# Giving Retail Investors a Say in Disclosure*

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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.[1]

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

[1]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.[2] 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.[3] 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

[2]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.

[3]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 stacked regression differences-in-differences design to address concerns about staggered treatment timing and treatment effect heterogeneity (Baker, Larcker, and Wang (2022)).

We find 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. The economic interpretation of our difference-in-differences estimate is that increasing retail order imbalance by one (within-fixed effects) standard deviation increases future five-day returns by 30 basis points in the Say Tech period 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 12 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 3.24 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 professional analysts and to assess retail investor sophistication and information

preferences vis-a-vis those of equity analysts.

We implement 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, manifesting in fewer answered analyst questions. Our DiD sample consists of 304 transcripts for treated firms and 806 transcripts for control firms, chosen with replacement, following the nearest neighbor matching approach described in Dettmann et al. (2019).

We estimate a Poisson (OLS) model when the outcome variable is the number of analysts and the (continuous), and find consistent evidence that the initiation of retail investor interactions during earnings calls is associated with reduced analyst interactions (Cohn, Liu, and Wardlaw, 2022). The interpretation of our difference-in-differences estimates is that firms that initiate interactions with retail investors, on average, interact with 1.35 fewer analysts and answer 3.24 fewer analyst questions relative to matched control firms. Additionally, we find no evidence that the overall length of the presentation or the Q&A segment increases. These findings, collectively, lend additional support to the idea that increased interactions with retail investors come at the expense of reduced interactions with analysts.

We scrutinize the casting hypothesis by conducting a textual analysis of retail investor and analyst questions that managers answer in the same earnings call. An additional motivation is to provide more direct evidence regarding differences in sophistication and information between investor groups, typically inferred from differences in trading behaviors (Blankespoor, deHaan, Wertz, and Zhu, 2019; Moss, Naughton, and Wang, 2023; Li, Watts, and Zhu, 2023).[4] We estimate a logistic regression of retail investor question indicator on the same set of ten 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

[4]Our inferences about differences in sophistication and information preferences are subject to the caveat that retail questions, although answered by management during the same earnings call, are posed in written form before the earnings announcement.

management. 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 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).[5] While several 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.[6] 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.

[5]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).

[6]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)

# 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."[7] The press release adds that 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.[8] 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

[7]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.

[8]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.

to answer questions that cast them in favorable light rather than critical questions that seek to elicit relevant information.

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, experience greater retail trading activity and social media coverage, 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 in Section 3.1.1.[9]

We then obtain daily TAQ and EDGAR search data for our sample of Say Tech firms and control firms. Adopting a difference-in-differences approach, we use these data to investigate whether quarters with earnings forums are distinguished by increased and more informative retail investor trading, and by increased retail investor information acquisition activities. Since TAQ data is updated on a daily basis we are able to perform the analysis of retail

[9]Institutional investors are not banned from participating in the forum, and they ask 327 questions. 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. In sensitivity analyses, we find that our results are robust to both excluding these questions and to including a non-retail investor indicator. We offer more details in Sections 3.1.2 and 3.1.3.

trading activity for our entire sample. In contrast, because CRSP data are available only through December 31st, 2022, we use a sample of fiscal quarters ending on or before October 31st, 2022 when analyzing the informativeness of trades by retail investors. Finally, because SEC search data are available for the period between May 19, 2020 and March 31st, 2023, we rely on a sample of fiscal quarters ending on or after September 30th, 2020 when analyzing retail investor information acquisition activity.

Earnings announcements are by far the most important information event in capital markets, and the majority of the forums, 165 out of 188, held by 38 firms, open approximately two weeks before earning are announced and close right before earnings are announced. Managers answer select questions after earnings are released in the forum, and in many cases, also during regular earnings calls.[10] Motivated by the importance of earnings calls, and the Q&A section, in particular, as a source of information in capital markets (Matsumoto, Pronk, and Roelofsen, 2011), in Section 3.3, we obtain earnings call transcripts to investigate how prevalent is the practice of answering retail questions during earnings calls, and whether answering retail questions is at the expense of answering analyst questions. Out of the 38 firms that host earnings forums, we find that three do not hold earnings calls, two do not answer retail questions during any of their calls, six answer questions during some calls, and 27 always answer questions during earnings calls. We conclude that the practice of answering retail questions during earnings calls is prevalent, and that firms engaging in it view retail investors as disclosure audience on par with analysts. To address the question of whether answering retail questions is at the expense of answering analyst questions, we analyze a sample of 1,110 earnings call transcripts for firms participating in Say Tech and their matching control firms.

[10] Appendix B provides three examples where companies answer Say Tech questions during earnings calls. Typically, retail questions are read out by the Investor Relations Officer, when one is present, and answered by the CEO or CFO.

# 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:

$$\begin{aligned}\mathbb{I}(Say\ Tech)_{iq} = \alpha_q + \gamma' \mathbf{Ownership_{iq}} + \theta' \mathbf{Trading_{iq}} + \pi' \mathbf{Coverage_{iq}} \\ + \eta' \mathbf{Firm_{iq}} + \varepsilon_{iq},\end{aligned} \tag{1}$$

where $\mathbb{I}(Say\ Tech)_{iq}$ 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, **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,[11] and media coverage, which reflects the demand for information from all groups of investors and stakeholders. **Firm** includes firm character-

[11] 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.

istics: firm size, book-to-market, firm age, profitability, return volatility, past returns, and indicator variables for companies in consumer-facing industries and meme stocks.[12] Finally, $\alpha_q$ represents calendar quarter fixed effects.

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 finding 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.[13]

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

[12] Appendix A provides detailed definitions of these variables.

[13] 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.

standard deviation of the dependent variable (i.e., $\mathbb{I}(Say\ Tech)$). We note that the discreteness of the dependent variable makes its within-fixed effects standard deviation less helpful as a benchmark in assessing significance.

In summary, our findings suggest three broad motivations for adopting Say Tech: meet retail investor demand for information, remedy market participants' (e.g., analysts) unduly negative view of the company, and increase investor recognition.

### 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 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 received by a question 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, revealing differences in the information preferences of the crowd of retail investors upvoting questions and the much smaller set of retail investors asking questions. As a sensitivity analysis, we include an indicator variable for questions that non-retail investors asked and find that our results remain unchanged. Whether upvoting influences management choice to answer a question is an empirical question addressed next.

### 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:

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

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 meaningful. 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 (e.g., *Question tone*, *Question length*) has limited effect on the statistical and economic significance of the coefficient of interest (i.e., *Upvotes* is associated with a 94.6% of within-forum standard deviation increase in the dependent variable) and only marginally improves model fit (i.e., pseudo $R^2$ increases from 53.4% to 54.5%), further

highlighting the key role of *Upvotes* in influencing management choice to answer a retail question.

Importantly, our results do not support the "casting" hypothesis, which posits that managers choose to answer questions that cast the company in a more favorable light: the coefficient on *Question tone* is statistically indistinguishable from zero. Notably, we find that both measures of information acquisition intensity and two of three measures of sophistication incrementally influence the likelihood that a question is answered, which suggests that managers use their discretion to answer questions that are more sophisticated and that aim to elicit more information. Interestingly, we find evidence that managers use their discretion to answer questions that seek risk-related information and avoid answering questions that seek ESG-related information. We note that managers' preference for risk-related questions and avoidance of ESG-related questions is directionally the same as but possibly stronger than retail investors' preference, revealed through upvoting, which we control for.[14]

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.

## 3.2 The Consequences of Say Tech Adoption

In this section we examine whether adopting Say Tech, which focuses on helping management communicate with retail investors, facilitates information production by retail investors. To investigate this hypothesis, 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

[14]Management answers are made publicly available, which raises the possibility that management considers the information preferences of other groups and stakeholders, e.g., analysts in selecting retail investors. In Section 3.4, we find that analysts are more likely to seek risk-related information and less likely to demand ESG-related information, consistent with management selecting retail questions that seek information of interest to analysts.

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 hosted Say Tech forums (which vary between 1-16 quarters) and pre-treatment period as the preceding eight quarters (based on data availability).

We then 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 test whether retail trading activity increases during quarters when firms participate in the Say Tech platform by estimating the following model:

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

In Equation (4), the dependent variable equals the number of retail trades or the percentage of trading volume executed by retail investors. The two dependent variables help us examine retail trading activity both in nominal terms and relative to the overall trading activity for the stock. The terms $\alpha_{c\times i}$ and $\gamma_{c\times q}$ denote $Cohort \times Firm$ and $Cohort \times Quarter$ fixed effects. Subscripts $i$, $c$, $q$, and $d$ index firm, cohort, quarter and day, respectively. The vector **Confounding Events** represents a set of indicator variables measuring the arrival

of information. Specifically, the variables *Earnings*, *10-K/Q*, *8-K*, and *Guidance* equal one when the company announces earnings, files an annual or quarterly SEC filing, 8-K filing, or issues a management forecasts. The variables *Forecast* and *Recommendation*, respectively, equal one when there is a forecast or recommendation issued by an analyst.

Table 5 reports the estimation results of Equation (4). The first model presents the estimation results of regressing the number of retail trades on the independent variables using Poisson regression, suggesting that the change in retail trading activity observed for treated firms when they participate in Say Tech firms is not different from that of control firms. In the second model of Table 5, we examine retail trading volume scaled by the overall trading volume. Here we use OLS instead of Poisson because the dependent variable is continuous. These results reiterate the results from the first model, indicating no meaningful change in trading activity for treated firms after they adopt Say Tech. Overall, the results in Table 5 do not identify a meaningful increase in retail trading activity coinciding with Say Tech participation.[15]

We predict that retail trades become more informative for firms that begin to employ Say Tech as part of their disclosure framework. To test this prediction, we measure the order imbalance of trades by retail investors and institutional investors and estimate the following empirical model:

$$\begin{aligned} y_{icqd} = \alpha_{c\times i} + \gamma_{c\times q} + \beta_1 Say\ Tech\ Quarter_{icqd} + \beta_2 Retail\ OIB_{icqd} \\ + \beta_3 Institutional\ OIB_{icqd} \\ + \beta_4 Say\ Tech\ Quarter_{icqd} \times Retail\ OIB_{icqd} \\ + \beta_5 Say\ Tech\ Quarter_{icqd} \times Institutional\ OIB_{icqd} + \varepsilon_{qf}. \end{aligned} \tag{5}$$

[15]We examine the validity of the parallel trends test by replacing *Say Tech Quarter* in Equation (4) with a series of relative quarter indicator variables, e.g., $q_{t-7}$, $q_{t-6}$, where $q_t$ corresponds to the first quarter of participation in the Say Tech platform. Figure 2 Panels A and B plot the coefficients for the models with *Number of retail trades* and *Retail trading volume %* as the dependent variable, respectively. In Panel A, a statistically significant difference between treated and control firms is evident for quarters *t-7* and *t-6*. In contrast, in Panel B, none of the coefficients is statistically significant during the pre-event quarters.

We estimate four specifications of Equation (5) with the dependent variables equaling the cumulative abnormal returns for the return accumulation windows: (+1, +5), (+6, +10), (+11, +15), and (+16, +20). We estimate daily abnormal returns using a four-factor model that accounts for market risk and size, book-to-market, and momentum effects. In Equation (5), *Retail OIB* equals the difference between the number of shares bought and sold by retail investors scaled by the sum of those shares. We rely on the approach developed in Boehmer et al. (2021) to identify retail trades. Similarly, the *Institutional OIB* variable measures the difference between the number of shares bought and sold by institutional investors. In order to identify institutional trades, we follow Lee and Radhakrishna (2000) and identify trades larger than $20K in size as executed by institutional investors.

Table 6 presents the estimation results of Equation (5). The coefficients on *Say Tech Quarter* × *Retail OIB* equals 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 they do for control firms. Importantly, the economic effect appears to be large. The coefficient on *Say Tech Quarter* × *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* × *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. These findings are 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, rather than being information-based. To examine this possibility, in Models 2-4, we use cumulative abnormal returns measured for the subsequent event windows of (+6, +10), (+11, +15), and (+16, +20). If our main results are driven by price pressure, we should observe a reversal in the returns associated with *Retail OIB*. In Models 2-4, however, the coefficients on *Say Tech Quarter* × *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 2 Panels C-F illustrate our parallel trends tests, showing the absence of any significant pre-trends with the exception of quarter $t$ - *2* for the CAR (+6, +10) variable and quarter $t$ - 7 for the CAR (+16, +20).

### 3.2.2 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.[16] 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

[16] 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.

respective filings by control firms. These relations are economically large, corresponding 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 statistically significant using a ten-percent cutoff. Figure 3 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.

## 3.3 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,

$$y_{icq} = \alpha_{c\times i} + \gamma_{c\times q} + \beta_1 \mathbb{I}(Earnings\ Forum)_{icq} + \varepsilon_{icq}, \tag{6}$$

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. $\mathbb{I}(Earnings\ Forum)$ is equal to one if management initiated an earnings forum on the Say Tech platform prior to the earnings announcement and zero otherwise, and subscripts $i$, $c$, and $q$ index firm, cohort, and quarter, respectively. The coefficient on $\mathbb{I}(Earnings\ Forum)$ measures the within-firm change in $y$ for treated firms when they host an earnings forum relative to the within-firm change in $y$ for the respective control firms during the same period.

Our sample consists of 1,110 quarterly earnings calls, 304 held by treated firms (*treated*) and 806 held by matched control firms (*control*) (Table 8 Panel A).[17] We find that managers, on average, engage with approximately six analysts during earnings calls, answering 14 questions with a mean length of 66 words. The presentation and Q&A sections are on average 4,069 and 2,972 words in length, respectively (Table 8 Panel B).

Columns 1-3 of Table 8 Panel B report the estimation results of Equation (6), demonstrat-

[17]Our estimations use fewer observations as singleton observations are dropped.

ing that firms that participate in the Say Tech platform invite fewer analysts to participate 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 1.35 and 3.24 for treated firms relative to control firms. These differences are economically large, representing 113% of the within-FE variation in *Analyst count* and 87% of the within-FE variation in *Analyst question count*. Finally, we find no relation between hosting an earnings forum 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.

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 $\mathbb{I}(Earnings\ Forum)$, 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, treated firms that initiate earnings forums appear to redesign their earnings calls by answering retail investor questions at the expense of answering analyst questions, without changing the length of their earnings calls.

In Panel C of Table 8, we replace the primary variable of interest, $\mathbb{I}(Earnings\ Forum)$, with $\mathbb{I}(Retail\ Investor\ Question)$, which takes a value of one when managers answer one or more questions from the Say Tech platform during their earnings call. The estimation results from this revised model reiterate our earlier findings (from Panel B), suggesting that managers provide analysts with fewer opportunities to participate in earnings calls. Specifically, we find that when managers discuss Say Tech questions during earnings calls,

they invite fewer analysts to participate in the call and answer fewer questions from them overall.

Table 8 Panel D reports estimation results when we replace the treatment indicator variable—firm hosts an earnings forum on Say Tech—with a multi-valued treatment variable—the number of retail investor questions answered by management (*# of Retail 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 0.33 and 0.77 per additional question that managers answer from Say Tech. Similar to the results in Panel C, 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 DiD model after replacing $\mathbb{I}(Earnings\ Forum)$ with a set of interaction variables (i.e., $\mathbb{I}(Earnings\ Forum) \times q_{t-7} ... \mathbb{I}(Earnings\ Forum) \times q_{t+16}$, 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 4 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.

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

In this section we conduct a textual analysis of earnings call transcripts where managers respond to retail investor questions to further address the concern that management select favorable retail questions, gain insights into retail investor information preferences and sophistication.

We view evidence on the properties of retail investor questions as complementary and arguably more helpful than archival evidence on the properties of retail investor trades in drawing inferences regarding retail investor sophistication and information preferences.

Empirically, we estimate the following logistic regression model:

$$\begin{aligned} y_{qc} = \alpha_c + \gamma' \mathbf{AcquisIntensity_{qc}} + \theta' \mathbf{Sophistication_{qc}} + \pi' \mathbf{Horizon_{qc}} \\ + \beta_1 Risk_{qf} + \beta_2 ESG_{qc} + \varepsilon_{qc}, \end{aligned} \tag{7}$$

where the dependent variable is equal to one for retail investor questions and zero otherwise. Subscripts $q$ and $c$ index questions and calls, respectively. The five set of independent variables represent measures of the information acquisition intensity, sophistication, horizon, risk and ESG content of questions (or answers).

Table 9 Panels A and B, respectively, present the estimation results of the analyses designed to identify questions posed by retail investors and managers' responses to those questions. The estimation results reported in the first model of Panel A suggest that questions answered from Say Tech are significantly more negative in tone, shorter, and contain more question marks relative to analysts' questions during the same call. Furthermore, retail questions typically contain fewer numbers, more financial words, are more complex than analysts' questions and tend to have a longer horizon focus, seeking more forward-looking information. These results characterize retail questions as being more sophisticated albeit less precise, as evidenced by fewer numbers. Finally, Panel A reports a negative coefficient on *Risk-related*

*intensity* and a positive coefficient on *ESG statement*, signifying less (greater) demand for information related to risk (ESG) related information from retail investors (conditional on being answered during calls).

In Model 2, we further examine the ESG aspect of questions, breaking down questions based on different topics using a more sophisticated FinBERT model. The results from this analysis reveal that questions on *Climate change*, *Corporate governance*, *Natural capital*, *Product liability*, and *Community relations*, which are answered during earnings calls, are more likely to come from Say Tech users than they are from analysts.

Next, in Panel B, we investigate how managers' answers to questions from Say Tech and analysts differ. We employ the same approach that we used in Panel A and estimate a model that predicts whether an answer is in response to analysts or Say Tech questions based on a series of linguistic features.

The estimation results based on answers depict managers' responses to Say Tech questions as conveying a more positive tone, being shorter and more scripted than their answers to analysts' questions. These differences are consistent with managers having more time to review Say Tech questions and prepare to answer them, making them more concise and less spontaneous. In addition, we attribute the more positive tone in answers to retail questions to managers having more time to develop answers that place the company in a positive light.

We also find that managers' responses to Say Tech questions contain more numbers and are more complex. Conversely, managers' responses to Say Tech questions contain more numbers and have roughly the same number of financial words as their answers to analysts' questions. These coefficient estimates, reveal inferences that are perplexing given that Say Tech questions contain fewer numbers and more financial words than analysts' questions.

There also appears to be a greater focus on the long-term in managers' responses to questions from Say Tech relative to questions from analysts. These results parallel the findings in Panel A, highlighting Say Tech questions' interest in longer-term issues. In contrast, the results depict managers' responses to Say Tech questions to be more relevant

for risk-related issues.

We additionally find that managers' responses to Say Tech questions are more likely to convey ESG-related information then their responses to analysts. This result is consistent with the finding in Panel A that Say Tech questions answered during earnings calls exhibit greater focus on ESG topics than analysts' questions. Finally, in Model 2, we disaggregate the ESG variable into sub-topics using an alternative FinBERT classification model. We find that managers' responses to Say Tech questions contain more content about climate change, natural capital, product liability and community relations.

In summary, we document several aspects of questions and answers that distinguish Say Tech questions from analysts' questions. Say Tech questions that are answered during earnings calls are more concise, probing, and have a longer-term focus than questions taken from analysts during calls.[18] Managers' responses to Say Tech questions, largely mirror these differences. Specifically, they tend to be more long-term focused, shorter, and more scripted, consistent with managers having more time to prepare to answer them. However, managers' responses to Say Tech questions have a more positive tone than their answers to analysts' questions. Further, they do not contain more numeric information or use more financial words than their answers to analysts.

In conclusion, our empirical results support the view that retail investors ask thoughtful and carefully developed questions that are effective in eliciting information from managers during earnings calls. Say Tech's upvoting feature, which "crowd-ranks" questions, is likely an important contributing factor to the effectiveness of the retail questions that are answered during calls. Finally, an additional important implication of these findings is that they refute the "casting hypothesis", which posits that managers systematically choose "soft ball" questions from the pool of retail questions available on Say Tech.

[18]The shorter length of Say Tech questions may be explained by written communication typically being more concise than verbal communication. Retail investors who seek to acquire information from managers through Say Tech, presumably write and edit their questions to ensure that they are clear and succinct. In contrast, analysts, when asking questions, generally start by making polite remarks and then move on to ask their questions. Further, analysts often provide context to their questions before they ask them and thereby may be using more words to communicate their 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 |
|---|---|
| **Say Tech Platform:** | |
| *Say Tech Quarter* | An indicator variable that equals one for days on or after the first day of the firm's participation in the Say Tech platform. [Say Tech] |
| $\mathbb{I}$(*Earnings Forum*) | An indicator variable that equals one for quarters during which the company initiated an earnings forum on the Say Tech platform. [Say Tech] |
| $\mathbb{I}$(*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] |
| *# of Retail Investor Questions* | The number of retail investor questions (Say Tech) answered during the earnings call. [Say Tech] |
| *Upvotes* | The natural logarithm of the number of Say Tech users who voted in support of a question by "upvoting" it. [Say Tech] |
| *Question length* | The natural logarithm of the number of words contained in the question posted on the Say Tech platform. [Say Tech] |
| *Question tone* | The number of positive words minus negative words (based on Loughran and McDonald, 2011) contained in the Say Tech question scaled by the sum of the positive and negative words. [Say Tech] |
| *# of financial words* | The number of financial-oriented words contained in the Say Tech question. Financial words are identified based on the dictionary provided in Matsumoto et al. (2011). [Say Tech] |
| *# of forward-looking words* | The number of forward-looking words contained in the Say Tech question. [Say Tech] |
| **Earnings call characteristics:** | |
| **Call-level** | |
| *Analyst count* | The number of analysts who asked at least one question during the earnings call. [Refinitiv Eikon] |
| *Analyst question count* | The number of uninterrupted speech segments that analysts spoke during the earnings call. [Refinitiv Eikon] |
| *Analyst average question length* | The average number of words spoken by analysts per uninterrupted speech segment during the earnings call. [Refinitiv Eikon] |
| *Call segment length - Presentation* | The number of words spoken during the presentation section of the earnings call. [Refinitiv Eikon] |
| *Call segment length - Q&A* | The number of words spoken during the question and answer section of the earnings call. [Refinitiv Eikon] |
| **Dialogue/Post level** | |
| *Retail question* | An indicator variable that equals one for speech segments where managers read or responded to questions the Say Tech platform. [Say Tech and Refinitiv Eikon] |
| *Question length* | The natural logarithm of the number of words contained in the question posted on the Say Tech platform. [Say Tech] |
| *Question marks* | The number of question marks contained in the dialogue. [Refinitiv Eikon] |
| *Question tone* | The number of positive words minus negative words spoken (based on Loughran and McDonald, 2011) during the dialogue scaled by the sum of the positive and negative words. [Refinitiv Eikon] |
| *Question answered* | An indicator variable that equals one for question posts in the Say Tech forum that were answered by managers. [Say Tech] |

| Variable | Definition |
|---|---|
| *Numeric* | The number of numbers spoken. [Refinitiv Eikon] |
| *Financial words* | The number of financial-oriented words spoken during the dialogue. Financial words are identified based on the dictionary provided in Matsumoto et al. (2011). [Refinitiv Eikon] |
| *Question complexity* | The Gunning Fog index value calculated based on the dialogue. [Refinitiv Eikon] |
| *Scriptedness* | 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] |
| *Short-horizon* | 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 Brochet, Loumioti, and Serafeim (2015). [Say Tech] |
| *Forward-looking intensity* | The fraction of sentences that are identified as forward-looking based on the approach developed in Muslu, Radhakrishnan, Subramanyam, and Lim (2015). [Refinitiv Eikon] |
| *Risk-related intensity* | The fraction of sentences identified as containing risk-related information based on the approach developed in Kravet and Muslu (2013). [Refinitiv Eikon] |
| *ESG statement (FinBERT)* | The topic classification generated by the "finbert-esg" model, which was developed by Huang, Wang, and Yang (2023). 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] |
| *ESG Topic* | The topic classification generated by the "finBERT-esg-9-categories" model, which was developed by Huang et al. (2023). 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] |
| *Sentence count* | The number of sentences spoken during the dialogue (uninterrupted speech segment). [Refinitiv Eikon] |
| *Word count* | The number of words spoken. [Refinitiv Eikon] |
| **Ownership characteristics:** | |
| *Inst. ownership* | The percentage of shares held by institutional investors. [Thomson Financial] |
| *Breadth of ownership* | The natural logarithm of the number of shareholders who own shares in the company. [Compustat] |
| **Trading activity:** | |
| *Turnover* | Average daily turnover during 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] |
| *# of retail trades* | 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 Boehmer et al. (2021). [TAQ and Compustat] |

| Variable | Definition |
|---|---|
| *# of retail trades as a % of all trades* | 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 Boehmer et al. (2021). [TAQ and Compustat] |
| **Coverage characteristics:** | |
| *IBES Coverage* | The natural logarithm of the number of analysts who issued an earnings forecast during the most recent fiscal quarter. [IBES] |
| *Sell recommendation percentage* | The proportion of recommendation ratings that are "Sell" and "Strong Sell". [IBES] |
| *Seeking Alpha coverage* | The natural logarithm of the number of distinct contributors who published an analysis article in the Seeking Alpha website during the most recent quarter. [Seeking Alpha] |
| *Media coverage* | 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] |
| **Firm characteristics:** | |
| *Size* | 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] |
| *Book-to-market* | Book-to-market ratio calculated following the definition in Daniel and Titman (1997). [Compustat] |
| *Firm age* | The number of years since the company's first appearance in the Compustat Annual Fundamental file. [Compustat] |
| *Profitability* | Earnings before interest, tax and depreciation scaled by total assets. When earnings before interest, tax and depreciation is missing this measure is calculated as Net income scaled by total assets. [Compustat] |
| *Return volatility* | Standard deviation of daily returns during the latest quarter. [Compustat and CRSP] |
| *Return* | Buy and hold return for the quarter. [Compustat and CRSP] |
| *Consumer facing* | An indicator variable that equals one for companies in industries that serve consumers. Fama and French (1997) 49 Industries numbered 2-10, 13, 23, 32, 35, 42, 43, and 45. [Compustat] |
| *Meme Stock* | An indicator variable that equals one for companies included by the Roundhill MEME ETF (MEME) as of February 1st, 2023. [Roundhill Investments] |
| **Confounding events:** | |
| *Earnings* | An indicator variable that equals one on days when the company made an earnings announcement and zero otherwise. [SEC Edgar] |
| *10-K/Q* | An indicator variable that equals one on days when the company filed a 10-K or 10-Q and zero otherwise. [SEC Edgar] |
| *8-K* | An indicator variable that equals one on days when the company filed a 8-K and zero otherwise. [SEC Edgar] |
| *Guidance* | An indicator variable that equals one on days when the company issued a management forecast and zero otherwise. [IBES] |
| *Forecast* | 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. [IBES] |
| *Recommendation* | 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***

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

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?

Jason Warnick, Robinhood Markets, Inc. - CFO

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.

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

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

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

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 bulletproof 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.

***Questions and Answers***

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

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?

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

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?

---

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.

---

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.

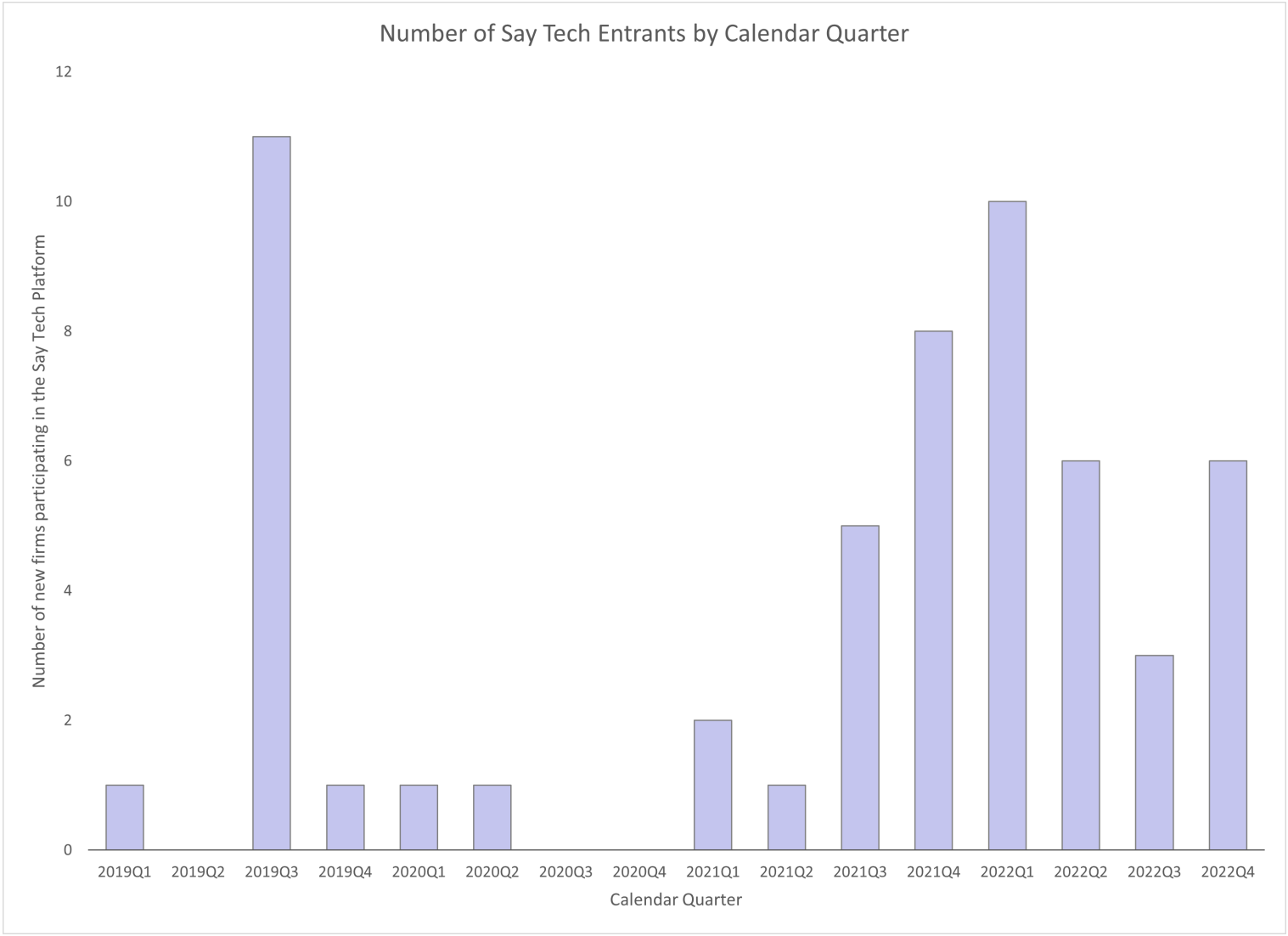

**Figure 2.** Tests of the parallel trends assumption in analyses investigating retail trading activity

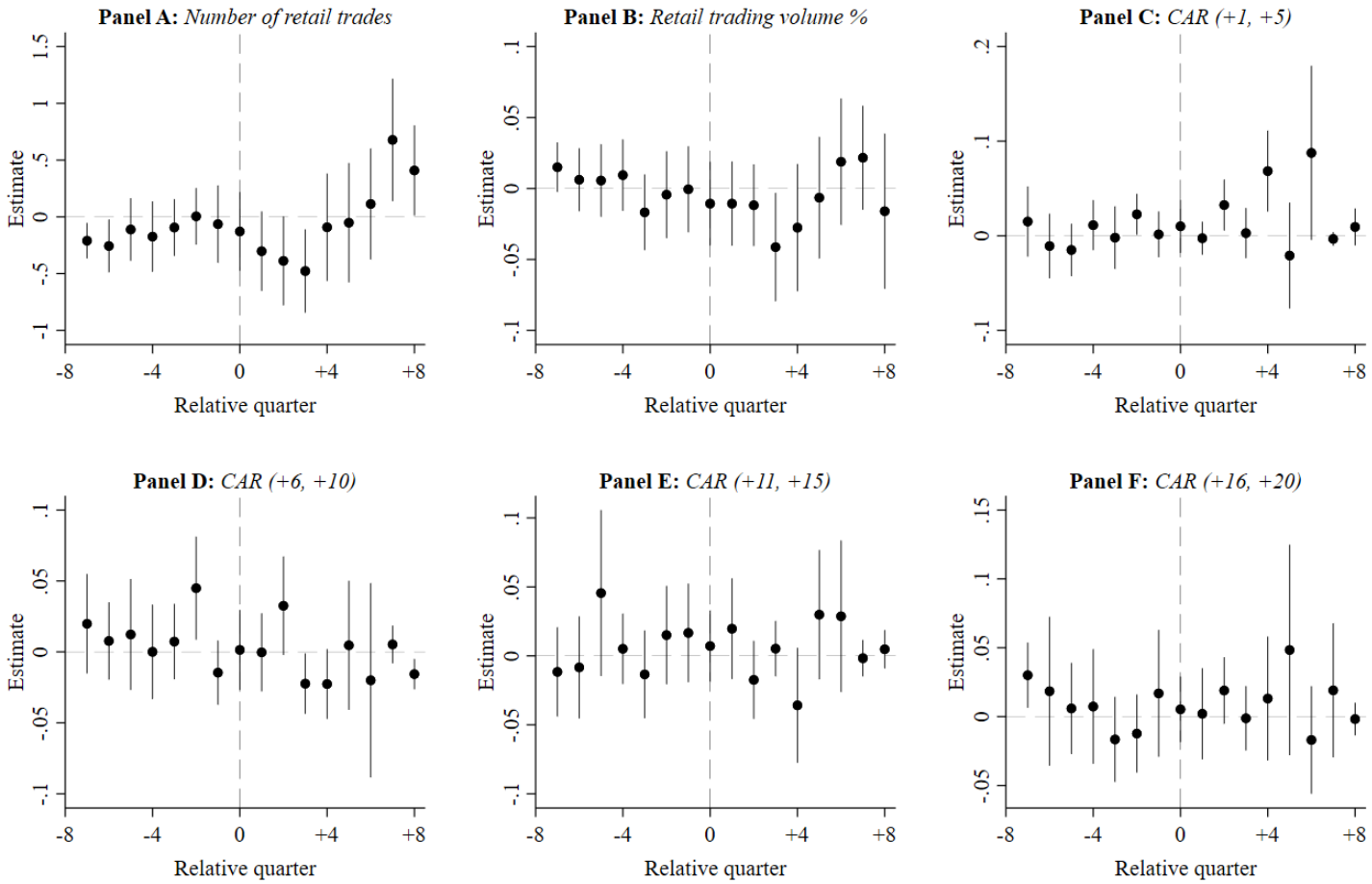

**Figure 3.** Tests of the parallel trends assumption in analyses examining retail investor information acquisition

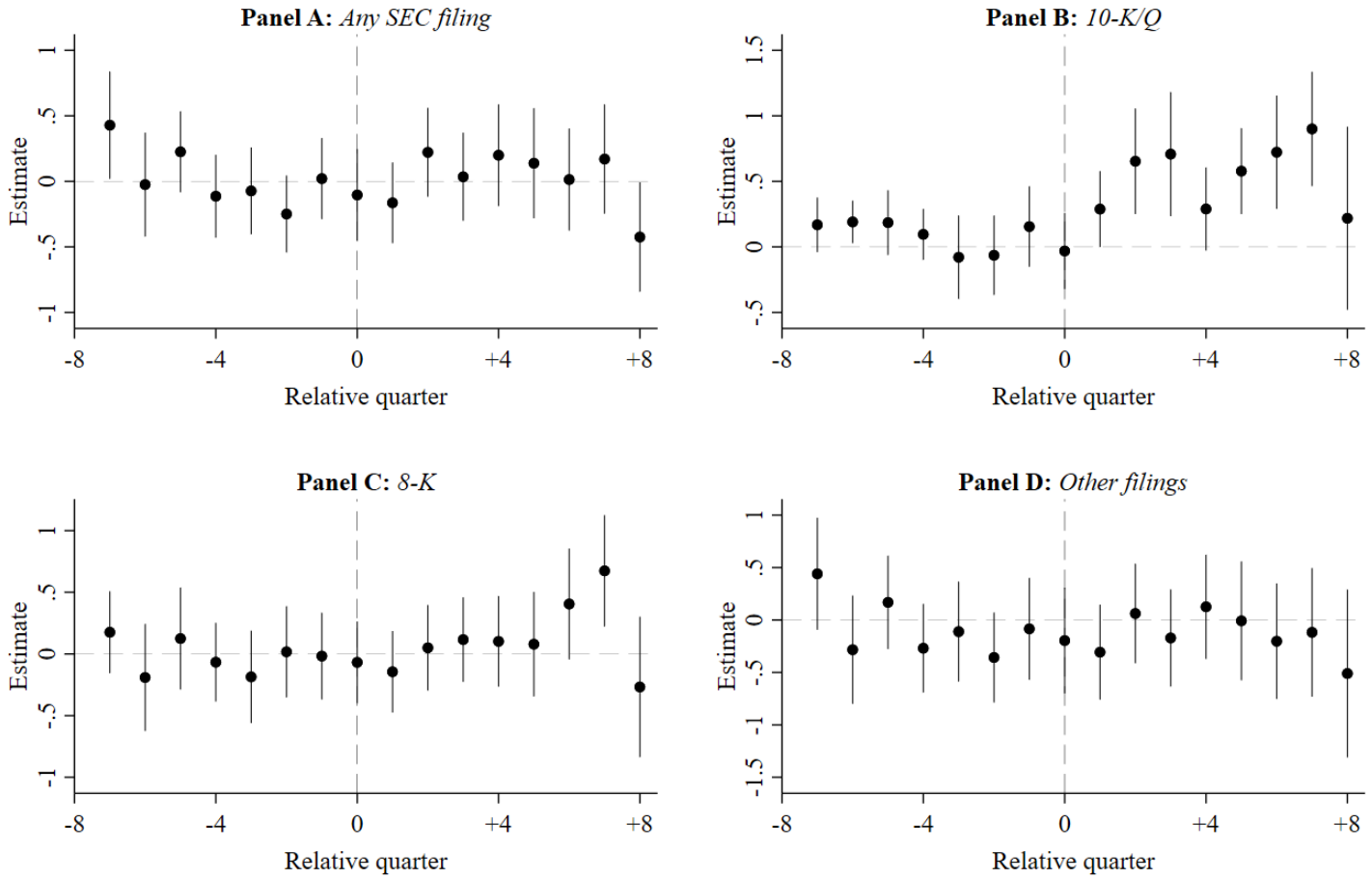

**Figure 4.** Tests of the parallel trends assumption in the difference-in-differences analysis of earnings calls (Table 8)

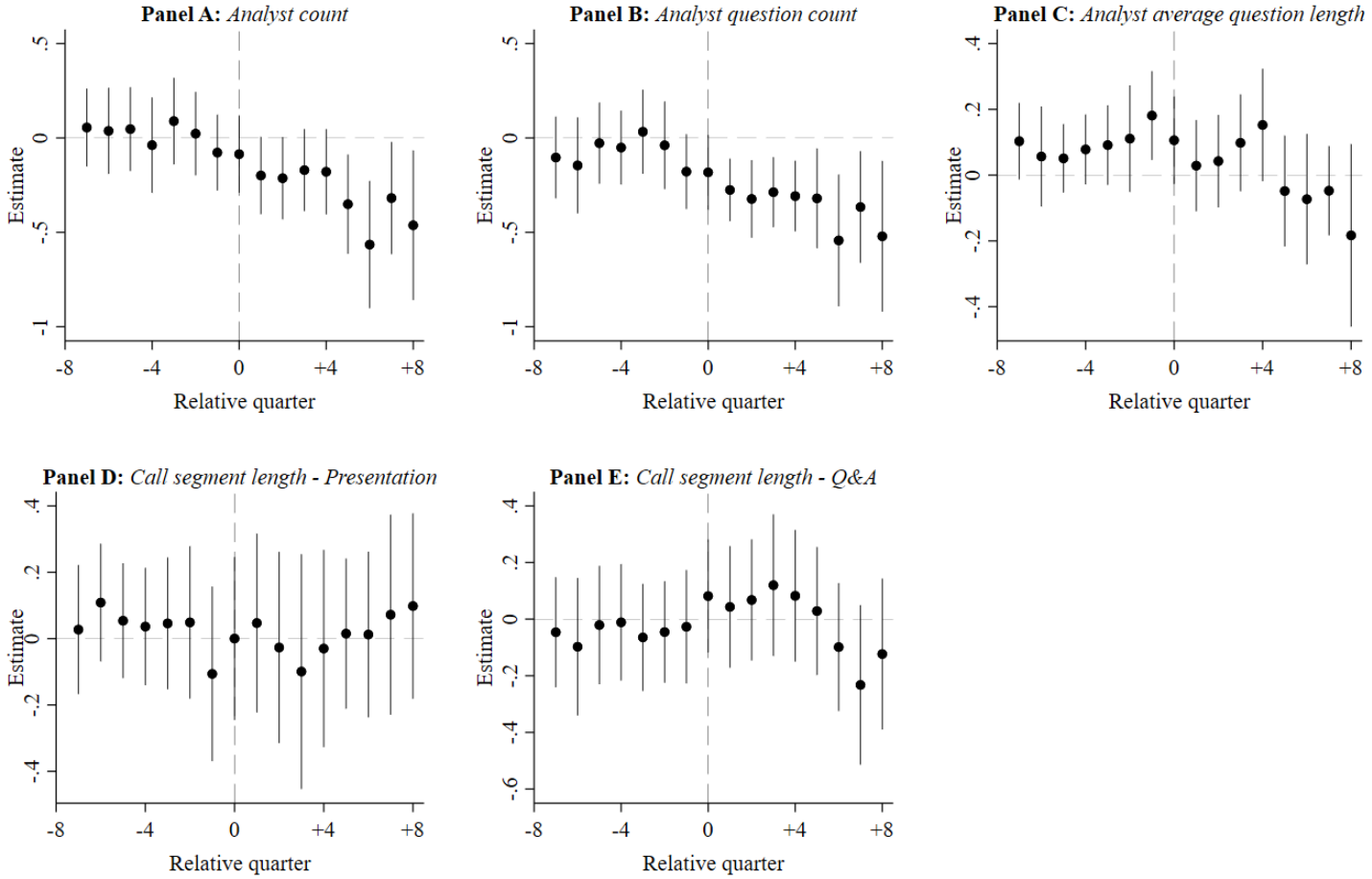

**Figure 5.** Word clouds based on Say Tech and Analyst questions
The figures below represent word clouds constructed based on the nouns in questions from analysts and retail investors (i.e., Say Tech). Prior to creating the word clouds, we first lemmatize each word, then exclude stop words and a selected list of words that are frequently observed in questions (e.g., color, time, guy).

**(a)** Say Tech Questions


**(b)** Analyst Questions

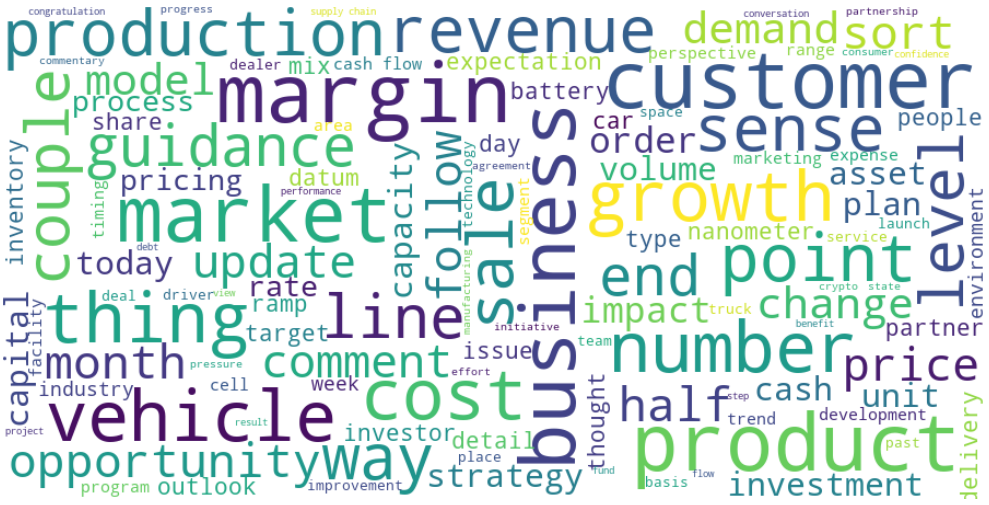

**Table 1**
Descriptive statistics
This table presents descriptive statistics for the sample used to estimate Equation (1), which studies the determinants of Say Tech adoption. The sample constitutes the full CRSP-Compustat universe combined with data from I/B/E/S, Raven Pack, Seeking Alpha, and TAQ. Panel A contrasts the characteristics of firms that adopt Say Tech and those that do not. Our sample includes 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 upvote count, the market value of shares represented by upvotes, and the Gini coefficient. Appendix A provides detailed variable definitions.

Panel A: Mean difference test

| | Say Tech | | Mean difference test: | |
|---|---|---|---|---|
| | Adopters | Non-adopters | $\Delta$ | $t$-statistic |
| Institutional ownership | 0.459 | 0.578 | −0.118 | −4.62*** |
| 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 | 4.93*** |
| 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 | 2.423 | 0.344 | 3.33*** |
| Size | 8.083 | 6.705 | 1.378 | 8.06*** |
| Book-to-Market | 0.555 | 0.590 | −0.035 | −0.64 |
| Firm age | 1.964 | 2.783 | −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 characteristics 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 created 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) | |
| *Ownership characteristics:* | | | | |
| Institutional ownership | $-2.528^{**}$ | $(-2.28)$ | $-1.998^{**}$ | $(-1.99)$ |
| Breadth of ownership | $-0.401^{*}$ | $(-1.65)$ | $-0.084$ | $(-0.48)$ |
| *Trading activity:* | | | | |
| Turnover | $-8.508^{**}$ | $(-2.53)$ | $-3.865$ | $(-0.85)$ |
| # of retail trades | $1.131^{***}$ | (6.61) | $1.154^{***}$ | (4.36) |
| # of retail trades as a % of all trades | $-1.667$ | $(-0.63)$ | $-2.768$ | $(-0.94)$ |
| *Coverage characteristics:* | | | | |
| IBES coverage | $-0.271$ | $(-0.91)$ | $-0.218$ | $(-0.62)$ |
| Sell recom. percentage | $2.778^{**}$ | (2.19) | $2.529^{*}$ | (1.95) |
| Seeking Alpha coverage | $0.341^{**}$ | (2.49) | $0.292^{**}$ | (2.35) |
| Media coverage | $-0.164$ | $(-0.92)$ | $-0.027$ | $(-0.14)$ |
| *Firm characteristics:* | | | | |
| Size | | | $-0.108$ | $(-0.48)$ |
| Book-to-Market | | | $0.447^{***}$ | (2.66) |
| Firm age | | | $-0.900^{***}$ | $(-3.56)$ |
| Profitability | | | $-0.116$ | $(-0.06)$ |
| Return volatility | | | $-13.948^{**}$ | $(-2.09)$ |
| Return | | | $-0.348^{*}$ | $(-1.75)$ |
| Consumer facing | | | $-0.046$ | $(-0.11)$ |
| Meme stock | | | 0.846 | (1.06) |
| Calendar Quarter FE | Yes | | Yes | |
| Observations | 62,698 | | 62,698 | |
| Pseudo R-Square | 0.292 | | 0.331 | |

**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 each model present the parameter estimates and $t$-statistics in parentheses, respectively. The $t$-statistics are based on standard errors clustered by forum. All 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.

| Dependent variable = | Number of users who upvoted | |
|---|---|---|
| *Question sentiment:* | | |
| Question tone | 0.012 | (0.56) |
| *Information acquisition intensity:* | | |
| Question length | 0.031 | (0.54) |
| Question marks | 0.167*** | (6.86) |
| *Sophistication:* | | |
| Numeric | 0.219*** | (9.24) |
| Financial words | 0.011 | (0.44) |
| Question complexity | 0.011*** | (2.61) |
| *Horizon:* | | |
| Short-horizon | 0.147** | (2.08) |
| Forward-looking intensity | −0.027 | (−0.87) |
| *Risk:* | | |
| Risk-related intensity | 0.088** | (2.11) |
| *ESG:* | | |
| ESG statement (FinBERT) | −0.107*** | (−3.71) |
| Forum FE | Yes | |
| Observations | 81,085 | |
| Pseudo R-Square | 0.091 | |

**Table 4**
Management choice to answer a retail question
This table presents descriptive statistics and the estimation results of Equation (3) using fixed-effects logistic model (within-forum). The dependent variable represents an indicator variable that equals one for Say Tech questions that managers answer. Appendix A provides detailed definitions of the variables employed in the estimation. 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.

| Dependent variable = | I(Question answered) | | | |
|---|---|---|---|---|
| | (1) | | (2) | |
| *Crowd input:* | | | | |
| Upvotes | 1.527*** | (13.72) | 1.534*** | (13.49) |
| *Question sentiment:* | | | | |
| Question tone | | | −0.099 | (−1.17) |
| *Information acquisition intensity:* | | | | |
| Question length | | | 0.277*** | (2.75) |
| Question marks | | | 0.152** | (2.03) |
| *Sophistication:* | | | | |
| Numeric | | | 0.183*** | (3.10) |
| Financial words | | | 0.035 | (0.52) |
| Question complexity | | | 0.039*** | (4.06) |
| *Horizon:* | | | | |
| Short-horizon | | | −0.029 | (−0.14) |
| Forward-looking intensity | | | −0.064 | (−0.57) |
| *Risk:* | | | | |
| Risk-related intensity | | | 0.390*** | (3.38) |
| *ESG:* | | | | |
| ESG statement (FinBERT) | | | −0.375*** | (−4.37) |
| Forum FE | Yes | | Yes | |
| Observations | 79,968 | | 79,968 | |
| Pseudo R-Square | 0.534 | | 0.545 | |

**Table 5**
Retail trading activity and Say Tech
This table reports the estimation results of Equation (4). The dependent variable in the first model equals the number of trades executed by retail investors and in the second model it equals retail trade volume scaled by total trading volume. *Say Tech Quarter* equals one after the firm starts participating in Say Tech and zero otherwise. The confounding event variables equal one when there is a 10-K/Q filing, 8-K filing, guidance, analyst forecast, and analyst stock recommendation for the corresponding day. $t$-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.

| Dependent variable = | Retail trade: | |
|---|---|---|
| | Number | % of trading volume |
| Say Tech Quarter | −0.089 | −0.012 |
| | (−0.40) | (−1.34) |
| Earnings | 0.065 | 0.004 |
| | (0.55) | (1.25) |
| 10-K/Q | 0.229 | 0.012*** |
| | (1.46) | (2.85) |
| 8-K | 0.172** | 0.006*** |
| | (2.21) | (2.76) |
| Guidance | 0.211* | 0.018*** |
| | (1.95) | (4.33) |
| Forecast | 0.149*** | 0.003** |
| | (6.36) | (2.29) |
| Recommendation | 0.247*** | 0.009*** |
| | (4.41) | (4.35) |
| Cohort × Firm FE | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes |
| Observations | 86,564 | 86,564 |
| Pseudo R-Square | 0.821 | |
| Adjusted R-Square | | 0.629 |

**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* equals one after the firm starts participating in Say Tech 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. *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.

| Dependent variable = | CAR (+1, +5) | CAR (+6, +10) | CAR (+11, +15) | CAR (+16, +20) |
|---|---|---|---|---|
| Say Tech Quarter × Retail OIB | 0.015** | −0.003 | 0.004 | 0.006 |
| | (2.07) | (−0.50) | (0.57) | (1.03) |
| Say Tech Quarter × Institutional OIB | −0.001 | 0.001 | 0.004* | −0.003 |
| | (−0.39) | (0.18) | (1.66) | (−1.16) |
| Say Tech Quarter | −0.010** | −0.009** | −0.008* | −0.002 |
| | (−2.50) | (−2.46) | (−1.88) | (−0.59) |
| Retail OIB | −0.001 | 0.000 | 0.000 | 0.003 |
| | (−0.44) | (0.03) | (0.02) | (1.62) |
| Institutional OIB | −0.001 | −0.002* | −0.002*** | 0.000 |
| | (−1.03) | (−1.90) | (−2.96) | (0.19) |
| Cohort × Firm FE | Yes | Yes | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes | Yes | Yes |
| Observations | 73,233 | 73,228 | 73,219 | 73,198 |
| Adjusted R-Square | 0.053 | 0.052 | 0.052 | 0.055 |

**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 Say Tech (Non Say Tech) 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). 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 participation* equals one after the firm starts participating in Say Tech and zero before that. The confounding event variables equal one when there is a 10-K/Q filing, 8-K filing, guidance, analyst forecast, and analyst stock recommendation for the corresponding day. All estimations include *Cohort* × *Firm* and *Cohort* × *Quarter* fixed effects. $t$-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 | Δ | $t$-statistic |
|---|---|---|---|---|
| Any filing | 310.45 | 152.29 | 158.16 | 23.10*** |
| 10-K/Q | 35.52 | 20.93 | 14.58 | 14.77*** |
| 8-K | 25.72 | 17.64 | 8.07 | 12.78*** |
| Other | 235.77 | 107.88 | 127.89 | 22.72*** |

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

| | Post | Pre | Δ | $t$-statistic |
|---|---|---|---|---|
| Any filing | 234.87 | 135.56 | 99.31 | 31.42*** |
| 10-K/Q | 31.27 | 18.34 | 12.93 | 26.88*** |
| 8-K | 21.03 | 13.67 | 7.36 | 26.15*** |
| Other | 172.27 | 99.75 | 72.52 | 27.28*** |

Panel C: Estimation results

| Dependent variable = | Number of user requests for: | | | |
|---|---|---|---|---|
| | Any filing | 10-K/Q | 8-K | Other |
| Say Tech Quarter | 0.180*** | 0.437*** | 0.121* | 0.130* |
| | (2.75) | (3.13) | (1.68) | (1.78) |
| Earnings | 0.307*** | 0.851*** | 0.738*** | 0.106 |
| | (4.11) | (8.15) | (7.80) | (1.17) |
| 10-K/Q | 0.300*** | 0.624*** | −0.220 | 0.161 |
| | (3.92) | (8.84) | (−1.57) | (1.58) |
| 8-K | 0.279*** | −0.226*** | 0.760*** | 0.252*** |
| | (4.39) | (−3.60) | (10.61) | (3.43) |
| Guidance | −0.121 | −0.132 | 0.145 | −0.177 |
| | (−1.36) | (−0.98) | (1.36) | (−1.59) |
| Forecast | 0.063** | 0.175*** | 0.283*** | 0.034 |
| | (2.11) | (3.38) | (8.27) | (1.05) |
| Recommendation | 0.106** | 0.036 | 0.110** | 0.113** |
| | (2.33) | (0.84) | (2.10) | (2.56) |
| Cohort × Firm FE | Yes | Yes | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes | Yes | Yes |
| Observations | 70,070 | 68,467 | 69,349 | 70,070 |
| Pseudo R-Square | 0.427 | 0.595 | 0.413 | 0.384 |

**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. 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 × Firm and Cohort × Quarter fixed effects. The variables of interest in Panel B, C, and D are an indicator variable that equals one when the earnings call is preceded by an earnings forum in the Say Tech platform ($\mathbb{I}$*(Earnings Forum)*), an indicator variable that equals one when management answers questions from retail investors during the earnings call ($\mathbb{I}$*(Retail Investor Question)*), and the number of retail investor questions answered during the earnings call (*# of Retail Investor Questions*). Appendix A provides detailed definitions of the variables employed in the estimation. 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: Descriptive statistics

| | Mean | Median | Std. Dev. | 1st Quartile | 3rd Quartile |
|---|---|---|---|---|---|
| *Analyst:* | | | | | |
| Count | 5.6 | 5.0 | 2.8 | 4.0 | 8.0 |
| Question count | 14.1 | 14.0 | 6.7 | 10.0 | 18.0 |
| Average question length (# of words) | 66.1 | 65.0 | 20.4 | 54.0 | 77.0 |
| *Call segment length (# of words):* | | | | | |
| Presentation | 2,971.5 | 2,904.0 | 1,128.6 | 2,205.0 | 3,675.0 |
| Q&A | 4,069.0 | 3,943.5 | 1,732.8 | 2,717.5 | 5,311.5 |

Panel B: Analysis of earnings calls preceded with and without Say Tech earnings forums for treated and control firms

| | Analyst: | | | Call segment length - | |
|---|---|---|---|---|---|
| Dependent variable = | Count | Question count | Avg. question length | Presentation | Q&A |
| $\mathbb{I}$(Earnings Forum) | $-0.234^{***}$ | $-0.224^{***}$ | $-0.037$ | $-0.000$ | 0.081 |
| | $(-3.23)$ | $(-2.97)$ | $(-1.11)$ | $(-0.00)$ | (1.39) |
| Cohort × Firm FE | Yes | Yes | Yes | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,031 | 1,031 | 1,031 | 1,031 | 1,031 |
| Pseudo R-Square | 0.228 | 0.270 | 0.330 | 0.739 | 0.769 |

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

| | Analyst: | | | Call segment length - | |
|---|---|---|---|---|---|
| Dependent variable = | Count | Question count | Avg. question length | Presentation | Q&A |
| $\mathbb{I}$(Retail Investor Question) | $-0.256^{***}$ | $-0.258^{***}$ | $-0.016$ | 0.005 | 0.067 |
| | $(-3.50)$ | $(-3.55)$ | $(-0.47)$ | (0.07) | (1.27) |
| Cohort × Firm FE | Yes | Yes | Yes | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,031 | 1,031 | 1,031 | 1,031 | 1,031 |
| Pseudo R-Square | 0.228 | 0.271 | 0.330 | 0.739 | 0.769 |

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

| | Analyst: | | | Call segment length - | |
|---|---|---|---|---|---|
| Dependent variable = | Count | Question count | Avg. question length | Presentation | Q&A |
| # of Retail Investor Questions | $-0.057^{***}$ | $-0.054^{***}$ | $-0.010$ | $-0.005$ | 0.015 |
| | $(-4.34)$ | $(-3.83)$ | $(-1.28)$ | $(-0.56)$ | (1.64) |
| Cohort × Firm FE | Yes | Yes | Yes | Yes | Yes |
| Cohort × Quarter FE | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,031 | 1,031 | 1,031 | 1,031 | 1,031 |
| Pseudo R-Square | 0.229 | 0.272 | 0.330 | 0.739 | 0.769 |

**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 (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 information acquisition intensity (Information supply), sophistication, horizon, risk, and ESG focus. Each variable is defined in Appendix A. 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.

Panel A: Linguistic feature analyses of questions

| Dependent variable = | I(Retail Question) | | | |
|---|---|---|---|---|
| | (1) | | (2) | |
| *Question sentiment:* | | | | |
| Question tone | −1.076*** | (−9.72) | −1.071*** | (−9.74) |
| *Information acquisition intensity:* | | | | |
| Question length | −1.075*** | (−6.64) | −1.078*** | (−6.70) |
| Question marks | 0.248*** | (3.13) | 0.264*** | (3.25) |
| *Sophistication:* | | | | |
| Numeric | −0.191*** | (−3.50) | −0.192*** | (−3.40) |
| Financial words | 0.300*** | (7.25) | 0.288*** | (6.78) |
| Question complexity | 0.055** | (2.13) | 0.055** | (2.08) |
| *Horizon:* | | | | |
| Short-horizon | −0.675*** | (−2.91) | −0.693*** | (−2.85) |
| Forward-looking intensity | 2.303*** | (6.09) | 2.366*** | (6.33) |
| *Risk:* | | | | |
| Risk-related intensity | −1.001*** | (−3.91) | −1.000*** | (−3.86) |
| *ESG:* | | | | |
| ESG statement (FinBERT) | 1.275*** | (8.33) | | |
| Climate change | | | 1.127*** | (3.81) |
| Pollution and waste | | | 0.704 | (1.26) |
| Corporate governance | | | 2.109*** | (7.34) |
| Natural capital | | | 1.592* | (1.96) |
| Product liability | | | 0.800* | (1.80) |
| Human capital | | | −0.292 | (−0.70) |
| Business ethics and values | | | 1.680 | (1.09) |
| Community relations | | | 1.711*** | (3.91) |
| Call FE | Yes | | Yes | |
| Observations | 2,136 | | 2,136 | |
| Pseudo R-Square | 0.271 | | 0.287 | |

Panel B: Linguistic feature analyses of answers

| Dependent variable = | I(Answer to Retail Question) | | | |
|---|---|---|---|---|
| | (1) | | (2) | |
| *Answer sentiment:* | | | | |
| Answer tone | 0.229** | (2.56) | 0.210** | (2.40) |
| *Information supply:* | | | | |
| Answer length | −0.520*** | (−4.56) | −0.536*** | (−4.61) |
| Scriptedness | 4.572*** | (6.58) | 4.545*** | (6.57) |
| *Sophistication:* | | | | |
| Numeric | 0.060** | (2.35) | 0.059** | (2.34) |
| Financial words | 0.024 | (1.07) | 0.031 | (1.40) |
| Answer complexity | 0.050*** | (2.99) | 0.048*** | (2.84) |
| *Horizon:* | | | | |
| Short-horizon | −0.260** | (−2.06) | −0.206 | (−1.58) |
| Forward-looking intensity | 1.210*** | (4.13) | 1.240*** | (4.24) |
| *Risk:* | | | | |
| Risk-related intensity | 0.774** | (2.53) | 0.749** | (2.41) |
| *ESG:* | | | | |
| ESG statement (FinBERT) | 0.410*** | (4.07) | | |
| Climate change | | | 0.541*** | (2.65) |
| Pollution and waste | | | 0.059 | (0.25) |
| Corporate governance | | | 0.088 | (0.41) |
| Natural capital | | | 1.146** | (2.13) |
| Product liability | | | 0.818*** | (4.04) |
| Human capital | | | 0.245 | (1.39) |
| Business ethics and values | | | 0.358 | (0.49) |
| Community relations | | | 0.698*** | (2.73) |
| Call FE | Yes | | Yes | |
| Observations | 2,938 | | 2,938 | |
| Pseudo R-Square | 0.087 | | 0.093 | |