders. Consequently, firms do not need to respond to ISS investigation nor change the way they communicate with shareholders to pass the compensation vote, as at the 70% threshold, firms already have the support to pass the SOP vote.

[8] Firms with and without dissonance signals at AGM could also be identified based on the signs of earnings news or ISS's recommendations for SOP proposals. However, such signals introduce selection bias as they are correlated with shareholder votes and other firm characteristics (Dey et al., 2023). Our setting avoids the selection bias concern by using firms almost randomly split into treatment firms (subject to ISS investigation, thus subject to cognitive dissonance) and control firms (not subject to ISS investigation, thus with congruent signals).

treated firms to use mood images compared to control firms. Thus, we find no evidence that the usage of mood images correlates with ISS investigation.[9] This finding is consistent with the random assignment of firms between treated and controls (Dey et al., 2023). This result gives us confidence that we observe how shareholders' cognitive dissonance in treated firms makes them perceive mood images in a different light compared to shareholders in control firms. In other words, ISS investigation is a shock to *shareholder perception* of mood images — it captures shareholders' emotional change from positive emotion induced by mood images to negative emotion caused by cognitive dissonance. Consequently, any differential effect of mood images on shareholder SOP votes between treatment and control firms comes solely from *investors'* heterogenous responses to mood images in annual reports, which is triggered by the presence of ISS investigation.

Third, though shareholders can observe if SOP votes are just below the threshold, the formal ISS investigation that missing this benchmark triggers sends a strong negative *public* signal that can affect both institutional and retail shareholders decision making.[10] Institutional investors' fiduciary duties and litigation risk promotes higher scrutiny of votes in companies subject to prominent public signals, such as ISS investigation (Hooghiemstra et al., 2015; Malenko et al., 2021). ISS investigation also attracts attention to the firm, which can trigger a more careful investor evaluation of the firm, including by retail investors (Dey et al., 2023).

Our careful selection of treatment and control firms within a close caliper around the 70% threshold controls for endogeneity in treatment assignment that could correlate with the usage of mood images and shareholder SOP voting. To further ensure we identify the true treatment effect

[9] In untabulated tests, we find no significant difference between treatment and control firms in terms of changes in the positioning of mood images within the annual report, i.e., the order of pages on which a mood image is displayed, or the size of mood images between meetings. We also manually examined if there are differences in the nature and type of images included in the annual reports for treated compared to control firms. However, we did not find any significant differences between the two groups. For differences in the nature of images to explain our main finding, treated firms would have to include images that evoke pessimistic and negative emotions, which is very unlikely.

[10] Dey et al. (2023) highlight the negative reputational effect of ISS investigation that prompts firms to increase shareholder engagement, transparency of CEO compensation and reduce total CEO pay compared to control firms.

and establish a *causal* effect that mood images have on shareholders' SOP votes, we focus on *changes* in the use of mood images and in SOP voting support between the current AGM, where an ISS investigation is triggered, and the next AGM. Compared to a levels model, a changes regression model factors out time invariant firm characteristics that could correlate with treatment assignment and shareholder votes.[11] In sum, the research design choices we make reinforce our confidence that we identify a causal relation between mood images and shareholder voting support for SOP proposals, conditional on the presence of cognitive dissonance.

To examine our research question, we use 408 U.S. firm-year-SOP voting outcome observations between 2011 and 2020. Our sample includes 198 treatment (210 control) observations (1) whose SOP voting outcomes — i.e., the percentage of shareholder votes for the SOP proposal — range between 67%–70% (70%–73%) in the current annual meeting and (2) that have a non-missing SOP voting outcome in an AGM within the next three years.[12] Using Python, we extract mood images from these firms' annual reports. We collect mood images included prior to the 10-K filing section in an annual report, as the content in the 10-K filing section strictly follows the SEC's regulations. 10-K format and content are also subject to the auditor's and SEC's scrutiny.[13]

We find a *positive* relation between changes in the number of mood images and changes in the SOP voting support for firms not subject to ISS investigation, which confirms that mood images have, on average, a positive effect on SOP voting support in the presence of cognitive *consistency*. This effect is economically significant: a firm not subject to ISS investigation that changes the usage of mood images between consecutive meetings by a one-standard-deviation

[11] The advantages of a changes model come at the cost of a lower testing power for identifying a statistically significant treatment effect when variables are 'sticky' (Wooldridge, 2010). This biases the tests against finding significant results.
[12] Most SOP votes are annual, but we allow up to three years between votes. Our conclusions do not change when we consider only SOP votes separated by one year.
[13] We draw a random sample of 100 annual reports and manually read their 10-K filing sections. We find that, of the 100 annual reports none includes a mood image in the 10-K filing section.

experiences a 22% increase in the SOP voting support between consecutive AGMs. However, when firms are subject to the ISS investigation, we find that the positive effect of mood images on shareholder voting support is muted. This evidence suggests that shareholders are affected differently by mood images in the presence of incongruent messages. Given that mood images positively affect individuals' perceptions, attitudes, and behaviors (Chowdhury et al., 2008; Madzharov and Block, 2010; Mitchell, 1986; Underwood and Klein, 2002), our results are in line with the cognitive dissonance theory that shareholders adopt a critical and analytical approach when confronted with conflicting signals, which results in a lower SOP voting support.

Next, we conduct additional tests to exclude alternative explanations. First, firms subject to ISS investigation may change the way they present financial information to shareholders in an annual report. For example, they can alter the tone and complexity of the language, which may influence shareholder voting in treatment firms, compared to control firms. We find that controlling for changes in the readability and the tone of annual reports between two consecutive AGMs does not change our inferences. Second, images that contain information — infographics, such as bar charts, pie graphs, and Venn diagrams (see Appendix B for examples) — in an annual report may affect shareholders' voting outcomes as they contain value-relevant financial information (Christensen et al., 2023) and their usage may correlate with mood images. We find that our results remain unchanged when we control for changes in the usage of infographics. Third, we construct variables for changes in other graphical features of the annual report and in the format of an annual report, such as bullet points, font size, font color, and the number of words. Controlling for changes in these graphical and textual features does not change our conclusions.

Cross-sectional analyses show that our findings on the asymmetric impact of mood images on SOP voting is more pronounced when the negative effect of cognitive dissonance on shareholders is stronger. This includes votes on firms with lower quality information environment, as captured by lower analyst coverage. In such firms, investors must spend more time and resources to acquire and process information to resolve cognitive dissonance. Further, the effect

is weaker for firms with higher institutional holdings, blockholder ownership, and domestic institutional ownership – these investors are more sophisticated and informed compared to retail or foreign investors, thus less likely to suffer from cognitive dissonance. The effect is also stronger when investor sentiment is more bearish and when the meeting takes place during winter. These are instances when investors are already in an unfavorable mood and more sensitive to negative stimuli. Our result is also stronger when the number of proposals that shareholders need to vote on in a meeting is high. Individuals facing several decisions have fewer resources they can devote to help them to resolve the cognitive dissonance, which can increase their frustration and negative emotional state promoting votes against managerial SOP proposal.

Our study makes several empirical and practitioner contributions. First, we extend the literature about the impact of images on human behavior to the annual report and shareholder voting at the AGM. Although the use of mood images in advertising and branding has received significant attention (e.g., (Amit et al., 2009; Peracchio and Meyers-Levy, 2005; Rim et al., 2015), no research has examined how mood images affect shareholder votes at annual general meetings.[14] Our study responds to Ang et al. (2020)'s call for research on the role of images in decision making - "A paucity of studies exists on the influence of photographs on attribute framing in the accounting and finance literature." Though we focus specifically on SOP votes, which is arguably among the most important and routine shareholder AGM votes, our results identify patterns likely

[14] Davison (2015) reviews the literature on the visual elements in annual reports. She emphasizes that the literature has examined impression management, visual rhetoric, professional identity, gender and diversity, corporate social responsibility, intellectual capital, myth, and religion expressed through visual elements. She emphasizes that research has focused on the use of mood images to change stereotypical views and identity. For example, Jeacle (2008) examines how UK Big Four firms use colorful pictures in their recruitment brochures to address the social stigma associated with accounting. The literature also examined how infographics can be used to convey or distort information. For example, Beattie and Jones (2002) use experiments to examine how distortions in financial graphs, through visual exaggeration of trends, influence decision-making. Davison (2015) highlights that most research linking visual elements with decision-making is based on small-scale experiments (Courtis, 2004; So and Smith, 2002; Stanton et al., 2004; Townsend and Shu, 2010) . It is an empirical question whether professional investors would be influenced by graphs and if one can find any large-scale evidence on systematic relation between visual elements and decision-making.

applying to other shareholder votes subject to cognitive dissonance highlighting generalizability of the findings.

Second, our research joins a growing literature on the use of visual elements in annual reports. Ben-Rephael et al. (2023) show that infographics that reinforce the textual narrative are associated with lower analyst forecast accuracy. Cao et al. (2023) document that infographics in executive presentations convey forward-looking information. Ronen et al. (2023) report that infographics can convey incremental information to the textual narrative. We examine the use of mood images, rather than infographics, in annual reports by listed U.S. companies and their impact on shareholder behavior.

Third, the practitioner contribution is in documenting how mood images can lead to shareholders' unintended and unfavorable voting behavior in the presence of cognitive dissonance. Our findings can help Investor Relations departments to better understand the importance of using graphical, information-free content in annual reports adequately to promote desirable shareholder voting for managerial proposals.

We recognize that our analysis does not distinguish the content of mood images. Thus, we cannot ascertain what content of the image, e.g., smiling people or photos of nature, affects shareholder perceptions. Thus, our study answers the question of whether on average mood images affect shareholder SOP votes. We believe that looking at the content of mood images with the help of digital image recognition can be an interesting future avenue for future research.

### 1.2. Literature review

This section first discusses the link between mood images and cognitive information processing. Second, we discuss the association between proxy advisors' recommendations and shareholder voting. Finally, we discuss the role of images in an annual report and link mood images with SOP voting outcomes.

### *1.2.1. Images in an annual report and cognitive processing*

Images can influence recipients' emotional state, which in turn affects their cognitive processing. Bodenhausen et al. (1994) and Schwarz (2012) report that positive mood promotes (1) heuristic decision making and (2) less attention to processing detailed information as individuals do not feel that even a suboptimal decision will have a significant negative effect on their wellbeing. In contrast, negative emotions signal threats, which calls for a more systematic and detailed evaluation of decisions. Consistently with mood affecting cognitive processing, studies document stronger negative customer reactions to negative, compared to positive, advertising messages and to corporate social responsibility disclosures (Chang and Lee, 2009; Chung and Lee, 2019; Dens et al., 2008).

### *1.2.2. Proxy advisors' recommendations and shareholder voting on Say-On-Pay*

The Dodd-Frank act (U.S. Securities and Exchange Commission, 2011) introduced the Say-On-Pay vote, which has increased the demand for proxy advisors' (PAs) advice. Based on the analysis of relevant policies, regulations, firms, industries, and discussions with market participants, PAs provide fee-based voting advice on AGM proposals to their clients. There are two large proxy advisors, Institutional Shareholder Services (ISS) and Glass Lewis (GL), that account for over 90% of the proxy advisor market share. Shu (2024) estimates the market share of ISS and GL are 63% and 28%, respectively, in 2017. Institutional investors are the primary clients of PAs and use ISS recommendations to meet their fiduciary duties to investors. Institutional investors face capacity constraint to analyze proposals on several companies in their highly diversified portfolios.

Previous literature provides evidence that PAs' recommendations are highly influential on shareholder voting decisions (e.g., Choi et al., 2009; Ertimur et al., 2013; Larcker et al., 2015; Malenko and Shen, 2016). Ertimur et al. (2013) examine the association between PAs' recommendations and shareholder votes on SOP and find that negative ISS (GL) recommendations are associated with 24.7% (12.9%) more votes against the compensation plan.

When ISS and GL both recommend voting Against a proposal, voting dissent increases by 38.3%. Malenko and Shen (2016) use the sample from 2010 to 2011 and a cut-off rule in ISS voting guidelines to conduct a regression discontinuity design. They find that an ISS recommendation *against* an SOP proposal leads to a 25% reduction in say-on-pay voting support, suggesting a strong influence PAs have on shareholder votes.

### *1.2.3. The mood images in annual report and shareholder voting outcomes on Say-On-Pay*

After the 1929 stock market crash, the U.S. Securities and Exchange Commission (SEC) mandated that listed firms prepare an annual report to be shared with their shareholders, in addition to the regulatory filings. An annual report goes beyond reporting on a firm's financial position, which is recorded in the 10-K filing. The annual report aims to communicate to shareholders on the firm's performance, future strategy, and achievements over the completed fiscal year in a clear and understandable way. Firms can provide information on their mission, history, and accomplishments that include news on product launches, R&D projects, and corporate social responsibility initiatives. In addition, although annual reports are primarily aimed at shareholders, they are also an important corporate marketing tool (Anderson and Imperia, 1992; Bekey, 1990; Neu et al., 1998). Importantly, there are no strict regulations and guidelines for the use of mood images. This stands in contrast to the 10-K filing, which is devoid of mood images and whose format and content are highly regulated by the SEC.

Several psychology studies emphasize the ability of visual content to elicit emotional responses (Davison, 2014; Joffe, 2008). The significance of emotion in making investment choices is increasingly being recognized in the field of behavioral finance (for example, Taffler and Tuckett, 2010). Studies have shown that the personal affect toward the source of information can influence the persuasiveness of a message. Specifically, positive emotions towards the information source result in more favorable opinions and increase persuasiveness compared to negative emotions (Petty and Brinol, 2008). Bhattacharjee et al. (2012) find that auditors' interpersonal affect toward the client can affect their behavior and audit quality. If auditors feel

negatively about a source of information, they are less likely to be persuaded by it. But if they feel positively about the client, they treat information from less competent and more competent sources similarly. Elliott et al. (2017) find that less numerate investors are more willing to invest in a firm whose disclosure shows consistency between the strategic framework and the presentation style of a firm's corporate social responsibility report.

We propose that visual elements in an annual report can be used by managers to promote shareholders' positive feelings and 'good mood', which will result in positive judgements of AGM resolutions. This in turn will promote higher shareholders' voting support for the SOP proposal. This leads to our first hypothesis.

> ***Hypothesis 1****: Mood images in an annual report align shareholder votes with managerial guidance, leading to higher SOP voting support.*

Our second hypothesis builds on the cognitive dissonance theory to propose that when shareholders face conflicting signals at the AGM, they experience a negative emotional state. This negative emotional state in turn promotes shareholders to evaluate managerial proposals more critically and analytically to resolve their cognitive dissonance. Thus, we expect that the positive impact of mood images on shareholders' voting support for SOP proposals will be weakened when shareholders face conflicting signals about managerial performance, such as the ISS investigation of the firm. This leads to our second hypothesis.

> ***Hypothesis 2****: Mood images in an annual report for firms subject to ISS investigation create cognitive dissonance leading lower SOP voting support.*

## 1.3. Sample and research design

### *1.3.1. Data sample*

To collect our sample, we first download 30,981 SOP voting outcomes for US companies between 2011 and 2020 calendar years from the ISS Voting Analytics database. We remove 398 duplicate firm-year observations. We require that the percentage of shareholder voting support for

a firm's SOP proposal in the current year's meeting falls between 67% and 73%. This reduces SOP voting outcomes to 805, which includes 684 unique firms. We further require that firms have a non-missing SOP voting outcome in the next annual meeting, which immediately follows the current annual meeting and takes place within the next three years. This reduces our sample to 648 voting outcomes for 553 unique firms. Of these, we find 465 firms' annual reports over the period 2011- 2020.[15] Because we calculate variables in changes, our last fiscal year is 2019. We use Python to extract mood images from each report. We also extract other graphical and textual elements from the annual report, including readability, sentiment, font color, font size, the number of words, bullet points, and infographics, such as pie graphs and line graphs.

We merge our sample with Compustat, Center for Research in Security Prices (CRSP), I/B/E/S, and Factset 13F Institutional Holdings databases to collect data on control variables for firms' fundamentals, stock returns, number of analysts following, and institutional ownership, respectively. We retain observations without missing variables, which yields the final sample of 408 firm-year-SOP voting outcome observations between 2011 and 2019. Our sample construction procedure is described in Table 1.1.

### *1.3.2. SOP voting support*

Proxy advisors provide shareholders with fee-based advice on company-specific proposals. The percentage of shareholder voting support decides whether managers' proposals pass or not. Our dependent variable is the change in shareholder voting support for the say-on-pay (SOP) proposal, *Δ SOP voting support*, measured as *SOP voting support* in the next annual meeting minus *SOP voting support* in the current annual meeting. *SOP voting support* is calculated as the number of shareholder votes *for* a SOP proposal divided by *base*. The *base* is different for various ballot items across companies, for example, the *base* can be the sum of voting *for* and *against*, or

[15] An annual report can be missing if a firm delisted or was acquired and removed the corporate page.

the sum of voting *for*, *against*, and *abstentions*, or the number of shares outstanding. Following (Dey et al., 2023), we choose the sum of voting *for* and *against* as *base*.

We focus on the changes in the SOP voting support, which identifies if a stimulus, such as the usage of mood images or ISS investigation, changes shareholder behavior. This research design choice reflects that a high level of SOP support could capture lack of shareholder engagement rather than favorable perception of firm's management (Malenko and Shen, 2016). Thus, a level analysis makes causal identification more challenging compared to analysis of changes. Appendix C lists the definitions of the variables used in the study.

### *1.3.3. Independent variables*

Our main variable of interest is the interaction term between *Δ Mood images* and *ISS investigation*. *Δ Mood images,* a change in mood images, is measured as the difference in the total number of mood images extracted from a firm's annual reports that were provided in the next versus the current annual meeting. We first use Python to extract images embedded in the PDF format of annual reports. Then, we classify the extracted images as *Mood images* using their information on *xref*, a cross-reference function used to identify an image in a PDF file.[16] We exclude all images whose sizes are less than one kilobyte as these are typically graphical artifacts, such as a stop point saved as graph.

Figure 1 reports the time-series variation in the mean number of mood images in the annual report. On average, our sample firms include 17 mood images in their annual reports, with the highest number of 23 images in 2012 and the lowest of 12 images in 2018. Figure 2 documents a significant cross-sectional variation in the number of mood images across industries. On average, firms in the construction and construction materials industries show the highest usage of mood images, with the mean number of mood images in an annual report of 52.

[16] We use the PyMuPDF library in Python to extract images. More details of PyMuPDF are available online at https://pymupdf.readthedocs.io/_/downloads/en/latest/pdf/.

*ISS investigation* is an indicator variable that equals one if a firm receives a below-70% *SOP voting support* (i.e., 67% to 70%, exclusive) and zero otherwise if the voting support is in the range 70% to 73%. Consistent with Dey et al. (2023), in Figure 3, we find that the distribution of voting outcomes for all firms in ISS Voting Analytics with SOP voting support between 50% and 90% is smooth around the 70% deterministic threshold. This result suggests a random assignment to treatment and control firms. Figure 4 shows the distribution of voting outcomes for our sample firms with SOP voting support between 67% and 73%. It shows that our sample is uniformly distributed in the 67% and 73% range and there is no evidence of clustering of observations at either side of the 70% cut-off point. Figure 5 illustrates the timeline of key events, including the current annual general meeting that triggers the ISS investigation in year *t*, the ISS investigation period, and the subsequent annual general meeting in year *t+1* at which the next SOP vote is proposed.

### *1.3.4. Control variables and the regression model*

We follow prior research (Dey et al., 2023; Ertimur et al., 2013; Malenko and Shen, 2016) and control for a wide range of determinants that might affect shareholder SOP voting support. Ertimur et al. (2013) suggest that voting dissent is higher in poorly performing firms, captured by low abnormal returns and low ROA, and in smaller firms. Consistently, we control for firm performance and include measures of firm profitability − *Δ Return on assets* and *Δ Operating loss*, and growth in assets − *Δ Asset growth* and in revenue − *Δ Sales growth*. We also control for relative firm value − *Δ Book-to-market* and *Δ TobinQ*, and firm financial risk − *Δ Leverage*, business risk − *Δ Abnormal returns* and *Δ Stock return volatility*, and firm size captured by the logarithm of market capitalization - *Δ Ln(market capitalization)*. Firms with higher institutional ownership and analyst coverage may receive more executive pay scrutiny (Dey et al., 2023; Malenko and Shen, 2016), thus lower voting support. Consequently, we control for institutional ownership and analyst coverage − *Δ Institutional ownership* and *Δ Ln(analysts)*.

We control for the annual report's characteristics that might affect shareholder SOP voting support, such as the annual report's readability and tone − *Δ Readability* and *Δ Sentiment*. We control for the textual and other graphical content of the annual report by looking at average font color, font size, number of words, which captures the complexity of the report, and visual layout of the report as captured by the number of bullet points and presence of infographics − *Δ Font color*, *Δ Font size*, *Δ Words*, *Δ Bullet points*, and *Δ Infographics*. These annual report characteristics can associate with shareholders' ability to process information from the annual report thus affect SOP voting decision.[17] Ertimur et al. (2013) and Malenko and Shen (2016) show that the ISS recommendation significantly influenced shareholder SOP voting support thus we control for ISS voting recommendation at the annual meeting − *Δ ISS recommendation*[18]. *ISS recommendation* equals one if ISS recommends voting "For" the SOP proposal in an annual meeting and zero otherwise.

We examine the impact mood images have on shareholders' voting support for an SOP proposal using the following regression model that we estimate using OLS:

$$\Delta \text{ SOP voting support} = \alpha + \beta_1 \Delta \text{ Mood images} + \beta_2 \text{ ISS investigation} + \beta_3 \Delta \text{ Mood images} \times \text{ISS investigation} + \chi + \Phi + \mu + \varepsilon. \quad (1)$$

The main variables of interest are *Δ Mood images* and *Δ Mood images*×*ISS investigation*, each of which captures the net effect of a change in mood images on voting outcome for control group (i.e., $\beta_1$) and treatment group (i.e., $\beta_1 + \beta_3$), respectively. $\chi$ is a vector of changes in firm-level control variables. We include Fama-French industry fixed effects, $\Phi$, and year fixed effects, $\mu$, to control for unobservable time-invariant industry characteristics and time trends, respectively. We

[17] The annual report characteristics are based on information extracted from the PDF files of annual reports using Python. For infographics, we use the function of *get_drawings()* in Python to identify the parts that possibly contain tables, line graphs and pie graphs in the PDF files of annual reports.

[18] We find a statistically significant, though modest, negative correlation between ISS investigations and ISS's subsequent recommendation for the following year's Say-on-Pay (SOP) vote. This finding reinforces our argument that an ISS investigation may serve as a negative signal to shareholders—particularly institutional investors who often rely on ISS recommendations when making voting decisions. Furthermore, in our regression models, we control for changes in ISS recommendations to mitigate any confounding effects of ISS recommendations.

cluster standard errors by industry to allow for a within-industry, intra-group correlation in error terms.

### *1.3.5. Descriptive statistics*

Table 1.2 reports descriptive statistics for the main variables in our sample. We find that the mean of *Δ SOP voting support* is 11.87, which suggests a significant variation in the percentage of shareholder votes "for" a say-on-pay proposal between the current and the next annual meeting.[19] The average change in the number of mood images between annual meetings is three images, and the means of changes in control variables are on average close to zero.

Table 1.3 compares the variables' means between treatment and control firms. As discussed earlier, the likelihood of receiving a shareholder voting support that falls just below (i.e., treatment firms) or just above (i.e., control firms) the 70% of the threshold, which triggers an ISS investigation, is almost random (e.g., Dey et al., 2023). Consistent with this notion, we find that none of our main variables show a significant difference between treatment and control firms. This result gives us confidence that changes in firm characteristics or in the usage of mood images are unlikely to explain changes in SOP voting support. Thus, it is the difference in how *shareholders* perceive mood images for firms subject to ISS investigation and for control firms that should explain the differential effect mood images have on the SOP voting support for the two groups.

In Appendix E, we compare the levels of variables in the year where firms are split between treated and control firms. As expected, we find no evidence of significant differences in levels of variables between treatment firms and control firms (except for *SOP voting support*,

[19] We report descriptive statistics for the levels of our variables in Appendix D. The mean level of *SOP voting support* in the current year's annual meeting is 70.09, which is comparable to the corresponding figures in prior studies (e.g., Dey et al., 2023). SOP voting support is multiped by 100 thus already expressed in percentages.

which is different by construction), consistent with their random allocation to treated and control groups.[20]

## 1.4. Empirical results

### *1.4.1. Main results*

Table 1.4 reports the results from estimating our baseline regression model in Equation (1). We find positive and statistically significant coefficients on *Δ Mood images* across all three columns for firms not subject to ISS investigation, regardless of what type of fixed effects are used. This finding suggests that a change in the number of mood images is positively associated with a change in shareholder voting support for SOP proposals when shareholders have consistent signals about a firm. This result is consistent with our first hypothesis (H1) that mood images evoke positive feelings subject to cognitive consistency of signals, which prompts shareholders' heuristic decision making that is more likely to align shareholders' votes with managers' recommendation.

The coefficient on *Δ Mood images×ISS investigation* is negative and statistically significant across all columns. This result suggests that mood images do not exert such a positive influence on shareholder voting support if a firm is subject to an ISS investigation.[21] This evidence is supportive of our second hypothesis (H2) that shareholders make a more critical and analytical evaluation of SOP proposals if they have a conflicting signal that arises from ISS investigation.

In terms of control variables, we find intuitive results: *Δ Return-on-assets* and *Δ ISS recommendation* are both positively and significantly associated with our dependent variable across all three columns, suggesting a higher percentage of shareholders' votes for a firm's SOP

[20] By definition, treatment (control) firms are those with a *SOP voting support* that is below (above) 70% in the current year. The mean levels of *SOP voting support* are 68.602 and 71.497 for treatment firms and control firms, respectively.

[21] In an untabulated test, we find that the sum of the two coefficients on *Δ Mood images* and *Δ Mood images*ISS investigation* is not significantly different from zero.

proposal when either the firm's performance or ISS recommendation has improved over time. We find that adjusted $R^2$s of our regression models are around 43–45%, suggesting good explanatory power for the models. Overall, the results in Table 1.4 suggest a contingent impact of mood images on SOP voting support — mood images promote shareholders' voting support, however, in the presence of a conflicting signal, i.e., ISS investigation, the positive impact is muted.[22]

### *1.4.2. Controlling for the effects of annual reports' other textual and graphical characteristics*

We perform several robustness checks to ensure the reliability of our main findings. First, one could argue that a change in the use of mood images might be a manifestation of changes in other features of an annual report, such tone, textual and graphical elements. To control for these potentially confounding effects, we include in Equation (1) changes in the readability of the annual report (*Δ Readability*), in the optimistic tone of the report (*Δ Sentiment*), in the number of bullet points (*Δ Bullet point*), in the number of font colors (*Δ Font color*), in the number of font sizes (*Δ Font size*), in the number of infographics (*Δ Infographics*), and in the number of words, which captures the length of the annual report (*Δ Words*). To allow for their asymmetric effects on voting support, conditional on the presence of a conflicting signal, we also include their interaction terms with *ISS investigation* in our analyses.

Table 1.5 reports the results from estimating Equation (1) augmented with variables capturing tone, graphical and textual characteristics of an annual report. We find that the estimated effects of mood images on SOP voting support remain robust, with the magnitudes of coefficients slightly higher compared to Table 1.4. Thus, our main conclusions are unchanged when we control for other characteristics of an annual report that can correlate with the usage of mood images.

[22] The results are the same when we use percentage growth in assets and in sales. Also, the results remain unchanged when we control for the length of the annual report.

### *1.4.3. Robustness tests*

This section presents tests that exploit the time-series and cross-sectional variation in the intensity of cognitive dissonance to confirm robustness of our main conclusions.

*1.4.3.1. Access to information*

First, we examine whether the effect of mood images vary with the level of accessibility to information that helps resolve cognitive dissonance. The negative emotional state resulting from conflicting signals will be stronger if shareholders must spend more resources to acquire and process new information to resolve the cognitive dissonance. Analysts process complex financial information and disseminate it to investors in a comprehensive way including advice on whether investors should hold or sell the stock. Thus, higher analyst coverage reduces the cost of acquiring and processing information making. This helps to resolve the negative emotional states quicker. In those cases, we would expect a less negative effect on SOP voting support from cognitive dissonance.

We first construct the log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the next fiscal year end, *Ln(analysts)*. We then create an indicator variable, *High ln(analysts)*, that equals one if *Ln(analysts)* is above the sample median and zero otherwise. Finally, we include *High ln(analysts)* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*, i.e., *Δ Mood images×High ln(analysts)*, *ISS investigation×High ln(analysts)*, and *Δ Mood images×ISS investigation×High ln(analysts)*, in our baseline regression model of Equation (1). The results are reported in Table 1.6 Panel A. Consistent with our prediction, we find that the estimated effects of mood images are less pronounced for firms with high levels of analyst coverage.[23]

[23] For example, according to our result in Column (3), the net effect in the absence of an ISS investigation is 0.029, which is 0.084 (*Δ Mood images*) – 0.055 (*Δ Mood images×High ln(analysts*)). The net effect in the presence of an ISS investigation is 0.003, which is 0.084 (*Δ Mood images*) -0.075 (*Δ Mood images * ISS investigation*) – 0.055 (*Δ Mood images×High ln(analysts)*) + 0.049 (*Δ Mood images×ISS investigation×High ln(analysts*)).

*1.4.3.2. Institutional ownership*

Next, we examine whether the estimated effect of mood images on shareholder voting support varies with a firm' ownership by institutional investors. Institutional investors are more sophisticated, have professional financial background and access to several resources to appraise managerial performance. Thus, they should be less susceptible to cognitive dissonance and if they are, they should be able to resolve the negative emotional state originating from mixed signals more quickly.

Following Bartov et al. (2000), we use the percentage of a firm's stock held by institutional investors, *Institutional ownership*, as a proxy for the level of investor sophistication. Then, we augment Equation (1) with *Δ Institutional ownership*, a change in institutional ownership between the current and the next annual meeting, and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. The results are reported in Table 1.7, Panel A. We find significantly positive coefficients on *ΔMood images×ISS investigation×ΔInstitutional ownership*, suggesting that the effects of mood images on shareholder voting support are weakened as a firm's institutional ownership increases.

In additional tests, we focus on two specific types of institutional ownership. We re-estimate the regression models used in Panel A after replacing *Δ Institutional ownership* with either *Δ Blockholder ownership* or *Δ Domestic institutional ownership*, a change in the value of ownership by institutional blockholders or domestic institutional investors, respectively.[24] Blockholders and domestic institutional investors have better access to managers and information (Boone and White, 2015) that can help them resolve cognitive dissonance. The results are reported in Table 1.7, Panels C and D. Similar to the earlier result, we find that the effects of mood images become significantly smaller as a firm's blockholder ownership or domestic institutional

[24] In untabulated tests, we replace *Δ Blockholder ownership* with *Δ Top5 institutional ownership*, a change in the value of ownership by top 5 institutional investors. We find qualitatively the same results.

ownership increases. As Equation (1) controls for changes in institutional ownership, the evidence for the moderating effect of blockholders and domestic institutional investors does not reflect the overall institutional ownership effect.

*1.4.3.3. Investor sentiment*

We also investigate whether the asymmetric effects of mood images vary with investor sentiment. The negative emotional states prompted by cognitive dissonance should be stronger when investors are already in negative mood, which we capture by investor sentiment, resulting in an incrementally negative effect on SOP voting support.[25] Specifically, we measure *Δ Investor sentiment bearish* as the change in the percentage of individual investors who are bearish between the current and the next annual meetings. Then, we re-estimate our baseline regression model of Equation (1) after additionally including *Δ Investor sentiment bearish* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. The results are reported in Table 1.8 Panel A. We find that *Δ Mood images×ISS investigation×Δ Investor sentiment bearish* shows negative and significant coefficients. This result suggests that the negative effect of mood images on shareholder voting support in the presence of an ISS investigation becomes stronger as investors are more bearish.

We next examine whether the effects of mood images are conditional on what season of a year a firm's annual meeting takes place in. Winter months are associated with the seasonal affective disorder (SAD) — a seasonally recurrent depression typically starting in early winter and ending in spring. SAD associates with depressive symptoms, cognitive impairments, and low mood (Harmatz et al., 2000; Michalon et al., 1997; Rosenthal et al., 1984). We expect that the effect of cognitive dissonance on SOP voting support will be more pronounced when an annual meeting takes place during winter than during other seasons.

[25] We utilize the result from a sentiment survey that captures the percentages of individual investors who are bullish, neutral, and bearish. The data is available on https://www.aaii.com/sentimentsurvey/sent_results.

We define *Season* to equal one if a firm's next annual meeting takes place in winter and zero otherwise. Then, we re-estimate our baseline regression model of Equation (1) that additionally includes *Season* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. We report the results in Table 1.8 Panel B. We find that *Δ Mood images×ISS investigation×Season* shows negative and significant coefficients across all three, but one, columns, suggesting that the negative effect of mood images on shareholder voting support in the presence of an ISS investigation is stronger during winter.

*1.4.3.4. The number of proposals at the annual meeting*

Lastly, we investigate whether the effects of mood images vary with the change in the number of proposals to be voted between two consecutive annual meetings. We expect a more pronounced negative effect of cognitive dissonance if shareholders must vote on several other proposal than the SOP. In such cases, investor attention and cognitive ability is split between several decisions which likely increases their negative emotional state while reducing the resources that can be devoted to resolving the cognitive dissonance related to the SOP proposal.

We measure *Δ Number of proposals* as the change in the total number of proposals to be voted in the next annual meeting versus the current annual meeting. Then we re-estimate our baseline regression model of Equation (1) after augmenting it with *Δ Number of proposals* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. We report the results in Table 1.9. We find negative and marginally significant coefficients on *Δ Mood images×ISS investigation×Δ Number of proposals* across two columns, suggesting that mood images have a negative impact on shareholder voting support when a firm is subject to an ISS investigation and its annual meeting has many other proposals to be voted on.

***1.4.4. Untabulated additional tests***

In unreported results, we perform several additional tests that are briefly described in this section.

*1.4.4.1. The time gap between two SOP votes*

The time span between two consecutive SOP voting events may be one, two or three years. The longer the time span is, the more potentially confounding events may take place in between two votes. To mitigate this concern, we only retain a subsample that has a time span of one year. The untabulated results show that the effect of mood images on SOP voting support is positive and significant, but this positive effect is muted for the treated group under ISS investigation. The results provide the robustness of our findings to confining our analysis to a one-year time span between two SOP voting events.

*1.4.4.2. Different bandwidth*

We choose a 3% bandwidth around the 70% threshold to construct the main sample. To solve the concern that our results may be affected by the bandwidth size, we adopt a 2.5% bandwidth used by Aiyesha Dey (2022) and construct a new sample and run the same regression of Equation 1. The results are consistent with our main results based on the 3% bandwidth in Table 1.4. It suggests that our results are not affected by different bandwidth sizes.

*1.4.4.3. Learning experience*

It is possible that managers use images strategically. To mitigate this issue, we only keep the first incidents of firms' ISS investigation to exclude situations where managers are likely to learn from experience. The untabulated results show positive and significant effect of mood images on SOP voting support but muted effect under ISS investigation, which are consistent with our main results. Our main results are not driven by learning experience by managers.

*1.4.4.4. Corporate governance*

It is possible that control (non-treated) firms have better corporate governance practices than treated firms. The positive effect of mood images on SOP voting support for control firms may be the outcome of firm transparency and accountability associated with good corporate governance. To solve this concern, we add the interaction term *Δ Institutional ownership × ISS investigation* to the regression of Table 1.4 to help control for corporate governance. The

untabulated results show that *Δ Institutional ownership × ISS investigation* is not statistically significant, whereas *Δ Mood image*s remains significantly positive and *Δ Mood images × ISS investigation* remains significantly negative. The evidence suggests that our main results are not driven by the effects of corporate governance.

*1.4.4.5. Different proposals*

In an annual meeting, shareholders may vote on a variety of issues other than SOP proposals. To test if the documented effect of mood images also manifests itself in other votes, instead of SOP proposals, we now focus on the election of directors and the ratification of auditors and run the same regression of Table 1.4. In untabulated tests, we do not find significant coefficients on *Δ Mood images* and *Δ Mood images × ISS investigation*, although the signs of their coefficients remain consistent. While the insignificant results might suggest that mood images do not exert the same influence on other types of votes, the results in this section need to be interpreted with caution due to its smaller sample size.

*1.4.4.6. Image size*

We investigate whether the effects of mood images on SOP voting support varies with the characteristics of mood images such as image size. We expect that shareholders' cognitive dissonance, arising from ISS investigation, will be weaker when one type of stimuli gets more dominant, i.e., when mood images are larger and more noticeable. Consistent with our prediction, in untabulated tests, we find positive and significant coefficients on *Δ Mood images × ISS investigation × High mood image size*, suggesting that the negative effect of ISS investigation on the positive relationship between mood images and shareholder voting supports is smaller when the images are displayed more prominently.

*1.4.4.7. High number of mood images vs low number of mood images*

We now examine whether our results vary with the number of a firm's mood images. We divide the *Δ Mood images* to four groups based on the cutting value of 5%, 50%, 95%. In

untabulated tests, we find that our main results are more pronounced for firms that belong to the highest group in terms of the number of mood images in annual reports.

*1.4.4.8. Median difference test*

The number of mood images may be skewed. To mitigate this issue, we conduct two-sample Wilcoxon rank-sum (Mann-Whitney) tests and examine median differences in the number of mood images for treated and control groups. We do not find any significant difference between treated and control groups regarding their use of mood images.

*1.4.4.9. Controlling for changes in CEO total compensation and tenure*

We find that the main conclusions remain robust after controlling for changes in CEO total compensation and tenure. Higher data requirements reduce the sample size for this test to only 249 observations, which is why we only report it in sensitivity tests.

*1.4.4.10. Controlling for corporate communication strategies*

To address the concern that corporate communication strategies—potentially functioning as omitted correlated variables—may influence both mood images and voting outcomes, I construct a dummy variable that equals one if a firm issues at least one voluntary disclosure between two consecutive annual meetings. This variable is included as a control in the regression model, and the results remain robust after its inclusion.

*1.4.4.11. Controlling for negative media coverage*

To address the concern that negative media coverage might trigger the SOP voting below 70%, we also include an additional analysis where we control for negative news and Twitter sentiment within a 7-day window preceding the subsequent annual meeting date. The results remain consistent with our main findings, suggesting that the observed effects are not driven by short-term sentiment shocks.

*1.4.4.12. Excluding firms from 'Construction and Construction Materials' and 'Utilities' industries*

To address the concern that the use of mood images in annual reports may be particularly pronounced among firms in heavily regulated industries—such as utilities and construction—we

conduct an additional robustness test by excluding firms in the "Construction and Construction Materials" and "Utilities" sectors, which exhibit the most pronounced use of mood images. The results remain consistent with our main findings based on the full sample.

### 1.5. Conclusions

This study examines whether mood images in a firm's annual report exert influence on shareholders' voting support during the shareholder annual meeting conditionally on the consistency of signals investors face. We utilize a hand-collected dataset of mood images from U.S. firms' annual reports and use the quasi-natural experiment setting related to ISS investigation to establish a causal relation. We find a contingent nature of mood images in affecting shareholders' voting behaviors. Mood images, on average, positively affect shareholders' voting support for the SOP proposal. However, in the presence of an ISS investigation, a conflicting signal triggering shareholders' more critical and analytics approach of processing information, mood images no longer exert such a positive effect. Our findings are not explained by the effects of annual reports' other qualitative, textual, and graphical features, such as the readability, textual tone, and number of bullet points, font colors, font size, infographics, and words. In additional tests, we also show that the estimated effects of mood images are more pronounced in instances when investors will find it harder to resolve cognitive dissonance originating from conflicting signals.

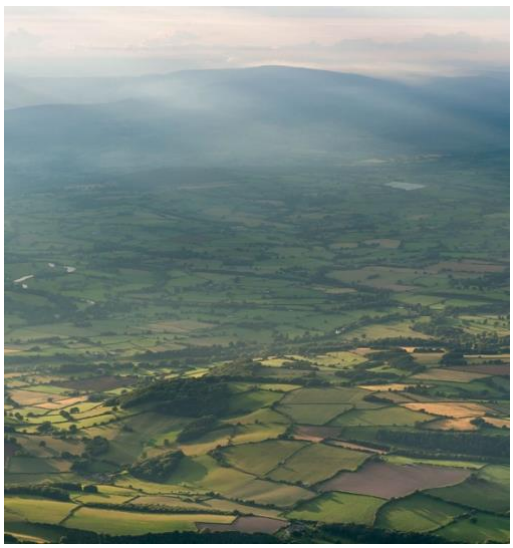
Our findings are consistent with the cognitive dissonance theory that individuals use a heuristic approach to make decisions when they are in good mood but rely on a critical and analytical approach when faced with negative or conflicting signals. Future research may consider examining the effect of mood images on other types of stakeholders' behaviors or that of mood images in other types of corporate disclosures, such as environmental, social, and governance (ESG) disclosures.

**Appendix A. Examples of mood images in US companies' annual reports**

Centene Corporation (2010)

Centene Corporation (2010)

AGCO Corporation (2015)

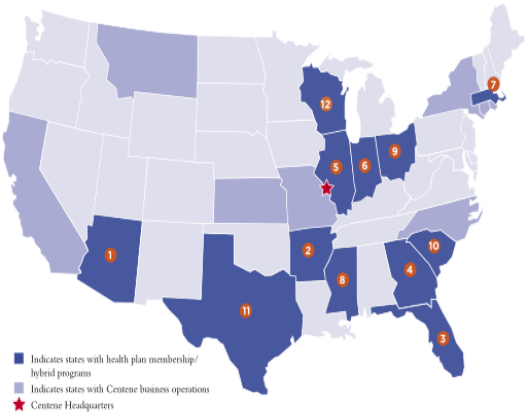


AGCO Corporation (2015)

Eagle Bancorp, Inc. (2016)

Eagle Bancorp, Inc. (2016)

## Appendix B. Examples of infographics in US companies' annual reports



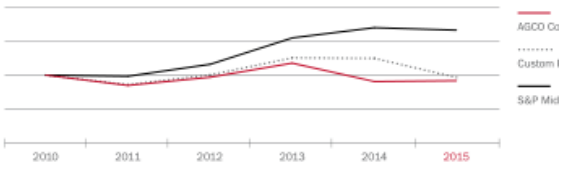

Centene Corporation (2010)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TANF | | • | • | • | | • | | | • | • | • |
| CHIP | | • | | • | | • | | | • | • | • |
| ABD (Non Duals) | | • | • | | • | | | • | • | • | • |
| ABD (Dually Eligible) | | • | • | | | | | | | • | • |
| Long-Term Care | | • | • | | | | | | | • | |
| Foster Care | | | | | | | | • | | • | |
| Medicare Special Needs Plans | | • | | | | | | | • | • | • |
| Hybrid | • | | | | | • | • | | | • | |
| Specialty Health Solutions | | | | | | | | | | | |
| Pharmacy Benefits (US Script) | | • | • | • | • | | • | • | | • | |
| Behavioral Health Management (Cenpatico) | | • | • | • | • | • | • | | • | • | • |
| Life & Health Management (Nurtur) | | • | • | • | • | • | • | • | • | • | • |
| Managed Vision (OptiCare) | | • | • | • | • | • | • | • | • | • | • |
| Telehealth (NurseWise) | | • | • | • | • | • | • | • | • | • | • |

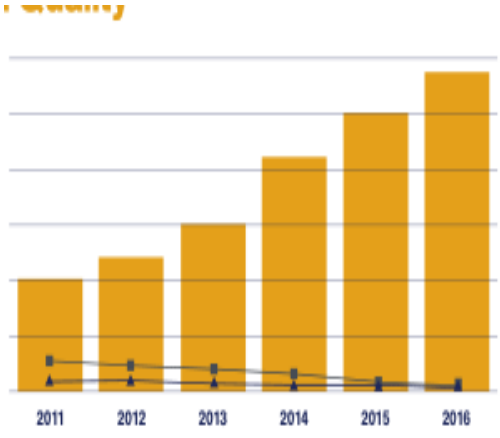
*In addition to providing specialty benefits to Centene's managed care plans, our specialty companies provide services to other healthcare clients and state agencies nationwide.*


Centene Corporation (2010)


AGCO Corporation (2015)




AGCO Corporation (2015)




Eagle Bancorp, Inc. (2016)


Eagle Bancorp, Inc. (2016)

**Appendix C. Variable Definitions**

| Variable | Definition |
|---|---|
| *SOP voting support* | 100 * (the percentage of shareholder voting for SOP proposal in the current annual meeting divided by the sum of shareholder voting for and against SOP proposal in an annual meeting). |
| *Δ SOP voting support (change of SOP voting support)* | 100 * (*SOP voting support* in the next annual meeting that has SOP proposal - *SOP voting support* in the current annual meeting that has SOP proposal). |
| *Mood images* | Firm's use of total number of mood images in the PDF version of annual report in an annual meeting that has SOP proposal. |
| *Δ Mood images (change of mood images)* | Firm's use of total number of mood images in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *ISS investigation* | Indicator variable that is equal to 1 if a firm receives below 70% votes approving SOP proposal in an annual meeting. Otherwise, *ISS investigation* equals to 0. |
| *Δ Readability (change of readability)* | Flesch Reading Ease Index for annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.<br>The Flesch Reading Ease Index formula, equal to:<br>206.835 - 1.015(# words / # sentences) - 84.6(# syllables / # words)<br>This formula was developed in by the US Department of Defense in 1948 to differentiate grade-level readability. |
| *Δ Sentiment (change of sentiment)* | Loughran-McDonald Negative word proportion for annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.<br>Loughran-McDonald Negative word proportion:<br>The number of Loughran-McDonald Financial-Negative words in the document divided by the total number of words in the document that occur in the master dictionary. |
| *Δ Font color (change of font color)* | Firm's use of total number of font colors (NOTE: counting all duplicates on different pages) in the annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *Δ Font size (change of font size)* | Firm's use of total number of font size (NOTE: counting all duplicates on different pages) in the annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *Δ Words (change of word)* | Firm's use of total number of words in the annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *Δ Bullet point (change of bullet point)* | Firm's use of total number of bullet point in the annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *Δ Infographics (change of other images)* | Firm's use of total number of infographics in the annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. |
| *Return-on-assets* | Earnings before interest, taxes, depreciation, and amortization divided by total assets in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Return-on-assets (change of return on assets)* | Earnings before interest, taxes, depreciation, and amortization divided by total assets in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal. |
| *Operating loss* | Equals 1 if the firm has a negative earnings before interest, taxes, depreciation, and amortization in Compustat in the fiscal year of an annual meeting that has SOP proposal. Otherwise, equals 0. |
| *Δ Operating loss (change of operating loss)* | *Operating loss* in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal. |
| *Ln(market capitalization)* | Log of market value of the firm in the fiscal year of an annual meeting that has SOP proposal. |

**Appendix C** (*Continued*)

| Variable | Definition |
|---|---|
| *Δ Ln(market capitalization)*<br>*(change of ln(market capitalization))* | Log of market value of the firm in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal. |
| *Book-to-market* | Book value of the firm divided by its market value in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Book-to-market*<br>*(change of Book-to-market)* | Book value of the firm divided by its market value in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *TobinQ* | Market value of a company divided by its assets' replacement cost in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ TobinQ*<br>*(change of tobinQ)* | Market value of a company divided by its assets' replacement cost in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Leverage* | Long-term debt plus long-term debt in current liabilities divided by total assets in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Leverage*<br>*(change of leverage)* | Long-term debt plus long-term debt in current liabilities divided by total assets in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Sales growth* | Year-over-year growth in total revenue in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Sales growth*<br>*(change of sales growth)* | Year-over-year growth in total revenue in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Asset growth* | Year-over-year growth in total asset in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Asset growth*<br>*(change of asset growth)* | Year-over-year growth in total asset in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Abnormal returns* | Annual common stock return less the return of the value weighted CRSP index in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Abnormal returns*<br>*(change of abnormal returns)* | Annual common stock return less the return of the value weighted CRSP index in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Stock return volatility* | Standard deviation of the monthly stock returns in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Stock return volatility*<br>*(change of stock return volatility)* | Standard deviation of the monthly stock returns in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Ln(analysts)* | Log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the fiscal year end from IBES in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Ln(analysts)*<br>*(change of number of analysts)* | Log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the fiscal year end from IBES in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *High ln(analysts)* | *High ln(analysts)* equals 1 if the log value of the number of analysts following a firm is larger than the median value of our sample firms in the fiscal year of next annual meeting that has SOP proposal, otherwise, equals 0. |
| *ISS recommendation* | *ISS recommendation* equals 1 if ISS recommends voting “For" the SOP proposal in an annual meeting and zero otherwise. |

**Appendix C** (*Continued*)

| *Variable* | *Definition* |
|---|---|
| *Δ ISS recommendation (change of ISS recommendation)* | *ISS recommendation* in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal. |
| *Institutional ownership* | Total institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in the fiscal year of an annual meeting that has SOP proposal. |
| *Δ Institutional ownership (change of institutional ownership)* | The change value of total institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting. |
| *Δ Blockholder ownership (change of blockholder ownership)* | The change value of ownership by institutional blockholders (>=5%) in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting. |
| *Δ Top5 institutional ownership (change of top5 institutional ownership)* | The change value of ownership by top 5 institutional investors in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting. |
| *Δ Domestic institutional ownership (change of domestic institutional ownership)* | The change value of domestic institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting. |
| *Δ Investor sentiment bearish (change of investor sentiment bearish)* | The change of the percentage of individual investors who are bearish as reported on sentiment survey in the next versus the current annual meetings. |
| *Δ Number of proposals (change of number of proposals)* | The change value of the number of proposals of a firms' next annual meeting versus current annual meeting. |
| *Season* | *Season* equals 1 if the meeting date of the next annual meeting is in winter, otherwise, equals 0. |

The table reports definitions of variables used in the study.

**Appendix D. Summary statistics for level variables**

| | Mean | Std. Dev. | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| *SOP voting support* | 70.092 | 1.682 | 68.717 | 70.084 | 71.549 |
| *Mood images* | 17.466 | 32.406 | 1.000 | 6.000 | 20.000 |
| *Return-on-assets* | -0.027 | 0.190 | -0.026 | 0.014 | 0.049 |
| *Operating loss* | 0.353 | 0.478 | 0.000 | 0.000 | 1.000 |
| *Ln(market capitalization)* | 7.148 | 1.927 | 5.987 | 7.091 | 8.295 |
| *Book-to-market* | 0.694 | 0.645 | 0.310 | 0.575 | 0.919 |
| *TobinQ* | 1.472 | 1.472 | 0.712 | 1.057 | 1.665 |
| *Leverage* | 0.278 | 0.244 | 0.079 | 0.219 | 0.431 |
| *Sales growth* | 201.384 | 1451.910 | -12.906 | 21.876 | 130.917 |
| *Asset growth* | 607.752 | 3270.717 | -34.567 | 30.030 | 342.263 |
| *Abnormal returns* | -0.063 | 0.376 | -0.303 | -0.081 | 0.135 |
| *Stock return volatility* | 0.108 | 0.060 | 0.064 | 0.092 | 0.143 |
| *Institutional ownership* | 0.670 | 0.327 | 0.479 | 0.784 | 0.930 |
| *Ln(analysts)* | 2.199 | 0.941 | 1.792 | 2.303 | 2.890 |
| *ISS recommendation* | 0.333 | 0.472 | 0.000 | 0.000 | 1.000 |

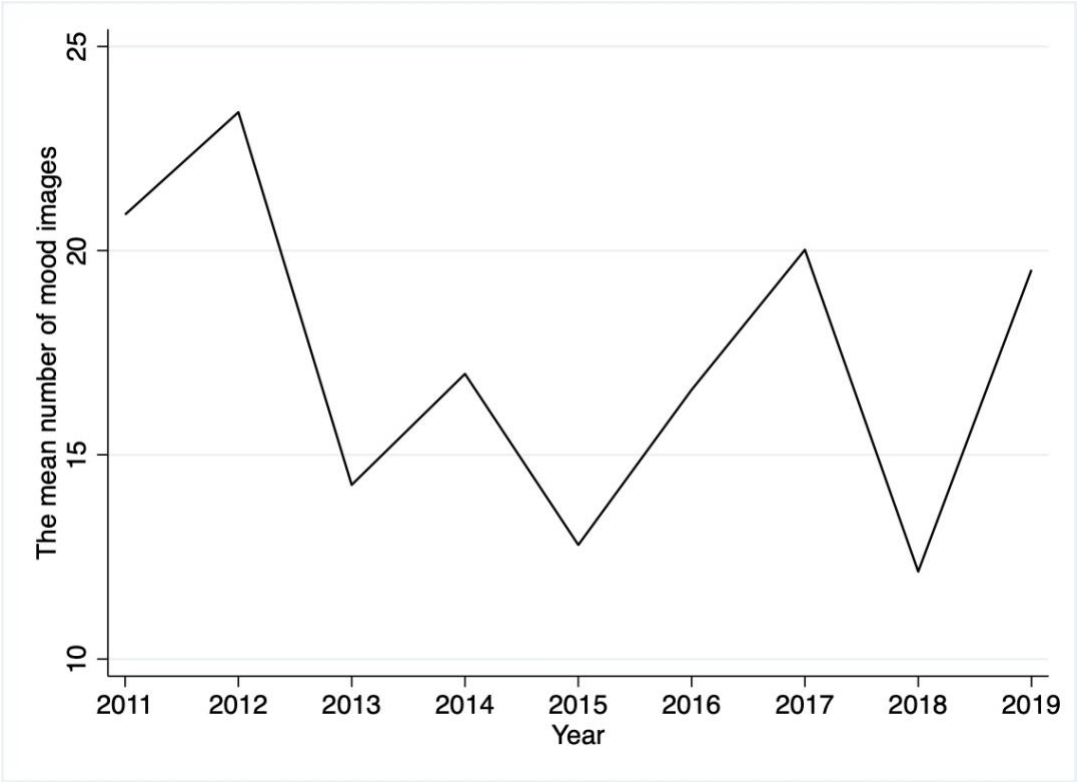
This table shows descriptive statistics for the level variables in the current annual meeting in our sample of 408 firm-year-meeting observations from 2011 to 2020.

**Appendix E. Comparison of the main level variables between treatment and control samples**

| Sample: | Treated firms | Control firms | | | |
|---|---|---|---|---|---|
| | Mean | Mean | Difference | *t*-test | *p*-value |
| *SOP voting support* | 68.602 | 71.497 | -2.895 | -34.156 | 0.000 |
| *Mood images* | 15.641 | 19.186 | -3.544 | -1.104 | 0.270 |
| *Return-on-assets* | -0.037 | -0.018 | -0.019 | -1.028 | 0.305 |
| *Operating loss* | 0.354 | 0.352 | 0.001 | 0.024 | 0.981 |
| *Ln(market capitalization)* | 7.141 | 7.154 | -0.013 | -0.070 | 0.944 |
| *Book-to-market* | 0.700 | 0.689 | 0.011 | 0.165 | 0.869 |
| *TobinQ* | 1.454 | 1.489 | -0.035 | -0.237 | 0.813 |
| *Leverage* | 0.268 | 0.288 | -0.020 | -0.845 | 0.398 |
| *Sales growth* | 204.404 | 198.536 | 5.869 | 0.041 | 0.968 |
| *Asset growth* | 600.550 | 614.542 | -13.992 | -0.043 | 0.966 |
| *Abnormal returns* | -0.076 | -0.050 | -0.026 | -0.699 | 0.485 |
| *Stock return volatility* | 0.107 | 0.109 | -0.002 | -0.406 | 0.685 |
| *Institutional ownership* | 0.682 | 0.659 | 0.023 | 0.705 | 0.481 |
| *Ln(analysts)* | 2.247 | 2.154 | 0.093 | 0.995 | 0.320 |
| *ISS recommendation* | 0.328 | 0.338 | -0.010 | -0.210 | 0.834 |

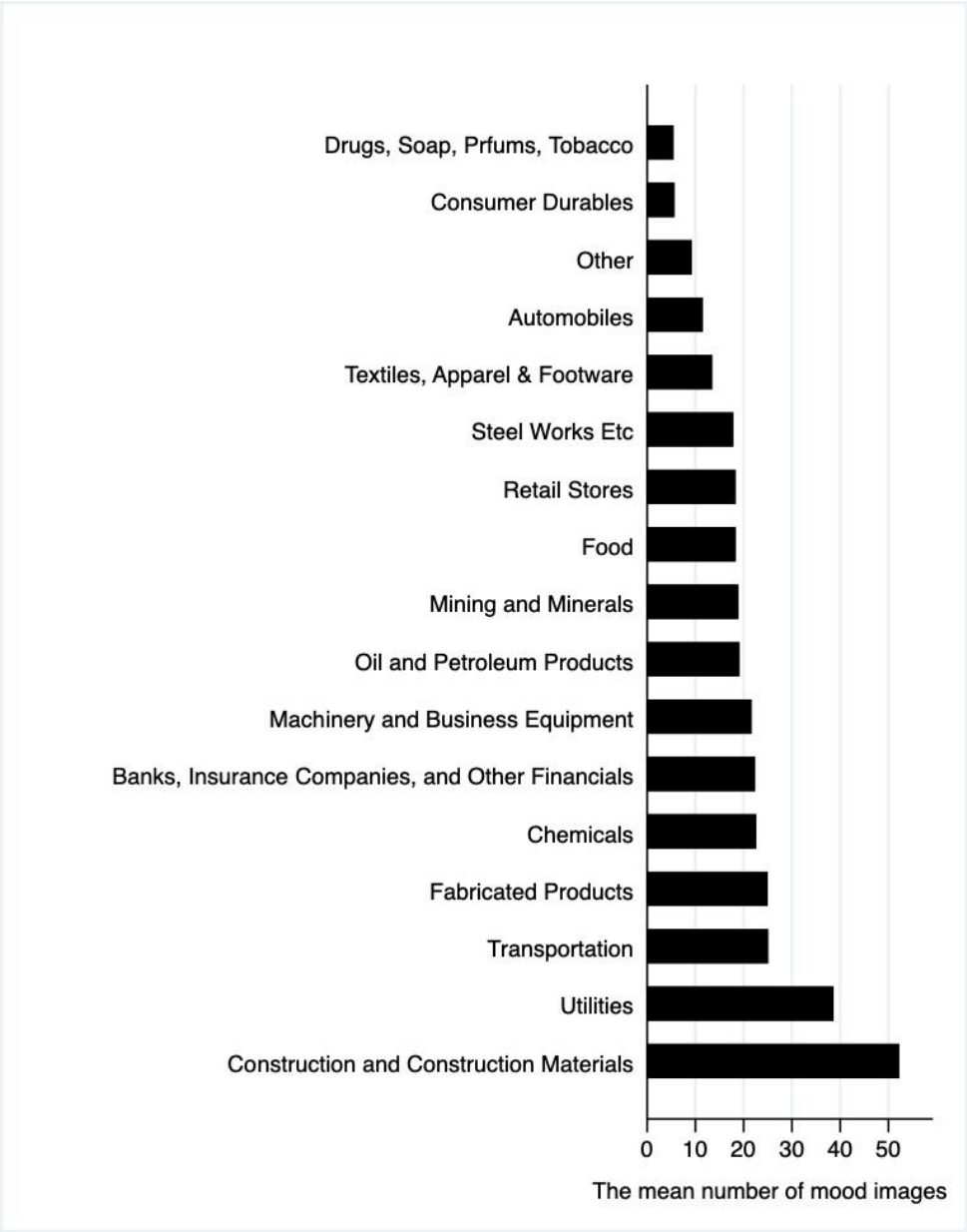
This table compares univariate differences in main level variables between treated group and control group. *Treated* includes firms with 67.00% to 69.99% SOP voting approval in the current annual meeting. *Control* includes firms with 70.00% to 73.00% SOP voting approval in the current annual meeting.

**Figure 1.1 The average number of mood images by year**



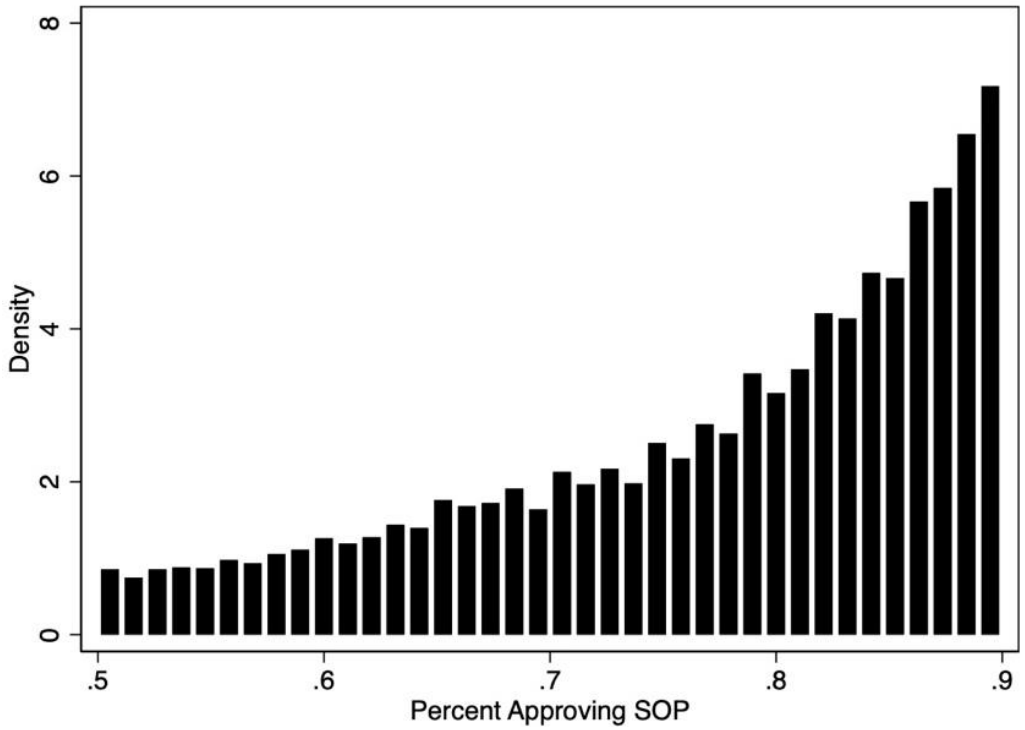

This figure plots a time-series variation in the mean number of mood images in the annual reports in sample firms from 2011 to 2019.

**Figure 1.2 The average number of mood images by industry**



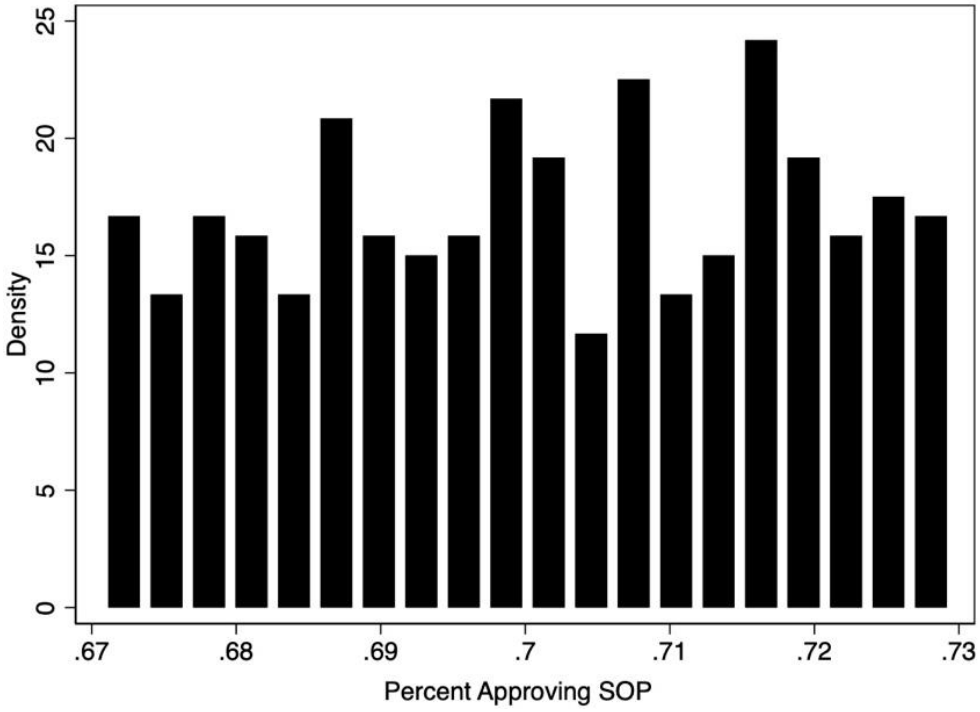

The figure plots a cross-sectional variation in the number of mood images in our sample firms across industries.

**Figure 1.3 The distribution of voting outcomes for all firms in ISS Voting Analytics**



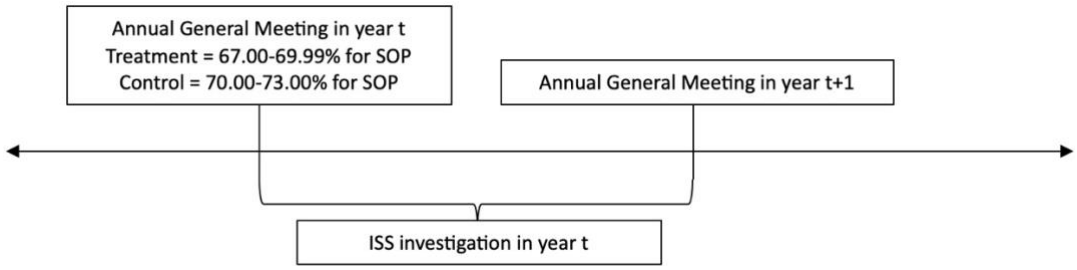

This figure plots the distribution of voting outcomes for all firms in ISS Voting Analytics with SOP voting support between 50% and 90%. The y-axis represents the observations for each percentage of SOP voting support between 50% and 90% for all firms. The height of y-axis is scaled so that the sum of all bar areas equals 1.

**Figure 1.4 The distribution of voting outcomes for our sample firms**




This figure plots the distribution of voting outcomes for our sample firms with SOP voting support between 67% and 73%. The y-axis represents the observations for each percentage of SOP voting support between 67% and 73% in our sample. The height of y-axis is scaled so that the sum of all bar areas equals 1.

**Figure 1.5 The timeline of events**




This figure plots the timeline of key events, including the current annual general meeting that triggers the ISS investigation in year *t*, the ISS investigation period, and the subsequent annual general meeting in year *t+1* at which the next Say-on-Pay (SOP) vote is proposed.

**Table 1.1 The sample construction procedure**

| | *N* |
|---|---|
| ISS - Voting Analytics data | 635,218 |
| Retain observations for the proposal "Advisory Vote to Ratify Named Executive Officers' Compensation" | 32,253 |
| Retain observations for years from 2011 through 2020 | 31,520 |
| Remove observations with missing SOP shareholder voting support data | 30,981 |
| Remove duplicate firm-year observations | 30,583 |
| Require SOP shareholder voting support to fall within the range of 0.67 to 0.73 | 805 |
| Require SOP shareholder voting support in the following year to be not missing | 648 |
| Require independent and control variables between consecutive AGMs to be not missing | 408 |
| Final sample for the period from 2011 to 2020 | 408 |

This table shows the procedure for our sample construction.

**Table 1.2 Descriptive statistics**

| | Mean | Std. Dev. | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| *Δ SOP voting support* | 11.869 | 15.905 | 1.496 | 16.672 | 25.075 |
| *Δ Mood images* | 3.061 | 50.294 | -5.000 | 0.000 | 2.000 |
| *Δ Return-on-assets* | -0.019 | 0.169 | -0.031 | -0.001 | 0.020 |
| *Δ Operating loss* | 0.005 | 0.390 | 0.000 | 0.000 | 0.000 |
| *Δ Ln (market capitalization)* | -0.014 | 0.531 | -0.244 | 0.046 | 0.261 |
| *Δ Book-to-market* | 0.006 | 0.609 | -0.134 | -0.028 | 0.099 |
| *Δ TobinQ* | 0.019 | 0.864 | -0.135 | 0.020 | 0.140 |
| *Δ Leverage* | 0.015 | 0.096 | -0.014 | 0.001 | 0.039 |
| *Δ Sales growth* | 125.014 | 1365.149 | -65.668 | 0.998 | 79.810 |
| *Δ Asset growth* | -93.012 | 2805.602 | -181.360 | 5.273 | 198.631 |
| *Δ Abnormal returns* | 0.002 | 0.552 | -0.266 | -0.004 | 0.264 |
| *Δ Stock return volatility* | 0.002 | 0.052 | -0.025 | 0.000 | 0.026 |
| *Δ Institutional ownership* | -0.006 | 0.115 | -0.016 | 0.000 | 0.022 |
| *Δ Ln(analysts)* | -0.028 | 0.380 | -0.129 | 0.000 | 0.095 |
| *Δ ISS recommendation* | 0.350 | 0.648 | 0.000 | 0.000 | 1.000 |

This table shows descriptive statistics for the main variables in our sample of 408 firm-year-meeting observations from 2011 to 2020. We provide variable definitions in Appendix C.

**Table 1.3 Comparison of firm characteristics between treatment and control samples**

| | Treated firms Mean | Control firms Mean | Difference | *t*-test | *p*-value |
|---|---|---|---|---|---|
| *Δ SOP voting support* | 11.467 | 12.249 | -0.782 | -0.496 | 0.620 |
| *Δ Mood images* | 2.606 | 3.490 | -0.884 | -0.177 | 0.859 |
| *Δ Return-on-assets* | -0.007 | -0.030 | 0.023 | 1.381 | 0.168 |
| *Δ Operating loss* | -0.025 | 0.033 | -0.059 | -1.518 | 0.130 |
| *Δ Ln(market capitalization)* | 0.013 | -0.039 | 0.053 | 1.000 | 0.318 |
| *Δ Book-to-market* | -0.028 | 0.037 | -0.065 | -1.079 | 0.281 |
| *Δ TobinQ* | 0.023 | 0.014 | 0.009 | 0.109 | 0.913 |
| *Δ Leverage* | 0.013 | 0.017 | -0.004 | -0.447 | 0.655 |
| *Δ Sales growth* | 216.335 | 38.911 | 177.424 | 1.313 | 0.190 |
| *Δ Asset growth* | 29.469 | -208.494 | 237.963 | 0.856 | 0.393 |
| *Δ Abnormal returns* | 0.041 | -0.035 | 0.076 | 1.395 | 0.164 |
| *Δ Stock return volatility* | 0.005 | -0.001 | 0.006 | 1.246 | 0.213 |
| *Δ Institutional ownership* | -0.001 | -0.010 | 0.008 | 0.732 | 0.464 |
| *Δ Ln(analysts)* | -0.037 | -0.020 | -0.017 | -0.447 | 0.655 |
| *Δ ISS recommendation* | 0.298 | 0.400 | -0.102 | -1.592 | 0.112 |

This table compares univariate differences in main variables between treated group and control group. *Treated* includes firms with 67.00% to 69.99% SOP voting approval in the current annual meeting. *Control* includes firms with 70.00% to 73.00% SOP voting approval in the current annual meeting.

**Table 1.4 The effect of a change in mood images on shareholder voting support**

| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| *Δ Mood images* | 0.039* | 0.040* | 0.041* |
| | (1.839) | (1.952) | (2.042) |
| *ISS investigation* | 0.969 | 1.304 | 1.641 |
| | (0.663) | (0.927) | (1.249) |
| *Δ Mood images × ISS investigation* | -0.035** | -0.034** | -0.035** |
| | (-2.594) | (-2.339) | (-2.426) |
| *Δ Return-on-assets* | 4.873* | 5.919** | 5.617** |
| | (1.927) | (2.360) | (2.325) |
| *Δ Operating loss* | -0.785 | -0.926 | -0.796 |
| | (-0.820) | (-0.992) | (-0.900) |
| *Δ Ln(market capitalization)* | 3.387* | 4.106** | 4.432** |
| | (1.940) | (2.268) | (2.442) |
| *Δ Book-to-market* | 1.353 | 1.896 | 1.800 |
| | (1.102) | (1.560) | (1.493) |
| *Δ TobinQ* | 1.122 | 1.100 | 1.003 |
| | (1.698) | (1.495) | (1.356) |
| *Δ Leverage* | 3.314 | 6.157 | 6.003 |
| | (0.450) | (0.822) | (0.779) |
| *Δ Sales growth* | -0.000 | -0.000 | -0.000 |
| | (-1.432) | (-1.302) | (-0.549) |
| *Δ Asset growth* | -0.000 | -0.000* | -0.000** |
| | (-1.337) | (-2.088) | (-2.246) |
| *Δ Abnormal returns* | -1.303 | -2.040 | -1.790 |
| | (-0.936) | (-1.479) | (-1.483) |
| *Δ Stock return volatility* | -7.043 | -2.927 | -1.798 |
| | (-0.387) | (-0.171) | (-0.099) |
| *Δ Institutional ownership* | -7.257 | -9.735 | -10.798* |
| | (-1.260) | (-1.663) | (-1.902) |
| *Δ Ln(analysts)* | -0.965 | -0.752 | -0.461 |
| | (-1.209) | (-0.985) | (-0.663) |
| *Δ ISS recommendation* | 16.047*** | 16.563*** | 16.061*** |
| | (15.701) | (14.375) | (16.431) |
| *Constant* | 5.764*** | 5.383*** | 5.375*** |
| | (5.762) | (5.407) | (8.955) |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.432 | 0.435 | 0.456 |

This table tests the relation between the change of mood images in the annual report used by two groups of firms (treated firms by ISS investigation and control firms) and the change of shareholder voting support on SOP between two consecutive annual meetings that have SOP proposals. This table presents regressions using Eq. (1). Control variables include: *Δ Return-on-assets*, *Δ Operating loss*, *Δ Ln(market capitalization), Δ Book-to-market, Δ TobinQ, Δ Leverage, Δ Sales growth, Δ Asset growth, Δ Abnormal returns, Δ Stock return volatility, Δ Institutional ownership, Δ Ln(analysts), Δ ISS recommendation.* Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

**Table 1.5 Robustness test: controlling for annual reports' textual and graphical characteristics**

| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| *Δ Mood images* | 0.048* | 0.052** | 0.053** |
| | (2.063) | (2.416) | (2.528) |
| *ISS investigation* | 1.133 | 1.476 | 1.901 |
| | (0.647) | (0.931) | (1.231) |
| *Δ Mood images × ISS investigation* | -0.050** | -0.053*** | -0.054** |
| | (-2.659) | (-3.022) | (-2.694) |
| *Δ Readability* | 0.220 | 0.042 | 0.002 |
| | (1.192) | (0.188) | (0.007) |
| *Δ Readability × ISS investigation* | -0.149 | -0.140 | -0.044 |
| | (-0.615) | (-0.591) | (-0.173) |
| *Δ Sentiment* | 10.201 | 67.309 | 37.844 |
| | (0.035) | (0.287) | (0.155) |
| *Δ Sentiment × ISS investigation* | -1312.122* | -1328.814* | -1141.295* |
| | (-1.973) | (-1.961) | (-1.810) |
| *Δ Bullet point* | 0.078*** | 0.084*** | 0.073** |
| | (3.415) | (3.702) | (2.845) |
| *Δ Bullet point × ISS investigation* | -0.052 | -0.054 | -0.045 |
| | (-0.887) | (-1.039) | (-0.699) |
| *Δ Font color* | 0.000 | 0.011 | -0.011 |
| | (0.016) | (0.475) | (-0.783) |
| *Δ Font color × ISS investigation* | 0.035 | 0.029 | 0.056* |
| | (0.815) | (0.780) | (2.048) |
| *Δ Font size* | -0.012* | -0.016** | -0.010 |
| | (-1.992) | (-2.739) | (-1.176) |
| *Δ Font size × ISS investigation* | -0.004 | -0.001 | -0.006 |
| | (-0.342) | (-0.139) | (-0.868) |
| *Δ Infographics* | -0.014 | -0.019 | 0.001 |
| | (-0.464) | (-0.620) | (0.037) |
| *Δ Infographics × ISS investigation* | 0.036 | 0.028 | -0.007 |
| | (0.567) | (0.404) | (-0.177) |
| *Δ Words* | -0.000 | -0.000 | -0.000 |
| | (-0.451) | (-0.251) | (-0.316) |
| *Δ Words × ISS investigation* | -0.000 | -0.000 | -0.000 |
| | (-0.454) | (-0.667) | (-0.692) |
| *Constant* | 5.841*** | 5.190*** | 5.138*** |
| | (6.216) | (5.812) | (8.597) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.436 | 0.440 | 0.455 |

This table tests the relation between the change of mood images in the annual report used by two groups of firms (treated firms by ISS investigation and control firms) and the change of shareholder voting support on SOP between two consecutive annual meetings that have SOP proposals after controlling other annual report characteristics, including *Δ Readability, Δ Sentiment, Δ Bullet point, Δ Font color, Δ Font size, Δ Infographics, Δ Words*. Control variables are the same as in Table 1.4. Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

**Table 1.6 The mitigating impact of analyst coverage**

| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| *Δ Mood images × High ln(analysts)* | -0.057*** | -0.061*** | -0.055*** |
| | (-5.284) | (-5.923) | (-4.871) |
| *Δ Mood images × ISS investigation × High ln(analysts)* | 0.067*** | 0.060** | 0.049** |
| | (3.869) | (2.720) | (2.120) |
| *ISS investigation* | 0.903 | 1.277 | 1.329 |
| | (0.501) | (0.758) | (0.803) |
| *Δ Mood images* | 0.084*** | 0.089*** | 0.084*** |
| | (4.018) | (4.588) | (4.134) |
| *Δ Mood images × ISS investigation* | -0.086*** | -0.082*** | -0.075*** |
| | (-4.385) | (-3.699) | (-3.170) |
| *High ln(analysts)* | -1.220 | -1.262 | -0.406 |
| | (-0.973) | (-0.949) | (-0.390) |
| *ISS investigation × High ln(analysts)* | 0.141 | 0.058 | 0.621 |
| | (0.087) | (0.035) | (0.427) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.430 | 0.434 | 0.453 |

This table presents regressions results for Equation (1) when we control for analyst coverage. *High ln(analysts)* equals 1 if the log value of the number of analysts following a firm in the next annual meeting is above the sample median, and 0 otherwise. Control variables are the same as Table 1.4. Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

**Table 1.7 The mitigating impact of institutional ownership**

| *Panel A. Institutional ownership* | | | |
|---|---|---|---|
| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
| *Δ Mood images × Δ Institutional ownership* | -0.511 | -0.460 | -0.494 |
| | (-1.667) | (-1.670) | (-1.667) |
| *Δ Mood images × ISS investigation × Δ Institutional ownership* | 0.603** | 0.566** | 0.611** |
| | (2.295) | (2.362) | (2.494) |
| *ISS investigation* | 0.828 | 1.185 | 1.530 |
| | (0.595) | (0.890) | (1.290) |
| *Δ Mood images* | 0.049* | 0.049** | 0.051** |
| | (1.972) | (2.133) | (2.238) |
| *Δ Mood images × ISS investigation* | -0.046*** | -0.045*** | -0.047*** |
| | (-2.990) | (-3.037) | (-3.195) |
| *Δ Institutional ownership* | -13.552 | -16.557* | -18.749* |
| | (-1.514) | (-1.752) | (-1.978) |
| *ISS investigation × Δ Institutional ownership* | 3.250 | 4.674 | 6.253 |
| | (0.185) | (0.270) | (0.346) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.431 | 0.433 | 0.455 |

| *Panel B. Blockholder ownership* | | | |
|---|---|---|---|
| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
| *Δ Mood images × Δ Blockholder ownership* | -0.492** | -0.488*** | -0.431** |
| | (-2.364) | (-2.923) | (-2.726) |
| *Δ Mood images × ISS investigation × Δ Blockholder ownership* | 0.685*** | 0.732*** | 0.643*** |
| | (3.143) | (3.694) | (4.400) |
| *ISS investigation* | 1.008 | 1.349 | 1.636 |
| | (0.700) | (0.959) | (1.226) |
| *Δ Mood images* | 0.034 | 0.036 | 0.037* |
| | (1.530) | (1.698) | (1.847) |
| *Δ Mood images * ISS investigation* | -0.032* | -0.031* | -0.033** |
| | (-2.068) | (-2.108) | (-2.290) |
| *Δ Blockholder ownership* | -3.512 | -3.423 | -1.604 |
| | (-0.550) | (-0.503) | (-0.240) |
| *ISS investigation * Δ Blockholder ownership* | -6.589 | -6.794 | -2.913 |
| | (-0.579) | (-0.623) | (-0.293) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.431 | 0.434 | 0.454 |

**Table 1.7 (***Continued***)**

| Panel C. Domestic institutional ownership | | | |
|---|---|---|---|
| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
| *Δ Mood images × Δ Domestic institutional ownership* | -0.514* | -0.483** | -0.511** |
| | (-2.056) | (-2.336) | (-2.302) |
| *Δ Mood images × ISS investigation × Δ Domestic institutional ownership* | 0.627** | 0.615*** | 0.648*** |
| | (2.603) | (2.983) | (3.046) |
| *ISS investigation* | 0.895 | 1.269 | 1.601 |
| | (0.646) | (0.961) | (1.372) |
| *Δ Mood images* | 0.049* | 0.049** | 0.051** |
| | (1.983) | (2.135) | (2.237) |
| *Δ Mood images × ISS investigation* | -0.047*** | -0.046*** | -0.048*** |
| | (-3.027) | (-3.048) | (-3.211) |
| *Δ Domestic institutional ownership* | 8.330 | 8.912 | 2.849 |
| | (0.318) | (0.332) | (0.104) |
| *ISS investigation × Δ Domestic institutional ownership* | 3.468 | 5.408 | 8.119 |
| | (0.223) | (0.354) | (0.508) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.430 | 0.433 | 0.455 |

This table presents regressions results for Equation (1) when we control for institutional ownership, blockholdings and domestic institutional ownership. *Δ Institutional ownership* represents a change in institutional ownership between the current and next annual meetings. *Δ Blockholder ownership* represents a change in the value of ownership by institutional blockholders. *Δ Domestic institutional ownership* is the change in the value of ownership by domestic institutional investors. Control variables are the same as Table 1.4. Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

**Table 1.8 The mitigating impact of sentiment**

| Panel A. Bearish investor sentiment | | | |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| *Δ Mood images × Δ Investor sentiment bearish* | 0.021 | 0.035 | 0.017 |
| | (0.176) | (0.290) | (0.174) |
| *Δ Mood images × ISS investigation × Δ Investor sentiment bearish* | -0.250** | -0.230* | -0.205** |
| | (-2.189) | (-2.072) | (-2.325) |
| *ISS investigation* | 0.218 | 0.498 | 0.781 |
| | (0.154) | (0.353) | (0.617) |
| *Δ Mood images* | 0.039* | 0.040* | 0.040** |
| | (2.065) | (2.119) | (2.225) |
| *Δ Mood images × ISS investigation* | -0.020 | -0.022 | -0.023 |
| | (-1.382) | (-1.480) | (-1.490) |
| *Δ Investor sentiment bearish* | -25.758*** | -5.689 | -5.741 |
| | (-2.996) | (-0.677) | (-0.812) |
| *ISS investigation × Δ Investor sentiment bearish* | 37.117** | 34.331** | 33.152** |
| | (2.452) | (2.375) | (2.592) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.440 | 0.441 | 0.461 |

| Panel B. Winter season | | | |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| *Δ Mood images × Season* | 0.023 | 0.025 | 0.020 |
| | (0.958) | (1.002) | (0.918) |
| *Δ Mood images × ISS investigation × Season* | -0.435*** | -0.470*** | -0.063 |
| | (-4.135) | (-3.920) | (-0.347) |
| *ISS investigation* | 1.278 | 1.634 | 1.911 |
| | (0.872) | (1.137) | (1.406) |
| *Δ Mood images* | 0.035 | 0.036 | 0.038 |
| | (1.505) | (1.595) | (1.723) |
| *Δ Mood images × ISS investigation* | -0.030* | -0.029* | -0.032* |
| | (-1.946) | (-1.792) | (-1.973) |
| *Season* | 4.385 | 3.553 | 3.454 |
| | (1.359) | (1.023) | (1.112) |
| *ISS investigation ×* Season* | -3.191 | -4.271 | -6.768 |
| | (-0.951) | (-0.994) | (-1.726) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.430 | 0.433 | 0.452 |

This table presents regressions results for Equation (1) when we control for sentiment. *Δ Investor sentiment bearish* represents a change in the percentage of individual investors who are bearish between the current and the next annual meetings. *Season* equals 1 if the next annual meeting happens in winter and is 0 otherwise. Control variables are the same as Table 1.4. Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

**Table 1.9 The mitigating impact of the number of proposals**

| Dependent variable: *Δ SOP voting support* | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| *Δ Mood images × Δ Number of proposals* | 0.011** | 0.013** | 0.012** |
| | (2.121) | (2.704) | (2.739) |
| *Δ Mood images × ISS investigation × Δ Number of proposals* | -0.020* | -0.019* | -0.017 |
| | (-1.961) | (-1.891) | (-1.617) |
| *ISS investigation* | 0.870 | 1.229 | 1.580 |
| | (0.586) | (0.853) | (1.175) |
| *Δ Mood images* | 0.028 | 0.027 | 0.030* |
| | (1.640) | (1.635) | (1.805) |
| *Δ Mood images × ISS investigation* | -0.020* | -0.018 | -0.021* |
| | (-1.994) | (-1.714) | (-1.891) |
| *Δ Number of proposals* | -0.660 | -0.648 | -0.646 |
| | (-1.244) | (-1.279) | (-1.261) |
| *ISS investigation × Δ Number of proposals* | 1.110 | 1.104* | 1.141 |
| | (1.668) | (1.822) | (1.713) |
| Control variables | Yes | Yes | Yes |
| Industry fixed effect | No | No | Yes |
| Year fixed effect | No | Yes | Yes |
| No. of observations | 406 | 406 | 406 |
| Adjusted $R^2$ | 0.435 | 0.438 | 0.459 |

This table presents regressions results for Equation (1) when we control for the change in the number of proposals between annual meetings. *Δ Number of proposals* is the change in the total number of proposals to be voted in the next annual meeting versus the current annual meeting. Control variables are the same as Table 1.4. Standard errors are clustered by Fama-French industry code. *t*-statistics are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level using two-tailed tests.

# Chapter 2: Corporate shareholder engagement and analyst earnings forecasts


**Abstract**

We examine if direct communication between a firm and shareholders to exchange information and solicit shareholder views – corporate shareholder engagement – affects analyst assessment of a firm's prospects. As a quasi-natural experiment that increases a firm's shareholder engagement activities, we use Institutional Shareholder Services (ISS) investigation of corporate engagement activities. We find an increase in earnings forecast optimism for firms subject to ISS investigation and a reduced likelihood an analyst will terminate coverage of such firms. However, forecast accuracy decreases for these firms, which suggests actual earnings do not match up to more optimistic analyst views. The results are present only for firms subject to ISS investigation for the first time. Overall, the findings suggest that analysts consider firm corporate shareholder engagement to have a positive effect on firm performance. However, analysts overweight the impact of corporate engagement on earnings resulting in inaccurate earnings forecasts.



*Keywords*: Proxy advisor; ISS; shareholder engagement; financial analyst; forecast optimism

*JEL Codes*: D72, D84, G24, G41, M14

## 2.1. Introduction

Emerging literature highlights the importance of corporate shareholder engagement (CSE) for firms and investors (Kakhbod, Loginova, Malenko and Malenko 2023; Dey, Starkweather, and White 2024). CSE involves a dialogue between managers and shareholders through meetings, roundtables and eliciting views through shareholder surveys. Firms, shareholders, and external parties, such as proxy advisors, can initiate shareholder engagement, and it is portrayed as a key mechanism through which shareholders can influence corporate governance and firm financial practices (McCahery, Sautner, and Starks 2016; Bebchuk, Cohen, and Hirst 2017). Proxy advisors, such as Institutional Shareholder Services (ISS) and Glass Lewis, consider shareholder engagement when issuing voting recommendations, particularly on managers' remuneration. If shareholder voting support for the Say-On-Pay (SOP) vote – a routine vote on managerial remuneration mandated by the Dodd-Frank Act – receives less than 70% (80%) shareholder support, ISS (Glass Lewis) conducts an investigation into the firm's shareholder engagement practices. The objective of the investigation is to pressure the firm to enhance its communication and responsiveness to shareholders with the goal of increasing future shareholder voting support.[26]

This study examines whether CSE affects market participants' perceptions of firm prospects. The link between CSE and market participants' views about a firm is unclear. On the other hand, CSE can affect firm performance through (i) managerial learning (Luo 2005; Chen et al., 2007; Hutton et al. 2012; Kadan et al. 2012), (ii) adjustments to the shareholder base that can reduce under and over-investments (Liu et al. 2016; Kempf et al. 2017), and facilitate capital raising (Halac et al. 2020), and (iii) it can promote structural corporate governance changes that

[26] ISS and Glass Lewis argue that communication with shareholders can help companies understand why shareholders' voting support for managers falls below the threshold. Such dialogue can either prompt better disclosure to shareholders or affect changes in firms corporate governance, including the compensation package (Dey, Starkweather, and White 2024). For example, Glass Lewis state that 'When a company receives low support for its say-on-pay proposal, we believe the compensation committee should provide some level of response to shareholders' concerns, including engaging with large shareholders to identify the concerns driving the opposition. Shareholders should also expect adequate disclosure of any such engagement and any resulting feedback or changes being made to address outstanding concerns.'

in turn positively affect future earnings (Bhagat and Bolton 2014). In addition, Firms subject to ISS investigation often increase their engagement with shareholders in an effort to address concerns related to executive compensation and corporate governance issues (Dey, Starkweather, and White 2024). Prior research has shown that Say-on-Pay voting can improve the alignment between CEO compensation and firm performance. For example, Ferri and Maber (2013) document that following negative Say-on-Pay outcomes, UK firms removed controversial CEO pay practices and strengthened the alignment between pay and performance. Balsam et al. (2016) find that in anticipation of the initial Say-on-Pay vote in 2011, firms proactively reduced executive compensation, particularly those with a history of CEO overcompensation. Moreover, these firms increased the use of performance-based compensation. In addition, Cuñat, Giné, and Guadalupe (2016) show that Say-on-Pay works as an effective governance tool by enabling shareholders to express their views on executive compensation, which is confirmed by significant improvements in both firm performance and shareholder value. Thus, analysts are likely to interpret the increased corporate shareholder engagement prompted by ISS investigation, triggered by SOP voting support below 70%, as an effective governance mechanism that may contribute to improved future firm performance. These are mechanisms consistent with the prediction that higher shareholder engagement strengths managerial monitoring, which in turn should promote higher pay-performance link and effort, which in turn would show up in higher firm performance and shareholder value.

On the other hand, CSE may have a limited impact on earnings. Dey et al. (2024) report no significant average price impact of the ISS investigation announcement, arguing that 'This could be due to the smaller sample size, or perhaps it is simply the case that investors do not anticipate treated firms, on average, to subsequently take engagement actions that will influence shareholder value.' They find a positive market impact from ISS investigation only for a subsample where ISS simultaneously recommends voting against SOP. Lack of perceived benefits arising from CSE can be attributed to (i) engagement with select groups of shareholders who

already have favourable views about a firm, (ii) the difficulty reconciling heterogeneous messages from various shareholder groups resulting in changes that have limited impact, and (iii) cosmetic changes aiming solely to appease the proxy advisor.[27] As CSE is costly (Kakhbod et al. 2023; Dey et al. 2024), the limited effect of CSE on higher future earnings would question shareholders' and proxy advisors' emphasis on CSE. In addition, lower SOP voting support can reflect concerns about pay-for-performance misalignment. Previous literature documents that many firms revise their executive compensation plans ahead of Say-on-Pay votes to align with the preferences of proxy advisory firms, aiming to avoid negative voting recommendations. However, these adjustments are associated with statistically significant negative stock market reactions, suggesting that such board decisions reduce shareholder value (Larcker, McCall, and Ormazabal 2015). Thus, analysts may interpret an ISS investigation as a negative signal regarding the firm's future performance prospects. Thus, understanding if CSE is perceived as value-enhancing is important for managers, investors, proxy advisor firms and regulators.

Identifying if CSE affects performance is challenging due to the typically low power of tests and the potential effect of omitted correlated variables. We overcome these problems by focusing on changes in analyst perception of future earnings. This research setting has several advantages. First, Dey et al. (2024) highlight that a small sample size reduces the power of tests that examine price reactions to exogenous shocks to CSE, such as those prompted by ISS investigations. Similarly, tests linking shocks to CSE to ex-post earnings can suffer from low power due to a small sample size. We focus on a large sample of analyst one-year-ahead forecasts, avoiding power issues. Second, CSE can correlate with unanticipated activities by investors and

[27] To illustrate, Dey et al (2024, Appendix B) highlights that Venta's Inc feedback from shareholders highlights that "Based on these discussions [with shareholders], we learned that our stockholders: (i) generally approve of the overall structure of our executive compensation program and diversity of goals, particularly our use of balanced metrics of growth, risk management and capital structure to mitigate risk and promote responsible, sustained long-term growth; (ii) generally approve of our implementation of the executive compensation program, the factors considered and the decisions made under the program; (iii) generally approve of our proxy disclosures regarding our executive compensation program and corporate governance best practices; (iv) generally support our pay-for-performance alignment; and (v) generally endorse our corporate governance practices."

other stakeholders, which can confound the effect of CSE on earnings. By focusing on changes in expectations, we examine how analysts anticipate CSE to *systematically* affect core earnings. As analyst forecasts are a good surrogate for investor expectations (Brown, Richardson, and Schwager 1987; Fried and Givoly 1982), we can generalise the results to changes in investors' perceptions. Third, we can better link the timing of CSE's shocks to earnings changes. Specifically, we align the horizon of the most pronounced CSE changes with the analyst earnings forecasting horizon, i.e., the period where earnings should reflect CSE actions. Though the delayed benefits of CSE are plausible, a large gap between CSE actions and changes in earnings would suggest a more tenuous relation.

We use the ISS investigation as a shock to the firm's CSE. Dey, Starkweather and White (2024) report that 'Firms receiving ISS treatment exhibit swift and substantive increases in extensive and intensive margins of engagement.' We utilise the ISS Voting Analytics database to identify firms under ISS coverage that undergo an ISS investigation due to receiving less than 70% support on Say-on-Pay (SOP) voting during an annual meeting. According to ISS policy, a qualitative review of a company's responsiveness is conducted if the company receives less than 70% shareholder support on its Say-on-Pay (SOP) proposal. As part of this review, ISS evaluates the company's disclosure regarding the scope of shareholder engagement, including the frequency, timing, and breadth of interactions with investors. Supporting this, recent literature finds that ISS investigation triggered by SOP support falling below the 70% threshold is associated with a significant increase in both the extensive and intensive margins of shareholder engagement in the subsequent year (Dey, Starkweather, and White 2024). To establish a causal relation between CSE and earnings expectations, we select only firms slightly below the 70% threshold that receive ISS investigation (treated firms) that we compare to firms slightly above the threshold (controls). Dey, Starkweather and White (2024) and Li, Bilinski and Jung (2024) argue that the odds of a firm falling either just above or below the 70% shareholder support in SOP votes are random. This allows us to adopt a difference-in-difference (DiD) methodology to examine changes in analyst

earnings forecast optimism bias and forecast accuracy following an ISS investigation. Our regression models incorporate industry and year-fixed effects to control for time-invariant industry characteristics and time-varying economic trends to help us further exclude potential confounding explanations.

We focus on the effect that the ISS investigation has on analyst earnings forecasts, specifically forecast optimism and accuracy. Earnings forecasts are the key research output that reflects analysts' views of the firm future earnings. If CSE affects performance, we should observe a link between analyst earnings forecasts and ISS investigation in treated firms. An increased forecast optimism suggests that analysts view CSE as promoting higher future performance. Accuracy allows us to gauge if changes in perceptions are justified, i.e., matched by the actual changes in performance. An increase in optimism that is associated with lower (higher) forecast accuracy suggests that analysts overweigh the expected CSE benefits (that actual earnings more closely match with analyst expectations). By intersecting the ISS Voting Analytics database with analyst data from the I/B/E/S database and other relevant variables potentially affecting analyst earnings forecast quality, we compile a sample of 8,118 observations that reflect firm-year-analyst forecasts from 2011 to 2021.

We find that a positive shock to CSE, resulting from the ISS investigation, has a significant positive impact on analysts' forecast optimism bias. The results indicate that analysts tend to issue more optimistic earnings forecasts for firms that undergo ISS investigations compared to control firms. This finding suggests that analysts interpret the enhanced shareholder engagement, prompted by ISS scrutiny, as a positive signal regarding the firm's prospects. However, this optimism bias comes at the cost of lower forecast accuracy. Jointly, the results suggest that (i) analysts believe CSE has a positive effect on firm earnings, but (ii) they overestimate the magnitude of the expected impact on earnings.

Our findings are robust across various tests. First, we show that the results are robust to alternative measures of forecast optimism and accuracy that control for the denominator effect

when scaling by actual earnings close to zero (Clement and Tse 2003). Second, considering that firms may require time to engage with shareholders, changes in analyst earnings forecast optimism might not be observed immediately following an ISS investigation and can vary over time. To assess the persistence of our main results throughout the year following an ISS investigation, we split our sample into two six-month periods: the first and second halves of the year post-investigation. We find that analyst optimism tends to be higher in the second half of the year. Thus, as the intensity of shareholder engagement increases, we observe more favourable views reflected in analyst forecasts. Third, we consider that analysts' reactions may differ for firms with prior ISS investigation experience. Unlike our main analysis, we expand the sample to include firms' subsequent (non-first) investigation incidents and incorporate firm-fixed effects in the regression model due to repeated firm appearances. The results indicate that our main findings for forecast optimism bias and accuracy are weaker or muted when analysts issue earnings forecasts for firms that have previously undergone ISS investigations. This evidence is consistent with learning where analysts recognize that CSE may not be associated with significantly higher future earnings. Finally, we document that analysts are unlikely to terminate coverage of firms subject to ISS investigation in the following year. Considering that analysts have incentives to cover firms with good prospects (Cowen, Groysberg and Healy 2006), the result corroborates our main findings that analysts perceive that ISS-driven shareholder engagement will have a positive effect on firms' prospects.

Our paper makes several contributions to the literature on corporate shareholder engagement and analyst behaviour (e.g., Byard, Li, and Weintrop 2006; Collins and DeAngelo 1990; Kerl and Ohlert 2015). First, it is the first study to empirically examine the impact of ISS-induced shareholder engagement on analyst earnings forecasts. We document that analysts perceive CSE to have a positive effect on future earnings, though analysts overweigh the expected impact. As analyst views are considered a surrogate for market expectations of earnings, the results suggest that investors and proxy advisors may overestimate the benefits of CSE as captured

by an increase in future cash flows. A more measured view of how CSE links with future earnings is warranted. The study enriches the ongoing debate on the effectiveness of shareholder engagement as a governance and value-enhancing tool (e.g., Bebchuk, Cohen, and Hirst 2017; Goranova et al. 2017; Iliev, Kalodimos, and Lowry 2021; Kakhbod et al. 2023; Lewellen and Lewellen 2022).

Second, we add to the literature that examines the factors affecting analyst forecast optimism and accuracy. Prior literature documents that analyst forecasts are often subject to optimism bias due to conflicts of interest and competitive pressures (e.g., Michaely and Womack 1999; Lim 2001; Hong and Kubik 2003). As analysts' earnings forecasts have a significant capital market impact, including share price performance, managerial decision making and investor capital allocation (e.g., Dechow, Hutton, and Sloan 2000; Veenman and Verwijmeren 2018; Walther and Willis 2013), it is important to understand what public signals affect analysts' forecast optimism. The paper also contributes to the broader literature on the determinants of analyst forecast accuracy (e.g., Clement 1999; Hope 2003; Keskek, Tse, and Tucker 2014; Lehavy, Li, and Merkley 2011; Pope and Wang 2023; Tan, Wang, and Welker 2011). Our study bridges the gap between two important strands of literature—corporate governance and analyst forecast behaviour. We provide new insights into the interaction between shareholder engagement activities and financial market intermediaries. By linking ISS investigations to analysts' forecast behavior, this study provides new insights into how external governance mechanisms can influence the information environment of firms.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature and develops our hypotheses. Section 3 describes the sample, research design, and empirical methods. Section 4 presents the empirical results. Section 5 concludes.

## 2.2. Related research and hypotheses

### *2.2.1. Corporate shareholder engagement*

Shareholder engagement involves direct communication between firms and their shareholders, aimed at sharing their views on corporate policies, addressing issues related to corporate governance and strategies, and improving corporate transparency (Kakhbod et al. 2023). Firms engage with shareholders through various activities such as annual meetings, conference calls, investor relations, disclosures, and direct dialogue (e.g., McCahery, Sautner, and Starks 2016; Levit 2019). Effective shareholder engagement is vital to a firm's success as it enhances corporate governance and performance (e.g., Bebchuk, Cohen, and Hirst 2017). While firms' shareholder engagement practices have constantly been evolving,[28] shareholder engagement has become particularly more important in recent years with the rise of proxy advisors like Institutional Shareholder Services and Glass Lewis, and regulatory changes such as the Dodd-Frank Act of 2010, which introduced Say-On-Pay votes (McCahery, Sautner, and Starks 2016; Kakhbod et al. 2023).

### *2.2.2. Say-On-Pay and institutional shareholder services (ISS)*

The Dodd-Frank Act of 2010 mandated the say-on-pay (SOP) vote, a regular advisory vote on executive compensation. The SOP vote allows shareholders to voice their approval or disapproval of executive compensation packages, offering an effective means of firms' communication with shareholders (Ertimur, Ferri, and Oesch 2013). Although the SOP vote is advisory and does not legally limit executive compensation, its outcome influences firms' executive compensation practices (Larcker, McCall, and Ormazabal 2015; Dey, Starkweather, and White 2024).

[28] One notable example is shareholder activism. In the 1980s, institutional investors began to actively engage in direct dialogue with managers, submit shareholder proposals, or conduct proxy battles to influence firms' strategies and performance (e.g., Gillan and Starks 2009).

In recent years, a substantial portion of shareholders, in particular institutional investors, have outsourced the SOP vote to proxy advisors due to their time constraints and limited resources to make correct and efficient voting decisions across their diverse portfolios (Ertimur, Ferri, and Oesch 2013; Larker, McCall, and Ormazabal 2015; Malenko and Malenko 2019). As a result, proxy advisors like Institutional Shareholder Services (ISS) play a crucial role in swaying the SOP voting outcome. Malenko and Shen (2016) find that shareholders' voting support decreases by 25% when ISS issues an "against" recommendation for the firm's SOP proposal. Furthermore, ISS can make firms change their shareholder engagement practices using the threat of issuing a negative recommendation for the firms' future ballot items (Dey, Starkweather, and White 2024). Specifically, ISS's policies stipulate that if a firm receives less than 70% voting support for its SOP proposal, ISS will conduct a formal investigation of the firm's shareholder engagement practices (ISS investigation, hereafter). ISS requires that the firm proactively reach out to its shareholders, understand their concerns that led to SOP dissent, take actions to address the concerns, and disclose details of its shareholder engagement practices as well as its plans to improve engagement in the future (Dey, Starkweather, and White 2024). If a firm fails to demonstrate a robust response to shareholder concerns in its subsequent proxy statement following a low SOP vote, ISS will recommend against the firm's future SOP and/or director votes, inflicting economic and reputational penalties for not complying with ISS's policies. Therefore, despite ISS's lacking legal enforcement capability, ISS investigation, triggered by a firm's low SOP vote, can pressure the firm to improve shareholder engagement policies (Ellickson 1991; Terlaak 2007; Dey, Starkweather, and White 2024).

### *2.2.3. Hypotheses*

Sell-side analysts are one of the most important market intermediaries, who collect and process firms' information and provide investment research and recommendations on the firms. Their research outputs, such as earnings forecasts and stock recommendations, can significantly impact stock prices and investors' decisions (Womack 1996). Analysts often exhibit optimism

bias in their research (e.g., Bradshaw 2004). Analysts' optimism can stem from conflicts of interest, such as their desire to maintain good relationships with managers and to attract investment banking businesses, as well as career concerns and competition among analysts (Michaely and Womack 1999; Lim 2001; Hong and Kubik 2003). Analysts' optimism is also affected by corporate governance and firms' information environment (Collins and DeAngelo 1990). Despite the rise of proxy advisors and the importance of understanding the drivers of analysts' optimism, no study has examined the specific effects of proxy advisor-triggered shareholder engagement on analysts' forecast optimism and accuracy.

Following a low SOP vote, ISS investigations prompt firms to improve their shareholder engagement practices (Dey et al. 2024). If firms' shareholder engagement activities, triggered by ISS investigations, are interpreted as positive actions that could potentially improve firm performance, we expect that analysts will make optimistic earnings forecasts for the firms:

> ***Hypothesis 1****: Analysts' earnings forecasts are more optimistically biased for firms that undergo ISS investigations than those that do not undergo ISS investigations.*

Next, we examine the impact of ISS-led shareholder engagement activities on analysts' forecast accuracy. If all analyst EPS forecasts fall below the actual EPS value, then a more optimistic forecast will, result in a smaller forecast error and thus appear more accurate. Conversely, if all forecasts exceed the actual EPS, greater optimism leads to larger forecast errors and lower accuracy. Given this uncertainty, we use Hypothesis 2 to examine whether analyst EPS forecast accuracy changes following ISS investigation.

> ***Hypothesis 2****: Analysts' earnings forecasts are less accurate for firms that undergo ISS investigations than those that do not undergo ISS investigations.*

## 2.3. Sample, research design, and regression models

### *2.3.1. Sample*

We begin by downloading 34,650 SOP voting outcomes for U.S. companies between 2011 and 2021 from the ISS Voting Analytics database. We eliminate observations with missing SOP shareholder voting support data and duplicate firm-year records. Next, we retain instances where the shareholder voting support percentage for a firm's SOP proposal at the annual general meeting falls within the range of 67% to 73%. This reduces our SOP voting sample to 872 firm-years. We then merge the SOP voting data with I/B/E/S to obtain information on analyst characteristics. We retain analysts' one-year-ahead earnings forecasts made after the firms' annual meeting dates. In order to mitigate the concern on the different time period between annual meeting which triggers the ISS investigation in year *t* and analyst forecasts for EPS in *t+1*, we use all analyst forecasts issued between the annual meeting that triggers the ISS investigation in year *t* and the announcement of actual EPS for year *t+1*. Additionally, we merge our sample with Compustat, the Center for Research in Security Prices (CRSP), ISS Directors, and Thomson Reuters 13F Institutional Holdings to collect data on firms' fundamentals and CEO characteristics, stock prices, board characteristics, and institutional ownership, respectively. After removing observations with missing variables, we obtain a sample of 10,175 firm-year-analyst-forecast observations. Finally, we retain only the first incidences of firms' SOP shareholder voting, resulting in a final sample of 8,118 firm-year-analyst-forecast observations, representing 215 unique firms and 1,470 unique analysts from 2011 to 2021. Our sample construction procedure is detailed in Table 2.1.

### *2.3.2. Regression models*

We examine the effects of corporate shareholder engagement on analysts' forecast optimism or accuracy using the following OLS regression model:

$$Forecast\ optimism\ (or\ accuracy)_{ijt+1} = \alpha_1\ ISS\ investigation_{it} + \alpha_2\ \Phi + \beta\ Fixed\ effects + \varepsilon. \quad (1)$$

In Equation (1), *i*, *j*, and *t* denote firm, analyst, and year, respectively. *Forecast optimism* is measured by two metrics. *Forecast optimism_1*$_{ijt+1}$, defined as analyst *j*'s one-year-ahead

earnings-per-share (EPS) forecast minus the actual EPS of firm *i* in year *t*+1, where year *t* includes firm *i*'s annual general meeting, scaled by the absolute value of the actual EPS. *Forecast optimism_2*$_{ijt+1}$, which follows a similar definition but is scaled by one plus the absolute value of the actual EPS to avoid scaling by either zero or earnings close to zero. *Forecast accuracy* is also measured by two metrics: *Forecast accuracy_1*$_{ijt+1}$, defined as negative one times the absolute difference between analyst *j*'s one-year-ahead EPS forecasts and the actual EPS of firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, scaled by the absolute value of the actual EPS; and *Forecast accuracy_2*$_{ijt+1}$, with a similar definition but scaled by one plus the absolute value of the actual EPS.

The variable of interest in Equation (1) is *ISS investigation*$_{it}$, defined as an indicator variable that equals to 1 if firm *i* receives below 70% votes approving the SOP proposal at the annual general meeting in year *t*, and 0 otherwise. Around the 70% threshold of SOP voting support in the annual general meeting, the treatment from Institutional Shareholder Services (ISS) is randomised (Dey, Starkweather, and White 2024). We choose a close calliper around the 70% threshold to construct the treatment and control groups. Specifically, when the SOP voting support percentage at a firm's annual meeting falls between 67% and 70% (or between 70% and 73%), the firms are classified as the treatment group (control group). A positive and significant coefficient on *ISS investigation*$_{it}$ for the dependent variable of *Forecast optimism* will support our first hypothesis that analysts' earnings forecasts are more optimistically biased for firms that undergo ISS investigations than those that do not undergo ISS investigations. Also, a negative and significant coefficient on *ISS investigation*$_{it}$ for the dependent variable of *Forecast accuracy* will support our second hypothesis that analysts' earnings forecasts are less accurate for firms that undergo ISS investigations than those that do not undergo ISS investigations.

In Equation (1), we include a set of control variables, represented by $\Phi$, capturing firm-, analyst-, and forecast-specific characteristics that are known to influence analysts' forecast optimism or accuracy (e.g., Clement and Tse 2003, 2005; Gleason and Lee 2003; Jiang, Kumar,

and Law 2016; Kumar 2010; Mikhail, Walther, and Willis 2003). Regarding firm characteristics, we control for book-to-market, market capitalization, institutional ownership, number of analysts following a firm, sales growth, board size, leverage and stock return volatility. Regarding analyst characteristics, we control for brokerage size, forecast frequency, analyst firm-specific experience, the number of firms and the number of industries an analyst follows. We also control for lagged forecast optimism or accuracy of the same analyst for the same firm in year *t*. Furthermore, we control for forecast horizon. Regarding CEO characteristics, we include CEOs' total compensation and tenure, which might contain information affecting analysts' forecasting accuracy (e.g., Fee, Li, and Peng 2023; Larocque, Martin, and Walther 2020). Variable definitions are provided in Appendix A. We include industry and year fixed effects to control for unobservable and time-invariant industry characteristics and the time trend. Following Bradshaw, Brown, and Huang (2013), we cluster standard errors at the analyst level to account for any intra-group correlations within analyst.

## 2.4. Results

### *2.4.1. Descriptive statistics*

In Table 2.2, we present descriptive statistics for the main variables used in our regression models. We find positive mean values of forecast optimism variables, suggesting that analysts' earnings forecasts are, on average, optimistically biased. The mean of *Brokerage size* is 62.7, suggesting that our sample analysts work for brokerage houses that have, on average, 62.7 analysts. Our sample analysts, on average, cover 18.8 firms with approximately 6 years of experience covering these firms and follow around 5 industries. Analysts issue, on average, 5.3 one-year-ahead EPS forecasts for a firm after its annual meeting in a year. In our sample, on average, firms have 9.4 directors on their boards, with their CEOs having been in office for 8.1 years.

Table 2.3 compares firm characteristics between firms that undergo ISS investigations (treatment firms) and those that do not (control firms). We find no significant difference in firm

characteristics between treatment and control firms, suggesting that treated firms are similar to control firms. This evidence is in line with Dey, Starkweather, and White (2024) finding that the likelihood of receiving shareholders' SOP voting support just below or above 70% is nearly random. Thus, any changes in shareholder engagement activities can be attributed to ISS investigations. The results in Table 2.3 suggest that using the ISS investigation as a shock to CSE allows us to identify the causal impact of shareholder engagement activities on analysts' forecast optimism and accuracy.

### *2.4.2. CSE and analysts' forecast optimism*

Using an ISS investigation as an exogenous shock to firms' shareholder engagement activities, we examine the impact of shareholder engagement activities on analysts' forecast optimism.[29] Table 2.4 shows the results of the optimism test. We find positive and significant coefficients on *ISS investigation*, suggesting that analysts issue more optimistically biased forecasts for firms that undergo ISS investigations. This evidence is present for both optimism measures. The results are also economically meaningful. For example, based on the result in Column (1), analysts' optimism bias is 8.3% higher when firms undergo ISS investigations (*ISS investigation*=1) than when firms do not (*ISS investigation*=0).[30] Given that the average forecast optimism in the sample is 0.106, this implies that firms subject to ISS investigation experience an increase in forecast optimism equivalent to approximately 78% of the sample mean. Overall, the results support our first hypothesis (H1) and suggest that analysts perceive CSE to affect firm earnings positively.

### *2.4.3. CSE and analysts' forecast accuracy*

We now examine the impact of ISS-induced shareholder engagement on analysts' forecast accuracy. Table 2.5 reports the results of the accuracy test. We find negative and significant

[29] To fit tables on the page, we do not report the intercept in Table 2.4 and subsequent tables.
[30] Put alternatively, the effect is 12.7% of forecast optimism standard deviation; 0.083 (coefficient on *ISS investigation*) ÷ 0.653 (standard deviation of *Forecast optimism_1*) = 0.127

coefficients on *ISS investigation* in both columns. According to the results in Column (1) of Table 2.5, analyst forecast accuracy is 12.5% lower for firms undergoing ISS investigations. Considering that the average forecast accuracy in the sample is –0.236, this corresponds to a decrease in accuracy of roughly 53% relative to the sample mean. Together with our finding in Table 2.4, the results suggest that analysts overweight the expected effect of CSE on future earnings, resulting in a greater divergence between analyst EPS forecasts and actual results. Overall, the results in Table 2.5 support our second hypothesis (H2) that analysts issue less accurate EPS forecasts for firms that undergo ISS investigations.

Regarding control variables, we consider both analyst and firm characteristics. Regarding analyst characteristics, firm-specific experience and prior forecast accuracy are significantly correlated with increased forecast accuracy, aligning with previous literature (e.g., Clement, 1999; Clement and Tse, 2003, 2005). Conversely, forecast frequency correlates with decreased forecast accuracy, consistent with prior studies (e.g., Jung et al., 2019; Kumar, 2010). Concerning firm characteristics, institutional ownership exhibits a significant positive correlation with forecast accuracy, while the book-to-market ratio shows a significant negative correlation. These findings corroborate previous research (e.g., Jiang, Kumar, and Law, 2016; Jung et al., 2019; Kumar, 2010; Ljungqvist et al., 2007). Additionally, following Larocque, Martin, and Walther (2020) evidence that compensation disclosures provide valuable information for estimating future firm performance, we control for CEO characteristics, including tenure and total compensation. Our analysis shows a positive association between CEO tenure and forecast accuracy.

### *2.4.4. Subsample tests*

Once ISS investigations are triggered, firms enhance their shareholder engagement and disclose the details of their engagement activities in the subsequent proxy statement (Dey, Starkweather, and White 2024). However, considering that firms may take time to plan their activities and take actions gradually throughout the year, a noticeable change in firms' shareholder engagement may not be observed immediately after the ISS investigation took place. In this case,

it is possible that analysts do not exhibit optimism bias in their forecasts issued right after ISS investigations. To examine this prediction, we first split the sample into two subsamples based on whether analysts' EPS forecasts are issued within the first six-month period or the second six-month period following a firm's ISS investigation. Then, we re-estimate our regression model of forecast optimism in Equation (1) using each subsample. The results are reported in Table 2.6. In Columns (1) and (3), we report results using the subsample of analyst forecasts issued within the first six-month period following ISS investigations. In Columns (2) and (4), we use the subsample of analyst forecasts issued within the second six-month period. Across all columns, except Column (3), we find positive and significant coefficients on *ISS investigation*. This evidence suggests that the effect of ISS-induced shareholder engagement on analysts' optimism bias is relatively persistent throughout the year.

We also re-estimated the accuracy regression model using the two subsamples. Results are reported in Table 2.7. Similar to Table 2.6, results using the subsample of analyst forecasts in the first six-month period are reported in Columns (1) and (3), and those using analysts forecasts in the second six-month period are reported in Columns (2) and (4). Across all four columns, we find negative and significant coefficients on *ISS investigation*, suggesting that the negative effect of ISS-induced shareholder engagement on analyst forecast accuracy is observable and persistent throughout the year[31].

we additionally partition the sample based on whether analyst forecasts were issued before or after six months prior to the EPS announcement date. The results from this alternative

[31] We also test for the significant differences between coefficients on *ISS Investigation* reported in Tables 2.6 and 2.7, respectively: in column 1 vs. column 2 and in column 3 vs. column 4. We construct an indicator variable, *Group*, which equals 1 if an analyst's EPS forecast is issued within the first six-month period following a firm's ISS investigation, and 0 otherwise. We then create an interaction term between *Group* and *ISS investigation* to assess whether the effect of ISS investigation on analyst behaviour differs across the two subsample periods. Using the full sample, we test whether the coefficient on the interaction term—representing the difference in the effect of ISS investigation between the two periods—is statistically significant. The results show that this difference is indeed significant, suggesting that analysts' forecast behavior is more strongly influenced by corporate shareholder engagement activities during the latter half of the post-investigation period.

specification remain consistent with those reported in Section 2.4.4, reinforcing the robustness of our findings.

### *2.4.5. Analysts' learning experience*

As analysts gain experience in forecasting earnings for firms undergoing ISS investigations, they better understand the consequences and implications of ISS-induced shareholder engagement on firm performance. Consequently, this learning experience may lead analysts to exhibit less optimism in their forecasts when covering firms that are not experiencing an ISS investigation for the first time. If this is the case, our results for forecast optimism bias and accuracy will be weaker or muted when analysts issue EPS forecasts for firms that have previously undergone ISS investigations.

To examine the potential moderating effect of analysts' learning experience on our findings, we first expand our sample to include all subsequent incidences of ISS investigations for firms. Using this larger sample, we re-estimate the baseline regression model of forecast optimism in Equation (1). The model is augmented with *Not first*, an indicator variable that equals one if an observation is associated with a firm's non-first (subsequent) incidence, and zero otherwise, along with its interaction term with *ISS investigation*. Given that a firm may appear multiple times in the sample, we also control for firm-fixed effects in the regression model. Results are reported in Table 2.8. Consistent with our prediction, we find positive coefficients on *ISS investigation* but negative and significant coefficients on *ISS investigation* × *Not first*, suggesting that the positive impact of ISS-induced shareholder engagement on forecast optimism is muted when firms have previously undergone ISS investigations.

We also repeated the forecast accuracy test using this larger sample that includes both first-time and subsequent incidences for firms. Results are reported in Table 2.9. Similar to the results for forecast optimism in Table 2.8, we find evidence of the moderating effect of analysts' learning experience. For example, in column (1) of Table 2.9, where the dependent variable is *Forecast accuracy*_1, *ISS investigation* shows a negative and significant coefficient. In contrast,

*ISS investigation* × *Not first* shows a positive and significant coefficient. The result suggests that the negative impact of ISS-induced shareholder engagement on analyst forecast accuracy weakens or disappears when firms have previously undergone ISS investigations[32].

### *2.4.6. Coverage drop*

In this subsection, we examine whether ISS-induced changes in firms' shareholder engagement activities affect analysts' coverage decisions. If analysts exhibit optimistic bias in forecasts because they interpret ISS investigations as positive shocks to firms' shareholder engagement and governance, which can increase firm value, analysts are likely to continue to cover the firms that undergo ISS investigations. To test it empirically, we construct the dependent variable of *Dropping coverage*, an indicator variable that equals one if an analyst stops issuing an EPS forecast for a firm in the following year and zero otherwise. The main variable of interest is *ISS investigation*, and control variables are identical to those in our baseline regression model of Equation (1). We estimate the regression of *Dropping coverage* and report results in Table 2.10. Consistent with our prediction, we find that the coefficient on *ISS investigation* is negative and significant, suggesting that analysts are more likely to continue to cover the firms undergoing ISS investigations in the following year.

## 2.5. Conclusions

This study examines the effect that firm shareholder engagement activities have on the optimism and accuracy of analyst earnings forecasts. Using ISS investigations as an exogenous shock that increases a firm's shareholder engagement activities, we find that analysts' EPS forecasts become more optimistic for firms undergoing ISS investigations. This suggests that

[32] In Table 2.8, the sum of the coefficients on *ISS Investigation* and *ISS Investigation* × *Not First* is negative and statistically significant, suggesting that analysts learn from prior experience that they have historically overestimated the positive impact of corporate shareholder engagement on firms' future earnings, and subsequently adjust by reducing their optimism bias. Similarly, in Table 2.9, the sum of these coefficients is positive and statistically significant, indicating that analysts tend to correct their forecast errors after learning from previous instances of corporate shareholder engagement induced by ISS investigations.

analysts view ISS-induced shareholder engagement activities as positive actions that could improve firm performance and value. However, forecast accuracy decreases for these firms, suggesting that analysts overweight the expected benefits of CSE for future earnings.

Overall, our study provides new evidence on the effects of corporate shareholder engagement on the quality of analyst forecasts. We are unaware of any other studies that explore the impact of ISS investigation-induced shareholder engagement activities on analysts' optimism bias and forecast accuracy. We demonstrate that corporate shareholder engagement activities triggered by ISS investigations following a low SOP vote can significantly impact analyst forecasts.

## Appendix A. Variables definition

| Variable | Definition |
|---|---|
| *Forecast optimism_1* $_{ijt+1}$ | Analyst *j*'s one-year-ahead earnings forecasts minus the actual earnings for firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, scaled by the absolute value of the actual EPS. |
| *Forecast optimism_2* $_{ijt+1}$ | Analyst *j*'s one-year-ahead earnings forecasts minus the actual earnings for firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, scaled by one plus the absolute value of the actual EPS. |
| *Forecast accuracy_1* $_{ijt+1}$ | Negative one times the absolute difference between analyst *j*'s one-year-ahead earnings forecasts and the actual earnings for firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, scaled by the absolute value of the actual EPS. |
| *Forecast accuracy_2* $_{ijt+1}$ | Negative one times the absolute difference between analyst *j*'s one-year-ahead earnings forecasts and the actual earnings for firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, scaled by one plus the absolute value of the actual EPS. |
| *Dropping coverage* $_{ijt+1}$ | An indicator variable that equals one if analyst *j* stops issuing a forecast for firm *i* in year *t*+1, where year *t* includes the firm's annual general meeting, and zero otherwise. |
| *ISS investigation* $_{it}$ | Indicator variable that equals to 1 if firm *i* receives below 70% votes approving SOP proposal in the annual general meeting in year *t*, and 0 otherwise. |
| *Not first* $_{it}$ | Indicator variable that equals to 1 if firm *i* is observed subsequent to the initial annual general meeting within our dataset, and 0 if firm *i* is encountered for the first time. |
| *Book-to-market* $_{it}$ | The ratio of book value of equity to market value of equity for firm *i*, measured at the beginning of year *t*, which includes the firm's annual general meeting. |
| *Market capitalization* $_{it}$ | The natural logarithm of firm *i*'s market capitalization (in thousands), measured in a year preceding the annual general meeting in year t. |
| *Institutional ownership* $_{it}$ | The mean proportion of firm *i*'s shares held by institutional investors over the four quarters in year t-1, preceding the annual general meeting in year t. |
| *Number of analysts* $_{it}$ | The natural logarithm of one plus the number of analysts following firm *i* in year *t*, which includes the firm's annual general meeting. |
| *Sales growth* $_{it}$ | A change in firm *i*'s sales between year *t* and year *t*-1, scaled by sales of year *t*-1, where year *t* includes the firm's annual general meeting. |
| *Board size* $_{it}$ | The number of firm *i*'s board directors in year *t*, which includes the annual general meeting. |
| *Leverage* $_{it}$ | The ratio of firm *i*'s total liabilities to total assets in year *t*, which includes the annual general meeting. |
| *Stock return volatility* $_{it}$ | Standard deviation of firm *i*'s 12 monthly stock returns in year *t*, which includes the annual general meeting. |
| *CEO tenure* $_{it}$ | The natural logarithm of one plus the number of years that the CEO of firm *i* has held the CEO title as of the beginning of year *t*, which includes the firm's annual general meeting. |
| *Total compensation* $_{it}$ | The natural logarithm of the CEO's total annual compensation during the year prior to firm *i*'s annual general meeting in year *t*. |
| *Brokerage size* $_{jt}$ | The natural logarithm of one plus the number of analysts at the brokerage house that analyst *j* works for in year *t*. |
| *Forecast horizon* $_{ijt}$ | The natural logarithm of one plus the number of days between the dates of firm *i*'s earnings announcement and analyst *j*'s most recent earnings forecast for the firm in year *t,* which includes the annual general meeting. |
| *Forecast frequency* $_{ijt}$ | The natural logarithm of one plus the number of one-year-ahead earnings forecasts that analyst *j* issues for firm *i* in year *t,* which includes the annual general meeting. |
| *Firm-specific experience* $_{ijt}$ | The natural logarithm of one plus the number of years that analyst *j* has issued one-year-ahead earnings forecasts for firm *i* in year *t,* which includes the annual general meeting. |
| *Number of firms* $_{jt}$ | The natural logarithm of one plus the number of firms that analyst *j* follows in year *t,* which includes the annual general meeting. |
| *Number of industries* $_{jt}$ | The natural logarithm of one plus the number of (two-digit SIC) industries that analyst *j* follows in year *t,* which includes the annual general meeting. |

The table reports definitions of variables used in the study.

**Table 2.1 Sample construction procedures**

| | N |
|---|---|
| ISS - Voting Analytics data | 684,759 |
| Retain observations for the proposal "Advisory Vote to Ratify Named Executive Officers' Compensation" | 35,383 |
| Retain observations for years from 2011 through 2021 | 34,650 |
| Remove observations with missing SOP shareholder voting support data | 34,065 |
| Remove duplicate firm-year observations | 33,619 |
| Require SOP shareholder voting support to fall within the range of 0.67 to 0.73 | 872 |
| Merge SOP shareholder voting with analyst forecast data | 19,293 |
| Require independent variables and control variables to be not missing | 10,175 |
| Retain the first incidents of firms' SOP shareholder voting | 8,118 |
| Final sample for the period from 2011 to 2021 | 8,118 |

This table shows the procedure of our sample construction.

**Table 2.2 Descriptive statistics**

| | N | Mean | Std. Dev. | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| *Forecast optimism_1* $_{ijt+1}$ | 8,118 | 0.106 | 0.653 | -0.056 | -0.007 | 0.053 |
| *Forecast optimism_2* $_{ijt+1}$ | 8,118 | 0.026 | 0.194 | -0.038 | -0.005 | 0.032 |
| *Forecast accuracy_1* $_{ijt+1}$ | 8,118 | -0.236 | 0.721 | -0.158 | -0.054 | -0.018 |
| *Forecast accuracy_2* $_{ijt+1}$ | 8,118 | -0.096 | 0.190 | -0.093 | -0.036 | -0.012 |
| *Brokerage size* $_{jt}$ | 2,356 | 62.675 | 51.786 | 21.000 | 49.000 | 98.500 |
| *Forecast horizon* $_{ijt}$ | 2,356 | 82.852 | 60.886 | 34.000 | 91.000 | 104.000 |
| *Forecast frequency* $_{ijt}$ | 2,356 | 5.256 | 2.828 | 3.000 | 5.000 | 7.000 |
| *Firm-specific experience* $_{ijt}$ | 2,356 | 6.153 | 4.471 | 3.000 | 5.000 | 9.000 |
| *Number of firms* $_{jt}$ | 2,356 | 18.799 | 8.018 | 14.000 | 18.000 | 23.000 |
| *Number of industries* $_{jt}$ | 2,356 | 4.731 | 2.682 | 3.000 | 4.000 | 6.000 |
| *Forecast optimism_1* $_{ijt}$ | 2,356 | -0.011 | 0.535 | -0.038 | -0.010 | 0.010 |
| *Forecast optimism_2* $_{ijt}$ | 2,356 | 0.000 | 0.131 | -0.024 | -0.007 | 0.006 |
| *Forecast accuracy_1* $_{ijt}$ | 2,356 | -0.242 | 0.881 | -0.095 | -0.026 | -0.010 |
| *Forecast accuracy_2* $_{ijt}$ | 2,356 | -0.058 | 0.130 | -0.050 | -0.018 | -0.007 |
| *Book-to-market* $_{it}$ | 215 | 0.581 | 0.452 | 0.285 | 0.483 | 0.789 |
| *Market capitalization* $_{it}$ | 215 | 15.083 | 1.645 | 13.891 | 14.840 | 16.154 |
| *Institutional ownership* $_{it}$ | 215 | 0.822 | 0.169 | 0.760 | 0.850 | 0.935 |
| *Number of analysts* $_{it}$ | 215 | 14.879 | 9.579 | 7.000 | 13.000 | 20.000 |
| *Sales growth* $_{it}$ | 215 | 0.084 | 0.263 | -0.020 | 0.048 | 0.137 |
| *Board size* $_{it}$ | 215 | 9.423 | 2.232 | 8.000 | 9.000 | 11.000 |
| *Leverage* $_{it}$ | 215 | 0.263 | 0.204 | 0.099 | 0.238 | 0.397 |
| *Stock return volatility* $_{it}$ | 215 | 0.103 | 0.059 | 0.065 | 0.087 | 0.126 |
| *CEO tenure* $_{it}$ | 215 | 8.112 | 7.052 | 3.000 | 6.000 | 12.000 |
| *Total compensation* $_{it}$ | 215 | 8,909.752 | 7,401.653 | 3,280.447 | 7,157.269 | 11,518.949 |

This table shows descriptive statistics for the main variables in our sample. The full analyst forecast sample consists of 8,118 observations, with 4,110 assigned to the treatment group and 4,008 to the control group. Some variables are reported as unlogged values for ease of interpretation, such as *brokerage size* $_{jt}$, *forecast horizon* $_{ijt}$, *forecast frequency* $_{ijt}$, *firm-specific experience* $_{ijt}$, *number of firms* $_{jt}$, *number of industries* $_{jt}$, *number of analysts* $_{it}$, *board size* $_{it}$, *CEO tenure* $_{it}$, *total compensation* $_{it}$. We provide variable definitions in Appendix A.

**Table 2.3 Comparisons of firm characteristics between firms with and without ISS investigation**

| | Full Sample = 215 | | | | |
|---|---|---|---|---|---|
| | Treated Mean | Control Mean | Difference | *t*-test | *p*-value |
| ***Firm characteristics*** | | | | | |
| *Book-to-market* $_{it}$ | 0.550 | 0.608 | -0.058 | -0.940 | 0.349 |
| *Market capitalization* $_{it}$ | 15.133 | 15.039 | 0.094 | 0.417 | 0.677 |
| *Institutional ownership* $_{it}$ | 0.820 | 0.808 | 0.012 | 0.483 | 0.629 |
| *Number of analysts* $_{it}$ | 2.588 | 2.570 | 0.018 | 0.211 | 0.833 |
| *Sales growth* $_{it}$ | 0.105 | 0.064 | 0.041 | 1.134 | 0.258 |
| *Board size* $_{it}$ | 2.214 | 2.225 | -0.011 | -0.365 | 0.716 |
| *Leverage* $_{it}$ | 0.267 | 0.259 | 0.008 | 0.292 | 0.770 |
| *Stock return volatility* $_{it}$ | 0.104 | 0.102 | 0.002 | 0.282 | 0.778 |
| *CEO tenure* $_{it}$ | 1.908 | 1.865 | 0.043 | 0.362 | 0.718 |
| *Total compensation* $_{it}$ | 8.850 | 8.657 | 0.193 | 1.584 | 0.115 |

This table compares univariate differences in main variables related to firm characteristics between treated group (102 observations) and control group (113 observations). Treated includes firms with 67.00% to 69.99% SOP voting approval in the annual general meeting. Control includes firms with 70.00% to 73.00% SOP voting approval in the annual general meeting.

**Table 2.4 Analyst optimism bias**

| Dependent variable: | *Forecast optimism_1* $_{ijt+1}$ | *Forecast optimism_2* $_{ijt+1}$ |
|---|---|---|
| | (1) | (2) |
| *ISS investigation* $_{it}$ | 0.083*** | 0.014* |
| | (2.648) | (1.681) |
| *Book-to-market* $_{it}$ | 0.198*** | 0.078*** |
| | (4.865) | (6.168) |
| *Market capitalization* $_{it}$ | 0.002 | 0.012*** |
| | (0.120) | (2.679) |
| *Institutional ownership* $_{it}$ | -0.439*** | -0.046 |
| | (-3.297) | (-1.534) |
| *Number of analysts* $_{it}$ | -0.010 | -0.023 |
| | (-0.189) | (-1.528) |
| *Sales growth* $_{it}$ | 0.064 | 0.048*** |
| | (1.643) | (3.608) |
| *Board size* $_{it}$ | -0.192* | -0.070** |
| | (-1.651) | (-2.460) |
| *Leverage* $_{it}$ | 0.188 | 0.042 |
| | (1.391) | (1.217) |
| *Stock return volatility* $_{it}$ | 0.462 | -0.131 |
| | (1.225) | (-1.085) |
| *CEO tenure* $_{it}$ | -0.140*** | -0.043*** |
| | (-5.892) | (-7.402) |
| *Total compensation* $_{it}$ | 0.047** | 0.010** |
| | (2.382) | (2.204) |
| *Brokerage size* $_{jt}$ | -0.005 | -0.002 |
| | (-0.466) | (-0.720) |
| *Forecast horizon* $_{ijt}$ | 0.019 | -0.001 |
| | (1.334) | (-0.305) |
| *Forecast frequency* $_{ijt}$ | 0.096*** | 0.027*** |
| | (3.093) | (2.888) |
| *Firm-specific experience* $_{ijt}$ | -0.038** | -0.009* |
| | (-2.251) | (-1.826) |
| *Number of firms* $_{jt}$ | 0.001 | -0.001 |
| | (0.037) | (-0.082) |
| *Number of industries* $_{jt}$ | -0.012 | 0.002 |
| | (-0.356) | (0.211) |
| *Forecast optimism_1* $_{ijt}$ | 0.045 | |
| | (1.312) | |
| *Forecast optimism_2* $_{ijt}$ | | 0.055 |
| | | (1.131) |
| Industry fixed effect | Yes | Yes |
| Year fixed effect | Yes | Yes |
| No. of observations | 8,118 | 8,118 |
| Adjusted $R^2$ | 0.251 | 0.281 |

This table uses full analyst forecast sample to test the relation between ISS investigation and analysts' earnings forecast bias. We retain only the records of the initial annual meeting for each firm included in our dataset. In model 1, Analysts' earnings forecasts bias is measured by *Forecast optimism_1* $_{ijt+1}$ for year t+1, following the annual general meeting in year t. In model 2, Analysts' earnings forecasts bias is measured by *Forecast optimism_2* $_{ijt+1}$ for year t+1, following the annual general meeting in year t. Models 1 to 2 incorporate Industry fixed effects and Year fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.5 Analyst forecast accuracy**

| Dependent variable: | *Forecast accuracy_1* $_{ijt+1}$ | *Forecast accuracy_2* $_{ijt+1}$ |
|---|---|---|
| | (1) | (2) |
| *ISS investigation* $_{it}$ | -0.125*** | -0.028*** |
| | (-3.503) | (-3.629) |
| *Book-to-market* $_{it}$ | -0.242*** | -0.085*** |
| | (-5.189) | (-8.744) |
| *Market capitalization* $_{it}$ | 0.005 | -0.007 |
| | (0.248) | (-1.645) |
| *Institutional ownership* $_{it}$ | 0.342** | 0.053** |
| | (2.342) | (2.026) |
| *Number of analysts* $_{it}$ | 0.030 | 0.018 |
| | (0.435) | (1.211) |
| *Sales growth* $_{it}$ | -0.159** | -0.058*** |
| | (-2.577) | (-4.991) |
| *Board size* $_{it}$ | 0.551*** | 0.090*** |
| | (3.899) | (3.490) |
| *Leverage* $_{it}$ | -0.023 | 0.026 |
| | (-0.158) | (0.776) |
| *Stock return volatility* $_{it}$ | 0.167 | 0.135 |
| | (0.382) | (1.143) |
| *CEO tenure* $_{it}$ | 0.115*** | 0.026*** |
| | (4.412) | (5.051) |
| *Total compensation* $_{it}$ | -0.026 | -0.001 |
| | (-1.050) | (-0.119) |
| *Brokerage size* $_{jt}$ | -0.008 | 0.001 |
| | (-0.651) | (0.295) |
| *Forecast horizon* $_{ijt}$ | -0.029** | -0.003 |
| | (-2.023) | (-0.683) |
| *Forecast frequency* $_{ijt}$ | -0.081** | -0.026*** |
| | (-2.374) | (-2.919) |
| *Firm-specific experience* $_{ijt}$ | 0.042** | 0.012** |
| | (2.292) | (2.403) |
| *Number of firms* $_{jt}$ | -0.015 | -0.003 |
| | (-0.437) | (-0.362) |
| *Number of industries* $_{jt}$ | 0.014 | 0.006 |
| | (0.400) | (0.642) |
| *Forecast accuracy_1* $_{ijt}$ | 0.097*** | |
| | (2.770) | |
| *Forecast accuracy_2* $_{ijt}$ | | 0.144** |
| | | (2.450) |
| Industry fixed effect | Yes | Yes |
| Year fixed effect | Yes | Yes |
| No. of observations | 8,118 | 8,118 |
| Adjusted $R^2$ | 0.250 | 0.303 |

This table uses full analyst forecast sample to test the relation between ISS investigation and analysts' earnings forecast accuracy. We retain only the records of the initial annual meeting for each firm included in our dataset. In model 1, Analysts' earnings forecast accuracy is measured by *Forecast accuracy_1* $_{ijt+1}$for year t+1, following the annual general meeting in year t. In model 2, Analysts' earnings forecast accuracy is measured by *Forecast accuracy_2* $_{ijt+1}$ for year t+1, following the annual general meeting in year t. Models 1 to 2 incorporate Industry fixed effects and Year fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.6 Optimism bias in the first versus second six-month periods**

| Dependent variable: | *Forecast optimism_1* $_{ijt+1}$ | | *Forecast optimism_2* $_{ijt+1}$ | |
|---|---|---|---|---|
| In the first six months: | Yes | No | Yes | No |
| | (1) | (2) | (3) | (4) |
| *ISS investigation* $_{it}$ | 0.078** | 0.150*** | 0.009 | 0.034*** |
| | (2.403) | (3.059) | (1.075) | (2.726) |
| *Book-to-market* $_{it}$ | 0.216*** | 0.187*** | 0.081*** | 0.076*** |
| | (4.720) | (3.986) | (5.823) | (4.796) |
| *Market capitalization* $_{it}$ | 0.009 | -0.023 | 0.017*** | -0.007 |
| | (0.576) | (-0.941) | (3.624) | (-1.150) |
| *Institutional ownership* $_{it}$ | -0.495*** | -0.050 | -0.061* | 0.048 |
| | (-3.430) | (-0.321) | (-1.864) | (1.278) |
| *Number of analysts* $_{it}$ | -0.002 | -0.107* | -0.028 | -0.025 |
| | (-0.038) | (-1.685) | (-1.554) | (-1.480) |
| *Sales growth* $_{it}$ | 0.087** | -0.062 | 0.062*** | -0.006 |
| | (2.129) | (-0.901) | (4.384) | (-0.287) |
| *Board size* $_{it}$ | -0.219* | -0.032 | -0.081*** | -0.009 |
| | (-1.815) | (-0.219) | (-2.669) | (-0.238) |
| *Leverage* $_{it}$ | 0.194 | 0.135 | 0.040 | 0.046 |
| | (1.251) | (0.971) | (1.007) | (1.426) |
| *Stock return volatility* $_{it}$ | 0.388 | 0.420 | -0.127 | -0.196 |
| | (0.907) | (1.062) | (-0.938) | (-1.607) |
| *CEO tenure* $_{it}$ | -0.137*** | -0.157*** | -0.045*** | -0.041*** |
| | (-5.466) | (-4.486) | (-7.127) | (-5.005) |
| *Total compensation* $_{it}$ | 0.041** | 0.085** | 0.009* | 0.020** |
| | (2.026) | (2.302) | (1.796) | (2.190) |
| *Brokerage size* $_{jt}$ | -0.008 | 0.014 | -0.004 | 0.002 |
| | (-0.689) | (1.294) | (-0.940) | (0.628) |
| *Forecast horizon* $_{ijt}$ | 0.018 | 0.025* | -0.002 | 0.004 |
| | (1.114) | (1.749) | (-0.442) | (0.972) |
| *Forecast frequency* $_{ijt}$ | 0.103*** | 0.040 | 0.030*** | 0.009 |
| | (2.980) | (1.407) | (2.801) | (1.068) |
| *Firm-specific experience* $_{ijt}$ | -0.040** | -0.017 | -0.011* | -0.002 |
| | (-2.248) | (-1.014) | (-1.889) | (-0.420) |
| *Number of firms* $_{jt}$ | 0.001 | -0.019 | 0.000 | -0.011 |
| | (0.033) | (-0.533) | (0.006) | (-1.113) |
| *Number of industries* $_{jt}$ | -0.014 | 0.016 | 0.003 | 0.006 |
| | (-0.369) | (0.494) | (0.264) | (0.570) |
| *Forecast optimism_1* $_{ijt}$ | 0.044 | 0.071* | | |
| | (1.251) | (1.836) | | |
| *Forecast optimism_2* $_{ijt}$ | | | 0.057 | 0.094* |
| | | | (1.115) | (1.788) |
| Industry fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes |
| No. of observations | 6,600 | 1,518 | 6,600 | 1,518 |
| Adjusted $R^2$ | 0.284 | 0.294 | 0.321 | 0.276 |

This table tests the relation between ISS investigation and analysts' earnings forecast bias. This table divides the full analyst forecast sample used by table 2.4 into two subsamples based on whether the date of the analysts' earnings forecast falls subsequent to or prior to the six-month mark following the annual general meeting. Models 1 and 3 present the findings for the period before the six-month threshold post-annual general meeting. Models 2 and 4 present the findings for the period after the six-month threshold post-annual general meeting. Models 1 to 4 incorporate Industry fixed effects and Year fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.7 Forecast accuracy in the first versus second six-month periods**

| Dependent variable: | *Forecast accuracy_1* $_{ijt+1}$ | | *Forecast accuracy_2* $_{ijt+1}$ | |
|---|---|---|---|---|
| In the first six months: | Yes | No | Yes | No |
| | (1) | (2) | (3) | (4) |
| *ISS investigation* $_{it}$ | -0.128*** | -0.167*** | -0.028*** | -0.039*** |
| | (-3.416) | (-2.655) | (-3.423) | (-3.150) |
| *Book-to-market* $_{it}$ | -0.279*** | -0.211*** | -0.095*** | -0.091*** |
| | (-5.253) | (-4.239) | (-9.255) | (-6.567) |
| *Market capitalization* $_{it}$ | 0.003 | 0.013 | -0.009** | -0.001 |
| | (0.162) | (0.379) | (-2.097) | (-0.105) |
| *Institutional ownership* $_{it}$ | 0.347** | 0.088 | 0.064** | -0.025 |
| | (2.178) | (0.533) | (2.211) | (-0.739) |
| *Number of analysts* $_{it}$ | 0.020 | 0.175** | 0.024 | 0.028** |
| | (0.252) | (2.292) | (1.354) | (2.009) |
| *Sales growth* $_{it}$ | -0.146** | -0.125 | -0.059*** | -0.019 |
| | (-2.291) | (-1.522) | (-4.303) | (-1.494) |
| *Board size* $_{it}$ | 0.579*** | 0.291 | 0.093*** | 0.040 |
| | (4.087) | (1.535) | (3.365) | (1.277) |
| *Leverage* $_{it}$ | -0.009 | -0.042 | 0.038 | -0.019 |
| | (-0.055) | (-0.265) | (0.955) | (-0.637) |
| *Stock return volatility* $_{it}$ | 0.391 | -0.216 | 0.188 | 0.250** |
| | (0.798) | (-0.510) | (1.419) | (2.227) |
| *CEO tenure* $_{it}$ | 0.101*** | 0.177*** | 0.024*** | 0.034*** |
| | (3.756) | (3.898) | (4.351) | (4.186) |
| *Total compensation* $_{it}$ | -0.022 | -0.076 | -0.001 | -0.002 |
| | (-0.884) | (-1.475) | (-0.250) | (-0.181) |
| *Brokerage size* $_{jt}$ | -0.007 | -0.018 | 0.001 | -0.002 |
| | (-0.566) | (-1.473) | (0.154) | (-0.689) |
| *Forecast horizon* $_{ijt}$ | -0.029* | -0.026 | -0.002 | -0.006 |
| | (-1.733) | (-1.514) | (-0.345) | (-1.480) |
| *Forecast frequency* $_{ijt}$ | -0.085** | -0.034 | -0.028*** | -0.004 |
| | (-2.274) | (-0.990) | (-2.807) | (-0.539) |
| *Firm-specific experience* $_{ijt}$ | 0.042** | 0.029 | 0.012** | 0.008* |
| | (2.180) | (1.565) | (2.214) | (1.696) |
| *Number of firms* $_{jt}$ | -0.011 | -0.028 | -0.001 | -0.008 |
| | (-0.286) | (-0.672) | (-0.122) | (-0.919) |
| *Number of industries* $_{jt}$ | 0.014 | 0.013 | 0.005 | 0.011 |
| | (0.344) | (0.358) | (0.459) | (1.196) |
| *Forecast accuracy_1* $_{ijt}$ | 0.098*** | 0.088** | | |
| | (2.726) | (2.516) | | |
| *Forecast accuracy_2* $_{ijt}$ | | | 0.159** | 0.118** |
| | | | (2.577) | (2.187) |
| Industry fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes |
| No. of observations | 6,600 | 1,518 | 6,600 | 1,518 |
| Adjusted $R^2$ | 0.277 | 0.299 | 0.355 | 0.319 |

This table tests the relation between ISS investigation and analysts' earnings forecast accuracy. This table divides the full analyst forecast sample used by table 2.5 into two subsamples based on whether the date of the analysts' earnings forecast falls subsequent to or prior to the six-month mark following the annual general meeting. Models 1 and 3 present the findings for the period before the six-month threshold post-annual general meeting. Models 2 and 4 present the findings for the period after the six-month threshold post-annual general meeting. Models 1 to 4 incorporate Industry fixed effects and Year fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.8 Optimism bias using all incidences of ISS investigations for firms**

| Dependent variable: | *Forecast optimism_1* $_{ijt+1}$ | *Forecast optimism_2* $_{ijt+1}$ |
|---|---|---|
| | (1) | (2) |
| *ISS investigation* $_{it}$ | 0.571*** | 0.044 |
| | (2.636) | (1.199) |
| *Not first* $_{it}$ | 0.583*** | 0.138*** |
| | (3.353) | (4.080) |
| *ISS investigation* $_{it}$ × *Not first* $_{it}$ | -1.115*** | -0.210*** |
| | (-3.546) | (-4.284) |
| *Book-to-market* $_{it}$ | 0.290 | 0.357*** |
| | (1.048) | (4.642) |
| *Market capitalization* $_{it}$ | -0.443* | 0.014 |
| | (-1.871) | (0.309) |
| *Institutional ownership* $_{it}$ | 1.365* | 0.201* |
| | (1.953) | (1.720) |
| *Number of analysts* $_{it}$ | 1.536*** | 0.178** |
| | (3.596) | (2.167) |
| *Sales growth* $_{it}$ | 0.770*** | 0.118*** |
| | (4.274) | (2.627) |
| *Board size* $_{it}$ | -2.721*** | -0.551*** |
| | (-2.902) | (-3.981) |
| *Leverage* $_{it}$ | 1.128** | 0.835*** |
| | (2.002) | (6.302) |
| *Stock return volatility* $_{it}$ | 9.986*** | 1.990*** |
| | (5.193) | (5.226) |
| *CEO tenure* $_{it}$ | 0.505*** | 0.102*** |
| | (3.560) | (4.545) |
| *Total compensation* $_{it}$ | 0.194*** | 0.034** |
| | (2.604) | (2.170) |
| *Brokerage size* $_{jt}$ | -0.008 | -0.003 |
| | (-1.308) | (-1.393) |
| *Forecast horizon* $_{ijt}$ | -0.011 | -0.006*** |
| | (-1.372) | (-2.774) |
| *Forecast frequency* $_{ijt}$ | 0.004 | -0.000 |
| | (0.262) | (-0.006) |
| *Firm-specific experience* $_{ijt}$ | 0.005 | 0.003 |
| | (0.485) | (0.968) |
| *Number of firms* $_{jt}$ | -0.057*** | -0.010** |
| | (-2.963) | (-2.061) |
| *Number of industries* $_{jt}$ | 0.030 | 0.001 |
| | (1.349) | (0.124) |
| *Forecast optimism_1* $_{ijt}$ | 0.049 | |
| | (1.641) | |
| *Forecast optimism_2* $_{ijt}$ | | 0.039 |
| | | (1.032) |
| Year fixed effect | Yes | Yes |
| Firm fixed effect | Yes | Yes |
| No. of observations | 10175 | 10175 |
| Adjusted $R^2$ | 0.598 | 0.599 |

This table uses full analyst forecast sample to test the relation between ISS investigation and analysts' earnings forecast bias. We retain records of a firm's first annual general meeting and all subsequent observations within our dataset. Then, we introduce the variable *Not first* that equals to 1 if a firm is observed subsequent to the initial annual general meeting within our dataset, and 0 if this firm is encountered for the first time. Models 1 to 2 incorporate Industry fixed effects, Year fixed effects and Firm fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.9 Forecast accuracy using all incidences of ISS investigations for firms**

| Dependent variable: | *Forecast accuracy_1* $_{ijt+1}$ | *Forecast accuracy_2* $_{ijt+1}$ |
|---|---|---|
| | (1) | (2) |
| *ISS investigation* $_{it}$ | -1.365*** | -0.065** |
| | (-4.471) | (-2.260) |
| *Not first* $_{it}$ | -1.158*** | -0.125*** |
| | (-5.244) | (-4.516) |
| *ISS investigation* $_{it}$ × *Not first* $_{it}$ | 2.058*** | 0.016 |
| | (4.453) | (0.424) |
| *Book-to-market* $_{it}$ | 0.088 | -0.198*** |
| | (0.243) | (-3.684) |
| *Market capitalization* $_{it}$ | 0.970*** | -0.021 |
| | (3.222) | (-0.809) |
| *Institutional ownership* $_{it}$ | -2.006** | -0.329** |
| | (-2.092) | (-2.305) |
| *Number of analysts* $_{it}$ | -1.015* | 0.258*** |
| | (-1.725) | (4.310) |
| *Sales growth* $_{it}$ | -0.845*** | 0.041 |
| | (-3.634) | (1.313) |
| *Board size* $_{it}$ | 4.971*** | -0.103 |
| | (3.323) | (-0.866) |
| *Leverage* $_{it}$ | -0.112 | 0.512*** |
| | (-0.157) | (4.892) |
| *Stock return volatility* $_{it}$ | -10.938*** | 0.529 |
| | (-3.607) | (1.397) |
| *CEO tenure* $_{it}$ | -0.628*** | 0.046** |
| | (-3.123) | (2.563) |
| *Total compensation* $_{it}$ | -0.138 | 0.042*** |
| | (-1.252) | (3.704) |
| *Brokerage size* $_{jt}$ | 0.000 | 0.002 |
| | (0.037) | (1.037) |
| *Forecast horizon* $_{ijt}$ | -0.004 | 0.000 |
| | (-0.486) | (0.004) |
| *Forecast frequency* $_{ijt}$ | -0.010 | -0.001 |
| | (-0.577) | (-0.157) |
| *Firm-specific experience* $_{ijt}$ | 0.011 | 0.006** |
| | (1.027) | (2.181) |
| *Number of firms* $_{jt}$ | 0.047** | 0.006 |
| | (2.363) | (1.253) |
| *Number of industries* $_{jt}$ | -0.017 | -0.003 |
| | (-0.712) | (-0.517) |
| *Forecast accuracy_1* $_{ijt}$ | -0.019 | |
| | (-0.466) | |
| *Forecast accuracy_2* $_{ijt}$ | | 0.082** |
| | | (2.068) |
| Year fixed effect | Yes | Yes |
| Firm fixed effect | Yes | Yes |
| No. of observations | 10175 | 10175 |
| Adjusted $R^2$ | 0.664 | 0.596 |

This table uses full analyst forecast sample to test the relation between ISS investigation and analysts' earnings forecast accuracy. We retain records of a firm's first annual general meeting and all subsequent observations within our dataset. Then, we introduce the variable *Not first* that equals to 1 if a firm is observed subsequent to the initial annual general meeting within our dataset, and 0 if this firm is encountered for the first time. Models 1 to 2 incorporate Industry fixed effects, Year fixed effects and Firm fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

**Table 2.10 Analyst coverage drop**

| Dependent variable: | *Dropping coverage* $_{ijt+1}$ |
|---|---|
| | (1) |
| *ISS investigation* $_{it}$ | -0.032* |
| | (-1.804) |
| *Book-to-market* $_{it}$ | 0.073*** |
| | (3.027) |
| *Market capitalization* $_{it}$ | -0.008 |
| | (-0.759) |
| *Institutional ownership* $_{it}$ | 0.023 |
| | (0.412) |
| *Number of analysts* $_{it}$ | 0.131*** |
| | (4.782) |
| *Sales growth* $_{it}$ | -0.058* |
| | (-1.960) |
| *Board size* $_{it}$ | -0.088 |
| | (-1.607) |
| *Leverage* $_{it}$ | 0.018 |
| | (0.351) |
| *Stock return volatility* $_{it}$ | -0.335 |
| | (-1.564) |
| *CEO tenure* $_{it}$ | 0.016 |
| | (1.586) |
| *Total compensation* $_{it}$ | -0.037*** |
| | (-2.944) |
| *Brokerage size* $_{jt}$ | -0.010 |
| | (-1.217) |
| *Forecast horizon* $_{ijt}$ | 0.128*** |
| | (13.236) |
| *Forecast frequency* $_{ijt}$ | -0.167*** |
| | (-8.819) |
| *Firm-specific experience* $_{ijt}$ | -0.026** |
| | (-2.060) |
| *Number of firms* $_{jt}$ | -0.098*** |
| | (-5.042) |
| *Number of industries* $_{jt}$ | 0.021 |
| | (0.973) |
| *Forecast optimism_2* $_{ijt}$ | -0.040 |
| | (-0.636) |
| *Forecast accuracy_2* $_{ijt}$ | -0.190** |
| | (-2.541) |
| Industry fixed effect | Yes |
| Year fixed effect | Yes |
| No. of observations | 3,366 |
| Adjusted $R^2$ | 0.238 |

This table uses full analyst forecast sample to test the relation between ISS investigation and the likelihood of an analyst discontinuing coverage of a firm. The dependent variable is measured by *Dropping coverage* $_{ijt+1}$ that equals one if an analyst stops issuing a forecast for a firm in year t+1, where year t includes the firm's annual general meeting, and zero otherwise. The model incorporates Industry fixed effects and Year fixed effects, with clustering by analyst. Intercept not reported. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests, with t-statistics presented in parentheses.

# Chapter 3: Do institutional investors value corporate shareholder engagement?

**Abstract**

How does direct communication between a firm and shareholders to exchange information and solicit shareholder views – corporate shareholder engagement – affect institutional ownership? We answer this question using a quasi-natural experiment that increases a firm's shareholder engagement activities – the Institutional Shareholder Services (ISS) investigation of a firm's corporate engagement activities. We document that a positive shock to corporate shareholder engagement has a positive effect on institutional holdings. This effect is driven by changes in ownership by transient investors, who benefit from increased transparency and the ability to speak with the firm more directly. The effect is more pronounced for smaller firms, which typically have less developed forms of communicating with investors. Overall, the findings suggest that institutional investors consider firm corporate shareholder engagement in their portfolio allocation decisions.

*Keywords*: Proxy advisor; ISS; shareholder engagement; financial analyst; forecast optimism

*JEL Codes*: D72, D84, G24, G41, M14

### 3.1. Introduction

Traditional corporate disclosure through filings, such as 10K and 10Qs, is unidirectional – from the firm to investors and geared towards communicating with all investors.[33] In contrast, corporate shareholder engagement (CSE) involves a dialogue between managers and shareholders through meetings, roundtables, and shareholder surveys. CSE's goal is to elicit views from representative investors to learn about shareholders' informational needs and receive feedback on current firm disclosure practices, corporate governance standards, and the efficacy of a company's communication with shareholders.[34] Institutional Shareholder Services (ISS), the largest proxy advisor in the market, highlights that shareholder engagement 'includes efforts made by companies to engage with their shareholders on a wide range of topics including executive compensation, strategy, risk management, corporate governance, and other topics falling outside of the usual financial and strategic conversations.[35] Shareholder engagement allows investors to voice their concerns and informational needs directly to managers. McCahery, Sautner, and Starks (2016) and Bebchuk, Cohen, and Hirst (2017) highlight that CSE is an important way through which investors can affect firm corporate governance practices. For managers, shareholder engagement allows them to learn directly from shareholders about the issues of concern that may have been overlooked. CSE has the potential to improve the efficacy of the communication between the firm and shareholders by better matching what investors want to hear about, when (e.g., the timing of communication during the fiscal year, the frequency of communication), and

[33] Research ascribes several benefits to firm's public mandatory disclosure, including lower information asymmetry and cost of capital (Diamond and Verrecchia 1991, Frino and Gallagher 2001), higher institutional ownership (Bushee and Noe 2000), analyst following (Lang and Lundholm 1996), and stock liquidity (Keim 1999). This evidence suggests that what companies communicate to investors is value-relevant.

[34] The annual general meeting, earnings calls, and investor days also allow companies to answer questions from investors. However, their purpose is not to reflect on the firm's disclosure practices and corporate governance structure. CSE is unique in how the company reaches out to investors to elicit their views on the current firm practices and disclosure.

[35] ISS is the dominant proxy advisor with a 60% market share that offers voting recommendations to institutional investors (Shu, 2024. Shu 2021). ISS client base includes over 1,600 institutional investors. Several studies document significant influence of ISS on voting outcomes suggesting shareholders pay attention to ISS recommendations (Dey et al., 2023; Ertimur et al., 2013; Malenko & Shen, 2016).

how (e.g., disclosures on company's website, social media or meetings with investors). Satisfactorily addressing the concerns can increase shareholder satisfaction, prompting higher support for the managerial team, e.g., as captured by voting support at annual shareholder meetings, and a lower likelihood of investors exiting the stock (Bebchuk, Cohen, and Hirst 2017; Dey, Starkweather, and White 2024).

It is not obvious that CSE will benefit investors. First, Regulation Fair Disclosure (FD) prohibits firms from selectively disclosing information to shareholders. Thus, shareholder engagement precludes disclosing new information to select shareholders. Second, managers may superficially engage with shareholders, e.g., they may not act on the issues mentioned in the meetings.[36] Managers may also engage with select investors where they expect the discussion will lead to limited changes. Third, not all shareholders may be interested in communicating with the firm due to their resource constraints. Meeting with managers and monitoring if firm behavior changes after a meeting is costly. Some investors, e.g., passive index funds, may not consider engagement with a firm as part of their duties, and the management fees do not cover the cost of such activities. In addition, there are critical perspectives on the role of proxy advisors, including concerns raised by market participants, showing that ISS recommendations often face criticism due to a perceived lack of accountability, as it is difficult to assess whether their guidance is objectively "correct," particularly when there is limited short-term impact on firm performance (Reuters, 2024). While prior research has documented the significant influence of ISS recommendations on shareholder voting outcomes (Ertimur, Ferri, and Oesch 2013; Malenko and Shen 2016), it remains unclear whether shareholders merely follow ISS guidance passively or really value the governance changes prompted by ISS. Tension in the question of whether institutional investors value shareholder engagement motivates us to examine this question

[36] Dey et al. (2023) do not examine if following ISS investigation firms materially change their behaviour in response to the concerns raised through shareholder engagement.

empirically. We answer this question by linking a positive shock to CSE with changes in institutional holdings.

We utilize a quasi-natural experiment related to ISS's investigation of a firm following insufficient voting support at the most recent annual general meeting. ISS starts a qualitative review of the firm's shareholder engagement before the next meeting when the say-on-pay shareholder support at the current meeting falls below the 70% threshold. The investigation is motivated by the low voting support, which ISS claims reflects that the firm does not communicate and engage sufficiently with shareholders. ISS asks managers to improve shareholder engagement before the next meeting. If managers show a 'robustness engagement response', ISS closes the investigation before the next meeting and issues a favorable vote recommendation for a say-on-pay vote. If the firm does not meet ISS expectations, ISS can issue an unfavorable say-on-pay recommendation against board candidates at the next meeting. Dey et al. (2023) report that '[F]irms receiving ISS treatment exhibit swift and substantive increases in extensive and intensive margins of engagement' and that the evidence of engagement persists. [37]

To examine our research question, we start with a sample of firms subject to ISS investing from 2011 to 2021. From this pool, we select firms where the percentage of shareholder votes for the SOP proposal ranges between 67%–70% and consider them 'treated' firms. We also select firms not subject to ISS investigation where the percentage of shareholder votes for the SOP proposal ranges between 70%–73%. We consider these control firms. Because the selection into treated and control firms is random around the 70% threshold (Dey et al. 2023), we can causally

[37] According to ISS's U.S. Compensation Policies Frequently Asked Questions (2024), ISS applies a clear, rule-based threshold: a Say-on-Pay (SOP) vote receiving less than 70% support from shareholders automatically triggers a qualitative review. Specifically, the policy states: "When a say-on-pay proposal receives less than 70% support of votes cast (for and against), ISS will conduct a qualitative review of the compensation committee's responsiveness to shareholder opposition at the next annual meeting." This mechanism is applied consistently and mechanically, based solely on SOP voting outcomes from the prior year. As such, the initiation of an ISS investigation is not discretionary and is unlikely to be influenced by institutional investors' views or decisions, thereby enhancing the validity of our identification strategy.

link an increase in CSE in treated firms to changes in institutional ownership relative to control firms where CSE activities are unchanged.

We find that institutional ownership in treated firms increases in the year after the start of the ISS investigation. This effect is economically significant – firms subjected to ISS investigation exhibit 1.51% higher institutional ownership than the control group[38]. To understand the timing of changes, we relate it to quarterly changes in institutional ownership for each quarter after the start of the ISS investigation. We find that institutional ownership increases in the last two quarters. This evidence is consistent with shareholders gradually learning about increased CSE activities of the firm and evaluating the CSE benefits. This evidence also helps us to rule out any changes in firm disclosure or operations unrelated to CSE but prompted by the ISS investigation. Such changes, e.g., an increase in firm disclosure, should occur shortly after the start of the ISS investigation, and their effects would mediate through changes in institutional ownership close to the start of the ISS investigation.

To understand which institutions react to changes in a firm's CSE, we use Bushee's (1998, 2001) institutional classification and split investors into transient, long-term, and quasi-indexers. Transient investors focus on short-term gains and exhibit high portfolio turnover. They react quickly to new information. Long-term investors (also referred to as dedicated investors) have low portfolio turnover and prioritize long-term value creation. They maintain stable holdings in companies over extended periods. Quasi-indexers follow a strategy resembling index funds with diversified, low-turnover portfolios. They balance between passive and active management, focusing on long-term returns but with less engagement than long-term investors.

We observe an increase in transient ownership in firms subject to ISS investigation. This result is consistent with the fact that these investors benefit from increased public communication,

[38] Since the dependent variable is the log-transformed value of institutional ownership, the economic significance of the coefficient on ISS Investigation should be calculated as follows: firms subject to an ISS investigation experience, on average, an approximately 1.51% increase in institutional ownership ($e^{0.015} - 1$) relative to firms that are not investigated.

which can provide them with more value-relevant information. We do not observe changes in holdings by long-term and quasi-indexing institutions. Long-term investors often hold substantial ownership in a firm and benefit from private channels of communication with managers, e.g., because they hold board seats (Cohen, Frazzini and Malloy 2008; Ge, Bilinski and Kraft 2021). Thus, these investors can communicate their informational needs directly to managers and firms can adjust their communication to meet their needs. Also, as they commit to holding stocks for long periods, they are unlikely to change their allocation over their holding period, e.g. in response to firm's CSE. Quasi-indexers hold highly diversified holdings, which makes it costly for them to directly communicate and then monitor their individual holdings. Thus, they may be less susceptible to changes in firms' communication prompted by CSE.

In additional tests, we split ownership into those by bank trusts, insurance companies, investment companies, and other institutions. We find that CSE has a positive effect on ownership by investment companies that manage individual investments through mutual and hedge funds and serve as external fund managers for pensions and endowments. There is also a positive effect on ownership by other funds that includes corporate pension funds, public pension funds, and university and foundation endowments. Bank trust ownership and ownership by insurance companies show no association with CSE consistent with their long-term investment focus and index-style investing.

The final tests focus on the cross-sectional variation in the CSE's impact on institutional ownership. We find some evidence that the CSE's effect is larger for smaller firms. Such firms have smaller investor relations departments and less-developed portfolios of communication strategies with investors. Thus, changes in the CSE are likely to have a marginally bigger impact on their overall communication with investors.

This study contributes to the literature on corporate shareholder engagement (McCahery et al. 2016; Bebchuk et al. 2017; Dey et al. 2023) and institutional ownership (e.g., Bushee and Noe, 2000; Bushee, 2001; Parrino, Sias, and Starks, 2003; Boone and White, 2015). We are the

first to empirically investigate the effect of ISS-driven shareholder engagement on institutional holdings. The findings reveal that investors perceive CSE favourably and increase their holdings in such firms. We also add to the ongoing discourse on the role of shareholder engagement as a governance mechanism and its potential to enhance firm value (e.g., Bebchuk, Cohen, and Hirst 2017; Goranova et al. 2017; Iliev, Kalodimos, and Lowry 2021; Kakhbod et al. 2023; Lewellen and Lewellen 2022).

### 3.2. Background and relevant literature

Shareholder engagement promotes two-way communication between managers and investors. This direct communication can help managers to better understand the concerns and views of shareholders on a wide range of topics. Proactively responding to shareholder views can increase shareholder satisfaction, which in turn reduces the risk of shareholders selling the stock and promotes higher support for managerial proposals, including for managerial compensation, at the annual meeting. Feedback from shareholders can also improve decision-making as managers learn which actions shareholders believe contribute to increased firm value (Chen, Goldstein, and Jiang 2007).

ISS reports that historically, direct engagement with a significant proportion of shareholders was rare. ISS highlights that 'Outside of these traditional forms of communication [public announcements, annual shareholder meetings, analyst calls], communication with shareholders is, more or less, limited to times of crisis or when performance issues arise.'[39] However, companies are increasingly devoting resources to improving their engagement with shareholders. Survey evidence from 133-US listed companies in 2013 conducted by ISS suggests that 'The portion of companies reporting more than 10 engagements with investors rose last year to 47 percent [in 2013] from 30 percent in 2011, when the investor engagement research was first

[39] https://www.issgovernance.com/file/publications/MaximizingTheShareholderRelationshipVol_13.3.pdf

carried out. At the same time, the number of institutional investors reporting more than 10 engagements increased to 55 percent from 31 percent.' ISS emphasizes the importance of shareholder engagement. The professional magazine 'Governance, Risk and Compliance' highlights that 'The single biggest factor in increased engagement is the new requirement that US companies seek investor approval for executive compensation policies.'[40]

Previous research suggests that institutional investors value firm disclosure (Diamond and Robert, 1991; Falkenstein, 1996; Gompers and Metrick, 1998). This relation reflects that disclosure facilitates stock valuation, which in turn improves portfolio allocation decisions (Kim and Verrecchia, 1994; Bushee and Noe, 2000). Better disclosure practices also reduce the cost of monitoring (Bushee and Noe, 2000; Chung and Zhang, 2011; Chung et al., 2015). Private communication with managers can be an important channel that elevates shareholders' views and preferences to affect what the company communicates and what it does. Appendix A reports examples of shareholder engagement statements highlighting that the discussions centre on accountability for achieving stated financial targets, executive compensation, corporate governance, and better articulation of firm's strategy.

However, private communication between managers and investors is likely devoid of new information, and thus may not increase the amount or precision of existing information available through public channels. Further, addressing all issues shareholders raise may be prohibitively costly as investors' preferences and concerns can be significantly divergent and conflicting. This can mean managers may be selective in what concerns to address or justify inaction by referring to opposing shareholder views. In this setting, we should not observe an association between shareholder engagement after the start of ISS investigation and institutional ownership. Finally, our identification centers on firms responding to ISS investigation, triggered by perceived low

[40] https://www.governance-intelligence.com/shareholders-activism/shareholder-engagement-rising-sharply-says-issirrci-study

levels of shareholder engagement. Some investors may see the ISS investigation as a negative signal that the firm poorly communicates with shareholders and may decide to exit, ignoring potential subsequent changes in shareholder engagement. Coffee (1991) argues that non-controlling institutional investors more often adopt the exit strategy following negative news as they cannot exert significant influence over management. As a result, it is unclear how higher shareholder engagement will affect ownership by institutional investors. Thus, we express our first hypothesis in the alternative form:

***Hypothesis 1:*** *There is no change in institutional ownership for firms under ISS investigation.*

### 3.3. Sample, research design, and regression models

#### *3.3.1. Sample*

Our study begins with the collection of 34,650 SOP voting outcomes for U.S. firms from 2011 to 2021, sourced from the ISS Voting Analytics database. Next, we exclude duplicate firm-year records and missing SOP shareholder voting support data. We keep only those instances where the SOP voting support at the annual general meeting falls within a narrow band of 67% to 73%. This criterion narrows our SOP voting sample to 872 firm-years. Subsequently, we integrate this refined SOP voting data with institutional ownership data from Thomson Reuters 13F Institutional Holdings. We further enrich our dataset by merging it with Compustat for firm characteristics, the Center for Research in Security Prices (CRSP) for stock characteristics, and I/B/E/S for analyst coverage data. This process yields a sample of 742 firm-year observations. Finally, we retain only the first occurrence of each firm's SOP shareholder voting and remove observations with missing data. This results in our final sample of 447 firm-year observations over the period from 2011 to 2021. Our sample construction procedure is presented in Table 3.1.

[Table 3.1 here]

### *3.3.2. Regression models*

We investigate whether institutional ownership increases after a firm experiences increased shareholder engagement due to ISS investigation using the following OLS regression model:

$$Ln\_Inst\_Ownership_{it+1} = \beta_0 + \beta_1 ISSinvestigation_{it} + \beta_2 \Phi_{it} + \beta_3 Fixed\ effects + \varepsilon_{it.} \quad (1)$$

Institutional ownership is measured as the ratio of the number of a firm's shares held by institutional investors to the total number of shares outstanding, averaged over four quarters. We then take the natural logarithm of one plus this institutional ownership measure as our dependent variable, $Ln\_Inst\_Ownership_{it+1}$, where $i$ and $t+1$ denote firm and year, respectively.

To examine how a firm's institutional ownership changes after undergoing an ISS investigation, we measure institutional ownership in year $t+1$, which is one year after the investigation. To assess whether our main result is consistent across the four quarters after the ISS investigation, we also repeat the regression model in equation (1), replacing the average institutional ownership with quarterly measurements. Additionally, following Bushee's classification, we categorize institutional ownership into different types to examine whether the relationship between institutional ownership and shareholder engagement varies across different categories of institutional investors. These categories include 'transient, dedicated, and quasi-indexer' institutions, as well as 'bank trust departments, insurance companies, investment companies or independent investment advisors, and others (e.g., corporate pension funds, public pension funds, and university and foundation endowments)'.[41]

Our independent variable in Equation (1) is $ISSinvestigation_{it}$, a binary indicator that takes the value of 1 if firm $i$ receives less than 70% approval votes for its SOP proposal at the annual general meeting in year $t$, and 0 otherwise. Dey, Starkweather, and White (2024) demonstrate that

[41] Bushee's classification: https://accounting-faculty.wharton.upenn.edu/bushee/.

the treatment from Institutional Shareholder Services (ISS) is randomized around the 70% threshold of SOP voting support. To construct our treatment and control groups, we employ a narrow bandwidth around this 70% threshold. Specifically, we classify firms with SOP voting support percentages falling between 67% and 70% as the treatment group, while those between 70% and 73% constitute the control group. A positive and statistically significant coefficient on *ISSinvestigation* $_{it}$ will support our hypothesis that institutional ownership increases after shareholder engagement increases due to ISS investigation.

Prior literature suggests that institutional investors' portfolio decisions are influenced by a number of factors. Badrinath, Kale, and Ryan (1996) provide evidence supporting the "safety-net" hypothesis, positing that institutional investors prefer stocks exhibiting safety-net characteristics, such as old companies, high stock liquidity, low stock volatility, and low leverage ratios. Del Guercio (1996) demonstrates that banks, a specific category of institutional investors, show a preference for large stocks with low book-to-market ratios. Falkenstein (1996) observes that mutual funds favor stocks with high visibility and low transaction costs while avoiding those with low volatility. Gompers and Metrick (2001) indicate that institutional investors are more inclined to invest in large, liquid stocks with low past returns. Furthermore, Gompers, Ishii, and Metrick (2003) find that firms with stronger shareholder rights exhibit higher profits and sales growth. O'Brien and Bhushan (1990) document a positive association between institutional ownership and analyst following. Given these findings, we incorporate a set of control variables that may influence a firm's institutional ownership, including return on assets, *ROA* $_{it}$, an indicator for operating loss, *Operating loss* $_{it}$, firm market capitalization in log form, *Ln(market capitalization)* $_{it}$, Tobin's Q, *TobinQ* $_{it}$, firm financial leverage, *Leverage* $_{it}$, growth in sales, *Sales growth* $_{it}$, stock return performance, *Stock return* $_{it}$, stock return volatility, *Stock return volatility* $_{it}$, bid-ask spread, *Bid-ask spread* $_{it}$, firm age in log form, *Ln(firm age)* $_{it}$, and the number of analysts following a firm in log form, *Ln(analysts)* $_{it}$. Moreover, considering the tendency for institutional ownership

to persist over time, we also control for lagged institutional ownership, $Ln\_Inst\_Ownership_{it}$, to account for the general trend in a firm's institutional ownership over time.

## 3.4. Results

### *3.4.1. Descriptive statistics*

In Table 3.2, we present descriptive statistics for institutional ownership and its various types, as well as firm and stock characteristics. For ease of interpretation, all types of institutional ownership, firm age, and number of analysts following are presented as unlogged values. The mean institutional ownership in the current year is 0.695, indicating that a high percentage of our sample firms' shares are held by institutional investors. The average firm age in our sample is 23.152 years, suggesting that our sample consists of relatively established firms. Consistent with previous studies (Bushee and Noe, 2000), the mean log value of market capitalization is approximately 7, and the mean leverage ratio is around 0.2, indicating that firms with SOP voting support around the 70% threshold in our sample tend to be larger firms with relatively low financial risk.

[Table 3.2 here]

Table 3.3 compares univariate differences in firm characteristics and stock characteristics between companies subjected to ISS investigations (treatment firms) and those not undergoing such scrutiny (control firms). Our findings exhibit no statistically significant differences in firm and stock characteristics between these two groups, suggesting a high degree of similarity. This result aligns with the findings of Dey, Starkweather, and White (2024), who posit that the likelihood of receiving shareholders' SOP voting support marginally below or above the 70% threshold is almost random. Consequently, any observed variations in shareholder engagement activities can be reasonably attributed to ISS investigations. The results in Table 3.3 boost our confidence of utilizing ISS investigations as an exogenous shock to shareholder engagement

activities. This approach enables us to identify the causal impact of shareholder engagement activities on changes in institutional ownership.

[Table 3.3 here]

### *3.4.2. Shareholder engagement and institutional ownership*

We utilize ISS investigations as an exogenous shock to examine the impact of shareholder engagement activities on a firm's institutional ownership. Table 3.4 reports the results of our tests on institutional ownership. In column (1) of Table 3.4, we use institutional ownership averaged over four quarters as the dependent variable. A significant and positive coefficient on *ISSinvestigation* $_{it}$ in this column indicates that institutional investors value the increased shareholder engagement with a firm following an ISS investigation. Based on the results in column (1), firms subjected to ISS investigation exhibit 1.5% higher institutional ownership compared to the control group.[42] In columns (2) to (5) of Table 3.4, we use institutional ownership in each quarter as the dependent variables. We find that only columns (4) and (5) show significant and positive coefficients on *ISSinvestigation* $_{it}$, suggesting that it takes time for shareholder engagement activities to impact institutional investors' portfolio decisions. To further test the robustness of our main results, we replace the level variable of institutional ownership with the change variable of institutional ownership. The results, reported in Appendix C, are consistent with our main findings presented in Table 3.4.

[Table 3.4 here]

Regarding the control variables in Table 3.4, we account for both firm and stock characteristics. Across all five columns, prior stock returns and prior institutional ownership show

[42] Alternatively, the effect is 7.5% of institutional ownership standard deviation; 0.015 (coefficient on *ISSinvestigation* $_{it}$) ÷ 0.201 (standard deviation of *Ln_Inst_Ownership* $_{it+1}$) = 0.075. Note: The descriptive statistics in Table 3.2 present the standard deviation for the unlogged value of institutional ownership, which differs from the standard deviation of the natural logarithm of institutional ownership.

positive and significant correlations with institutional ownership subsequent to a firm's ISS investigation, aligning with previous research (e.g., Chung and Zhang 2011; Bushee and Miller 2012). Conversely, the leverage ratio exhibits a negative and significant association with institutional ownership, consistent with prior studies (e.g., Bushee and Miller 2012; Badrinath, Kale, and Ryan 1996). Additionally, we find that ROA and sales growth are positively and significantly correlated with institutional ownership in some columns of Table 3.4.

### *3.4.3. Various types of institutional ownership*

To examine whether the composition of institutional ownership changes after ISS investigation, we separate institutions into groups based on Bushee's classification that divides institutions into three groups based on the investment style: "Transient", "Dedicated", and "Quasi-indexers". Table 3.5 shows that ISS-treated firms experience a significant increase in "Transient" investors. However, there is no significant change in "Dedicated" or "Quasi-indexer" investors. These results suggest that ISS-treated firms tend to attract less-stable investors. Based on previous research (e.g., Bushee and Noe 2000), increased disclosure practices attract more transient investors who focus on short-term trading profits and high portfolio turnover. Additionally, Dey, Starkweather, and White (2024) find that shareholder engagement activities facilitate better disclosure to shareholders. Furthermore, transient investors have limited resources to devote to actively seek to communicate with the firm themselves. Since the cost of CSE resides with the firm, they are more likely to respond to CSE as it offers significant benefits, such as the ability to communicate with the firm, with the cost borne principally by the firm. Therefore, transient investors are more likely to respond to CSE and increase their ownerships.

As for Long-term investors, they are more likely to already have direct channels of communication with the firm and are more proactively seeking to communicate with the managers, given their comparatively large and long-term holdings in a firm. As a result, it is unlikely that their portfolio choices will be influenced by CSE. Finally, indexing institutions' investment strategies typically mimic an index and do not depend on the ability to directly communicate with

managers. Quasi-indexers' broadly diversified portfolios limit their capacity to thoroughly analyze and monitor the corporate policies of each firm in their portfolios. Therefore, quasi-indexers might not change their portfolio after CSE.

[Table 3.5 here]

Next, we follow Bushee (2001) and split investors based on their fiduciary standards classification into: "Bank trust," "Insurance company," "Investment company or independent investment advisor," and "Other institutions" (such as corporate pension funds, public pension funds, and university and foundation endowments). The results in Table 3.6 indicate significant increases in "Investment company or independent investment advisor" and "Other institutions" categories for ISS-treated firms, who typically face less strict fiduciary responsibilities.

[Table 3.6 here]

### *3.4.4. Institutional ownership across different firm sizes*

Previous studies (e.g., Gompers and Metrick 2001; Del Guercio 1996) have found that institutional investors show a preference for large firms. Thus, we investigate whether changes in institutional ownership of ISS-treated firms vary across firm sizes. We re-estimate the regression model of Equation (1) by adding the interaction term between $ISSinvestigation_{it}$ and firm size, measured as the natural logarithm of a firm's market capitalization $Ln(market\ capitalization)_{it}$. The results are presented in Table 3.7. We find that the coefficients on the interaction term $ISSinvestigation_{it} * Ln(market\ capitalization)_{it}$ are only negatively significant in column 5 of table 3.7. This result indicates that the increased institutional ownership, mainly induced by increased transient investors for ISS-treated firms, is weakened by large firm sizes only during the fourth quarter following the ISS investigation.

[Table 3.7 here]

## 3.5. Conclusions

This study examines the effect corporate shareholder engagement has on institutional ownership. We use a quasi-natural experiment that increases a firm's shareholder engagement activities – the Institutional Shareholder Services (ISS) investigation of a firm's corporate engagement activities as an exogenous shock to CSE. We document that a positive shock to corporate shareholder engagement has a positive effect on institutional holdings. This effect is driven by changes in ownership by transient investors, who benefit from improved firm disclosure and changes in firm corporate governance quality. The effect is more pronounced for smaller firms which typically have less developed forms of communicating with investors. The findings suggest that institutional investors consider firm corporate shareholder engagement in their portfolio allocation decisions.

## Appendix A. Examples of engagement statements

### Ventas Inc 2017 Proxy statement

We have continued to gain valuable insight from engaging with our stockholders on a consistent basis. We have conducted broad investor outreach programs on three separate occasions. In late 2015 and early 2016, the Chair of our Compensation Committee, our independent compensation consultant to the Compensation Committee and members of our Legal team reached out to 27 of our largest stockholders (holding more than 60% of our outstanding shares of common stock) to discuss our executive compensation program and invited such stockholders to provide us with feedback on our executive compensation program and corporate governance practices.

After filing our 2016 Proxy Statement, the Chair of our Compensation Committee, our independent compensation consultant to the Compensation Committee and members of our Legal team again reached out to our 30 largest stockholders (holding more than 60% of our outstanding shares of common stock) during April 2016 to discuss, and solicit feedback regarding potential changes to, our executive compensation program. We invited such stockholders to provide us with constructive comments regarding our executive compensation program and corporate governance practices.

In early 2017, a combination of the Chair of our Compensation Committee and members of our Legal team again reached out to our 32 largest stockholders (holding 60% of our outstanding shares of common stock) to discuss, and solicit feedback regarding our executive compensation program. We invited such stockholders to provide us with constructive comments regarding our executive compensation program and corporate governance practices.

Based on these discussions, we learned that our stockholders:

- ✓ generally approve of the overall structure of our executive compensation program and diversity of goals, particularly our use of balanced metrics of growth, risk management and capital structure to mitigate risk and promote responsible, sustained long-term growth;
- ✓ generally approve of our implementation of the executive compensation program, the factors considered and the decisions made under the program;
- ✓ generally approve of our proxy disclosures regarding our executive compensation program and corporate governance best practices;
- ✓ generally support our pay-for-performance alignment; and
- ✓ generally endorse our corporate governance practices.

We also received constructive feedback from our investors. After careful consideration of this feedback, we have decided to make significant and responsive modifications to our executive compensation program, beginning with the 2017 compensation cycle.

Source: https://www.sec.gov/Archives/edgar/data/740260/000110465917021407/a17-2391_1def14a.htm#ResponsiveRedesignFollowing2016A_120349

### Seacost Banking Corporation of Florida 2017 Proxy Statement

years. (See "Outcome of our 2016 Say-On-Pay vote" in the table below.) Shareholder support of directors standing for re-election at the 2016 annual meeting also dropped compared to prior year. To better understand shareholder interests and concerns, we expanded our shareholder outreach in 2016, taking the following actions:

- Members of our Board and executive management team met in-person and by phone with shareholders representing a significant portion of Seacoast's outstanding unaffiliated shares.
- In March 2016, the Company entered into an Observer Rights Agreement with one of our largest shareholder, Basswood Capital Management, L.L.C. ("Basswood") and Matthew Lindenbaum, a principal of Basswood, pursuant to which we gave Mr. Lindenbaum the right to attend all meetings of our Board of Directors in a non-voting observer capacity, and to receive materials provided to board members, subject to certain exceptions. The agreement can be terminated by either party at any time, but remains in effect. Mr. Lindenbaum's viewpoint on matters impacting institutional investors has been very insightful and beneficial to the Company.
- We have hosted visits with a number of large investors at our facilities in Stuart to provide them with a better understanding of the depth and talent of our management team, the execution of our balanced strategy and our progress in creating shareholder value.
- We hosted an Investor Day and webcast on February 22, 2017, where Seacoast's management team provided a detailed update of the Company's strategy and long-term vision.

In these meetings, our shareholders expressed a wide range of viewpoints relating to our performance, compensation, governance and other matters. This engagement process was very informative and constructive.

Below are highlights of the feedback we have received from shareholders and our Board's response:

| What We Heard | Our Board's Response |
|---|---|
| Improve financial performance to deliver results expected from acquisitions | *Delivered Promised Results.* Achieved our 2016 earnings target of $1.00 fully diluted adjusted earnings per share[1] ("EPS") despite economic headwinds. Improved adjusted efficiency ratio[1] by 12% year over year, and from 74.9% in fourth quarter of 2014 to 60.8% in the fourth quarter of 2016. |
| Higher stock ownership by management and directors | *Replacing Cash Bonuses with Equity.* Replaced 2016 cash bonuses paid to executive officers for achievement of performance objectives with performance based and performance-contingent stock awards. All of our directors are paid a stock retainer; several participated in our recent capital raise. |
| Reduce Board tenure and the risk of entrenchment | *Three New Directors.* In 2016, our Board appointed two new directors, Timothy S. Huval and Herbert Lurie, further enforcing its commitment to a balanced mix of new directors with fresh perspectives and, for continuity, seasoned, experienced directors with deep knowledge of the Company and its markets. In 2017, our Board has nominated another new Board member, Alvaro Monserrat, to replace a longer-tenured director. In addition, two long-tenured directors rotated off the CGC in 2016 and one short-tenured director was added, resulting in the majority of the CGC now comprised of short-tenured directors. |

Source: https://www.sec.gov/Archives/edgar/data/730708/000114420417019335/v463271_def14a.htm

**Appendix B. Variable definitions**

| Variable | Definition |
|---|---|
| *Ln_Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_Inst_Ownership_Q1* $_{it+1}$ | The natural logarithm of one plus the proportion of firm *i*'s shares held by institutional investors during the first quarter subsequent to the annual general meeting in year t. |
| *Ln_Inst_Ownership_Q2* $_{it+1}$ | The natural logarithm of one plus the proportion of firm *i*'s shares held by institutional investors during the second quarter subsequent to the annual general meeting in year t. |
| *Ln_Inst_Ownership_Q3* $_{it+1}$ | The natural logarithm of one plus the proportion of firm *i*'s shares held by institutional investors during the third quarter subsequent to the annual general meeting in year t. |
| *Ln_Inst_Ownership_Q4* $_{it+1}$ | The natural logarithm of one plus the proportion of firm *i*'s shares held by institutional investors during the fourth quarter subsequent to the annual general meeting in year t. |
| *Ln_Top5 Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by largest 5 institutional investors over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_Top10 Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by largest 10 institutional investors over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_Block Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional blockholders over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_Foreign Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by foreign institutional investors (Non-US institutions) over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_Domestic Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by domestic institutional investors over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_TRA Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by transient institutional investors following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_QIX Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by quasiindexer institutional investors following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_DED Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by dedicated institutional investors following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_BNK Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors that belong to bank trust following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_INS Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors that belong to insurance company following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_INV Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors that belong to investment company or independent investment advisor following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *Ln_OTHER Inst_Ownership* $_{it+1}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors that belong to all other institutions such as corporate (private) pension fund, public pension fund, and university and |

| | |
|---|---|
| | foundation endowments following Brian Bushee's classification over the four quarters subsequent to the annual general meeting in year t. |
| *ISSinvestigation* $_{it}$ | Indicator variable that equals to 1 if firm *i* receives below 70% votes approving SOP proposal in the annual general meeting in year *t,* and 0 otherwise. |
| *ROA* $_{it}$ | Earnings before interest, taxes, depreciation, and amortization divided by total assets for firm *i*, measured in the fiscal year for the annual general meeting in year t. |
| *Operating loss* $_{it}$ | Equals 1 if the firm *i* has negative earnings before interest, taxes, depreciation, and amortization in the fiscal year for the annual general meeting in year t. Otherwise, equals 0. |
| *Ln(market capitalization)* $_{it}$ | The natural logarithm of firm *i*'s market capitalization (in thousands), measured in the fiscal year for the annual general meeting in year t. |
| *TobinQ* $_{it}$ | Firm *i*'s market value divided by its assets' replacement cost, measured in the fiscal year for the annual general meeting in year t. |
| *Leverage* $_{it}$ | The ratio of firm *i*'s total liabilities to total assets, measured in the fiscal year for the annual general meeting in year t. |
| *Sales growth* $_{it}$ | A change ratio in firm *i*'s sales between year *t-1* and year *t,* where year *t* includes the firm's annual general meeting. |
| *Stock return* $_{it}$ | Firm *i*'s 12-month stock return during the fiscal year for the annual general meeting in year t. |
| *Stock return volatility* $_{it}$ | Standard deviation of firm *i*'s 12 monthly stock returns during the fiscal year for the annual general meeting in year t. |
| *Bid-ask spread* $_{it}$ | Mean of quarterly bid-ask spreads (ask high minus bid low, scaled by the midpoint) over four quarters during the fiscal year for the annual general meeting in year t. |
| *Ln(firm age)* $_{it}$ | The natural logarithm of the number of years since firm *i*'s first appearance in CRSP as of the fiscal year for the annual general meeting in year t. |
| *Ln(analysts)* $_{it}$ | The natural logarithm of one plus the number of analysts following firm *i* in the fiscal year for the annual general meeting in year t. |
| *Ln_Inst_Ownership* $_{it}$ | The natural logarithm of one plus the mean proportion of firm *i*'s shares held by institutional investors over the four quarters preceding the annual general meeting in year t. |

The table reports definitions of variables.

**Appendix C. Change in institutional ownership**

| Dependent variables | Model 1. OLS Model $\Delta$ *Inst_Ownership* $_{it+1}$ | Model 2. OLS Model $\Delta$ *Inst_Ownership_Q1* $_{it+1}$ | Model 3. OLS Model $\Delta$ *Inst_Ownership_Q2* $_{it+1}$ | Model 4. OLS Model $\Delta$ *Inst_Ownership_Q3* $_{it+1}$ | Model 5. OLS Model $\Delta$ *Inst_Ownership_Q4* $_{it+1}$ |
|---|---|---|---|---|---|
| *ISSinvestigation* $_{it}$ | 0.021** | 0.014 | 0.018 | 0.023* | 0.019* |
| | (2.591) | (1.242) | (1.436) | (1.903) | (1.885) |
| *ROA* $_{it}$ | 0.037** | 0.073*** | 0.067** | 0.050* | 0.020 |
| | (3.100) | (3.233) | (2.633) | (1.851) | (1.359) |
| *Operating loss* $_{it}$ | 0.002 | 0.005 | 0.007 | -0.001 | -0.014 |
| | (0.114) | (0.308) | (0.394) | (-0.040) | (-0.603) |
| *Ln(market capitalization)* $_{it}$ | 0.005 | 0.006 | 0.004 | 0.007 | 0.006 |
| | (0.580) | (1.144) | (0.575) | (0.910) | (0.516) |
| *TobinQ* $_{it}$ | -0.001 | -0.004 | -0.003 | -0.004 | -0.001 |
| | (-0.426) | (-1.765) | (-1.443) | (-1.547) | (-0.290) |
| *Leverage* $_{it}$ | -0.062* | -0.069* | -0.067** | -0.084** | -0.057** |
| | (-2.035) | (-1.913) | (-2.330) | (-2.489) | (-2.518) |
| *Sales growth* $_{it}$ | 0.022*** | 0.008 | 0.015 | 0.029*** | 0.032*** |
| | (3.432) | (0.826) | (1.463) | (5.273) | (7.388) |
| *Stock return* $_{it}$ | 0.033** | 0.026** | 0.036*** | 0.039*** | 0.030 |
| | (2.658) | (2.759) | (3.684) | (5.094) | (1.674) |
| *Stock return volatility* $_{it}$ | -0.144 | -0.090 | -0.222 | -0.210 | -0.270 |
| | (-0.803) | (-0.633) | (-1.394) | (-1.110) | (-0.789) |
| *Bid-ask spread* $_{it}$ | 0.046 | 0.060 | 0.227 | 0.067 | 0.108 |
| | (0.049) | (0.076) | (0.272) | (0.071) | (0.066) |
| *Ln(firm age)* $_{it}$ | -0.006 | -0.011 | -0.007 | -0.015 | -0.011 |
| | (-0.756) | (-1.062) | (-0.590) | (-1.062) | (-0.802) |
| *Ln(analysts)* $_{it}$ | -0.026 | -0.018 | -0.018 | -0.031 | -0.032 |
| | (-1.374) | (-1.246) | (-1.237) | (-1.704) | (-1.259) |
| *Constant* | 0.045 | 0.043 | 0.049 | 0.088 | 0.077 |
| | (1.261) | (0.982) | (1.046) | (1.525) | (1.461) |
| Industry fixed effect | Yes | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| No. of observations | 444 | 430 | 427 | 426 | 410 |
| Adjusted R-squared | 0.052 | 0.047 | 0.064 | 0.067 | 0.051 |

This table uses the institutional ownership sample to test the relation between ISS investigation and changes in institutional ownership. We retain only the records of the first annual meeting for each firm included in our dataset. Model 1 uses the change in institutional ownership (averaged over four quarters) between year t and year t+1 as the dependent variable. Models 2 through 5 use the change in institutional ownership between year t and quarters 1 to 4 in year t+1, respectively, as the dependent variable. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

**Appendix D. Each type of institutional ownership**

| Dependent variables | Model 1. OLS Model *Ln_Top5 Inst_Ownership* $_{it+1}$ | Model 2. OLS Model *Ln_Top10 Inst_Ownership* $_{it+1}$ | Model 3. OLS Model *Ln_Block Inst_Ownership* $_{it+1}$ | Model 4. OLS Model *Ln_Foreign Inst_Ownership* $_{it+1}$ | Model 5. OLS Model *Ln_Domestic Inst_Ownership* $_{it+1}$ |
|---|---|---|---|---|---|
| *ISSinvestigation* $_{it}$ | 0.002 | 0.006 | 0.003 | 0.001 | 0.004 |
| | (0.413) | (1.201) | (0.488) | (0.335) | (0.359) |
| *ROA* $_{it}$ | 0.022** | 0.026*** | 0.040** | -0.002 | -0.004 |
| | (2.556) | (3.176) | (3.073) | (-0.624) | (-0.088) |
| *Operating loss* $_{it}$ | 0.006 | 0.006 | 0.004 | -0.004 | -0.008 |
| | (0.679) | (0.577) | (0.342) | (-1.427) | (-0.700) |
| *Ln(market capitalization)* $_{it}$ | 0.002 | 0.003 | 0.002 | 0.002 | -0.000 |
| | (0.785) | (0.838) | (0.698) | (1.467) | (-0.073) |
| *TobinQ* $_{it}$ | 0.001 | 0.001 | 0.003 | 0.000 | -0.002 |
| | (0.619) | (0.874) | (1.785) | (0.713) | (-0.590) |
| *Leverage* $_{it}$ | -0.027* | -0.033* | -0.034 | -0.006* | -0.044* |
| | (-1.916) | (-2.000) | (-1.646) | (-1.859) | (-2.200) |
| *Sales growth* $_{it}$ | 0.006* | 0.009* | 0.013*** | -0.000 | 0.010* |
| | (1.876) | (2.093) | (3.416) | (-0.607) | (1.964) |
| *Stock return* $_{it}$ | 0.010** | 0.014** | 0.013*** | 0.003* | 0.014 |
| | (2.461) | (2.815) | (3.170) | (1.991) | (1.476) |
| *Stock return volatility* $_{it}$ | -0.005 | -0.031 | -0.023 | -0.019 | 0.142 |
| | (-0.073) | (-0.341) | (-0.265) | (-0.899) | (1.228) |
| *Bid-ask spread* $_{it}$ | -0.148 | -0.085 | -0.048 | 0.098 | -0.983* |
| | (-0.316) | (-0.142) | (-0.091) | (0.497) | (-1.953) |
| *Ln(firm age)* $_{it}$ | -0.001 | -0.001 | -0.002 | -0.003*** | -0.015* |
| | (-0.351) | (-0.345) | (-0.420) | (-3.208) | (-2.123) |
| *Ln(analysts)* $_{it}$ | -0.008 | -0.011 | -0.010 | 0.004 | 0.016 |
| | (-1.374) | (-1.465) | (-1.414) | (1.089) | (1.258) |
| *Ln_Top5 Inst_Ownership* $_{it}$ | 0.910*** | | | | |
| | (19.404) | | | | |
| *Ln_Top10 Inst_Ownership* $_{it}$ | | 0.929*** | | | |
| | | (20.828) | | | |
| *Ln_Block Inst_Ownership* $_{it}$ | | | 0.875*** | | |
| | | | (23.571) | | |
| *Ln_Foreign Inst_Ownership* $_{it}$ | | | | 0.707*** | |
| | | | | (10.391) | |
| *Ln_Domestic Inst_Ownership* $_{it}$ | | | | | 0.742*** |
| | | | | | (17.761) |
| *Constant* | 0.033 | 0.033 | 0.042* | -0.005 | 0.118*** |
| | (1.577) | (1.296) | (1.892) | (-0.647) | (3.207) |
| Industry fixed effect | Yes | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| No. of observations | 444 | 444 | 444 | 444 | 444 |
| Adjusted R-squared | 0.723 | 0.746 | 0.719 | 0.763 | 0.852 |

This table uses institutional ownership sample to test the relation between ISS investigation and each type of institutional ownership including top5 institutional ownership, top10 institutional ownership, blockholder ownership, foreign institutional ownership and domestic institutional ownership. We retain only the records of the first annual meeting for each firm included in our dataset. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

**Table 3.1 The sample construction procedure**

| | N |
|---|---|
| ISS - Voting Analytics data | 684,759 |
| Retain the proposal "Advisory Vote to Ratify Named Executive Officers' Compensation" | 35,383 |
| Retain observations for years from 2011 to 2021 | 34,650 |
| Remove missing SOP shareholder voting support data and duplicate firm-year observations | 33,619 |
| Keep SOP shareholder voting support to fall within the range of 0.67 to 0.73 | 872 |
| Merge SOP shareholder voting with institutional ownership and other data for control variables | 742 |
| Retain the first incidents of firms' SOP shareholder voting and remove observations with missing data | 447 |
| Final sample for the period from 2011 to 2021 | 447 |

This table shows the procedure for our sample construction.

**Table 3.2 Descriptive statistics**

| | Full Sample = 447 | | | | |
|---|---|---|---|---|---|
| | Mean | Std. Dev. | Q1 | Median | Q3 |
| **Control Variables** | | | | | |
| *ROA* $_{it}$ | -0.038 | 0.217 | -0.035 | 0.013 | 0.053 |
| *Operating loss* $_{it}$ | 0.362 | 0.481 | 0.000 | 0.000 | 1.000 |
| *Ln(market capitalization)* $_{it}$ | 7.092 | 1.945 | 5.685 | 6.947 | 8.289 |
| *TobinQ* $_{it}$ | 1.637 | 1.827 | 0.701 | 1.062 | 1.844 |
| *Leverage* $_{it}$ | 0.246 | 0.232 | 0.053 | 0.195 | 0.381 |
| *Sales growth* $_{it}$ | 0.152 | 0.601 | -0.042 | 0.053 | 0.174 |
| *Stock return* $_{it}$ | 0.087 | 0.496 | -0.216 | 0.019 | 0.323 |
| *Stock return volatility* $_{it}$ | 0.125 | 0.079 | 0.072 | 0.106 | 0.155 |
| *Bid-ask spread* $_{it}$ | 0.037 | 0.017 | 0.024 | 0.033 | 0.045 |
| *Firm age* $_{it}$ | 23.152 | 18.485 | 9.000 | 19.000 | 31.000 |
| *Analysts* $_{it}$ | 11.817 | 8.931 | 5.000 | 9.000 | 17.000 |
| *Inst_Ownership* $_{it}$ | 0.695 | 0.278 | 0.557 | 0.776 | 0.915 |
| **Dependent Variables** | | | | | |
| *Inst_Ownership* $_{it+1}$ | 0.679 | 0.297 | 0.558 | 0.770 | 0.905 |
| *Top5 Inst_Ownership* $_{it+1}$ | 0.297 | 0.128 | 0.239 | 0.312 | 0.389 |
| *Top10 Inst_Ownership* $_{it+1}$ | 0.411 | 0.176 | 0.332 | 0.439 | 0.536 |
| *Block Inst_Ownership* $_{it+1}$ | 0.242 | 0.155 | 0.124 | 0.238 | 0.359 |
| *Foreign Inst_Ownership* $_{it+1}$ | 0.048 | 0.051 | 0.003 | 0.034 | 0.077 |
| *Domestic Inst_Ownership* $_{it+1}$ | 0.560 | 0.336 | 0.302 | 0.690 | 0.835 |
| *TRA Inst_Ownership* $_{it+1}$ | 0.153 | 0.110 | 0.068 | 0.139 | 0.210 |
| *QIX Inst_Ownership* $_{it+1}$ | 0.409 | 0.217 | 0.271 | 0.442 | 0.563 |
| *DED Inst_Ownership* $_{it+1}$ | 0.112 | 0.114 | 0.020 | 0.070 | 0.180 |
| *BNK Inst_Ownership* $_{it+1}$ | 0.067 | 0.046 | 0.030 | 0.067 | 0.100 |
| *INS Inst_Ownership* $_{it+1}$ | 0.019 | 0.017 | 0.007 | 0.017 | 0.027 |
| *INV Inst_Ownership* $_{it+1}$ | 0.541 | 0.257 | 0.417 | 0.589 | 0.727 |
| *OTHER Inst_Ownership* $_{it+1}$ | 0.047 | 0.035 | 0.021 | 0.042 | 0.063 |

This table shows descriptive statistics for the main dependent and control variables in our sample. All dependent variables, and part of control variables, including firm age (*Firm age* $_{it}$), the number of analysts following (*Analysts* $_{it}$), and the lag value of institutional ownership (*Inst_Ownership* $_{it}$), are reported as unlogged values for ease of interpretation. We provide variable definitions in Appendix A.

**Table 3.3 Comparisons of firm characteristics between ISS-treated group and control group**

| | Full Sample = 447 | | | | |
|---|---|---|---|---|---|
| | Treated Mean | Control Mean | Difference | t-test | p-value |
| *ROA* $_{it}$ | -0.041 | -0.035 | -0.006 | -0.316 | 0.752 |
| *Operating loss* $_{it}$ | 0.369 | 0.357 | 0.012 | 0.266 | 0.790 |
| *Ln(market capitalization)* $_{it}$ | 7.194 | 6.996 | 0.199 | 1.080 | 0.281 |
| *TobinQ* $_{it}$ | 1.606 | 1.666 | -0.060 | -0.349 | 0.727 |
| *Leverage* $_{it}$ | 0.248 | 0.245 | 0.003 | 0.136 | 0.892 |
| *Sales growth* $_{it}$ | 0.150 | 0.154 | -0.005 | -0.081 | 0.936 |
| *Stock return* $_{it}$ | 0.070 | 0.104 | -0.034 | -0.728 | 0.467 |
| *Stock return volatility* $_{it}$ | 0.121 | 0.128 | -0.007 | -0.900 | 0.369 |
| *Bid-ask spread* $_{it}$ | 0.036 | 0.038 | -0.002 | -1.163 | 0.246 |
| *Ln(firm age)* $_{it}$ | 2.877 | 2.918 | -0.041 | -0.550 | 0.582 |
| *Ln(analysts)* $_{it}$ | 2.353 | 2.250 | 0.103 | 1.479 | 0.140 |
| *Ln_Inst_Ownership* $_{it}$ | 0.518 | 0.506 | 0.012 | 0.694 | 0.488 |

This table compares univariate differences in firm characteristics between ISS-treated group (217 observations) and control group (230 observations). ISS-treated (Control) group includes firms with 67.00% to 69.99% (70.00% to 73.00%) SOP voting approval in the current annual meeting in year t.

**Table 3.4 Institutional ownership**

| Dependent variables | Model 1. OLS Model *Ln_Inst_Ownership* $_{it+1}$ | Model 2. OLS Model *Ln_Inst_Ownership_Q1* $_{it+1}$ | Model 3. OLS Model *Ln_Inst_Ownership_Q2* $_{it+1}$ | Model 4. OLS Model *Ln_Inst_Ownership_Q3* $_{it+1}$ | Model 5. OLS Model *Ln_Inst_Ownership_Q4* $_{it+1}$ |
|---|---|---|---|---|---|
| *ISSinvestigation* $_{it}$ | 0.015** | 0.010 | 0.012 | 0.016* | 0.013* |
| | (2.735) | (1.243) | (1.349) | (1.805) | (2.038) |
| *ROA* $_{it}$ | 0.027** | 0.045** | 0.044** | 0.035 | 0.020 |
| | (2.641) | (3.049) | (2.431) | (1.559) | (1.345) |
| *Operating loss* $_{it}$ | 0.004 | 0.003 | 0.005 | 0.001 | -0.006 |
| | (0.312) | (0.280) | (0.412) | (0.061) | (-0.338) |
| *Ln(market capitalization)* $_{it}$ | 0.003 | 0.004 | 0.003 | 0.005 | 0.004 |
| | (0.583) | (1.144) | (0.627) | (0.928) | (0.559) |
| *TobinQ* $_{it}$ | -0.000 | -0.003 | -0.002 | -0.002 | 0.000 |
| | (-0.196) | (-1.547) | (-1.235) | (-1.127) | (0.113) |
| *Leverage* $_{it}$ | -0.037* | -0.045* | -0.043** | -0.052** | -0.032* |
| | (-1.908) | (-1.888) | (-2.310) | (-2.482) | (-2.128) |
| *Sales growth* $_{it}$ | 0.014** | 0.004 | 0.009 | 0.018*** | 0.021*** |
| | (3.021) | (0.752) | (1.422) | (4.357) | (5.729) |
| *Stock return* $_{it}$ | 0.024*** | 0.018** | 0.024*** | 0.027*** | 0.022* |
| | (3.106) | (3.010) | (3.824) | (6.370) | (2.079) |
| *Stock return volatility* $_{it}$ | -0.060 | -0.043 | -0.121 | -0.098 | -0.103 |
| | (-0.481) | (-0.465) | (-1.122) | (-0.731) | (-0.418) |
| *Bid-ask spread* $_{it}$ | -0.246 | -0.043 | 0.004 | -0.252 | -0.505 |
| | (-0.333) | (-0.074) | (0.007) | (-0.326) | (-0.390) |
| *Ln(firm age)* $_{it}$ | -0.004 | -0.007 | -0.004 | -0.009 | -0.007 |
| | (-0.706) | (-0.999) | (-0.563) | (-1.020) | (-0.739) |
| *Ln(analysts)* $_{it}$ | -0.013 | -0.010 | -0.010 | -0.016 | -0.015 |
| | (-1.078) | (-0.999) | (-1.003) | (-1.477) | (-0.912) |
| *Ln_Inst_Ownership* $_{it}$ | 0.948*** | 0.980*** | 0.977*** | 0.939*** | 0.910*** |
| | (21.674) | (34.663) | (31.660) | (20.657) | (15.920) |
| *Constant* | 0.047 | 0.031 | 0.038 | 0.080 | 0.082 |
| | (1.593) | (0.962) | (1.087) | (1.613) | (1.672) |
| Industry fixed effect | Yes | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| No. of observations | 444[43] | 430 | 427 | 426 | 410 |
| Adjusted R-squared | 0.791 | 0.846 | 0.832 | 0.793 | 0.713 |

This table uses the institutional ownership sample to test the relation between ISS investigation and institutional ownership. We retain only the records of the first annual meeting for each firm included in our dataset. Model 1 uses institutional ownership, averaged over four quarters, as the dependent variable. Models 2 through 5 use institutional ownership in quarters 1 to 4 as the dependent variable, respectively. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

[43] Due to the fixed effects and clustering, the original sample size is reduced from 447 to 444 by STATA.

**Table 3.5 Each type of institutional ownership**

| Dependent variables | Model 1. OLS Model *Ln_TRA Inst_Ownership* $_{it+1}$ | Model 2. OLS Model *Ln_QIX Inst_Ownership* $_{it+1}$ | Model 3. OLS Model *Ln_DED Inst_Ownership* $_{it+1}$ |
|---|---|---|---|
| *ISSinvestigation* $_{it}$ | 0.010** | 0.009 | -0.000 |
| | (2.599) | (1.029) | (-0.021) |
| *ROA* $_{it}$ | -0.005 | 0.028** | 0.009 |
| | (-0.366) | (2.307) | (0.843) |
| *Operating loss* $_{it}$ | 0.001 | -0.003 | 0.012 |
| | (0.072) | (-0.247) | (1.756) |
| *Ln(market capitalization)* $_{it}$ | -0.006 | 0.001 | 0.006** |
| | (-1.537) | (0.245) | (2.804) |
| *TobinQ* $_{it}$ | -0.003* | -0.000 | 0.002 |
| | (-1.850) | (-0.028) | (1.191) |
| *Leverage* $_{it}$ | -0.002 | -0.037 | -0.012 |
| | (-0.240) | (-1.738) | (-0.785) |
| *Sales growth* $_{it}$ | 0.004 | 0.016*** | 0.007 |
| | (0.956) | (6.218) | (1.388) |
| *Stock return* $_{it}$ | 0.011* | 0.016* | 0.005 |
| | (1.942) | (1.857) | (1.149) |
| *Stock return volatility* $_{it}$ | 0.026 | -0.151 | -0.018 |
| | (0.469) | (-1.630) | (-0.227) |
| *Bid-ask spread* $_{it}$ | -0.770** | 0.474 | -0.203 |
| | (-2.488) | (0.667) | (-0.544) |
| *Ln(firm age)* $_{it}$ | -0.000 | 0.005 | 0.004 |
| | (-0.070) | (0.649) | (0.665) |
| *Ln(analysts)* $_{it}$ | 0.002 | -0.007 | -0.005 |
| | (0.259) | (-1.003) | (-1.008) |
| *Ln_TRA Inst_Ownership* $_{it}$ | 0.720*** | | |
| | (22.501) | | |
| *Ln_QIX Inst_Ownership* $_{it}$ | | 0.872*** | |
| | | (41.443) | |
| *Ln_DED Inst_Ownership* $_{it}$ | | | 0.792*** |
| | | | (11.222) |
| *Constant* | 0.084*** | 0.021 | -0.003 |
| | (3.252) | (0.771) | (-0.124) |
| Industry fixed effect | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes |
| No. of observations | 444 | 444 | 444 |
| Adjusted R-squared | 0.598 | 0.741 | 0.729 |

This table uses the institutional ownership sample to test the relation between ISS investigation and each type of institutional ownership including transient institutional ownership, quasi indexer institutional ownership, and dedicated institutional ownership. We retain only the records of the first annual meeting for each firm included in our dataset. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

**Table 3.6 Each type of institutional ownership**

| Dependent variables | Model 1. OLS Model *Ln_BNK Inst_Ownership* $_{it+1}$ | Model 2. OLS Model *Ln_INS Inst_Ownership* $_{it+1}$ | Model 3. OLS Model *Ln_INV Inst_Ownership* $_{it+1}$ | Model 4. OLS Model *Ln_OTHER Inst_Ownership* $_{it+1}$ |
|---|---|---|---|---|
| *ISSinvestigation* $_{it}$ | -0.000 | 0.001 | 0.014* | 0.004** |
| | (-0.012) | (0.937) | (1.825) | (2.481) |
| *ROA* $_{it}$ | 0.001 | 0.001 | 0.002 | 0.004 |
| | (0.197) | (0.288) | (0.132) | (0.669) |
| *Operating loss* $_{it}$ | -0.006*** | 0.002 | 0.008 | 0.003 |
| | (-3.495) | (1.658) | (0.609) | (1.306) |
| *Ln(market capitalization)* $_{it}$ | 0.003* | 0.000 | 0.000 | 0.001 |
| | (1.874) | (0.283) | (0.000) | (1.037) |
| *TobinQ* $_{it}$ | 0.000 | -0.001** | -0.000 | -0.000 |
| | (0.315) | (-2.502) | (-0.162) | (-0.438) |
| *Leverage* $_{it}$ | -0.012** | 0.001 | -0.041** | -0.005 |
| | (-2.366) | (0.321) | (-2.301) | (-1.320) |
| *Sales growth* $_{it}$ | 0.005*** | 0.001 | 0.017** | 0.003*** |
| | (3.321) | (1.601) | (2.575) | (3.780) |
| *Stock return* $_{it}$ | 0.002 | 0.002** | 0.019* | 0.002 |
| | (0.731) | (2.289) | (2.027) | (1.107) |
| *Stock return volatility* $_{it}$ | -0.003 | 0.007 | -0.126 | -0.034 |
| | (-0.099) | (0.860) | (-1.009) | (-1.036) |
| *Bid-ask spread* $_{it}$ | -0.008 | -0.106 | -0.253 | 0.006 |
| | (-0.036) | (-1.593) | (-0.283) | (0.043) |
| *Ln(firm age)* $_{it}$ | 0.003 | -0.000 | 0.009 | 0.002 |
| | (1.400) | (-0.368) | (0.967) | (1.347) |
| *Ln(analysts)* $_{it}$ | 0.002 | 0.002 | -0.017* | -0.002 |
| | (0.719) | (1.333) | (-1.959) | (-0.918) |
| *Ln_BNK Inst_Ownership* $_{it}$ | 0.666*** | | | |
| | (24.843) | | | |
| *Ln_INS Inst_Ownership* $_{it}$ | | 0.747*** | | |
| | | (13.066) | | |
| *Ln_INV Inst_Ownership* $_{it}$ | | | 0.926*** | |
| | | | (26.255) | |
| *Ln_OTHER Inst_Ownership* $_{it}$ | | | | 0.761*** |
| | | | | (13.834) |
| *Constant* | -0.011 | 0.002 | 0.047 | 0.001 |
| | (-0.923) | (0.435) | (0.915) | (0.174) |
| Industry fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes |
| No. of observations | 444 | 444 | 444 | 444 |
| Adjusted R-squared | 0.666 | 0.647 | 0.718 | 0.665 |

This table uses the institutional ownership sample to test the relation between ISS investigation and each type of institutional ownership including bank trust, insurance company, investment company and all other institutions. We retain only the records of the first annual meeting for each firm included in our dataset. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

**Table 3.7 Institutional ownership across different firm sizes**

| Dependent variables | Model 1. OLS Model *Ln_Inst_Ownership* $_{it+1}$ | Model 2. OLS Model *Ln_Inst_Ownership_Q1* $_{it+1}$ | Model 3. OLS Model *Ln_Inst_Ownership_Q2* $_{it+1}$ | Model 4. OLS Model *Ln_Inst_Ownership_Q3* $_{it+1}$ | Model 5. OLS Model *Ln_Inst_Ownership_Q4* $_{it+1}$ |
|---|---|---|---|---|---|
| *ISSinvestigation* $_{it}$ | 0.043*** | 0.027* | 0.031** | 0.059** | 0.055** |
| | (3.247) | (1.902) | (2.551) | (2.215) | (2.685) |
| *ISSinvestigation* $_{it}$ * *Ln(market capitalization)* $_{it}$ | -0.004 | -0.002 | -0.003 | -0.006 | -0.006* |
| | (-1.736) | (-1.067) | (-1.383) | (-1.680) | (-1.824) |
| *ROA* $_{it}$ | 0.029*** | 0.046*** | 0.045** | 0.037 | 0.023 |
| | (3.113) | (3.228) | (2.583) | (1.766) | (1.547) |
| *Operating loss* $_{it}$ | 0.004 | 0.003 | 0.005 | 0.001 | -0.005 |
| | (0.298) | (0.262) | (0.394) | (0.036) | (-0.326) |
| *Ln(market capitalization)* $_{it}$ | 0.005 | 0.005 | 0.004 | 0.007 | 0.007 |
| | (0.804) | (1.247) | (0.828) | (1.173) | (0.803) |
| *TobinQ* $_{it}$ | -0.001 | -0.003 | -0.002 | -0.002 | 0.000 |
| | (-0.260) | (-1.600) | (-1.289) | (-1.229) | (0.094) |
| *Leverage* $_{it}$ | -0.037* | -0.045* | -0.042** | -0.051** | -0.031* |
| | (-1.860) | (-1.865) | (-2.256) | (-2.357) | (-1.999) |
| *Sales growth* $_{it}$ | 0.014** | 0.004 | 0.009 | 0.018*** | 0.021*** |
| | (2.898) | (0.732) | (1.383) | (4.171) | (6.123) |
| *Stock return* $_{it}$ | 0.024*** | 0.018** | 0.024*** | 0.027*** | 0.022* |
| | (3.176) | (3.020) | (3.859) | (6.459) | (2.100) |
| *Stock return volatility* $_{it}$ | -0.053 | -0.038 | -0.115 | -0.087 | -0.099 |
| | (-0.419) | (-0.420) | (-1.078) | (-0.634) | (-0.397) |
| *Bid-ask spread* $_{it}$ | -0.283 | -0.061 | -0.018 | -0.299 | -0.525 |
| | (-0.383) | (-0.105) | (-0.029) | (-0.382) | (-0.405) |
| *Ln(firm age)* $_{it}$ | -0.004 | -0.007 | -0.004 | -0.009 | -0.006 |
| | (-0.715) | (-1.003) | (-0.563) | (-1.019) | (-0.720) |
| *Ln(analysts)* $_{it}$ | -0.014 | -0.010 | -0.010 | -0.017 | -0.016 |
| | (-1.092) | (-1.003) | (-1.007) | (-1.488) | (-0.926) |
| *Ln_Inst_Ownership* $_{it}$ | 0.947*** | 0.980*** | 0.976*** | 0.939*** | 0.909*** |
| | (21.436) | (34.327) | (31.491) | (20.341) | (15.653) |
| *Constant* | 0.036 | 0.024 | 0.030 | 0.061 | 0.064 |
| | (1.150) | (0.738) | (0.823) | (1.260) | (1.294) |
| Industry fixed effect | Yes | Yes | Yes | Yes | Yes |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| No. of observations | 444 | 430 | 427 | 426 | 410 |
| Adjusted R-squared | 0.791 | 0.845 | 0.832 | 0.793 | 0.713 |

This table uses the institutional ownership sample to test whether the relation between ISS investigation and institutional ownership varies across different firm sizes, as measured by *Ln(market capitalization)* $_{it}$. We retain only the records of the first annual meeting for each firm included in our dataset. Model 1 uses institutional ownership, averaged over four quarters, as the dependent variable. Models 2 through 5 use institutional ownership in quarters 1 to 4 as the dependent variable, respectively. All models incorporate Industry fixed effect and Year fixed effect, with clustered standard errors at the industry level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. Numbers presented in parentheses are t-statistics.

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