

# Giving Retail Investors a Say in Disclosure\*

Stanimir Markov<sup>1</sup> and Ari Yezegel<sup>2</sup>

<sup>1</sup>University of Texas at Dallas

<sup>2</sup>Bentley University

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## Abstract

We use Say Tech—an online platform where companies solicit and answer questions from retail investors—as a laboratory to study retail-investor-driven changes in disclosure and their consequences. We find that firms are more likely to use the platform when their retail ownership and Seeking Alpha coverage are greater. When firms use the platform, retail investor trade informativeness and user requests for 10-K/Q filings increase relative to a matched control sample. Focusing on firms that use the platform around earnings announcements, we find that managers answer 4.8 retail investor questions and 3.24 fewer analyst questions during regular earnings calls, suggesting increased attention to retail investors is accompanied by reduced attention to analysts. Finally, retail investors’ questions are no less sophisticated but seek different information than analysts’ questions. We conclude that retail investors have different information needs and that catering to these needs can spur retail investors’ information production.

**Keywords:** FinTech; conference calls; information acquisition; access to management; equity analysts; retail investors.

**JEL Classifications:** M41; G11; G14.

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# 1 Introduction

*“There was a perception [retail investors] are not educated, and it is low ROI to engage with them, and that has shifted. Retail has more access to information, and they are more engaged and educated.”*

— Zach Hascoe, *Co-founder of Say Tech*

*September 15th, 2022*

*“Individual investors—which are a large and important part of our shareholder base—haven’t traditionally had a platform to engage directly with Chevron’s leadership... This approach allows us to better understand their sentiment and priorities.”*

— Roderick Green, *Chevron Head of Investor Relations*

*September 12th, 2022*

Managers perceive institutional investors and equity analysts as the two most important groups in terms of setting company stock price and shaping voluntary disclosure policies, whereas retail investors rank a distant third ([Graham, Harvey, and Rajgopal, 2005](#)). Consequently, voluntary disclosure policies have traditionally prioritized the information needs of equity analysts and institutional investors over those of retail investors. A case in point is the prevalence of management interactions with equity analysts and institutional investors, occurring at a multitude of venues (e.g., the Q&A of earnings calls, investor conferences, analyst/investor days, non-deal road shows), benefiting analysts and their institutional clients at the expense of retail investors (e.g., [Soltes, 2014](#); [Solomon and Soltes, 2015](#); [Green, Jame, Markov, and Subasi, 2014](#); [Bradley, Jame, and Williams, 2022](#)). Researchers have questioned whether such interactions are congruent with the SEC’s professed goal of all investors having equal access to information ([Solomon and Soltes, 2015](#)).

In this study, we investigate whether corporate disclosure has become more attentive to retail investors’ needs, and whether increased attention to retail investors can facilitate retail investors’ information production. Our inquiry is motivated by two recent market trends.

Individual investors' stock market participation has sharply increased in the past decade, as evidenced by retail investor volume exceeding in some years 20% of all stock market activity (Eaton, Green, Roseman, and Wu, 2022), and retail investors have become a force to reckon with in capital markets. In addition, as the costs of acquiring, processing, and sharing information have plummeted, retail investor sophistication has increased dramatically over the years. Recent studies consistently find that aggregate retail trades (Boehmer, Jones, Zhang, and Zhang, 2021; Farrell, Green, Jame, and Markov, 2022) and investment research produced outside the Wall Street information ecosystem (e.g., Chen, De, Hu, and Hwang, 2014; Drake, Guest, and Twedt, 2014) convey new information to capital markets. We argue that increased stock market participation and sophistication of retail investors create incentives for managers to devote more attention to retail investors.

Founded in 2018 and adopted by more than 50 companies with a total market cap of \$1.5 trillion, Say Technologies (Say Tech, henceforth) is an online platform where verified retail shareholders can ask management questions and upvote existing questions. The platform has several unique features that make it especially well-suited for studying retail investor-driven changes in disclosure and their consequences. First, by limiting user participation to verified shareholders, Say Tech allows a much cleaner identification of retail investors' information demands than Facebook or Twitter, which are used by both retail investors and stakeholders (e.g., customers and local communities). Second, the majority of firms participating in Say Tech solicit retail questions a week before earnings are announced and answer retail questions during the post-earnings announcement period, which is when they hold earnings calls and answer analyst questions. With the demand for information from all investor groups peaking during this period, managers are forced to reveal their true perceptions of retail investors and analysts as disclosure audiences. Finally, Say Tech has features that potentially reduce information processing and agency costs arising from the collection of questions from numerous investors with differing sophistication and preferences. Specifically, by virtue of collecting retail question upvotes, the platform helps firms filter out

idiosyncratic questions, and by making questions and upvotes publicly available, the platform helps investors hold managers accountable. After eliminating non-US firms, ETFs, REITs, and non-earnings forums, our final sample includes 188 earnings forums hosted by 41 firms.

We begin by investigating factors influencing the choice to solicit retail questions on the Say Tech platform. We observe that Say Tech firms have lower percentage of institutional ownership and higher retail trading than other firms, consistent with Say Tech firms facing stronger retail investor demand for information. In addition, we find that Say Tech adopters have greater Seeking Alpha coverage but no evidence that they have greater media coverage or cluster in consumer-facing industries. Our explanation is that Seeking Alpha coverage reflects the informational demands of sophisticated retail investors, who are more likely to seek information from management than other retail investors, whereas media coverage and membership in a consumer-facing industry reflect the informational demands of all groups of investors and stakeholders. Finally, companies with less favorable equity analyst coverage, lower book-to-market ratio, and lower age are more likely to adopt Say Tech, presumably because their managers view Say Tech as an additional tool to influence their information environments and increase investor recognition.

On average, 446 questions are submitted to an earnings forum but only 5.5 are answered, underscoring the need to understand the underlying selection process. Empirical evidence suggests that retail investor upvotes play an important role in filtering out idiosyncratic questions and influencing management choice to answer a question. First, the distribution of upvotes in a forum is highly unequal, as evidenced by Gini coefficients whose mean (median) is 0.63 (0.70), which implies that only a small set of questions capture forum users' attention and endorsement and, therefore, merit management attention and answer.<sup>1</sup>

Second, evidence from a Poisson model with forum fixed effects of question upvotes on ten salient question attributes suggests that the upvoting process promotes questions with

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<sup>1</sup>The Gini coefficient, bounded between 0 and 1, is frequently used in social sciences to measure the level of income inequality in a population. In our study, a Gini coefficient of 1 means that a single question receives all votes, whereas a value of 0 means all questions receive the same number of votes.

higher sophistication, proxied by the Fog index and the number of numbers in a question post, and higher information acquisition intensity, measured by the number of question marks in a post.<sup>2</sup> To assess economic importance, we compute marginal effects by multiplying parameter estimates and variables' within-forum standard deviations; and we benchmark these effects against the within-forum standard deviation of the dependent variable.<sup>3</sup> As a percentage of the within-forum standard deviation of the dependent variable, the marginal effects are fairly modest, the highest being 3% in the case of question intensity and numeracy.

Third, we model management choice to answer a retail question as a function of the number of upvotes garnered by questions and the same set of ten question attributes. We find that upvotes are the most important choice determinant. In particular, increasing the number of upvotes by one within-forum standard deviation increases the likelihood of answering a question by nearly ten percentage points, which equals 94.6% of the (within-forum) standard deviation of the dependent variable. In addition, managers are more likely to answer question posts that are longer and include more numbers and question marks—but not more positive in tone—which suggests that they place an even higher premium on question sophistication and question intensity than retail investors do. Finally, managers are more likely to answer retail questions that seek risk-related information and less likely to answer ESG-focused questions.

Drawing on prior research that finds public management answers to analyst questions yield greater informational benefits for the analysts asking the questions (Mayew, 2008; Cohen, Lou, and Malloy, 2020), we suggest that management answers to retail investor questions may yield greater informational benefits for retail investors. To explore this hypothesis, we test whether daily retail order imbalance is more predictive of future abnormal returns in quarters when firms are more attentive to the needs of retail investors. We use our model

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<sup>2</sup>These attributes include question tone, two measures of information acquisition intensity, three measures of sophistication, two measures of question horizon, and a variable indicating whether the question seeks ESG information.

<sup>3</sup>Breuer and deHaan (2023) recommend the use of within-fixed effects standard deviation of an independent variable to calculate a variable's marginal effect and within-fixed effects standard deviation of the dependent variable to assess the magnitude of the effect.

of the determinants of Say Tech adoption to match each Say Tech adopter to up to three firms, with replacement, in the adoption quarter, following the nearest neighbor matching approach described in [Dettmann, Giebler, and Weyh \(2019\)](#); and implement a stacked regression differences-in-differences design to address concerns about staggered treatment timing and treatment effect heterogeneity ([Baker, Larcker, and Wang \(2022\)](#)).

We find statistically and economically significant evidence that the ability of retail order imbalance to predict future five-day abnormal returns strengthens in quarters in which firms are more attentive to retail investor information needs relative to matched control firms. In particular, increasing retail order imbalance by one (within-fixed effects) standard deviation increases future five-day returns by 30 basis points in Say Tech quarters for treated firms relative to control firms. We find no evidence that this return predictability reverses.

Using the same stacked regression DiD design, we find that daily Edgar 10-K/Q requests increase by 11 among Say Tech firms relative to matched control firms, consistent with the notion that increased disclosure attention to retail investors spurs information acquisition by retail investors. The documented increase in 10-K/Q requests is statistically significant and economically large, representing 26.5% of the variable's within-fixed-effects standard deviation.

The majority of the Say Tech firms engage with retail investors around earnings announcements and answer retail questions not only on the Say Tech platform but also during regular earnings calls. Out of the 35 firms that host both earnings forums and earnings calls, 27 always answer retail questions and six answer retail questions during some calls. On average, firms that open an earnings forum answer 4.8 retail questions during earnings calls and 3.78 fewer analyst questions. The collocation of retail investor questions and analyst questions in the same earnings call presents two unique research opportunities. It allows us to test whether increased disclosure attention to retail investors is at the expense of attention to analysts and to compare retail investor information preferences and sophistication to

those of analysts.<sup>4</sup>

We adopt a stacked DiD approach to test whether increased attention to retail investors, which manifests in management opening an earnings forum and answering retail questions during earnings calls, is associated with reduced attention to analysts, resulting in fewer answered analyst questions. Our DiD sample includes 278 treated firm transcripts and 705 control firm transcripts, chosen with replacement based on the nearest neighbor matching approach (Dettmann et al., 2019).

We find evidence consistent with a substitution effect. In particular, firms that open earnings forums, on average, interact with 1.55 fewer analysts and answer 3.88 fewer analyst questions during earnings calls relative to matched control firms. We find no evidence that these firms lengthen the Q&A segment, further supporting the hypothesis that increased interactions with retail investors come at the expense of reduced interactions with analysts.

To examine the information preferences of retail investors and analysts, we estimate a logistic regression of retail investor question indicator on the same set of ten salient question attributes, with earnings call fixed effects, and document several stylized facts. First, retail questions are shorter, more negative in tone, and more inquisitive, consistent with retail investors being less interested in maintaining a friendly relationship with management and management choosing not to use their discretion to pick favorable retail investor questions. Second, retail questions are distinguished by higher Fog index, and greater use of financial words and less frequent use of numbers, which suggests that retail investors are no less sophisticated than equity analysts. Finally, retail investor questions are more long-term and ESG-oriented but less risk-focused than equity analyst questions.

Our primary contribution is to the literature on corporate disclosure. Prioritizing the needs of analysts and institutional investors over retail investors is an essential but con-

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<sup>4</sup>Typically, retail investor information preferences and sophistication are inferred from retail investor trading behavior (Blankespoor, deHaan, Wertz, and Zhu, 2019; Moss, Naughton, and Wang, 2023; Li, Watts, and Zhu, 2023). Since not all trades are information-driven, questions asked by retail investors offer unique insights into retail investor information demand. A shortcoming of our comparative analysis is that retail questions, although answered by management during the same earnings call, are posed in written form before earnings are announced.

controversial feature of corporate disclosure. We present novel evidence that in recent years firms adopt more inclusive disclosure policies, and suggest that firms do so in response to increased retail investor stock market participation and sophistication and increased ease of discerning retail investor information demand, afforded by Say Tech. Our findings should be of interest to regulators and policy-makers because leveling the informational field between retail investors and institutional investors is a common rationale for disclosure regulation.

Our study contributes to a vast literature that examines how technology shapes information flows in capital markets. One stream in this literature examines how firms use technology to disseminate information to a broader audience of investors and stakeholders (e.g., [Bushee, Matsumoto, and Miller, 2003](#); [Lee, Hutton, and Shu, 2015](#); [Jung, Naughton, Tahoun, and Wang, 2018](#)). Another stream examines how technology helps investors acquire, produce, and share information (e.g., [Blankespoor, deHaan, and Zhu, 2018](#); [Bartov, Faurel, and Mohanram, 2018](#); [Jame, Johnston, Markov, and Wolfe, 2016](#); [Farrell et al., 2022](#)), with often the same technology, Twitter, facilitating information dissemination on the corporate side and information acquisition and sharing on the investor side. We turn our attention to an interactive platform, Say Tech, which enables firms to differentiate and meet the information needs of retail investors. Our study of how firms use technology to make earnings call disclosures more responsive to retail investors' needs naturally complements and extends [Bushee et al.'s \(2003\)](#) study of how firms use technology to make earnings call disclosures available to all external users of information in real time.

We also contribute to the literature on retail investors. The conventional wisdom is that retail investors prefer intermediary-filtered information to company-provided information and exhibit suboptimal demand for and processing of information (see Section 3.2 of [Cascino, Clatworthy, García Osma, Gassen, Imam, and Jeanjean, 2014](#)).<sup>5</sup> While several

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<sup>5</sup>More recently, [Blankespoor et al. \(2019\)](#) find that retail investors disregard accounting information and urge caution in mandating expanded accounting disclosures. The view of retail investors emerging from analysis of Robinhood trading data is that they are prone to herding and engage in attention-based and return-chasing trades (e.g., [Barber, Huang, Odean, and Schwarz, 2022](#); [Eaton et al., 2022](#); [Michels, 2023](#); [Friedman and Zeng, 2022](#)).



recent studies find that aggregate retail trades reveal new information to capital markets (e.g., Kaniel, Liu, Saar, and Titman, 2012; Kelley and Tetlock, 2013, 2017; Boehmer et al., 2021; Farrell et al., 2022), to our knowledge, we are the first to present archival evidence linking the informativeness of retail trades to retail investors’ acquisition of information from management.<sup>6</sup> Our findings that retail investors’ questions are sophisticated and topically different from analyst questions suggest superior processing of public information as an explanation for this link. Our evidence that retail investors seek climate-related information from management is especially topical in view of the SEC’s recent controversial proposal for mandated climate disclosure and the dearth of clear evidence regarding retail investors’ demand for climate-related information (e.g., Moss et al., 2023; Li et al., 2023).

Our study differs from recent work that focuses on exchange-mandated investor-interactive forums in China (Lee and Zhong, 2022; Blankespoor, 2022; Wong, Yu, Zhang, and Zhang, 2023; Guo, Yu, and Faff, 2022; Friedman, Huang, and Wu, 2023). We examine a series of voluntary disclosure choices that either do not arise or are difficult to examine in their setting: the choice to solicit retail investor questions (e.g., participate in the forum), the choice to answer these questions, and the broader choice to devote more attention to retail investors at the expense of analysts and institutional investors.

## 2 Data

Founded in 2018, Say Technologies (Say Tech) operates an online platform where firms can solicit and answer questions from verified shareholders, and shareholders can upvote questions that they deem important. Say Tech’s mission, as articulated in a press release announcing the completion of its seed funding, is to help individual shareholders “gain a deeper understanding of and influence over what they own.”<sup>7</sup> The press release adds that

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<sup>6</sup>Experimental evidence suggests answering retail investor questions enhances trader estimates of value and market efficiency (Elliott, Grant, and Hobson, 2020), as well as trust in management, which can mitigate negative market reactions to future withholding of information (Croom, Grant, and Seto, 2023)

<sup>7</sup>The full-text of the press release is accessible at <https://www.businesswire.com/news/home/20180410005615/en/New-Technology-Gives-Every-Shareholder-a-Louder-Voice>.

Say Tech’s platform “empowers shareholders, amplifies the voices of individual investors, and *helps level the playing field with institutional shareholders* (emphasis added).”

Say Tech is widely viewed as being among a group of fintech start ups that seek to democratize capital markets by reducing various institutional and informational frictions impeding retail investor stock market participation (Fuscaldo, 2019). While individual companies can operate their own online platforms, economies of scale arguably arise when a single entity works with brokerages, issuers, and retail investors to verify retail ownership and create a platform to host all company-retail shareholder interactions. The platform leaves it to individual companies to decide when to begin and stop soliciting questions from shareholders, i.e., open and close an investor forum; and which questions to answer.

During our sample period (January 2019 - March 2023), 59 entities, including 11 exchange-traded funds (ETF), six foreign companies, and one real estate investment trust, have used the platform to solicit and answer questions from retail shareholders through 229 forums.<sup>8</sup> We exclude ETFs, non-U.S. firms, and REITs and merge the remaining 41 firms by name with Compustat, CRSP, IBES, Raven Pack, and Seeking Alpha to compile information on firm ownership, trading and information environment, sell-side analyst and social-media research, and other relevant characteristics. These firms solicit 81,085 questions through 188 forums and answer only 997 of these questions, raising concerns about management choosing to answer questions that cast them in favorable light rather than critical questions that seek to elicit relevant information.<sup>9</sup>

Table 1 Panel A compares Say Tech adopters to non-adopters based on ownership, trading, coverage, and other salient firm characteristics. We find that Say Tech adopters have lower institutional ownership, attract more retail trading activity and Seeking Alpha cover-

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<sup>8</sup>The number of Say Tech adopters increases from one in the first calendar quarter of 2019 to six in the last calendar quarter of 2022.

<sup>9</sup>Institutional investors are not banned from participating in the forum, but they ask a mere 327 questions (0.004 percent). Upon reviewing their names, we find that they are primarily family offices (e.g., Pittenger Family Office), which lack access to management that the prototypical institutional investor has. Our results are robust to excluding these questions and to alternatively including a non-retail investor indicator. We offer more details in Sections 3.1.2 and 3.1.3.

age, and are rated less favorably by sell-side analysts. Furthermore, Say Tech adopters tend to be larger, younger, and more likely to be identified as “Meme” stocks. In Section 3.1.1, we further examine how Say Tech firms differ from other firms to shed light on the factors that influence the choice to engage with retail investors on the platform.

Table 1 Panel B presents forum-level summary statistics. The mean number of forum questions is 445.5, with a standard deviation of 1,041.8. The corresponding figures for the number of questions answered are 5.5 and 4.1. The mean number of question upvotes, calculated by first averaging over questions within each forum, and then averaging over all forums is 22.5, with a standard deviation of 16. The corresponding statistics for the market value of shares represented by upvotes equals \$28.8 million, with a standard deviation of \$131.9 million. The average forum-level Gini coefficient, calculated based on the distribution of upvotes within each forum, equals 0.63, revealing an upvoting pattern that is concentrated among a small number of questions. We use forum-level data to analyze the determinants of question upvotes and management choice to answer questions (Sections 3.1.2 and 3.1.3).

We obtain daily TAQ, CRSP, and EDGAR search data to investigate whether the choice to engage with retail investors on the Say Tech platform (1) increases retail investor trading, (2) strengthens the ability of retail order imbalance to predict future returns, and (3) spurs retail investor information acquisition activities. We use the same difference-in-differences approach, with the length of the post-period determined by the availability of data to document these consequences (Section 3.2).

We observe that 165 forums, held by 38 firms, open approximately two weeks before earnings are announced and close right before earnings are announced. Notably, managers answer questions after earnings are released not only in the forum but also in many cases during regular earnings calls. Analyzing earnings calls transcripts, we find that 27 firms always answer retail questions, six answer questions during some calls, two do not answer questions, and three do not hold earnings calls.<sup>10</sup> In view of the important role of earnings

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<sup>10</sup>Appendix B provides three examples of companies answering Say Tech questions during earnings calls. Typically, retail questions are read out by the Investor Relations Officer, when one is present, and answered

calls, and the Q&A section, in particular, as an information source in capital markets (Matsumoto, Pronk, and Roelofsen, 2011), we suggest that the majority of Say Tech firms view retail investors as a disclosure audience on par with analysts and institutional investors. In Section 3.4, we analyze the earnings call transcripts of Say Tech firms with earnings forums and a sample of matched control firms to address the question of whether answering retail questions is at the expense of answering analyst questions.

### 3 Empirical Analyses

#### 3.1 Management Choice to Solicit and Answer Retail Questions on the Say Tech Platform

In this section we study management choice to solicit and answer retail investor questions on the Say Tech platform. We hypothesize that firms facing greater information demand from retail investors are more likely to take advantage of a communications technology that targets specifically retail investors, and that questions of greater interest to larger swaths of retail investors are more likely to be answered.

##### 3.1.1 Management Choice to Solicit Retail Investor Questions

To shed light on the factors driving the choice to adopt this new technology, we estimate the following logistic regression model:

$$\begin{aligned} \mathbb{I}(\text{Say Tech})_{iq} = & \alpha_q + \gamma' \mathbf{Ownership}_{iq} + \theta' \mathbf{Trading}_{iq} + \pi' \mathbf{Coverage}_{iq} \\ & + \eta' \mathbf{Firm}_{iq} + \varepsilon_{iq}, \end{aligned} \tag{1}$$

where  $\mathbb{I}(\text{Say Tech})_{iq}$  equals one if firm  $i$  solicits questions on the platform during quarter  $q$ , **Ownership** includes the percentage of institutional ownership and the number of shareholders, **Trading** includes retail turnover, the number of retail trades, and total turnover, by the CEO or CFO.

**Coverage** includes the number of analysts covering a stock, a common measure of institutional investor demand for information, the percentage of analysts with a sell recommendation on the stock, and the Seeking Alpha coverage, which measures the level of interest in the stock by sophisticated retail investors,<sup>11</sup> and media coverage, which reflects the demand for information from all groups of investors and stakeholders. **Firm** includes firm characteristics: firm size, book-to-market, firm age, profitability, return volatility, past returns, and indicator variables for companies in consumer-facing industries and meme stocks.<sup>12</sup>

Table 2 reports the results from the estimation of Equation (1), with Model 1 (2) excluding (including) the vector of firm characteristics (i.e., **Firm**). We find that the likelihood of adopting Say Tech is decreasing in the level of institutional ownership and increasing in the number of retail trades and Seeking Alpha coverage, consistent with the notion that firms with larger, more active, and more sophisticated retail shareholder base are more likely to adopt Say Tech. We also find that firms with less favorable analyst recommendations are more likely to adopt Say Tech, pointing to dissatisfaction with unfavorable analyst coverage as motivation. Unexpectedly, firms with larger number of shareholders and greater total turnover appear less likely to adopt Say Tech, but these findings disappear in Model 2. Notable additional determinants of the choice to adopt Say Tech are the book-to-market ratio and firm age (inversely related to the adoption likelihood). Our explanation is that some high book-to-market firms are perhaps undervalued by the market, therefore incentivizing their managers to seek more opportunities to engage with investors and enhance investor awareness. Furthermore, lacking investor recognition, young firms may view Say Tech as a means to attract investor recognition.<sup>13</sup>

To assess the economic significance of our findings, we calculate the change in the Say

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<sup>11</sup>Seeking Alpha is a platform that helps retail investors produce and share research. Farrell et al. (2022) find that Seeking Alpha research distinctly enhances the informativeness of retail trades, which suggests that Seeking Alpha coverage can serve as a proxy for demand for information from sophisticated retail investors.

<sup>12</sup>Appendix A provides detailed definitions of these variables.

<sup>13</sup>Results are robust to the use of the OLS method apart from the coefficient on *Return volatility* losing statistical significance and the coefficients on *IBES coverage* and *Return* becoming negative and significant (untabulated for brevity. We find similar results when we estimate a duration model (tabulated in Internet Table \*\*\*).

Tech adoption probability for a within-quarter standard deviation increase in the variable of interest. These marginal effects are approximately 21 basis points for institutional ownership, and six basis points for Sell recommendation percentage and Seeking Alpha coverage. Importantly, the marginal effect of retail trading activity equals 49 basis points. Overall, the marginal effects appear economically large when compared with the 0.27% unconditional probability of Say Tech adoption and modest when compared with the 5.2% within-quarter standard deviation of the dependent variable (i.e.,  $\mathbb{I}(\text{Say Tech})$ ). We note that the discreteness of the dependent variable makes its within-fixed effects standard deviation less helpful as a benchmark.

In summary, our findings suggest three broad motivations for adopting Say Tech: meet retail investor demand for information, remedy market participants’ unduly negative view of the company, and increase investor recognition.<sup>14</sup>

### 3.1.2 Determinants of Question Upvotes

The Say Tech platform allows retail investors to upvote questions, and for each question, it prominently displays the number of upvotes and the total number of shares owned by investors upvoting the question. Upvotes, by helping management identify questions representative of retail investors’ information needs (and therefore, worth answering), potentially play a valuable information filtering role. Additionally, by helping retail investors assess management attentiveness to their needs, this feature likely discourages management from choosing to answer questions that portray them in a good light. In this section, we shed light on the information filtering role of upvoting by analyzing the properties of questions that attract more retail upvotes.

We estimate a Poisson model, with forum fixed effects, of the number of question upvotes on a comprehensive set of question attributes: question tone, two measures of question

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<sup>14</sup>Our findings are non-causal because the set of variables we consider are not completely exogenous to disclosure choice. As initial evidence on the forces driving firms to adopt a new technology that allows firms to identify and meet retail investors’ information demand, our findings are nevertheless useful.

intensity, two measures of question sophistication, two measures of question horizon, and measures of risk-focus and ESG focus (see Appendix A for variable definitions):

$$\begin{aligned}
 Upvotes_{qf} = & \alpha_f + \beta_1 Question\ tone_{qf} + \gamma' \mathbf{AcquisIntensity}_{qf} + \theta' \mathbf{Sophistication}_{qf} \\
 & + \pi' \mathbf{Horizon}_{qf} + \beta_2 Risk_{qf} + \beta_3 ESG_{qf} + \varepsilon_{qf}.
 \end{aligned} \tag{2}$$

We report our estimation results in Table 3. We find that the number of upvotes is increasing in the number of questions marks in a question post (a measure of information acquisition intensity), and question numeracy and complexity (measures of sophistication), suggesting that the crowd of retail investors wisely selects questions that are more sophisticated and more pressing of management. Questions that contain relatively more short-term horizon words and risk-focused sentences, and that cover fewer ESG-topics attract more upvotes, which suggests that the information preferences of investors asking retail questions do not perfectly reflect the information preferences of the much larger set of retail investors upvoting questions. Interestingly, while many individual investors are energized by ESG issues, the majority would rather management answer non-ESG questions. In sensitivity analysis, we find that our results are robust to excluding questions from non-retail investors and to including a non-retail question indicator.

### 3.1.3 Management Choice to Answer Select Analyst Questions on the Say Tech Platform

We model management choice to answer retail questions on the Say Tech platform as a function of question upvotes and the set of attributes included in Equation (2), and estimate the following model:

$$\begin{aligned}
 \mathbb{I}(Qstn.\ Ans w.)_{qf} = & \alpha + \beta_1 Upvotes_{qf} + \beta_2 Question\ tone_{qf} + \gamma' \mathbf{AcquisIntensity}_{qf} \\
 & + \theta' \mathbf{Sophistication}_{qf} + \pi' \mathbf{Horizon}_{qf} + \beta_3 Risk_{qf} \\
 & + \beta_4 ESG_{qf} + \varepsilon_{qf}.
 \end{aligned} \tag{3}$$

We first estimate Equation (3) with *Upvotes* as the only independent variable, and report our findings in the first column of Table 4. The coefficient on *Upvotes* is statistically significant and economically large. Specifically, a within-forum standard deviation increase in *Upvotes* is associated with a 204% of within-forum standard deviation increase in the dependent variable (i.e., the likelihood of a question being answered by managers).

The inclusion of question attributes in column 2 leaves the coefficient on *Upvotes* largely unchanged and it improves model fit only marginally: the pseudo  $R^2$  increases from 53.4% to 54.6%), further highlighting the key role of *Upvotes* in influencing management choice. We do not find that managers choose to answer questions that cast the company in a more favorable light: the coefficient on *Positive* is statistically indistinguishable from zero whereas the coefficient on *Negative* is positive and statistically significant. In contrast, the likelihood of answering a question is increasing in both measures of acquisition intensity and two of three measures sophistication, which suggests managers view questions with higher intensity and higher sophistication as even more deserving of answers than retail investors do. Recall that the number of upvotes, which we control for, is increasing in measures of question intensity and question sophistication. Finally, managers use their discretion to answer questions that seek risk-related information and avoid questions that seek ESG-related information, suggesting managers' preference for risk-related questions and avoidance of ESG-related questions are stronger than those of retail investors, as revealed through upvoting.<sup>15</sup>

As a sensitivity analysis, we estimate our analyses with an indicator variable for questions asked by non-retail investors. The number of observations for non-retail investors are limited (less than 0.4%), making it difficult to interpret their coefficients. However, we find that our results, with the exception of *Question marks* becoming statistically insignificant, are the same when we account for non-retail users through the inclusion of indicator variables.

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<sup>15</sup>Since management answers retail investors in public, it is possible that management considers the information preferences of other groups and stakeholders in choosing which retail questions to answer. For example, in Section 3.5, we find that analysts are more likely to seek risk-related information and less likely to demand ESG-related information than retail investors. If managers consider analyst preferences, they may choose to answer questions that have fewer upvotes but seek relatively more risk-related information and avoid questions that have more upvotes but seek relatively more ESG information.



## 3.2 The Consequences of Say Tech Adoption

In this section we examine whether engaging with retail investors on the Say Tech platform (1) increases retail investor trading, (2) strengthens the ability of retail order imbalance to predict future returns, and (3) spurs retail investor information acquisition activities.

To investigate these consequences, we adopt a difference-in-differences approach. We define treated firms as those that solicit questions on the Say Tech platform and matched control firms as firms that face similar retail information demands. Empirically, for each treated firm we select up to three firms in the same [Fama and French \(1997\)](#) 12-industry and with similar characteristics. We match on firm characteristics appearing in Equation (1) in the quarter of Say Tech adoption, using the nearest neighbor method ([Dettmann, Becker, and Schmeißer, 2011](#); [Dettmann et al., 2019](#)). We find no statistically significant (five percent significance level) evidence that control firms differ from treated firms based on any of the variables. We define the treatment period as firm-quarters when management host Say Tech forums (which vary between 1-16 quarters) and pre-treatment period as the preceding eight quarters (based on data availability). Because the length of the treatment period is conditional on managers’ decision to hold Say Tech, it exhibits greater variation than the pre-treatment period, which is limited to eight quarters.

We implement the difference-in-differences method using a “stacked regression” approach, which calls for creating cohorts of treated firms and their matched control firms, stacking cohort-specific datasets, and including dataset-specific unit- and time-fixed effects ([Baker et al., 2022](#)). This approach overcomes concerns about staggered treatment timing and treatment effect heterogeneity that plague standard DiD regression estimates.

### 3.2.1 Effect on Retail Trading Activity

We expect more retail trading in stocks of firms using Say Tech because of the well-established link between information acquisition, revision of beliefs about investment payoffs, and trad-

ing. In our setting, retail investors acquire more information from management through the Say Tech platform, causing them to revise their beliefs and trade. On the other hand, firms that engage with their retail shareholders may experience a change in retail investor composition – increased (decreased) ownership by long-term (short-term) retail investors – resulting in less retail trading. We expect the net effect to be positive, but we also acknowledge that our sample of 38 firms may be too small to detect an increase in retail trading.

We estimate the following model:

$$y_{icqd} = \alpha_{c \times i} + \gamma_{c \times q} + \beta_1 \text{Say Tech Quarter}_{icqd} + \pi' \mathbf{Confounding\ Events}_{icqd} + \varepsilon_{qf}. \quad (4)$$

The dependent variable is the number of daily retail trades or daily retail trading volume scaled by total daily trading volume. The subscripts  $i$ ,  $c$ ,  $q$ , and  $d$  index firm, cohort, quarter and day, respectively.  $\alpha_{c \times i}$  and  $\gamma_{c \times q}$  denote *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. *Say Tech Quarter* represents an indicator variable that equals one after the company initiates its first Say Tech forum. **Confounding Events** is a vector of indicator variables, *Earnings*, *10-K/Q*, *8-K*, *Guidance*, *Forecast*, and *Recommendation*, each indicating the occurrence of an information event (see Appendix A for definitions). We estimate Equation (4) using Poisson regression when the outcome variable is the number of retail trades, and OLS regression when the outcome variable is the percentage of retail trading volume, and report results in columns 1 and 2 of Table 5.

In Table 5 column 1, the estimated coefficient on *Say Tech Quarter* is not significantly different from zero, suggesting the lack of elevated daily retail trading in quarters of Say Tech participation. The coefficients on *8-K*, *Guidance*, and *Recommendation* are estimated to be positive and significant, consistent with investors trading during days of information arrival. Interestingly, the coefficient on *Earnings* and *10-K/Q* are not statistically significant. Upon further investigation, we note that the lack of statistically coefficient on *Earnings* and *10-K/Q* are due to their high correlation with the *8-K* and *Guidance* measures. When

we exclude the  $8-K$  and *Guidance* variables, we find that the coefficients on *Earnings* and  $10-K/Q$  are positive and statistically significant. In column 2, we replace the dependent variable with the percentage of trading volume executed by retail investors and find similar results. Overall, our analyses of retail trading produce no evidence of elevated daily retail trading in quarters of Say Tech participation.

### 3.3 Retail Order Imbalance Informativeness

Our prediction that retail order imbalance aggregates more new information in quarters in which retail investors acquire information from management is based on the idea that investors or analysts can benefit more than others from the public disclosure of information that they have specifically requested. In support of this idea, [Mayew \(2008\)](#) and [Cohen et al. \(2020\)](#) provide evidence that analysts who ask questions during earnings calls issue subsequently more accurate earnings forecasts than other analysts. More recently, [Farrell et al. \(2022\)](#) report that retail investor order imbalance is more predictive of future returns following the public dissemination of Seeking Alpha research, consistent with retail investors benefiting from technology-enabled improvements in how retail investors produce and share information.

We predict that retail investors will benefit from a technology (i.e., Say Tech) that helps them acquire information directly from management. To test this prediction, we estimate the following model using daily return and trading data for the firms in our sample:

$$\begin{aligned}
 y_{icqd} = & \alpha_{c \times i} + \gamma_{c \times q} + \beta_1 \text{Say Tech Quarter}_{icqd} + \beta_2 \text{Retail OIB}_{icqd} \\
 & + \beta_3 \text{Institutional OIB}_{icqd} \\
 & + \beta_4 \text{Say Tech Quarter}_{icqd} \times \text{Retail OIB}_{icqd} \\
 & + \beta_5 \text{Say Tech Quarter}_{icqd} \times \text{Institutional OIB}_{icqd} + \varepsilon_{qf},
 \end{aligned} \tag{5}$$

where subscripts  $i$ ,  $c$ ,  $q$ , and  $d$  index firm, cohort, quarter and day, respectively. The depen-

dent variable equals the future four-factor risk-adjusted cumulative abnormal return (Fama and French, 1993; Carhart, 1997) measured over windows (+1, +5), (+6, +10), (+11, +15), (+16, +20), and (+21, +60) relative to day  $d$  when the independent variables are measured (e.g., *Retail OIB*).  $\alpha_{c \times i}$  and  $\gamma_{c \times q}$  represent *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. *Say Tech Quarter* is an indicator variable that equals one starting on the day that the company initiates its first Say Tech forum and zero before then. *Retail (Institutional) OIB* is the difference between the number of shares bought and sold by retail (institutional) investors on day  $d$  scaled by their sum.<sup>16</sup>

We report the estimation results of Equation (5) in Table 6. The coefficient on *Say Tech Quarter*  $\times$  *Retail OIB* is estimated to be 0.015 ( $p$ -value  $< 0.05$ ) when the dependent variable equals CAR (+1, +5), implying that the retail order imbalance informativeness increases significantly more for treated firms after Say Tech adoption than it does for control firms. Importantly, the economic effect appears to be large. The coefficient on *Say Tech Quarter*  $\times$  *Retail OIB* indicates that the average future five-day return associated with a within-FE standard deviation change in *Retail OIB* increases by 30 basis points for Say Tech firms relative to control firms. This magnitude corresponds to a 3.2% of a within-FE standard deviation increase in future returns associated with a within-FE standard deviation change in *Retail OIB* for treated firms after Say Tech adoption relative to control firms. In contrast, the coefficient on *Say Tech*  $\times$  *Institutional OIB* is estimated to be statistically indistinguishable from zero. These results, collectively, suggest that retail order imbalance becomes more predictive of future returns after treated firms begin to participate in Say Tech. Conversely, we do not document a similar significant change in the informativeness of institutional investors' trades, consistent with Say Tech primarily influencing retail investors' trading activity.

A plausible alternative explanation is that retail trading activity linked to Say Tech participation creates price pressure, leading to an over-reaction in prices to retail trades,

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<sup>16</sup>We follow Boehmer et al.'s (2021) approach to identify retail trades and use a \$20,000 trade size cut-off to identify institutional trades (Lee and Radhakrishna, 2000).

rather than being information-based. To examine this possibility, in Models 2-5, we use cumulative abnormal returns measured for the subsequent event windows of (+6, +10), (+11, +15), (+16, +20), and (+21, +60). If our main results are driven by price pressure, we should observe a reversal in the returns associated with *Retail OIB*. In Models 2-5, however, the coefficients on *Say Tech Quarter*  $\times$  *Retail OIB* are not statistically significant, indicating the absence of price reversal. These results corroborate the finding that Say Tech participation, presumably through more active and wider retail investor engagement in information acquisition and interpretation, contributes to more informative retail trades.

Finally, Figure 3 Panels A-E illustrate our parallel trends tests, showing the absence of any significant pre-trends with the exception of quarter  $t - 2$  for the CAR (+1, +5) and CAR (+6, +10) variables and quarter  $t - 7$  for the CAR (+16, +20).

### 3.3.1 Effect on Retail Investor Information Acquisition

We next test whether information acquisition increases after Say Tech adoption using EDGAR search volume as a proxy for investors' information acquisition activity.<sup>17</sup> Specifically, we estimate Equation (4), replacing the dependent variable with measures of user requests for (i) any SEC filing, (ii) 10-Ks or 10-Qs, (iii) 8-Ks, and (iv) other SEC filings for company  $i$  during day  $d$ .

Table 7 reports the estimation results. In model 1, we find that the change in the number of user requests for SEC filings in general is positive and statistically significant. In model 2, we focus on user requests for 10-K and 10-Q filings, which typically convey information that are more relevant for investment analysis and valuation. The difference-in-differences estimates in models 1 and 2 suggest an increase of 35 (11) user requests for all (10-K/Q) filings per day after Say Tech adoption compared to the change in user requests for the respective filings by control firms. These relations are economically large, corresponding

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<sup>17</sup>A limitation of this measure is that we do not have full coverage for our sample period. The new SEC log dataset is available starting on May 19, 2020 and the old dataset ends on June 30, 2017. The lack of data for the period from July 1, 2017 to May 18, 2020 limits the sample that we use in the tests in this section.

to 10.5% (26.5%) of a within-fixed-effects standard deviation change in daily user requests for all (10-K/Q) filings. In models 3 and 4, when we replace the dependent variable with user requests for 8-K filings and other SEC filings, we find more modest increases in search volume coinciding with Say Tech participation that are not statistically significant. Figure 4 Panels A-D provide the results of the parallel trends tests, which depict no meaningful pre-trends for any of the variables that we study in Table 7. Although there appears to be no discernible pre-trend, the quarter  $t-7$  parameter for the *Any SEC filing* analysis and the quarter  $t-6$  parameter for the *10-K/Q* analysis are statistically significant.

These results, overall, depict an environment where companies' participation in the Say Tech platform is associated with heightened investor demand for information. We document a meaningful increase in the number of user requests for 10-K and 10-Q filings, which convey the most amount of information about companies. These findings are consistent with investors searching for information that is useful for their analyses and valuation in a targeted manner. Such information acquisition activities are likely driven by investors' efforts to ask well-formulated questions on Say Tech as well as their efforts to combine the information that they acquired from Say Tech with information from SEC filings (i.e., mosaic theory) to produce private information.

In conclusion, our analyses support the intuition that participation in Say Tech is associated with an increase in investors' investment in private information production. Importantly, the increase in information production activities is coupled with more informative retail trades, suggesting that investors' efforts to acquire more information result in more informative trades.

### 3.4 Management Choice to Redesign Earnings Calls

As noted in Section 2, the majority of the Say Tech firms hold earnings forums and answer retail questions during earnings calls, which signifies a greater change in management perception of retail investors as a disclosure audience than answering retail questions only

on the Say Tech platform. More importantly, the collocation of management answers to analyst questions and retail investor questions in a very short period around earnings announcements presents an opportunity to test whether increased disclosure attention to retail investor information needs is met at the expense of institutional investor information needs, as expressed by analysts. To the extent that the increased importance of retail investors in capital markets is at the expense of institutional investors (and management resources are limited), firms should cater more to retail investors and less to institutional investors (whose information needs sell-side analysts seek to meet).

We implement the difference-in-differences approach that we employed in Section 3.2 and estimate Equation (6) using the sample of *treated* and *control* firms,

$$y_{icq} = \alpha_{c \times i} + \gamma_{c \times q} + \beta_1 \mathbb{I}(\text{Retail Investor Question})_{icq} + \varepsilon_{icq}, \quad (6)$$

where  $y$  is the number of analysts asking questions during an earnings call, the number of analyst questions, or the average length of analyst questions. Subscripts  $i$ ,  $c$ , and  $q$  index firm, cohort, and quarter, respectively.  $\mathbb{I}(\text{Retail Investor Question})$  is equal to one if management answered one or more questions from the Say Tech platform during the earnings call and zero otherwise. The coefficient on  $\mathbb{I}(\text{Retail Investor Question})$  measures the within-firm change in  $y$  for treated firms when they answer retail investor questions relative to the within-firm change in  $y$  for the respective control firms during the same period.

Our sample consists of 983 quarterly earnings calls, 278 held by treated firms (*treated*) and 705 held by matched control firms (*control*).<sup>18</sup> We find that managers, on average, engage with approximately six analysts during earnings calls, answering 14 questions with a mean length of 66 words (Table 8 Panel A). The presentation and Q&A sections are on average 3,046 and 4,123 words in length, respectively (Table 8 Panel A).

Columns 1-3 of Table 8 Panel B report the estimation results of Equation (6), demonstrating that firms that answer questions from Say Tech invite fewer analysts to participate

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<sup>18</sup>Our estimations use fewer observations as singleton observations are dropped.

in their earnings calls and take fewer questions from them. Specifically, the number of analysts participating in earnings calls (*Analyst count*) and the number of questions (*Analyst question count*) that they ask decline by 1.55 and 3.88 for treated firms relative to control firms. These differences are economically large, representing 125.1% of the within-FE variation in *Analyst count* and 99.7% of the within-FE variation in *Analyst question count*. Finally, we find no relation between answering Say Tech questions and the average length of analysts’ questions, indicating that analysts do not alter the length of their questions in reaction to having fewer opportunities to ask questions. These results support the conclusion that answering retail questions from Say Tech during earnings calls comes at the expense of answering analyst questions.<sup>19</sup>

In the final two models of Panel B, we replace the dependent variable in Equation (6) with the length of the management presentation and Q&A segments. The coefficient on  $\mathbb{I}(\text{Retail Investor Question})$ , in column 4, is statistically indistinguishable from zero, suggesting that managers do not lengthen their prepared remarks to address retail investor questions. Importantly, consistent with there being a substitution effect between retail investor and analyst questions, in column 5, we find no evidence that the Q&A segment lengthens when managers begin to answer retail investor questions during the Q&A session. Overall, firms that answer questions from Say Tech during their earnings calls appear to redesign their calls by answering retail investor questions at the expense of answering analyst questions, without changing the length of their calls.

Table 8 Panel C reports estimation results when we replace the treatment indicator variable—firm answers questions from Say Tech during the call—with a multi-valued treatment variable—the number of retail investor questions answered by management (*# of Retail*

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<sup>19</sup>An important related question is whether analysts ask questions differently (or on other topics) once firms start to participate in Say Tech. In untabulated analyses, we use a DiD approach to examine the linguistic features of analysts’ questions (i.e., tone, length, number of numbers and financial words, complexity, short-horizon focus, forward-looking intensity, risk-related intensity, and ESG topic classifications). We find no statistically significant change in analysts’ questions that may be attributed to Say Tech participation, indicating that analysts do not appear to change the way that they ask questions after managers begin to solicit questions from retail investors.



*Investor Questions*). We find that the coefficients on *# of Retail Investor Questions* are negative and statistically significant when the outcome variables are *Analyst count* and *Analyst question count*. The estimated coefficients imply that *Analyst count* and *Analyst question count*, on average, decline by 0.35 and 0.83 per additional question that managers answer from Say Tech. Similar to the results in Panel B, we find no statistically significant relation between *# of Retail Investor Questions* and the average length of analysts questions or the lengths of the presentation and Q&A sections.

Finally, we evaluate the validity of the parallel trends assumption by re-estimating our difference-in-differences models after replacing  $\mathbb{I}(\text{Retail Investor Question})$  with a set of interaction variables (i.e.,  $\mathbb{I}(\text{Retail Investor Question}) \times q_{t-7} \dots \mathbb{I}(\text{Retail Investor Question}) \times q_{t+16}$ , where  $t$  represents the first quarter that the company initiated an earnings forum on Say Tech). We then plot the coefficients on the interaction variables to evaluate the existence of trends during the period preceding Say Tech adoption. Figure 5 illustrates that the estimated differences between treated and control firms during the pre-adoption period are statistically indistinguishable from zero for the *Analyst count*, *Analyst question count*, *Call segment length - Presentation*, and *Call segment length - Q&A* measures. Further, with the exception of quarter  $t-1$ , the predicted differences for the *Analyst average question length* variable are not statistically distinguishable from zero. These results, overall, are consistent with the parallel trends assumption not being violated in our setting.

### 3.5 Comparative Analysis of Retail Investor and Analyst Dialogues with Management

An alternative explanation is that managers—to portray the company in a more favorable light—substitute smart, critical questions from sell-side analysts with unsophisticated, soft-ball questions from retail investors (i.e., “call casting hypothesis”). On the one hand, questions from retail investors are likely to be easier for managers to answer. The average retail investor is arguably less sophisticated than the average sell-side analyst. On the

other hand, Say Tech’s upvote feature helps investors rank questions based on their quality and promote higher quality questions among a large pool of questions. This feature makes it harder for managers to evade highly voted, sophisticated retail investor questions and answer more friendly, yet less sophisticated questions.<sup>20</sup>

We test the call casting hypothesis by conducting a series of textual analyses of the questions using the following logistic regression model:

$$\begin{aligned} \mathbb{I}(\text{Retail Question})_{qc} = & \alpha_c + \beta_1 \text{Question tone}_{qc} + \gamma' \mathbf{AcquisIntensity}_{qc} \\ & + \theta' \mathbf{Sophistication}_{qc} + \pi' \mathbf{Horizon}_{qc} + \delta_1 \text{Risk}_{qc} \\ & + \delta_2 \text{ESG}_{qc} + \varepsilon_{qc}, \end{aligned} \quad (7)$$

where the dependent variable,  $\mathbb{I}(\text{Retail Question})$ , equals one when the question is from a retail investor and zero otherwise. Subscripts  $q$  and  $c$  index questions and calls, respectively. The term  $\alpha_c$  represents call fixed effects. The set of ten independent variables, introduced in section 3.1.2, measure a question’s sentiment, information acquisition intensity, sophistication, horizon, and risk and ESG content.

Table 9, Panel A, column 1 presents the estimation results of Equation (7). The results suggest that retail investors’ questions are significantly more negative in tone, shorter in length, and contain more question marks relative to analysts’ questions. In addition, retail investors’ questions include fewer numbers but more financial words, and are more complex than analysts’ questions. Our findings that retail investor questions are more pressing of management and no less sophisticated than analysts’ questions contradict the call casting hypothesis, which posits that managers *opportunistically* answer retail investors’ questions at the expense of analysts’ questions, leading to a poorer information environment.

We document several additional differences between questions from retail investors and

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<sup>20</sup>Analyzing proprietary retail trade data, [Coval, Hirshleifer, and Shumway \(2021\)](#) find that while most retail investors underperform standard performance benchmarks, a substantial subset of retail investors achieve superior performance. [Tetlock and Gardner \(2016\)](#) document the existence of super-forecasters (i.e., individuals whose predictions are more accurate than experts’ predictions).

analysts. First, retail investors’ questions tend to have a longer horizon than analysts’ questions. Survey and archival evidence attribute managerial myopia to analysts’ preoccupation with short-term performance and financial goals (Graham et al., 2005; He and Tian, 2013). This intuition implies that managers’ tendency to pay more (less) attention to retail investors (analysts) may lead to more long-term (short-term) oriented decision-making. Second, retail questions less frequently seek risk-relevant information than analysts, perhaps because many of them own the stock and have investment horizons longer than one year, the horizon implicit in analysts’ stock recommendations. Finally, retail investors’ questions are more likely to seek ESG-related information than analysts’ questions, consistent with non-pecuniary preferences influencing retail investors’ information acquisition more than equity analysts’ information acquisition activities.

In column 2 of Table 9 Panel A, we replace the ESG variable in Equation (7) with a series of indicators, flagging whether a question seeks information about climate change, pollution and waste, corporate governance, natural capital, product liability, human capital, business ethics and values, and community relations. We find that questions on *Climate change*, *Corporate governance*, *Natural capital*, *Product liability*, and *Community relations*, are more likely to come from retail investors than analysts. Our finding that retail investors are more likely to ask climate-change-related questions than analysts is relevant to the the debate surrounding SEC’s recent rule proposal on climate disclosure. A comment letter signed by several prominent legal scholars and economists (Cunningham et al., 2022) points out the dearth of clear evidence that individual investors find ESG disclosures useful (Moss et al., 2023; Li et al., 2023) and that the current case for climate disclosure regulation rests solely on large institutional investors and various stakeholder groups that demand climate information. Our findings suggest that a significant subset of retail investors seek climate information from companies and may, therefore, find mandated climate disclosures useful.

Managers typically answer retail investors’ questions before they answer analysts’ questions, which raises the possibility that retail investors ask questions that analysts may have

otherwise asked. To evaluate this possibility, we adopt a difference-in-differences approach and test whether the attributes of analysts' questions in the treated earnings calls sample change relative to those in the matched control sample. If retail investors, for example, ask ESG-focused questions that analysts ordinarily ask, we would expect a decline in the ESG content of analysts' questions to treated firms relative to control firms. We find no evidence, however, that the attributes of analysts' questions in the treated sample change relative to those in the matched control sample.

Next, we turn our attention to how managers answer questions from retail investors and analysts. We expect that differences in how management answer retail questions and analyst questions will generally reflect differences in the content and sophistication of retail questions and analyst questions. For example, our findings that retail questions are shorter, more negative, and more risk-focused than analyst questions suggest that management answers to retail questions will be shorter, more negative, and more risk-focused than management answers to analyst questions. Since management ultimately decides how to answer questions and has more time to craft a response to a retail question, it is possible that answers to retail questions are in fact longer, more positive, and not necessarily more ESG-focused than their responses to analysts' questions.

To provide an empirical analysis, we replace the dependent variable  $\mathbb{I}(\textit{Retail Question})$  in Equation (7) with  $\mathbb{I}(\textit{Answer to Retail Question})$  and the independent variable *Question marks* with the *Scriptedness* measure. Following Lee (2016), we measure scriptedness (i.e., lack of spontaneity) based on the cosine-similarity of the stop words that managers use during the Presentation and Q&A segments. Table 9 Panel B reports the estimation results. To make the comparison with Panel A easier, we list the predicted signs of coefficients based on the respective Panel A coefficient signs.

Notably, while retail questions are more negative in tone and contain fewer numbers than analyst questions, management answers to retail investors' questions are more positive in tone and contain more numbers. Our explanation is that having more time to answer

questions, as is the case with questions submitted by retail investors, helps managers craft answers that are more detailed and portray the company in a positive light. We also find that management answers to retail investors' questions are more concise and scripted, consistent with management preparing their responses ahead of the earnings call.

In column 2, we decompose the ESG indicator into specific content about environmental, social, and governance issues. Consistent with the results in Panel A, we find that managers discuss climate change, natural capital, product liability, and community relations issues more when they answer retail investors' questions. In contrast, although the results in Panel A imply that retail investors are more concerned about corporate governance than analysts, managers do not seem to discuss corporate governance issues to a greater extent when they are responding to retail investors' questions.

## 4 Conclusions

Historically, management interactions with market participants at earnings calls, investor calls, and other venues have excluded retail investors, raising questions about the congruence of these interactions with the SEC's goal that all investors have equal access to information (Solomon and Soltes, 2015). We suggest that a confluence of factors—increased retail investor stock market participation, increased retail investor sophistication, and increased ease of discerning retail investor information demands—leads to the adoption of more inclusive policies. We present evidence that companies with a larger and more sophisticated retail shareholder base solicit retail investor questions through a recently created online platform, Say Tech, and democratize their earnings call interactions by answering select retail investor questions at the expense of answering equity analyst questions, leading to more informative retail investor trades and increased EDGAR user requests for 10-K/Q filings. We conclude that adopting more inclusive disclosure policies spurs private information production by retail investors. Our study's contribution is to deepen our knowledge of how companies

interact with different groups of market participants.

Our study is not without limitations. First, our findings speak only to the existence of retail investors who have the critical mass and the level of sophistication required to affect and benefit from more inclusive earnings call interactions. We caution against drawing conclusions about the sophistication and the information preferences of the average retail investor on the basis of our evidence. Second, we acknowledge that the sample of companies that change their policies for interactions with investors is perhaps too small to yield evidence indicative of a general disclosure trend. It remains to be seen whether the documented change in disclosure policies will spread to other companies. Finally, we acknowledge the possibility of firms increasing their interactions with analysts at other venues, in which case the public display of attention to retail investors masks a continued policy of giving preference to the needs of analysts and institutional investors over retail investors. We note that our findings of increased informativeness of retail order imbalance makes this scenario less likely.

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## Appendix A Variable definitions

Variable	Definition
<b>Ownership characteristics:</b>	
<i>Inst. ownership</i>	The percentage of shares held by institutional investors. [Thomson Financial]
<i>Breadth of ownership</i>	The natural logarithm of the number of shareholders who own shares in the company. [Compustat]
<b>Trading activity:</b>	
<i>Turnover</i>	Average daily turnover during the period starting three days after the previous quarter’s earnings announcement date and ending two days after the current quarter’s earnings announcement date. Daily turnover is computed as the ratio of trading volume and the number of shares outstanding. [Compustat and CRSP]
<i># of retail trades</i>	The natural logarithm of the total number of trades executed by retail investors during the period starting three days after the previous quarter’s earnings announcement date and ending two days after the current quarter’s earnings announcement date. Retail trades are identified following the methodology developed in <a href="#">Boehmer et al. (2021)</a> . [TAQ and Compustat]
<i># of retail trades as a % of all trades</i>	The number of trades executed by retail investors scaled the total number of trades during the period starting three days after the previous quarter’s earnings announcement date and ending two days after the current quarter’s earnings announcement date. Retail trades are identified following the methodology developed in <a href="#">Boehmer et al. (2021)</a> . [TAQ and Compustat]
<b>Coverage characteristics:</b>	
<i>IBES Coverage</i>	The natural logarithm of the number of analysts who issued an earnings forecast during the most recent fiscal quarter. [IBES]
<i>Sell recommendation percentage</i>	The proportion of recommendation ratings that are “Sell” or “Strong Sell”. [IBES]
<i>Seeking Alpha coverage</i>	The natural logarithm of the number of distinct contributors who published an analysis article on the Seeking Alpha website during the most recent quarter. [Seeking Alpha]
<i>Media coverage</i>	The natural logarithm of the number of news articles published in the media during the most recent quarter. Only full articles and news flashes with a relevance score above 75 are included. [RavenPack]
<b>Firm characteristics:</b>	
<i>Size</i>	The natural logarithm of the market capitalization of the company. Market capitalization is measured as the number of shares outstanding times price at the end of the fiscal quarter. [Compustat]
<i>Book-to-market</i>	Book-to-market ratio calculated following the definition in <a href="#">Daniel and Titman (1997)</a> . [Compustat]
<i>Firm age</i>	The number of years since the company’s first appearance in the Compustat Annual Fundamental file. [Compustat]
<i>Profitability</i>	Earnings before interest, tax and depreciation scaled by total assets. Net income scaled by total assets when earnings before interest, tax and depreciation is missing. [Compustat]
<i>Return volatility</i>	Standard deviation of daily returns during the latest quarter. [Compustat and CRSP]

Variable	Definition
<i>Return</i>	Buy and hold return for the quarter. [Compustat and CRSP]
<i>Consumer facing</i>	An indicator variable that equals one for companies in industries that serve consumers. <a href="#">Fama and French (1997)</a> 49 Industries numbered 2-10, 13, 23, 32, 35, 42, 43, and 45. [Compustat]
<i>Meme Stock</i>	An indicator variable that equals one for companies included by the Roundhill MEME ETF (MEME) as of February 1st, 2023. [Roundhill Investments]
<b>Say Tech Platform:</b>	
<b>Forum-level</b>	
<i>Say Tech Quarter</i>	An indicator variable that equals one after the firm starts participating in Say Tech by hosting a forum and zero before that. This variable equals zero for control firms throughout the sample period. [Say Tech]
$\mathbb{I}(\text{Earnings Forum})$	An indicator variable that equals one for quarters during which the company hosted an earnings forum on the Say Tech platform. [Say Tech]
$\mathbb{I}(\text{Retail Investor Question})$	An indicator variable that equals one for quarters during which the company answered a retail investor question from the Say Tech platform during its earnings call. [Say Tech]
<i># of Retail Investor Questions</i>	The number of retail investor questions (Say Tech) that management answered during the earnings call. [Say Tech]
<b>Question-level</b>	
<i>Upvotes</i>	The number of Say Tech users who voted in support of a question by “up-voting” it. <i>Note:</i> This variable is log-transformed when it is used as an independent variable. [Say Tech]
<i>Question tone</i>	The number of positive words minus negative words (based on <a href="#">Loughran and McDonald, 2011</a> ) contained in the Say Tech question scaled by the sum of the positive and negative words. Missing values are replaced with zero. [Say Tech]
<i>Positive</i>	The number of positive words (based on <a href="#">Loughran and McDonald, 2011</a> ) contained in the Say Tech question. [Say Tech]
<i>Negative</i>	The number of negative words (based on <a href="#">Loughran and McDonald, 2011</a> ) contained in the Say Tech question. [Say Tech]
<i>Question length</i>	The natural logarithm of the number of words contained in the question posted on the Say Tech platform. [Say Tech]
<i>Question marks</i>	The number of question marks contained in the question posted on the Say Tech platform. [Say Tech]
<i>Numeric</i>	The number of numbers contained in the Say Tech question. [Say Tech]
<i># of financial words</i>	The number of financial-oriented words contained in the question posted on the Say Tech platform. Financial words are identified based on the dictionary provided in <a href="#">Matsumoto et al. (2011)</a> . [Say Tech]
<i>Question complexity</i>	The Gunning Fog index value calculated based on the question posted on the Say Tech platform. [Say Tech]
<i>Short-horizon</i>	The number of short-term words scaled by the sum of the short- and long-term words contained in the the question posted on the Say Tech platform. The dictionary of short- and long-term words come from <a href="#">Brochet, Loumioti, and Serafeim (2015)</a> . [Say Tech]
<i>Forward-looking intensity</i>	The fraction of sentences in the Say Tech question that are identified as forward-looking using the approach developed in <a href="#">Muslu, Radhakrishnan, Subramanyam, and Lim (2015)</a> . [Say Tech]
<i>Risk-related intensity</i>	The fraction of sentences in the Say Tech question that are identified as containing risk-related information using the approach developed in <a href="#">Kravet and Muslu (2013)</a> . [Say Tech]

Variable	Definition
<i>ESG statement (FinBERT)</i>	The topic classification generated by the “finbert-esg” model, developed by <a href="#">Huang, Wang, and Yang (2023)</a> . The “finbert-esg” model is a FinBERT model fine-tuned on 2,000 manually annotated sentences from firms’ ESG reports and annual reports. We use the predictions generated from this model, requiring a confidence score of 50% or higher. [Hugging Face and Say Tech]
<b>Market data:</b>	
<i>Retail OIB</i>	The difference between shares bought and sold scaled by the sum of shares bought and sold by retail investors. Retail investors’ trades are identified using the approach developed in <a href="#">Boehmer et al. (2021)</a> . [TAQ]
<i>Institutional OIB</i>	The difference between shares bought and sold scaled by the sum of shares bought and sold by institutional investors. Institutional investors’ trades are identified using the approach developed in <a href="#">Lee and Radhakrishna (2000)</a> . [TAQ]
<i>CAR (+1, +5)</i>	Sum of the daily abnormal returns for the subsequent five-trading-day window (+1, +5). Daily abnormal returns are calculated as the difference between returns and expected returns derived from the four-factor model (i.e., market, size, book-to-market, and momentum). The four-factor model is estimated using daily security and factor return data for the 255 trading day period ending on $t - 46$ . [CRSP and Fama French Factor Library]
<i>CAR (+6, +10)</i>	Sum of the daily abnormal returns for the five-trading-day window starting on day $t + 6$ (+6, +10). Day $t$ ’s abnormal return is calculated as the difference between the security return and the expected return derived from the four-factor model (i.e., market, size, book-to-market, and momentum). The four-factor model is estimated using daily security and factor return data from the 255 trading day period ending on $t - 46$ . [CRSP and Fama French Factor Library]
<i>CAR (+11, +15)</i>	Sum of the daily abnormal returns for the five-trading-day window starting on day $t + 11$ (+11, +15). Day $t$ ’s abnormal return is calculated as the security return for day $t$ minus the four-factor model (i.e., market, size, book-to-market, and momentum) expected return for the same day. The four-factor model is estimated using daily security and factor return data from the 255 trading day period ending on $t - 46$ . [CRSP and Fama French Factor Library]
<i>CAR (+16, +20)</i>	Sum of the daily abnormal returns for the five-trading-day window starting on day $t + 16$ (+16, +20). Day $t$ ’s abnormal return is calculated as the security return for day $t$ minus the four-factor model (i.e., market, size, book-to-market, and momentum) expected return for the same day. The four-factor model is estimated using daily security and factor return data from the 255 trading day period ending on $t - 46$ . [CRSP and Fama French Factor Library]
<b>Information acquisition:</b>	
<i>Any filing</i>	The daily number of user requests made for SEC filings. [SEC]
<i>10-K/Q</i>	The daily number of user requests for 10-K and 10-Q filings. [SEC]
<i>8-K</i>	The daily number of user requests for 8-K filings. [SEC]
<i>Other</i>	The daily number of user requests for other filings (excluding 10-K, 10-Q, and 8-K). [SEC]
<b>Earnings call characteristics:</b>	
<b>Call-level</b>	

<b>Variable</b>	<b>Definition</b>
<i>Analyst count</i>	The number of analysts who asked at least one question during the earnings call. [Refinitiv Eikon]
<i>Analyst question count</i>	The number of uninterrupted speech segments that analysts spoke during the earnings call. [Refinitiv Eikon]
<i>Analyst average question length</i>	The average number of words spoken by analysts per uninterrupted speech segment during the earnings call. [Refinitiv Eikon]
<i>Call segment length - Presentation</i>	The number of words spoken during the presentation section of the earnings call. [Refinitiv Eikon]
<i>Call segment length - Q&amp;A</i>	The number of words spoken during the question and answer section of the earnings call. [Refinitiv Eikon]
<b>Dialogue-level</b>	
<i>Retail question</i>	An indicator variable that equals one for speech segments where managers read questions from the Say Tech platform. [Say Tech and Refinitiv Eikon]
<i>Answer to Retail question</i>	An indicator variable that equals one for speech segments where managers responded to questions from the Say Tech platform. [Say Tech and Refinitiv Eikon]
<i>Question (Answer) tone</i>	The number of positive words minus negative words spoken (based on <a href="#">Loughran and McDonald, 2011</a> ) during the dialogue scaled by the sum of the positive and negative words. Missing values are replaced with zero. [Refinitiv Eikon]
<i>Question (Answer) length</i>	The natural logarithm of the number of words spoken during the dialogue. [Refinitiv Eikon]
<i>Question marks</i>	The number of question marks contained in the dialogue transcript. [Refinitiv Eikon]
<i>Scriptedness</i>	The cosine-similarity of the manager’s response to the question and the manager’s speech during the presentation section of the call. [Refinitiv Eikon]
<i>Numeric</i>	The number of numbers spoken. [Refinitiv Eikon]
<i>Financial words</i>	The number of financial-oriented words spoken during the dialogue. Financial words are identified based on the dictionary provided in <a href="#">Matsumoto et al. (2011)</a> . [Refinitiv Eikon]
<i>Question complexity</i>	The Gunning Fog index value calculated based on the dialogue. [Refinitiv Eikon]
<i>Short-horizon</i>	The number of short-term words scaled by the sum of the short- and long-term words. The dictionary of short- and long-term words come from <a href="#">Brochet et al. (2015)</a> . [Say Tech]
<i>Forward-looking intensity</i>	The fraction of sentences that are identified as forward-looking based on the approach developed in <a href="#">Muslu et al. (2015)</a> . [Refinitiv Eikon]
<i>Risk-related intensity</i>	The fraction of sentences identified as containing risk-related information based on the approach developed in <a href="#">Kravet and Muslu (2013)</a> . [Refinitiv Eikon]
<i>ESG statement (FinBERT)</i>	The topic classification generated by the “finbert-esg” model, which was developed by <a href="#">Huang et al. (2023)</a> . The “finbert-esg” model is a FinBERT model fine-tuned on 2,000 manually annotated sentences from firms’ ESG reports and annual reports. We use the predictions generated from this model, requiring a confidence score of 50% or higher. [Hugging Face and Say Tech]

<b>Variable</b>	<b>Definition</b>
<i>ESG Topic</i>	The topic classification generated by the “finBERT-esg-9-categories” model, which was developed by <a href="#">Huang et al. (2023)</a> . This model was fine-tuned using approximately 14,000 manually annotated sentences from firms’ ESG reports and annual reports. The predicted ESG topics consist of climate change, pollution and waste, corporate governance, natural capital, product liability, human capital, business ethics and values, and community relations. We use the predictions generated from this model, requiring a confidence score of 50% or higher. [Hugging Face and Say Tech]
<b>Confounding events:</b>	
<i>Earnings</i>	An indicator variable that equals one on days when the company made an earnings announcement and zero otherwise. We use the earliest earnings announcement date reported in the Compustat Fundamentals Quarterly and I/B/E/S Summary files. [Compustat and I/B/E/S]
<i>10-K/Q</i>	An indicator variable that equals one on days when the company filed a 10-K or 10-Q and zero otherwise. [SEC Edgar]
<i>8-K</i>	An indicator variable that equals one on days when the company filed an 8-K and zero otherwise. [SEC Edgar]
<i>Guidance</i>	An indicator variable that equals one on days when the company issued a management forecast and zero otherwise. [I/B/E/S]
<i>Forecast</i>	An indicator variable that equals one on days when one or more analysts issued a new forecast (e.g., earnings, sales, cash-flow) and zero otherwise. [I/B/E/S]
<i>Recommendation</i>	An indicator variable that equals one on days when one or more analysts issued a new recommendation and zero otherwise. [IBES]

## Appendix B Excerpts from Earnings Call Transcripts

2019:Q4 Tesla Inc. Earnings Call, January 29th, 2020.

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### *Questions and Answers*

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Martin Viecha, Tesla, Inc. - Senior Director for IR

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Thank you. We are going to take the first questions from retail investors compiled by Say Technologies.

So the first retail investor question is, “since solar is required for all new home constructions in California, do you have any substantial orders for Solarglass Roofs from any of the large California homebuilders that you can share? What’s the 2020 target for the number of Solarglass Roof installations in California?”

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Elon R. Musk, Tesla, Inc. - Founder, CEO & Director

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Well, I think we do – we are seeing, mostly from a small base, exponential growth in demand and output for solar – for the Solarglass Roof. So it’s difficult to predict what the demand will be this year, except that the demand is very strong. And we are working also not just through Tesla Solar Roof but also through new homebuilders and through just the roofing industry in general, whether it’s in North America, on the order of 4 million new roofs per year. So we see a lot of interest.

And so it’s just a question of refining the installation process, getting lots of crews trained to do the installation. But over time, I would expect a significant percentage of new roofs to be something to use Solarglass in one form or another. It’s really going to be a choice of do you want a roof that is alive with power or dead without. And I think people will want a live roof that generates power and looks good and lasts a long time, and it’s the future we want.

So it will be a significant product, but because it is a new and quite revolutionary product and there’s a lot of challenges to overcome, but they will be overcome, and this will be a major product line of Tesla. And the Buffalo factory is doing great. So, yes.

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Martin Viecha, Tesla, Inc. - Senior Director for IR

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Thank you. And the second question from retail shareholders is, “will you release the Tesla ride-hailing network app before full autonomy and change the terms of Tesla Insurance to allow owners to be drivers on the network? If so, when will this happen? Might want to target California airports first. Also a good place to add Superchargers.”

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Elon R. Musk, Tesla, Inc. - Founder, CEO & Director

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Sorry, it sounds like more question than one.

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Martin Viecha, Tesla, Inc. - Senior Director for IR

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Yes, it's a bit of a bundle. Yes.

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Elon R. Musk, Tesla, Inc. - Founder, CEO & Director

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Well, I think it's – it probably will make sense to have the – to enable car sharing in advance of the kind of sort of driving robotaxi fleet because the car sharing can be done before Full Self-Driving is approved by regulators. So it's probably something that we would enable before the full sort of robotaxi fleet is enabled. And it sounds like there were some other questions bundled in there.

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Martin Viecha, Tesla, Inc. - Senior Director for IR

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Superchargers at airports.

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Elon R. Musk, Tesla, Inc. - Founder, CEO & Director

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Sure. Yes. Yes, probably, we'll have Superchargers in airports. We'll have Superchargers wherever we see that there is a need for Superchargers.

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Zachary Kirkhorn, Tesla, Inc. - CFO

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And then on the insurance part of the question, it is our intent to allow people to put their cars into ride-sharing or the FSD network using Tesla Insurance. That's not currently the case, but by the time that this is available, it's our intent to get that ready.

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*Questions and Answers*

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Irvin Sha, Robinhood Markets, Inc. - Head of IR & Capital Markets

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So last week, we announced that we'll be using Say Technologies to enable all Robinhood shareholders to submit questions for our management team. As of yesterday, we had received over 1,300 questions from our shareholders. We'll start today's Q&A by answering the top questions by number of votes, although we'll pass over any questions that are already being addressed. After that, we'll turn to live questions from the analyst community.

First, will Hood pay out a dividend in the future?

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Jason Warnick, Robinhood Markets, Inc. - CFO

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I'll take that, Irv. Thanks for the question. At this point, we think the best use of our capital is deploying it in the business. We're very much in the growth stage. And so for now, we have no plans to issue any dividends.

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Irvin Sha, Robinhood Markets, Inc. - Head of IR & Capital Markets

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Great. Number two, is Robinhood getting a crypto wallet?

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Vladimir Tenev, Robinhood Markets, Inc. - Co-Founder, President, CEO & Chairman of the Board

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I'll be happy to field that question. And I know that there's been a ton of enthusiasm from the crypto community and the Dogecoin community, in particular, on getting access to wallets. And it's something that our teams are working on.

So let me tell you a little bit about sort of why this is difficult and challenging. So this year, clearly, Robinhood has had explosive growth in crypto during Q1 and Q2, and we've had to grow out the team. We made a lot of progress growing out the team and really hiring great talent on to crypto and scaling our systems to make sure that we can handle the increased load. And we're very proud of the work that the team has done.

Of course, offering crypto wallets and the ability to deposit and withdraw cryptocurrencies is tricky to do at scale. We want to make sure it's done correctly and properly, and we want to make sure that everything from a security and operations standpoint is as bullet-proof as possible because our top value is safety first, and we hold ourselves to a very high standard for that.

So I think as with all these things, we'll want to make sure it's right. But we have made a lot of progress in the crypto team and the platform, and we're excited to roll this out for our customers. And we definitely hear you, and it's a key priority for our teams at Robinhood as well.

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*Questions and Answers*

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Kevin Lewis, United States Steel Corporation - VP of IR and Corporate FP&A

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Okay. Thank you, Dave. The global pandemic had a profound impact on how we engage with our key stakeholders over the last 2 years. At U.S. Steel, we've embraced distributed work to get closer to our customers and increase the productivity, satisfaction and retention of our employees. We've never been better connected as an organization, more deeply involved with our customers or more focused on finding new pools of talent to join our organization.

It is in that spirit, and to ensure we create new ways to engage with stockholders, that we have partnered with Say Technologies to directly receive questions from our investors for today's call. Using the Say Technologies platform, investors were able to submit and upvote questions over the past week.

We have seen strong support and engagement on the platform, and received over 50 pre-submitted questions. For this morning's call, we have selected 2 top questions to kick off our Q&A session. So Dave, Christie and Rich, I will get us started with our first question.

We received several investor questions about dividends and stock buybacks, including from Scott A., Jayesh P., Luis L. and Steven S. So Dave, can you get us started by sharing your thoughts on how we're thinking about our quarterly dividend, and any additional comments on stock buybacks?

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David Boyd Burritt, United States Steel Corporation - President, CEO & Director

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Sure, Kevin. And thanks, that's a great question. But let me just make one quick comment before we jump in.

I really appreciate the strong level of engagement we saw with this new Q&A platform, so I applaud you for looking for new ways to engage with stockholders. I think it's a really interesting tool, and we'll just see how it goes and get feedback from others as we move forward. So far, so good, and really good questions over the past week.

Now let's get back to the question on capital allocation. This is a really important topic, one we spend a lot of time thinking about. Investors trust us with their capital, and we want to reward everyone who has put their confidence in U.S. Steel. Obviously, the choices we make about dividends and buybacks are so important to long-term value creation.

You recall on the dividend, we planned – we reinstated the dividend of \$0.05, and we plan to maintain the \$0.05 per share quarterly dividend. But to be clear, this is something we will continue to evaluate, and it could be a future opportunity. This is the power of our Best for All strategy, and we continue to do this well. So with our stockholders and future increases to the dividends are something we will continue to consider.

What I think is most exciting is our progress on our stock buyback. Right now, we know the stock price is too low, and buybacks are the best way to return capital to stockholders. And good timing, I just received here an update that we completed our first \$300 million authorization and are beginning our \$500 million authorization now.

So as I mentioned in my remarks, we expect the pace of our buybacks to materially

increase in the second quarter. So Christie, do you have anything else you want to add to that?

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David Boyd Burritt, United States Steel Corporation - President, CEO & Director

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Well, thanks Dave. I think you gave a really good summary. But I would add a couple of points about how we got to where we are. In the last year, all of you have heard is how focused we've been on strengthening our balance sheet, and I think what we've done in the last year has truly been remarkable. As you know, we paid off more than \$3 billion dollars of debt.

We now have an industry-leading net debt to leverage ratio and it's at 0.2x leverage, net leverage, so we're very pleased with that. We also pushed out our debt maturities. We have 80% that are 2029 or later. We also have record cash and liquidity, and that gives us a lot of confidence as we execute these strategic investments.

I think your sentence that you said several times today, it really summarizes it. When we do well, our stockholders do well. I think that kind of says it.

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Kevin Lewis, United States Steel Corporation - VP of IR and Corporate FP&A

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Great. All right. Thank you Dave and thank you Christie. The second and final question from Say Technologies that we'll address here this morning is related to U.S. Steel's ability to benefit from the Biden administration's infrastructure bill. This was a question submitted both from Elizabeth and Mina.

So Dave, do you want to get us started with our opportunity — the opportunity provided by the infrastructure bill?

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David Boyd Burritt, United States Steel Corporation - President, CEO & Director

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Yes, Kevin. I think that's another really good question, and I'm not at all surprised it finds its way to the top of the list. I think what the question highlights is how critical U.S. steel is to our country. Quite literally, steel is the backbone of America. Our infrastructure, our supply chains and the products we all use daily to keep our families safe and make progress possible.

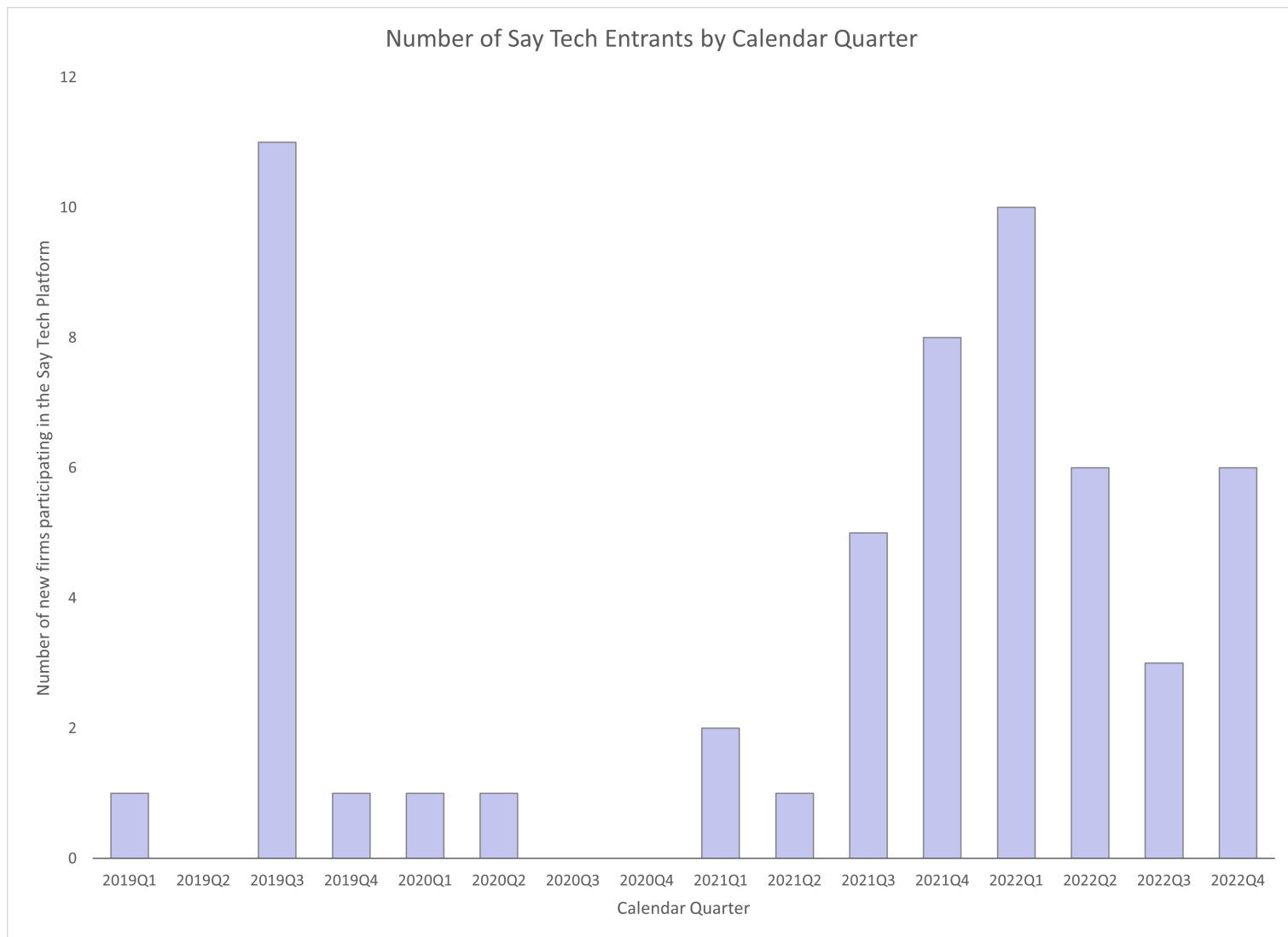
In many ways, we believe it's our patriotic duty to support our country, whether it's through infrastructure and climate change or against international bad actors. So, we strongly support bipartisan action to invest in American infrastructure. We support the need to develop partnerships and advance policy that is responsive to climate change and supports the transition of our steelmaking footprint towards a more sustainable future, to help deliver on our 2030 and 2050 sustainability goals.

We certainly support the administration's continued enforcement of trade policy against those countries not playing on a level playing field and damaging our essential industry. We're pretty passionate about this. And I guess I could spend a lot more time on this, but maybe I'll just pause here.

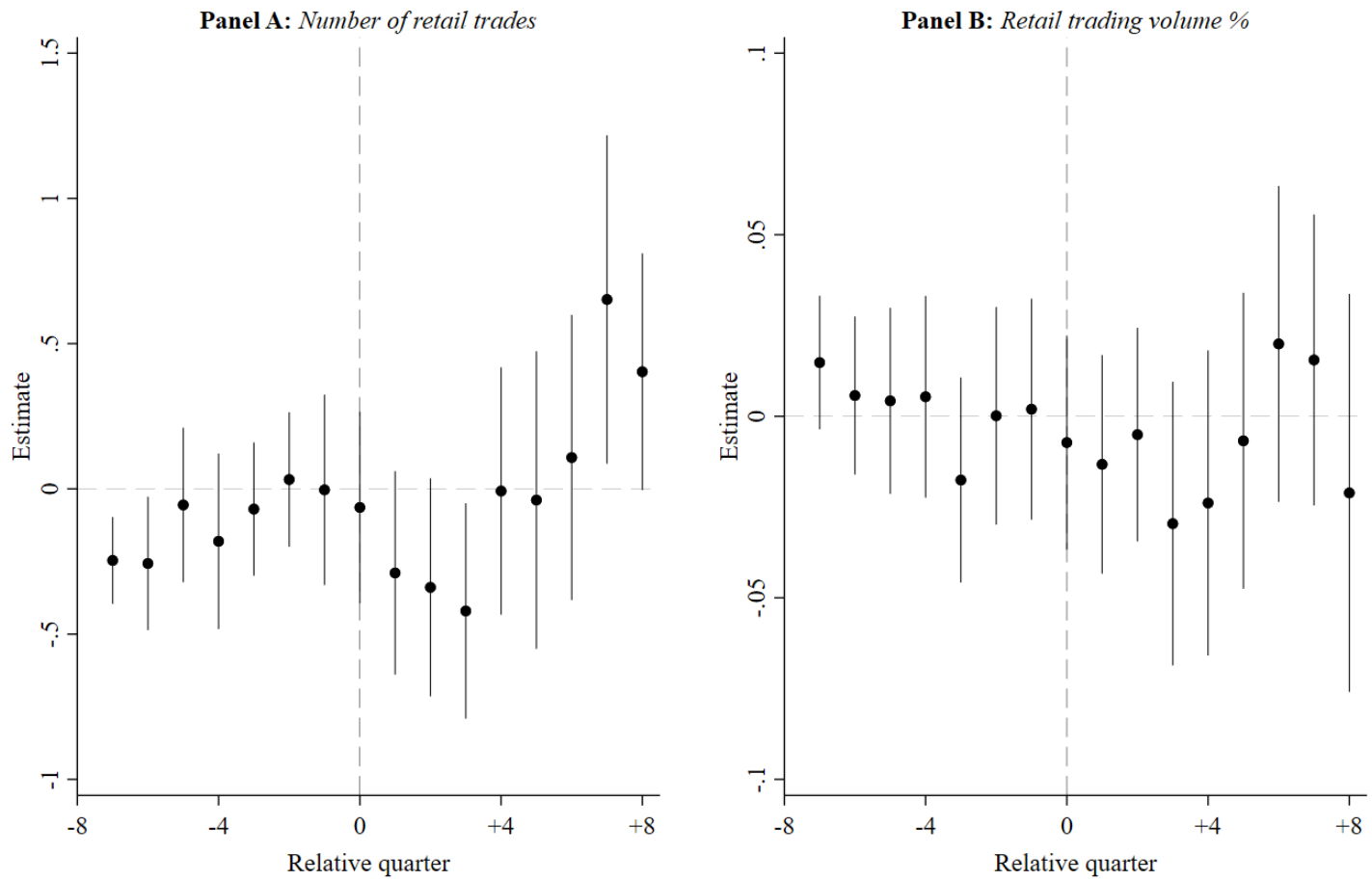
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**Figure 1.** Say Tech Entry over time

This figure plots the number of new companies that began to participate in the Say Tech platform by calendar quarter.



**Figure 2.** Tests of the parallel trends assumption in analyses investigating retail trading activity (Table 5)



**Figure 3.** Tests of the parallel trends assumption in analyses investigating retail order imbalance informativeness (Table 6)

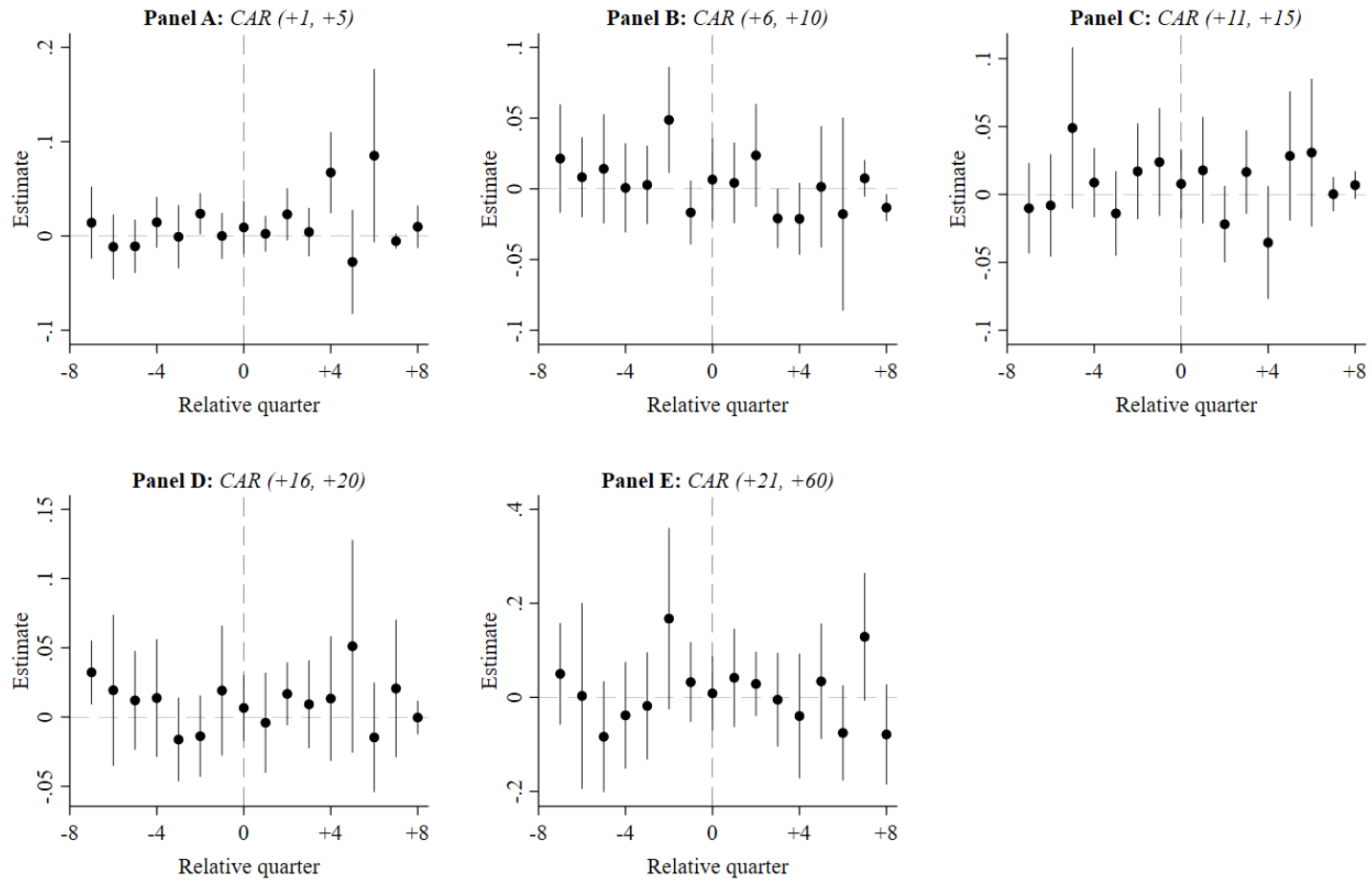
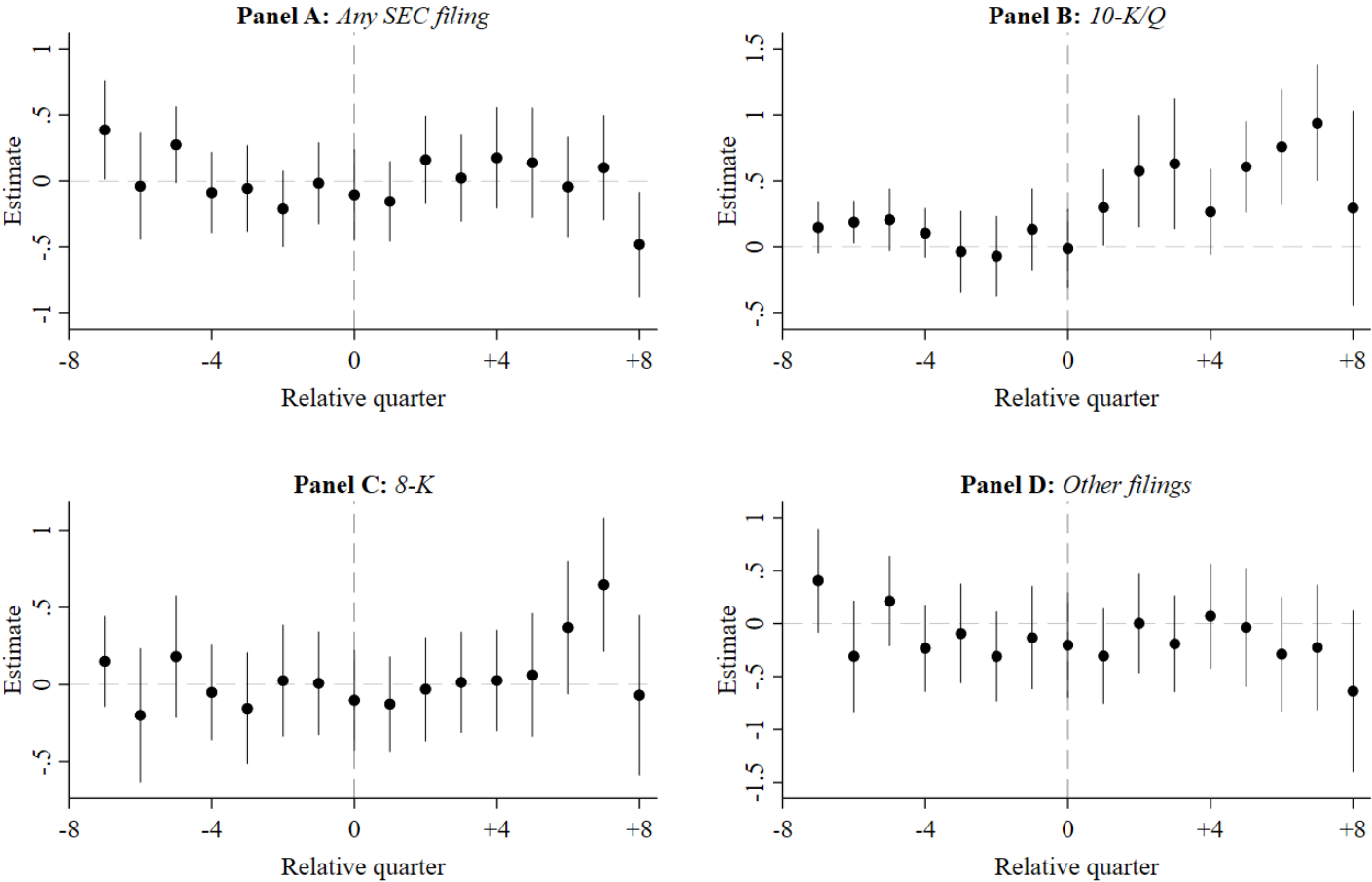
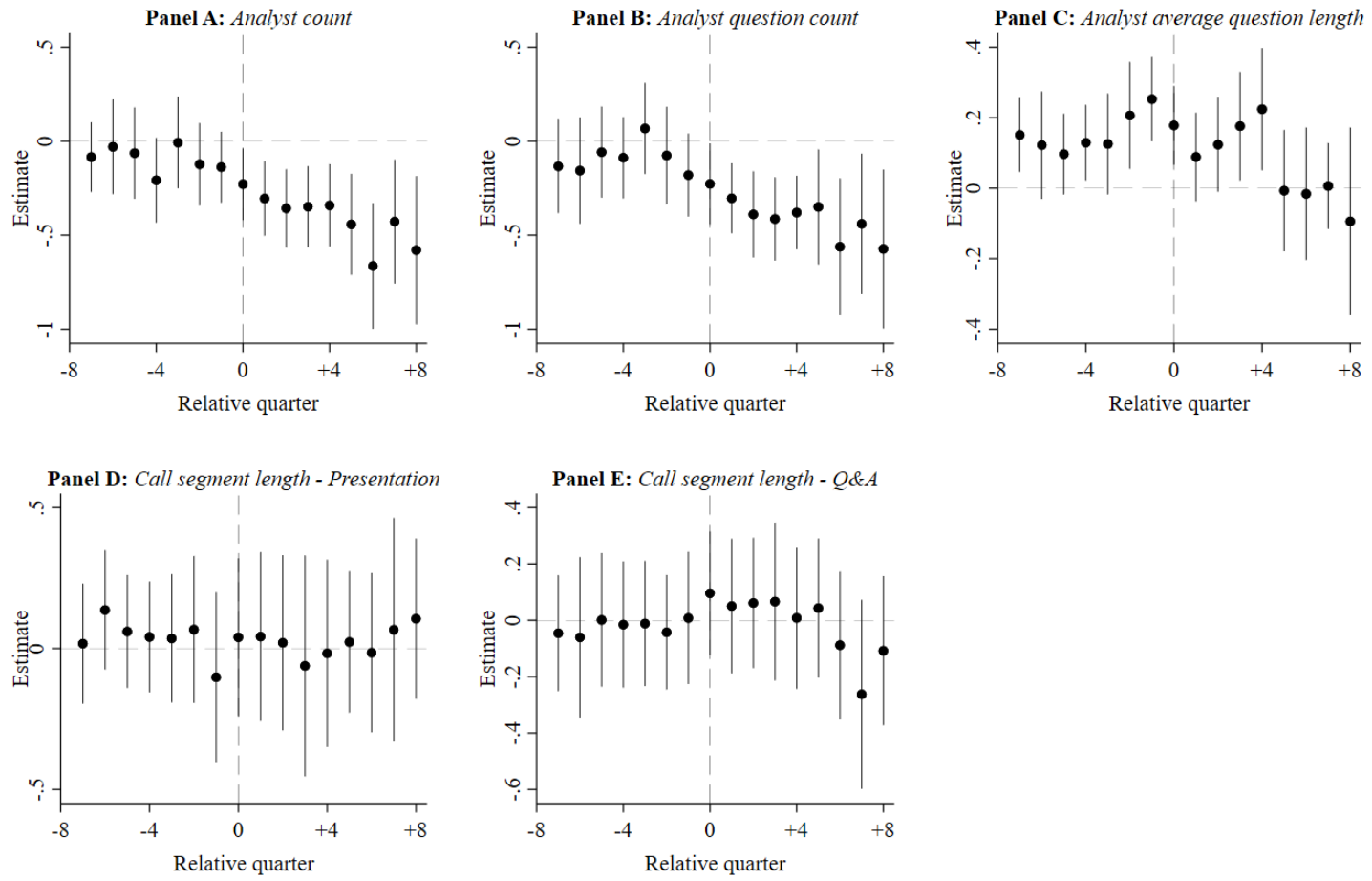


Figure 4. Tests of the parallel trends assumption in analyses examining retail investor information acquisition (Table 7)





**Figure 5.** Tests of the parallel trends assumption in the difference-in-differences analysis of earnings calls (Table 8)





**Table 1**

## Descriptive statistics

This table presents descriptive statistics for the sample used to estimate the determinants model for Say Tech adoption (Equation 1). The sample constitutes the full CRSP-Compustat universe combined with data from I/B/E/S, Raven Pack, Seeking Alpha, and TAQ. Panel A contrasts the characteristics of firms that adopt Say Tech and those that do not. The Say Tech data consists of 188 forums hosted by 41 firms. We consider 17 variables that measure the ownership, coverage, firm, and security characteristics affecting firms' information environment. For each variable, we report mean values for Say Tech adopters and non-adopters, the difference between the two values, and the corresponding  $t$ -statistic. Panel B reports forum-level descriptive statistics: number of questions asked and answered, average number of users who upvoted a question, the market value of shares represented by upvotes, and the Gini coefficient based on the upvotes. Appendix A provides detailed variable definitions.

Panel A: Mean difference test

	Say Tech		Mean difference test:	
	Adopters	Non-adopters	$\Delta$	$t$ -statistic
Institutional ownership	0.448	0.608	-0.159	-6.67***
Breadth of ownership	0.670	0.701	-0.031	-0.34
Turnover	0.034	0.014	0.020	8.89***
# of retail trades	13.104	10.664	2.440	17.87***
# of retail trades as a % of all trades	0.320	0.260	0.059	8.34***
IBES coverage	1.961	1.608	0.354	4.94***
Sell recom. percentage	0.097	0.033	0.065	9.03***
Seeking Alpha coverage	1.535	0.507	1.029	20.02***
Media coverage	2.767	2.422	0.345	3.34***
Size	8.083	6.705	1.378	8.06***
Book-to-Market	0.555	0.590	-0.035	-0.64
Firm age	1.964	2.782	-0.819	-11.67***
Profitability	-0.040	-0.021	-0.019	-2.93**
Return volatility	0.051	0.037	0.013	6.92***
Return	-0.130	0.012	-0.142	-5.42***
Consumer facing	0.395	0.443	-0.048	-1.26
Meme stock	0.169	0.004	0.165	33.92***

Panel B: Forum-level summary statistics

	Mean	Median	Std. Dev.	1st Quartile	3rd Quartile
Number of questions asked	445.52	79.00	1,041.77	24.00	306.00
Number of questions answered	5.48	5.00	4.13	2.00	7.00
Average upvote count	22.53	23.49	15.98	7.66	31.22
Upvote market value (in mill. dol.)	28.81	0.19	131.87	0.05	0.50
Gini coefficient (Upvotes)	0.63	0.70	0.25	0.49	0.83

**Table 2**

## Determinants analysis

This table reports the estimation results (using logistic regression) of Equation (1), analyzing the factors that contribute to managers' decision to participate in the Say Tech platform. The dependent variable, Say Tech Participation, equals one for quarters when the firm hosted a Say Tech forum, soliciting questions for earnings calls, investor days, webinars, shareholder meetings, or product launches. The two columns reported for each model present the parameter estimates and  $t$ -statistics in parentheses, respectively. The  $t$ -statistics are based on standard errors clustered by firm. All estimations are performed with calendar quarter fixed effects (e.g., 2020Q4). All continuous variables (except for logged variables) are winsorized at the bottom and top percentile by fiscal year. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively.

Dependent variable =	Say Tech Participation			
	(1)		(2)	
<i>Ownership characteristics:</i>				
Institutional ownership	-2.288**	(-2.00)	-1.737*	(-1.69)
Breadth of ownership	-0.428*	(-1.71)	-0.089	(-0.50)
<i>Trading activity:</i>				
Turnover	-7.171**	(-2.10)	-3.221	(-0.74)
# of retail trades	1.057***	(6.49)	1.120***	(4.38)
# of retail trades as a % of all trades	-1.375	(-0.52)	-2.593	(-0.87)
<i>Coverage characteristics:</i>				
IBES coverage	-0.235	(-0.75)	-0.188	(-0.51)
Sell recom. percentage	2.992**	(2.34)	2.650**	(2.03)
Seeking Alpha coverage	0.344**	(2.42)	0.303**	(2.43)
Media coverage	-0.167	(-0.92)	-0.027	(-0.14)
<i>Firm characteristics:</i>				
Size			-0.139	(-0.60)
Book-to-market			0.432**	(2.57)
Firm age			-0.901***	(-3.59)
Profitability			0.008	(0.00)
Return volatility			-13.784**	(-2.10)
Return			-0.357*	(-1.78)
Consumer facing			-0.070	(-0.17)
Meme stock			0.901	(1.11)
Calendar Quarter FE		Yes		Yes
Observations	62,702		62,702	
Pseudo R-Square	0.289		0.329	

**Table 3**

## Determinants of Upvotes

This table reports the estimation results (using Poisson regression) of Equation (2), analyzing the characteristics that explain variation in Say Tech users' upvoting behavior. The two columns reported for the model present the parameter estimates and  $t$ -statistics in parentheses, respectively. The  $t$ -statistics are based on standard errors clustered by forum. The estimations are performed with forum fixed effects. All continuous variables (except for logged variables) are winsorized at the bottom and top percentile. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively. Appendix A provides detailed definitions of the variables employed in the estimation.

Dependent variable =	Number of users who upvoted	
<i>Question sentiment:</i>		
Positive	0.035	(1.43)
Negative	0.035	(1.34)
<i>Information acquisition intensity:</i>		
Question length	0.014	(0.25)
Question marks	0.168***	(6.85)
<i>Sophistication:</i>		
Numeric	0.221***	(9.37)
Financial words	0.008	(0.34)
Question complexity	0.010**	(2.56)
<i>Horizon:</i>		
Short-horizon	0.146**	(2.08)
Forward-looking intensity	-0.024	(-0.77)
<i>Risk:</i>		
Risk-related intensity	0.089**	(2.13)
<i>ESG:</i>		
ESG statement (FinBERT)	-0.106***	(-3.71)
Forum FE	Yes	
Observations	81,085	
Pseudo R-Square	0.091	

**Table 4**

Management choice to answer a retail question

This table reports the estimation results (using logistic model) of Equation (3). The dependent variable represents an indicator variable that equals one for Say Tech questions that managers answered and zero otherwise. The two columns reported for each model present the parameter estimates and  $t$ -statistics in parentheses, respectively. The  $t$ -statistics based on standard errors clustered by forum are reported in parentheses. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively. Appendix A provides detailed definitions of the variables employed in the estimation.

Dependent variable =	I(Question answered)	
	(1)	(2)
<i>Crowd input:</i>		
Upvotes	1.527*** (13.72)	1.535*** (13.51)
<i>Question sentiment:</i>		
Positive		0.032 (0.38)
Negative		0.218*** (2.76)
<i>Information acquisition intensity:</i>		
Question length		0.206** (2.02)
Question marks		0.159** (2.10)
<i>Sophistication:</i>		
Numeric		0.189*** (3.20)
Financial words		0.032 (0.47)
Question complexity		0.038*** (3.89)
<i>Horizon:</i>		
Short-horizon		-0.034 (-0.16)
Forward-looking intensity		-0.056 (-0.50)
<i>Risk:</i>		
Risk-related intensity		0.395*** (3.44)
<i>ESG:</i>		
ESG statement (FinBERT)		-0.370*** (-4.28)
Forum FE	Yes	Yes
Observations	79,968	79,968
Pseudo R-Square	0.534	0.546

**Table 5**

## Retail trading activity and Say Tech

This table reports the estimation results of Equation (4). The dependent variables in Models 1 and 2, respectively, equal the number of trades executed by retail investors and the ratio of retail trade volume and total trading volume. Model 1 is estimated using Poisson regression and Model 2 is estimated using OLS. *Say Tech Quarter* is an indicator variable that equals one after the firm starts participating in Say Tech by hosting a forum and zero otherwise. The confounding event variables equal one when there is an earnings announcement, 10-K/Q filing, 8-K filing, guidance, analyst forecast, and analyst stock recommendation for the corresponding day. The *t*-statistics based on standard errors clustered by firm are reported in parentheses. All estimations include *Cohort × Firm* and *Cohort × Quarter* fixed effects. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively.

Dependent variable =	Retail trade:	
	Number	% of trading volume
Say Tech Quarter	-0.088 (-0.42)	-0.010 (-1.14)
Earnings	0.045 (0.39)	0.004 (1.27)
10-K/Q	0.238 (1.55)	0.012*** (2.95)
8-K	0.181** (2.38)	0.006*** (2.79)
Guidance	0.194* (1.84)	0.016*** (3.89)
Forecast	0.159*** (6.79)	0.003** (2.51)
Recommendation	0.244*** (4.50)	0.009*** (4.44)
Cohort × Firm FE	Yes	Yes
Cohort × Quarter FE	Yes	Yes
Observations	88,359	88,359
Pseudo R-Square	0.820	
Adjusted R-Square		0.627

**Table 6**

Retail order imbalance informativeness and Say Tech

This table reports the results of estimating Equation (5). The dependent variables equal the cumulative abnormal returns based on the four-factor model (i.e., controlling for market risk, size, B/M, and momentum effects) for the windows described in the label for each model. *Say Tech Quarter* is an indicator variable that equals one after the firm starts participating in Say Tech by hosting a forum and zero before that. The measures *Retail OIB* and *Institutional OIB* represent the difference between shares bought and sold scaled by the sum of shares bought and sold. Retail and Institutional trades are identified using the approach developed in [Boehmer et al. \(2021\)](#) and [Lee and Radhakrishna \(2000\)](#), respectively. The *t*-statistics based on standard errors clustered by firm are reported in parentheses. All estimations include *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively.

Dependent variable =	CAR (+1, +5)	CAR (+6, +10)	CAR (+11, +15)	CAR (+16, +20)	CAR (+21, +60)
Say Tech Quarter $\times$ Retail OIB	0.015** (2.04)	-0.003 (-0.45)	0.005 (0.65)	0.007 (1.13)	0.007 (0.29)
Say Tech Quarter $\times$ Institutional OIB	-0.002 (-0.51)	0.000 (0.01)	0.004 (1.52)	-0.003 (-1.10)	-0.002 (-0.18)
Say Tech Quarter	-0.008* (-1.91)	-0.008* (-1.75)	-0.006 (-1.40)	-0.001 (-0.34)	-0.050* (-1.82)
Retail OIB	-0.000 (-0.15)	-0.001 (-0.32)	-0.000 (-0.14)	0.003 (1.38)	0.012 (1.62)
Institutional OIB	-0.001 (-1.06)	-0.002* (-1.75)	-0.002*** (-3.06)	0.000 (0.10)	0.005 (1.43)
Cohort $\times$ Firm FE	Yes	Yes	Yes	Yes	Yes
Cohort $\times$ Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	75,103	75,103	75,099	75,083	75,069
Adjusted R-Square	0.056	0.052	0.052	0.056	0.343



**Table 7**

## Information acquisition activity and Say Tech

Panels A and B present descriptive statistics based on internet traffic to SEC filings of treated and control firms, respectively. In both Panels A and B the columns labeled Post (Pre) describe the period after (before) *treated* firms began participating in Say Tech. The average number of visits is reported by period and filing type along with the mean difference and its corresponding *t*-statistic. Panel C reports the results of estimating a variation of Equation (4), analyzing information acquisition activity. The dependent variables equal the number of visits to any SEC filing, 10-K or 10-Q filings, 8-K filings, and other filings. *Say Tech Quarter* is an indicator variable that equals one after the firm starts participating in Say Tech by hosting a forum and zero before that. The confounding event variables equal one when there is an earnings announcement, 10-K/Q filing, 8-K filing, guidance, analyst forecast, and analyst stock recommendation for the corresponding day. All estimations include *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. The *t*-statistics based on standard errors clustered by firm are reported in parentheses. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively.

Panel A: Daily User Requests by Filing Type for Treated Firms

	Post	Pre	$\Delta$	<i>t</i> -statistic
Any filing	304.68	156.58	148.11	22.08***
10-K/Q	34.75	21.19	13.55	14.00***
8-K	25.33	18.28	7.05	11.29***
Other	230.35	111.14	119.22	21.86***

Panel B: Daily User Requests by Filing Type for Control Firms

	Post	Pre	$\Delta$	<i>t</i> -statistic
Any filing	235.47	138.67	96.80	30.81***
10-K/Q	31.03	18.88	12.15	25.31***
8-K	20.60	14.44	6.15	21.61***
Other	173.20	101.08	72.13	27.63***

Panel C: Estimation results

Dependent variable =	Number of user requests for:			
	Any filing	10-K/Q	8-K	Other
Say Tech Quarter	0.163*** (2.58)	0.424*** (3.06)	0.093 (1.33)	0.106 (1.55)
Earnings	0.253*** (3.55)	0.818*** (8.02)	0.725*** (7.61)	0.036 (0.43)
10-K/Q	0.298*** (4.09)	0.634*** (9.32)	-0.234* (-1.69)	0.168* (1.73)
8-K	0.308*** (4.86)	-0.214*** (-3.64)	0.776*** (11.01)	0.289*** (3.97)
Guidance	-0.095 (-1.13)	-0.102 (-0.81)	0.156 (1.48)	-0.144 (-1.39)
Forecast	0.076** (2.51)	0.179*** (3.47)	0.278*** (8.17)	0.048 (1.52)
Recommendation	0.114** (2.47)	0.050 (1.10)	0.123** (2.36)	0.121*** (2.70)
Cohort $\times$ Firm FE	Yes	Yes	Yes	Yes
Cohort $\times$ Quarter FE	Yes	Yes	Yes	Yes
Observations	70, 102	69, 273	69, 330	70, 102
Pseudo R-Square	0.429	0.592	0.401	0.388

**Table 8**

Difference-in-differences analysis of earnings calls

This table presents the descriptive statistics (Panel A), and estimation results (Panels B, C, and D) of difference-in-differences analysis based on earnings conference calls. The dependent variables measure the number of analysts participating in the earnings call (*Analyst count*), the number of questions from analysts (*Analyst question count*), the average length of questions from analysts in words (*Analyst average question length*), the length of the presentation (*Call segment length - Presentation*) and Q&A (*Call segment length - Q&A*) sections in words. Since the dependent variables are count-based measures, we use Poisson regression to estimate the models. All models include *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. The variables of interest in Panel B and C, respectively, equal an indicator variable that equals one when management answers questions from retail investors during the earnings call ( $\mathbb{I}(\text{Retail Investor Question})$ ), and the number of retail investor questions that management answered during the earnings call (*# of Retail Investor Questions*). All estimations are performed with *Cohort*  $\times$  *Firm* and *Cohort*  $\times$  *Quarter* fixed effects. The *t*-statistics based on standard errors clustered by firm are reported in parentheses. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively. Appendix A provides detailed definitions of the variables employed in the estimation.

Panel A: Descriptive statistics

	Mean	Median	Std. Dev.	1st Quartile	3rd Quartile
<i>Analyst:</i>					
Count	5.6	5.0	2.7	4.0	7.0
Question count	14.3	14.0	6.8	10.0	18.0
Average question length (# of words)	65.7	64.0	20.1	54.0	77.0
<i>Call segment length (# of words):</i>					
Presentation	3,045.9	2,975.0	1,155.5	2,312.0	3,795.0
Q&A	4,123.1	3,957.5	1,765.6	2,730.0	5,426.0

Panel B: Analysis of earnings calls with and without discussion of retail investor questions for treated and control firms

Dependent variable =	Analyst:			Call segment length -	
	Count	Question count	Avg. question length	Presentation	Q&A
$\mathbb{I}(\text{Retail Investor Question})$	-0.273*** (-3.73)	-0.264*** (-3.45)	-0.031 (-0.91)	0.003 (0.04)	0.049 (0.89)
Cohort $\times$ Firm FE	Yes	Yes	Yes	Yes	Yes
Cohort $\times$ Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	903	903	903	903	903
Pseudo R-Square	0.209	0.273	0.322	0.731	0.773

Panel C: Analysis of earnings calls based on the number of retail investor questions answered for treated and control firms

Dependent variable =	Analyst:			Call segment length -	
	Count	Question count	Avg. question length	Presentation	Q&A
# of Retail Investor Questions	-0.061*** (-4.57)	-0.057*** (-3.87)	-0.014* (-1.68)	-0.004 (-0.43)	0.012 (1.32)
Cohort × Firm FE	Yes	Yes	Yes	Yes	Yes
Cohort × Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	903	903	903	903	903
Pseudo R-Square	0.210	0.275	0.323	0.731	0.773

**Table 9**

Linguistic feature analyses of questions and answers

This table reports results from a comparative analysis of questions asked by retail investors and analysts during earnings calls and managers responses (Eq. 7). The dependent variable in Panel A equals one when the question comes from a retail investor (i.e., Say Tech platform) and zero otherwise (e.g., analysts). In Panel B, the dependent variable equals one when the answer is in response to a question read from Say Tech. The independent variables in Panel A (B) represent measures of question (answer) sentiment, information acquisition intensity (information supply), sophistication, horizon, risk, and ESG focus. Estimations are performed using fixed effects logistic model (within-call). The  $t$ -statistics based on standard errors clustered by call are reported in parentheses. The symbols, \*, \*\*, \*\*\* denote statistical significance at ten-, five-, and one-percent levels, respectively. Appendix A provides detailed definitions of the variables employed in the estimation.

Panel A: Linguistic feature analyses of questions

Dependent variable =	ℐ(Retail Question)			
	(1)		(2)	
<i>Question sentiment:</i>				
Positive	-0.067	(-0.88)	-0.060	(-0.78)
Negative	1.040***	(11.87)	1.041***	(11.93)
<i>Information acquisition intensity:</i>				
Question length	-1.445***	(-7.07)	-1.441***	(-7.11)
Question marks	0.314***	(3.75)	0.321***	(3.79)
<i>Sophistication:</i>				
Numeric	-0.223***	(-3.76)	-0.222***	(-3.66)
Financial words	0.098*	(1.82)	0.094*	(1.71)
Question complexity	0.069**	(2.46)	0.069**	(2.42)
<i>Horizon:</i>				
Short-horizon	-0.871***	(-3.58)	-0.892***	(-3.48)
Forward-looking intensity	2.386***	(6.01)	2.438***	(6.13)
<i>Risk:</i>				
Risk-related intensity	-0.850***	(-3.28)	-0.858***	(-3.29)
<i>ESG:</i>				
ESG statement (FinBERT)	1.100***	(7.27)		
Climate change			0.997***	(3.36)
Pollution and waste			0.707	(1.36)
Corporate governance			1.890***	(6.98)
Natural capital			1.577*	(1.95)
Product liability			0.745*	(1.83)
Human capital			-0.401	(-1.09)
Business ethics and values			1.728	(1.32)
Community relations			1.524***	(3.34)
Call FE	Yes		Yes	
Observations	2,144		2,144	
Pseudo R-Square	0.317		0.331	

Panel B: Linguistic feature analyses of answers

Dependent variable =	Expected sign	I(Answer to Retail Question)	
		(1)	(2)
<i>Answer sentiment:</i>			
Positive	?	0.113*** (4.91)	0.112*** (4.79)
Negative	+	0.016 (0.39)	0.027 (0.66)
<i>Information supply:</i>			
Answer length	-	-0.706*** (-5.92)	-0.725*** (-6.02)
Scriptedness	+	4.852*** (7.14)	4.828*** (7.14)
<i>Sophistication:</i>			
Numeric	-	0.055** (2.16)	0.054** (2.13)
Financial words	+	0.004 (0.17)	0.011 (0.47)
Answer complexity	+	0.059*** (3.65)	0.057*** (3.49)
<i>Horizon:</i>			
Short-horizon	-	-0.274** (-2.14)	-0.221* (-1.67)
Forward-looking intensity	+	1.289*** (4.31)	1.315*** (4.40)
<i>Risk:</i>			
Risk-related intensity	-	0.823*** (2.69)	0.804*** (2.60)
<i>ESG:</i>			
ESG statement (FinBERT)	+	0.355*** (3.49)	
Climate change	+		0.504** (2.43)
Pollution and waste	?		0.019 (0.08)
Corporate governance	+		0.064 (0.29)
Natural capital	+		1.100** (2.04)
Product liability	+		0.763*** (3.74)
Human capital	?		0.117 (0.67)
Business ethics and values	?		0.202 (0.27)
Community relations	+		0.673*** (2.61)
Call FE		Yes	Yes
Observations		2,947	2,947
Pseudo R-Square		0.094	0.100