Firm Attention to Retail Investors

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Abstract

This paper investigates how firms allocate their attention to retail investors, exploiting two novel online interactive platforms in China where listed firms receive and answer to questions. We measure firms' attention to retail investors by textual analysis using both the speed and informativeness of the answers' contents. On average, firms incline to provide quicker and more detailed answers to positive questions, and during days when firms experience a surge in total question volume. Besides, growth firms, firms experiencing better stock performance in recent weeks, and those with lower agency conflicts opt to provide more comprehensive answers. At the managerial level, we find that, board secretaries, who are directly responsible for providing answers, exhibit better answering behaviour when they are male and of lower salaries. Overall, our analysis indicates that firms pay close attention to retail investors using their time strategically.

Keywords: retail investors; investor relation; interactive communication; textual analysis

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1 Introduction

Traditional asset pricing theory assumes that new information is continuously incorporated into prices. This assumption requires that investors allocate sufficient attention to news. However, in reality, attention is a scarce resource. The influence of limited attention on asset prices has been at the epicentre of a recent literature discussion, especially from the perspective of retail investors. Notably, Da, Engelberg, and Gao (2011) find a positive association between peaked retail investor attention and short-term stock performance. However, surprisingly, little is known about firms' attention to retail investors: given the strong asset pricing implications of retail investor attention, do firms pay their attention back toward retail investors? And if yes, what is driving their attention?

One major challenge in investigating these critical questions is to disentangle firm attention towards retail investors with the one towards other market participants. Despite efforts in preparing various forms of mandatory and voluntary disclosures can be regarded as firm attention, institutional investors and analysts are more likely to benefit from this firm attention. There is no guarantee that retail investors are aware of and are accessible to these filings and documents; they may also be hindered by the high information integration costs of deciphering financial data into investment signals (Blankespoor et al. (2019); Blankespoor, deHaan, and Marinovic (2020)).

Two analogous online Q&A platforms in China provide us with a compelling environment to address this issue. Retail investors can ask any questions interested in Chinese listed firms, and the board secretary, generally a board member in Chinese listed firms, is responsible for answering these questions. The only requirement for asking questions is an easy and free registration using a mobile phone number. This renders Hudongyi (`https://irm.cn.info.com.cn/`) and eHudong (`https://sns.sseinfo.com`) the two mostly welcomed information communication platforms in China, a jurisdiction with the largest population of retail investors around the globe (Jones et al. (2022)). The benefits of using these platforms are four-folded.

First, these are innovation platforms where retail investors initiate conversations with public firms. Unlike the traditional channel where retail investors passively receive firms' information, they can

speak on topics they are most interested in. Although their counterparties, such as institutional investors and brokerage analysts, can initiate such conversations through private interactions with listed firms (Green et al. (2014a); Solomon and Soltes (2015); Bushee, Gerakos, and Lee (2018); Bradley, Jame, and Williams (2022)), retail investors have few ways to attend these private interactions. These platforms provide them with a convenient and free opportunity to express their information demand. Second, even though one cannot rule out the probability that other market participants also use these online platforms, the related literature has reached a consensus that the users of these platforms concentrate on retail investors (Wu et al. (2022)). Therefore, these platforms can assist in separating firm attention to retail investors from the one to institutions or analysts. Third, some characteristics of these platforms help to build up the research environment. For instance, firm behaviours on these platforms are supervised by the two major Chinese stock exchanges and inherent legal obligations, which guarantees the creditability of the information supply. Firms have no authority to edit or delete questions received, enabling us to observe the full picture of firm preferences over answering various types of questions. Besides, users will receive timely notifications from the platforms once his/her question has been answered or there are updates for firms that he/she subscribes to, which make an immediate stock market reaction possible. Finally, compared with infrequent mandatory and voluntary disclosures, these online Q&A platforms provide a rich sample of frequent communications between retail investors and listed firms.

We collect all questions and answers on these Q&A platforms from their inception in January 2010 to June 2022. After cleaning, the final sample comprises over 3 million observations, spanning 3,984 Chinese A-share listed firms, which represents approximately 82.37% of all stocks that have ever been listed during our sample period. Within the 12-year sample period, a total of 320,472 unique users participated, with an average of 9.63 question posted by each user. Besides, retail investors do not allocate their attention evenly across industries; industries related to technologies, including pharmaceutical, electronic, and manufacturing industries, receive most questions from retail investors. Figure 1 illustrates the increasing embrace of these online Q&A platforms by retail investors during periods when smart device became more accessible to the general public. Question frequency concentrates around years when there is exacerbated uncertainties in the underlying economic conditions. The surge in the volume of questions around year 2015 and year 2020 is

correlated with the 2015-2016 Chinese stock market turbulence and the outbreak of COVID-19 pandemic around year 2020.

We start our empirical study by proposing two categories of quantitative metrics to measure the level of firm attention paid to retail investors. The first category is the informativeness of the answer, captured by the average of textual similarities of an answer with its preceding ones within one-month periods. We term this variable 'answer similarity'. This variable will be high if firms provide duplicated answers towards distinct questions, thus reflecting a potential 'no-answer' behaviour (Gow, Larcker, and Zakolyukina (2021)). Common examples of duplicated answers within our sample include 'thank you for your question' or 'thank you for your attention' without any question-related contents. To address the possibility that the answer similarity arising from similar questions, we introduce another measure, 'similarity difference', calculated as the difference between an 'answer similarity' and the corresponding 'question similarity'. On average, answers are more similar with each other than questions: the average 'answer similarity' and 'question similarity' is 62.30% and 58.41%, respectively.

The second category is the speed of the answer, measured by the time gap between an answer and its corresponding question. This metric is innovative in this context, since the traditional interactions between listed firms and analysts or institutional investors predominantly occur in a real-time manner, which means the effort allocated for preparation beforehand remains unobservable. Since firms have no ex-ante expectations over the specific questions they receive from retail investors on these online Q&A platforms, this variable fully reflects the total time spent, and therefore effort paid, by firms preparing for an answer.

We start to explore factors that shape firms' decisions over the extent of attention paid to retail investors. To begin with, we anticipate that firms exhibit distinct preferences over questions of different characteristics. For instance, firms opt to pay more attention to positive questions in order to convey positive signals to retail investors and boost retail investor confidence, particularly given the limited downward pressure exerted by retail investors in China due to short selling constraints. Empirical evidence supports this hypothesis, that positive questions, on average, receive

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more comprehensive answers delivered with faster speed. Specifically, when questions carry positive sentiment, firms accelerate their response by an average of 0.066 calendar days and reduce the answer similarity by 0.068%. Besides, firms tend to provide more detailed answers when they receive an abnormal surge of questions on a specific day, evidenced by an average decline of 0.082% in answer similarity with each unit of increase in question volume. Such surge in question volume may be correlated with specific important corporate events, indicating that firms allocate more attention to retail investors when such events occur. This interpretation is further supported by the positive correlation between firm attention and a dummy variable indicating whether a question is asked within 7-day window of a quarterly earnings announcement. Firms provide more comprehensive answers when questions are initiated closely to this important corporate event.

We then investigate the influence of firms' management structure and ownership structure on their attention to retail investors. Agency theory (Jensen and Meckling (1976)) predicts a decline in investor relationship investment if there is a robust conflict of interest between firm management and shareholders. We study this hypothesis by examining the association of firm attention with both the top executive holding ratio and the institution holding ratio. Our finding reveals a positive association between top executive holding and firm attention, consistent with the interpretation that firms incline to stimulate favourable policies aligning with shareholder interests when top executives themselves are major blockholders. The association between firm attention and institution holding is moderate, however, suggesting that on average institutions opt to maintain their relative information advantages to retail investors, treating the online Q&A platforms where retail investors concentrate as a secondary information venue.

Furthermore, we examine the influence of firm financials on the level of firm attentions, anticipating that firms at distinct stages within business cycles may exhibit varying preference. We find that growth firms, indicated by lower book-to-market ratios, on average, pay more attention to retail investors. This empirical finding is consistent with the notion that growth firms have the initiative to increase their public exposure to retail investors, in order to increase the possibility for being in retail investors' investment decision pools. Besides, since board secretaries are the personals responsible for answering retail investors' questions by mandating regulations, we explore

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the influence of board secretary characteristics, namely, their average age, gender, and salary, to the degree of comprehensiveness of their answers. Surprisingly, our findings indicate that, on average, male secretaries with lower salary tend to provide answers of better quality.

Finally, we anticipate a statistically significant relationship between the level of firm attention and the current market condition that firm experiences. Firms may engage more actively in providing high-quality answers when experiencing outstanding stock performance, if they anticipate that their behaviour will influence retail investors' perception of the firm, and consequently maintain a positive stock momentum. Consistent with this hypothesis, we find a positive relationship between the average past week stock return that firm experiences with the level of firm attention. Besides, firm tend to provide answers of better quality when the average trading volume is decreasing, potentially to simulate retail trading by conveying positive images for investor relations.

This paper contributes to several literature streams. First, there is a gap of explaining whether and the reason why a listed firm may pay attention to retail investors' requests, given that retail investors have far less influential voting power. Previous literature instead focuses over listed firms' interactions with other major market participants, such as interaction with analysts in the setting of Q&A section in the earnings conference call (Mayew, Sharp, and Venkatachalam (2013); Dzieliński, Wagner, and Zeckhauser (2017); Cohen, Lou, and Malloy (2020); Gow, Larcker, and Zakolyukina (2021)), broker-hosted investor conference (Green et al. (2014a)) and analyst/investor day (Kirk and Markov (2016)); and interaction with institutional investors in the context of private meetings (Solomon and Soltes (2015); Bushee, Gerakos, and Lee (2018)) and non-deal roadshows (Bradley, Jame, and Williams (2022)). Traditionally, the communication between listed firm and retail investors is of one-way direction, that retail investors passively receive information that firms disclose and generally are not capable to initiate communications with firm management in settings mentioned above. The online Q&A platform examined in this paper therefore provides us an opportunity to examine the direct communication between listed firms and retail investors.

Second, this paper contributes to the attention literature. Attention is a scarce resource, not only to investors but also to firms. Current literature focuses more over how different investors pay

time-varying attention to firms and the corresponding economic consequence (Barber and Odean (2008); Hirshleifer, Lim, and Teoh (2009); DellaVigna and Pollet (2009)). In this paper, we fill the literature gap by examining the other direction. Da, Engelberg, and Gao (2011) and Ben-Rephael, Da, and Israelsen (2017) use investors' online activities, the Google and Bloomberg search volume for retail and institutional investors, respectively, to directly measure investor attention. We therefore believe the various answering behaviours by listed firms on these online Q&A platforms may analogously represent firms' different levels of attention to retail investors. One may argue that firms will always pay limited attention to relatively more influential institutional investors. However, our empirical findings suggests that firms with less agency conflicts incline to stimulate policies in favour of retail investor interests, and firms at earlier stages of their business cycle tend to demand more retail investor attention.

Lee and Zhong (2022) is the paper that is mostly related to our work by examining the same online Q&A platforms. Instead, they focus more over investors' perspective, by examining what's the category of information that investors care the most and whether such platforms help reduce investors' information integration and processing costs. Our paper instead takes a firm perspective and examines the various factors that influence firms to pay excessive attention to retail investors.

2 Sample

2.1 Background of the Online Q&A Platforms

The two analogous online Q&A platforms that we use in this study are Hudongyi (`http://irm.cn info.com.cn/`) and eHudong (`https://sns.sseinfo.com`), that are initiated and supervised by two major Chinese stock exchanges, Shenzhen stock exchange (SZSE) and Shanghai stock exchange (SSE), respectively. Since the launch of these two platforms on January 1, 2010, and July 5, 2013, they have become one of China's most welcomed and embraced communication platforms. Most public firms listed on SZSE and SSE have actively participated on these platforms.

On these platforms, after easy registration with mobile phone number, users could post questions

for free on the community page of a listed firm they are interested in. Questions are not submitted to the listed firms directly, but to the exchange. The stock exchange will perform a cursory review of the question first before the question is shown public, but we are unaware of any instance where a question may fail such a review. Since the question is not posted directly to the listed firm, firms have no authority to edit or delete any questions received. In other words, firms cannot intentionally pick the most favourable questions, unlike the situation where firms could be picky with analysts in the earnings conference environment (Cohen, Lou, and Malloy (2020)). Although any question posted needs to be answered, firms still have the room of replying either diligently or perfunctorily. Exploring the cause and consequence of such answering behaviour therefore becomes our main research focus.

Besides, firms are legally responsible for any content posted on the platform. Exchanges require firms' board secretaries to be responsible for answering these questions to ensure the accuracy and credibility of all disclosed information. Additionally, exchanges keep monitoring firms' replies to ensure there is no substantial misleading information and will send comment letters to the firm if any suspicious behaviour is detected. These comment letters are publicly accessible to all investors. In most cases, firms are asked to publicly clarify any possibly misleading information brought forward by these comment letters to investors. Such screening effort ensures the credibility of information supply on these platforms.

Finally, the platform ensures most users are timely notified. Users will be notified by a text message immediately after his/her question has passed the review by the exchange and been made public, as well as when his/her question has been answered. Users can also subscribe to a specific firm and will be altered from his/her account (in the mobile app or the computer website) whenever a question has been posted/answered by the firm. This timely notification system ensures that information conveyed from the platform is possible to drive an immediate market reaction, and therefore any timely observed market reaction is attributed to activities on these platforms.

2.2 Full Sample

The primary dataset adopted in this study is from Chinese Research Data Services (CNRDS). The dataset enables us to identify the specific timing and content of questions and answers, the unique users ID that initiates the question, and the stock code and full name of firms being questioned. The sample period spans from January 2010 to June 2022, which therefore covers the entire possible observations given that the platforms were first introduced in 2010. We exclude all questions and answers with incorrect timestamps, where question occurs after its answer time. Besides, we also identify and remove some outliers, where the firm answers the question more than 100 days after the question is initially posted (i.e. more than 3 months). Such outlier observations only constitute 1.32% of the full sample. In instances where users accidentally post several questions with the identical content within close time intervals, we only retain the observation with longest answer. 93.27% of the questions receive official response from the listed firm. The final sample has 3,002,925 observations, covering 3984 A-share stocks from both Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). Given that there are totally 4837 A-share stocks in the sample period including delisted firms, there are 82.37% of them ever being questioned.

Table 1 reports the distribution of questions according to industry categories. As expected, retail investors don't allocate their attention uniformly across industries. Notably, industries linked to technologies, either pharmaceutical technology, electronic or manufacturing technology, command the majority of retail investors' attention. Among all 31 classifications, the top 10 collectively account for 66.54% of total questions posed by retail investors.

Figure 1 illustrates the distribution of questions according to their year of publication. The observed shift of frequency from year 2010 to 2015 signifies several trends. First, it reflects the increasing popularity of the online platforms among retail investors with higher penetration rate of smart devices. Second, it correlates with the prevailing economic conditions. The 2015-2016 Chinese stock market turbulence amplified market volatility and exacerbated negative sentiment among retail investors. This surge in market turbulence and investor anxiety drove an increase in the number of questions directed towards listed firms. The similar upsurge in question frequency after year 2020 may also

be attributed to the heighten panic among retail investors due to the outbreak of the COVID-19 pandemic. The economic uncertainties stemming from the pandemic prompted retail investors to seek more information from listed firms.

Table 3 reports the summary statistics for key variables employed in our empirical analysis. To begin with, we determine the length of question and answer as the number of valid Chinese characters, which are identified through a Chinese text segmentation module. We eliminate all stop-words including white spaces and punctuation, and additionally exclude frequent yet inconsequential greeting expressions in the context of Q&A communications (e.g. 'hello', 'dear secretary', 'thank you'). The average length of question and answer are 35.77 and 43.09 characters, respectively. This finding provides preliminary evidence of substantial information contained within the online conversations. Moreover, we observe that, on average a listed firm receives 4.236 questions per day, while the firm in turn provides 9.687 answers per day. This pattern is consistent with the notion that board secretaries typically aggregate questions into groups rather than delivering all responses immediately.

3 Measuring Firms' Attention to Retail Investors

To quantitatively measure the firms' attention to retail investors, we purpose two categories of novel characteristics of the questions asked by retail investors and answer provided by the firm secretary. The first category describes the informativeness of the answer, and the second category describes the speed of the answer.

3.1 Informativeness of the answer

Within sample, we observe a phenomenon where answers are duplicated across different questions. For example, 'thank you and happy new year' may be provided across a range of distinct questions during the new year periods. These repetitive answers should be regarded of minimum informational value, and therefore firms providing such answers are providing least attention to retail investors. To capture this answering behaviour quantitatively, we calculate the average textual similarity of one specific answer to all its preceding ones for the same firm over a one-month window. To guarantee an adequate number of questions and answers is used for most firms, we choose the length

of the estimate window to be one month, and we exclude a small proportion of observations when there are less than three questions within that estimate window.

The resulting average similarity score is used as a key measure for firm attention, which we term 'answer similarity'. A high answer similarity indicates a low level of informativeness, and consequently, a low level of firm attention. To eliminate the possibility that a high answer similarity is attributed by a high question similarity and therefore does not necessarily indicate a bad answering behaviour, we calculate another variable 'similarity difference' as the difference between the 'answer similarity' and the 'question similarity', which is calculated under the same logic. A less informative answer is expected to exhibit both low answer similarity and low similarity difference.

Our approach is inspired by the methodology adopted by Gow, Larcker, and Zakolyukina (2021) in their examination of questions that receive 'no answer' in the context of the earnings conference calls. In their work, 'no answer' questions are identified through the presence of specific phrases in responses, that are refusal (e.g. 'we don't disclose these numbers') and inability (e.g. 'I don't know'). We improve the accuracy of our variable by calculating the cosine textual similarity through a state-of-the-art large language model, finBERT, as developed by Huang, Wang, and Yang (2023), tailored to the finance domain in the Chinese context. This specialization of finBERT improves from earlier algorithm such as the original BERT by confining the training sample on financial communication text and surpasses other earlier neural word embedding models such as word2vec by learning similarities of words based on context and surrounding words. In this new AI era, fin-BERT has been adopted among many finance researchers, such as Cao et al. (2023) and Curti and Kazinnik (2023). For robustness, we recompute the aforementioned variables using the word2vec algorithm, and the correlation matrix is displayed as Table 2. As anticipated, there is a strong positive correlation among variables calculated using both algorithms. This consistency cross algorithms provides preliminary evidence of the robustness and reliability of our empirical analysis.

From Table 3, a key observation is that the similarity derived from finBERT algorithm is on average higher compared to those generated by the Word2Vec algorithm, despite the strong positive correlation observed between these two methods. This provides the initial evidence that finBERT

excels in capturing textual similarity within context of financial communications. Besides, answer similarity on average is higher than question similarity under both algorithms. Again, this observation aligns with our interpretation that board secretary provide answers in an aggregated manner, while questions exhibit less similarity, given stronger possibility that they originate from different retail investors. Finally, similarity difference, despite conceptually tied to answer similarity, displays a very different distribution pattern, highlighting the importance of treating it as an independent metric of research.

Another potential candidate for measuring answer informativeness is the textual similarity within the pair of a question and its corresponding answer. Answers that are less similar with their questions, implied by a lack of shared keywords, may be deemed irrelevant from the question, and thus considered as of low informativeness. However, we opt not to include this variable in our analysis due to situations in which a question is concise and thus short in length while the corresponding answer is extremely lengthy and highly informative. In this situation, the algorithm may erroneously report a low similarity score, since the number of keywords contained within answer far exceeds the one for questions, even though the answer may be the most comprehensive and valuable one.

3.2 Speed of the answer

The second category of firm attention measure that we purpose is the time gap between a question and the corresponding answer, quantified in calendar days, which we term as 'time gap'. This variable measures firm attention in terms of speed. We decide to construct the variable by the number of calendar days opposed to trading days, since certain corporate secretaries may opt to provide answers during non-trading days.

In the traditional interactions between the public firms and analysts or institutional investors, conversations predominantly occur in a real-time, face-to-face manner, which means responses from firms must also happen in real time. Firms need to allocate time and effort preparing the upcoming questions beforehand, and the total time spent by firms, which represents how seriously firms treat their analyst/investor relation, remains unobservable in these contexts. The online Q&A platforms employed in this study introduce a new dynamic, as firms lack ex-ante knowledge or expectation

regarding the specific questions they will receive from retail investors, at the same time they keep the flexibility on the timing of replying. Consequently, the total time firm spent from receiving questions to making replies will reflect the level of attention firms paid to retail investors.

As observed in Table 3, the average response time for board secretaries is approximately 5.109 calendar days. Notably, even at the 90th percentile of the response time distribution, questions receive their answers after 12 calendar days. This finding provides evidence highlighting the convenience and efficiency of these online Q&A platforms. Despite the large volume of questions that a firm receives every day, enquiries posted by retail investors receive quick responses. This is in line with the growing popularity of these platforms among retail investors. Besides, the speed of the answer exhibits a positive correlation with the informativeness of the answer, regardless of a modest magnitude due to different dimensions of measurement. Therefore, we anticipate observing the highest firm attention to retail investors in scenarios where answers are both highly informative and provided in less response time.

4   Factors that Influence Firm Attention

In this section, we propose four categories of variables that we believe will influence firms' decision over the level of attention they pay to retail investors: question and answer characteristics, agency conflicts, business cycle characteristics, board secretary characteristics, and market conditions.

4.1   Question and Answer characteristics

The first category of factors that we hypothesize to influence firm attention is question and answer characteristics, namely, the tone of the question (*tone*), the total number of questions and answers provided (*question no.* and *answer no.*, respectively), whether a question is posted in proximity of quarterly announcement periods (*near announcement*), and whether an answer is provided during non-business hours (*business time*).

This hypothesis focuses on the notion that firms will adjust the attention level based on various question and answer characteristics. For instance, the tone of the question, determined by

comparing the counts of positive and negative words, may serve as an indicator of the overall sentiment among retail investors. Extensive research has shown a strong association between investor sentiment and market reactions in various contexts, including traditional media such as newspapers (Tetlock (2007); Garcia (2013)); and social media, where retail investors interact with one another (Antweiler and Frank (2004); Chen et al. (2014)). Given the significant economic implications associated with investor sentiment, firms may exhibit distinct preferences in addressing positive versus negative questions. One possible direction is that firms will choose to pay more attention to positive questions and deliver more comprehensive answer, in order to convey positive signals to retail investors and enhance their confidence over firms, and thereby sustaining positive momentum in stock price performance. The possibility of this effect is higher by the fact that Chinese retail investors face constraints on short selling and therefore relatively hard to implement bearish sentiment through short selling, reducing the incentive for firms to provide a detailed clarification over negative questions. Conversely, in the context that negative questions indeed contribute to bearish market sentiment affecting stock performance, firms are likely to respond promptly with high-quality clarifications.

Besides, we anticipate that the total number of questions received on a specific day when a question is posted will influence the level of attention firms pay to retail investors. An abnormal surge in question volume may closely correlate with the aggregate amount of attention retail investors paid to listed firms driven during specific events (Da, Engelberg, and Gao (2011)), and therefore we expect firms will pay more attention to retail investors when such events occur. We consolidate this hypothesis by suggesting a similar relationship between firm attention and a question posed within a 7-day window of quarterly earnings announcements. Firms may allocate additional effort to provide comprehensive answers during these important corporate events.

Lastly, considering that stock exchanges mandate the board secretary to answer retail investor questions, his/her limited resources and time will impact the level of attention paid to retail investors. We introduce the variable, the total number of answers provided on a specific day when an answer is provided, to proxy the degree of workload of the board secretary. We also introduce a dummy variable, of whether an answer is provided in board secretaries' off-duty hours (earlier than

8am or later than 6pm on trading days, as well as full days for public holidays), to explore whether questions answered during such time are treated as a top priority by the firm.

Alternatively, it is plausible that question and answer characteristics will not influence firm attention level. Under this possibility, firms may perceive retail investor sentiment and attention as inconsequential noise that exhibits negligible influence over firm fundamentals, especially considering the traditional perception of retail investors being less sophisticated. Da, Engelberg, and Gao (2011) found a temporary surge in stock return with the concentration of retail investor attention, but such surge will be reverted to fundamental in just five days.

4.2 Agency Conflict

The second category of variables that we hypothesize to influence firm attention is agency conflicts, namely, top executive holding ratio (*top holdings*) and institutional ownership ratio (*institution*). This hypothesis builds on the notion that participants with significant voting power will impact firms' decisions over investment relations. For instance, we anticipate that firms with top executives holding more shares are inclined to formulate policies that align with the interest of retail investors. We also anticipate two distinct directions in the relationship between firm attention and institutional ownership. On one hand, despite the fact that institutional investors have various accessible methods to engage interactions with listed firms, such as private meetings (Solomon and Soltes (2015); Bushee, Gerakos, and Lee (2018)), broker-hosted investor conferences (Green et al. (2014b)), and non-deal roadshows (Bradley, Jame, and Williams (2022)), these interactions may be costly and infrequent, while sharing an online Q&A platform with retail investors may be a more cost-effective option. In such scenario, on average, firms with higher institutional ownership will exhibit a more favourable answering behaviour on these platforms. On the other hand, if firm attention is also a finite resource that different groups compete for, a high level of attention paid to retail investors may signify a reduced focus on institutional investors. To protect their information advantages, institutional investors may advocate less comprehensive answers to be provided to retail investors.

Another factor potentially associated with the level of attention paid to retail investors is the

quality of firms' public disclosures, indicated by the rating assigned by the stock exchange on which they operate (*sec rating*), as well as the total number of following analysts (*analyst*). High-quality public information indicates lower information asymmetry that retail investors face, and therefore firms may adjust their policies about the degree of voluntary exposures accordingly.

Alternatively, it is plausible that the degree of agency conflict will not influence firm attention to retail investors if both top executives and institutional investors opt to maintain their information advantages, rendering requests from retail investors inconsequential to their considerations.

4.3   Business Cycle Characteristics

The third category of variables that we hypothesize to influence firm attention is firm financials that represents their stages in business cycles. Our specific focus includes firm age (*firm age*), firm size (*size*), book-to-market ratio (*bm*), leverage-to-asset ratio (*leverage*), growth rate of total asset (*changeta*), return on equity (*roe*), for the most recent reported quarter at the time when firm provides an answer.

We believe firms in different stages of their business cycles will exhibit distinct preferences over the level of attention paid to retail investors. Prior evidence in the context of institutional investor relations suggests that larger, younger firms with greater growth opportunities are more likely to have investment decisions inclined to investor relationships (Kirk and Markov (2016)), and young firms attend more broker-hosted investor conferences to increase their investor exposure (Green et al. (2014b)). Analogously, we anticipate that the level of attention paid to retail investors also varies across different firm characteristics. For instance, small firms with more growth opportunities that exhibit pronounced information asymmetry may utilise these platforms to increase their public exposure; in contrast, large and mature firms may use the diligent answering behaviour to enhance their public images.

Alternatively, there is possibility that firms in various stages of business cycle collectively neglect retail investors' request, if they prioritize the investor relationship with institutional investors, given the latters' influential voting powers. For instance, firms that engage non-deal roadshows with their

institutional investors place significant information disadvantages to retail investors (Bradley, Jame, and Williams (2022)). Given the dispersed holdings and infrequent exercise of their voting rights, their influence may be deemed negligible in comparison.

4.4 Board Secretary Characteristics

To protect the integrity of information supply on the online Q&A platforms, stock exchanges mandate board secretaries to be the personal responsible in providing answers to retail investors. Therefore, it is reasonable to anticipate that the personal characteristics of board secretaries will significantly influence their answering behaviours. Empirical evidence has been found in the context of earnings conference calls in Dzieliński, Wagner, and Zeckhauser (2017), that the vagueness of answers provided to analysts during the Q&A section is closely linked to the speaker's personal style rather than some other time-varying characteristics. Three variables are purposed, namely, age (*secretary age*), gender (*secretary gender*) and annual salary (*secretary salary*). Given that an individual firm may have multiple board secretaries simultaneously, we take the average of these variables across all secretaries on board.

Previous empirical evidence finds that gender diversity influences corporate policies (see, for example, Huang and Kisgen (2013)). Hence, we expect an association between board secretary gender diversity and the level of attention they pay to retail investors, particularly considering the important role that board secretaries play in Chinese corporate boards. Similarly, as compensation structure indicates the motivation aspect addressed in agency theories, we expect a connection between board secretary's salary and firm attention.

4.5 Market Conditions

The last category of variables that we hypothesize to influence firm attention is market conditions, which are the average stock return firm experiences, volatility (*stock volatility*) and volume of stocks traded (*stock turnover*) when firms provide answers on these online Q&A platforms. We construct the stock performance variable over three distinct estimation horizons: the recent week (*past week return*), the recent month (*past month return*) and the recent quarter (*past quarter return*).

We anticipate a robust association between the recent market condition firm experiences with the level of attention paid to retail investors if firms can leverage such attention to influence the perception of retail investors about their potentials. One plausible scenario is that firms may allocate more attention to retail investors when they experience a positive stock performance, aiming to maintain the positive performance momentum. Conversely, another possibility is that firms will allocate more attention to retail investors when they experience a negative stock performance, seeking to reverse the undesirable trend. Additionally, firms experiencing low trading volume will enhance their attention level to increase their investor exposure.

Alternatively, there is the possibility that the market condition the firm experiences will have no discernible effect on the attention level if the attention paid by firm is not processed by retail investors when retail investors do not update their belief about stock potential even after receiving answers from board secretaries. If firm attention brings negligible economic consequences, then firms are unable to utilise such attention to manipulate their stock performance.

5 Results

In this section, we evaluate the extent to which various categories of characteristics are associated with five different attention measures. These measures include informativeness, answer similarities (*answer sim.*), and similarity differences (*sim. diff.*) under finBERT and Word2Vec algorithms. Additionally, we include a measure of speed, represented by the time gap between answers and questions (*time gap*). To prevent confusion in variable interpretation, we invert the sign of all attention measures. Consequently, positive coefficients presented in the tables indicate a positive relationship between the independent variable and firm attention.

5.1 Empirical Specification

Our regression analysis will be conducted by estimating the following model:

$$Attention_{i,j,t} = \alpha_{\text{day}} + \alpha_{\text{month}} + \alpha_{\text{industry}} + \beta Driver_{i,j,t} + \epsilon_{i,j,t}, \tag{1}$$

where $Attention_{i,j,t}$ is the level of manager attention for question i on firm j at day t, while the variable of interest is captured by $Driver_{i,j,t}$. The week day and month fixed effects (α_{day} and α_{month}) account for the possibility that questions concentrated over certain time horizons exhibit similar but unobservable patterns. We also include industry fixed effect (α_{industry}) to control for time-invariant differences across industries. Given that questions can relate to different dimensions of a given firm, we cluster the standard errors at the firm level to account for potential correlation across residuals ($\epsilon_{i,j,t}$) within a given firm.

5.2 Question and Answer Characteristics

As observed in Table 4, on average, positive questions receive more firm attention. Questions expressing positive sentiment demonstrate a positive correlation with both the informativeness of responses and the speed with which answers are supplied. This empirical finding is consistent with our initial hypothesis, suggesting that companies recognize the significance of retail investor sentiment. As a result, they tend to favor positive questions as a means to communicate positive signals to retail investors, thereby bolstering confidence in the company. In the context of the constraints on short selling faced by retail investors in China, firms may choose to overlook relatively negative questions due to the limited downward pressure exerted under these conditions.

Furthermore, our results reveal positive relationships between both the total number of questions received on a specific day (*question no.*) and the dummy variable for questions posted near quarterly announcements (*near announcement*) with firm attention. This observation aligns with the hypothesis that an unusual increase in retail investors' attention is potentially linked to significant corporate events. Consequently, firms are promoted to allocate additional efforts to provide comprehensive answers.

Finally, the total number of answers provided on a specific day (*answer no.*) and the dummy variable indicating whether an answer is provided during business hours (*business time*) serve as proxies for the workload of a board secretary. Notably, we found no significant relationship between answer number with firm attention, except for the time gap measure. The negative relationship indicates a successful simulation, suggesting that, on average, board secretaries spend less time

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on each answer when providing an abnormal number of answers on a specific day. However, the empirical result for the business time dummy warrants specific focus. Answers provided during business hours tend to exhibit better quality, conversely implying that answers provided during board secretaries' off-duties hours, on average, have less informativeness and slower speed. Answering during non-trading hours or when investor attention is mostly distracted (for example, midnights or weekends) would mitigate potential negative influences to the greatest extent (Hirshleifer, Lim, and Teoh (2009); DellaVigna and Pollet (2009); Huang, Huang, and Lin (2019); Peress and Schmidt (2020)).

5.3   Agency Conflict

Results in Table 5 reveal the story of agency conflicts. On average, firms with a higher ratio of top executive holdings tend to exhibit a better-answering behavior, by providing more comprehensive answers with faster speed. This empirical evidence is consistent with the notion that firms with fewer agency conflicts are inclined to formulate policies that align with the interests of retail investors.

Besides, there is a moderate relationship between institutional investor ownership and the level of firm attention. Specifically, the informativeness of firm attention demonstrates a moderate increase for measures calculated under the finBERT algorithm, although the statistical significance diminishes under robustness checks. Consequently, we interpret the result as institutional investors aiming to maintain their relative information advantages to retail investors. This suggests that activities on an online Q&A platform, where retail investors typically concentrate, may be of less concern to institutional investors. The negative coefficient of institutional ownership with the speed of answer also supports this interpretation, that institutional investors want firms to provide answers at a slower speed, such that they retain information advantages.

Finally, we find a positive association between the low information asymmetry measured by the total number of following analysts (*analyst*) and the informativeness of answers. This result suggests firms with low information asymmetry also take care to maintain relationships with retail investors by providing more informative answers on interactive platforms. Meanwhile, firms with

low information asymmetry may prepare the answers with more time and answer questions relatively slowly. Besides, there is no statistically significant relationships between the quality of voluntary disclosures (*sec rating*) and the informativeness of answers provided by listed firms. This result is consistent with the interpretation that answers provided on the online Q&A platforms are of quasi-mandatory nature rather than completely voluntary.

5.4   Business Cycle Characteristics

Results in Table 6 reveal the distinct degree of influence that different firm financials have on the level of firm attention. Notably, the book-to-market ratio and return on equity ratio emerge as particularly influential among all the variables examined. On average, growth firms exhibit better-answering behaviors. Growth firms, being in the initial stage of their business cycle, have a strong incentive to increase their public exposures, such that retail investors are aware of their existence and therefore increase the probability that retail investors will consider them in their investment decisions. They try to eliminate one of the biggest concerns that retail investors face when investing in growth stocks, that is the significant information asymmetry, by delivering a positive attitude as well as comprehensive and informative answers to retail investors.

Furthermore, the findings indicate a moderate relationship between the level of firm attention and other business cycle indicators, including firm size, age, and growth in total assets. Despite the statistical significance being relatively weak, the consistent sign of all coefficients aligns with the concept that firms in the early stages of the business cycle—characterized by smaller size, younger age, and a higher rate of investment growth—demonstrate a robust motivation to augment their public exposure. This strategic intent increases the likelihood that they will be taken into consideration within the limited pool of investment decisions made by retail investors.

5.5   Board Secretary Characteristics

Results in Table 7 indicate the varying degrees of association between three board secretary characteristics and the level of firm attention. The statistically negligible significance between secretary age and firm attentions suggests that age is not influencing board secretaries in their answering

behaviours. However, the negative and statistically significant coefficients between secretary gender and firm attention reveal that male-dominated secretaries tend to provide more comprehensive answers. This finding may align with the finding of the male-dominant managerial overconfidence, as explained in Huang and Kisgen (2013), that male-dominant boards are on generally more confident about investment outcomes, and therefore male-dominant secretaries may incline to provide more detailed information, particularly in response to questions related to these aspects.

Surprisingly, we also identify a negative and statistical significance between board secretary salary and firm attention. Secretaries with lower compensation, in fact, exhibit superior answering behaviours. This may suggest sub-optimal compensation structures of board members across various firms in China.

5.6   Market Conditions

Finally, Table 8 presents the regression results for market conditions indicators. In this analysis, we exclude the variable indicating the average past month's return due to its high correlation with the other independent variable, the average past week's return. Notably, a significant association is observed between a firm's recent stock performance, as reflected in the average past week's return, and the level of attention that firms dedicate to retail investors. On average, firms with stronger recent stock performance tend to provide answers of higher quality. Furthermore, the negative coefficient of the past week returns with firm attention, particularly when measured by speed, offers an alternative perspective. When firms encounter relatively poor stock performance, they demonstrate a tendency to provide answers at a faster speed relative to the information content. These results align with the concept that firms place value on the potential of informative answers delivered swiftly to alter investors' perception of the firm's value. By offering more comprehensive answers during periods of positive stock performance, firms sustain positive stock momentum. Conversely, providing swift but information-limited answers reveals a firm's intention to stabilize its performance, particularly during periods of low stock returns.

This interpretation is also consistent with the scenario where firms manipulate the level of attention paid to retail investors for the purpose of performance maintenance. Besides, despite the

disappearance possibly due to noises contained in a longer estimation horizon, the past quarter return also exhibits positive coefficients across the majority of firm attention measures, suggesting the same story of performance maintenance.

There is a moderate statistical relationship between the average trading volume that a firm experiences with the level of firm attention. Firms are inclined to provide informative answers during periods when they have less trading volumes, in order to stimulate trading by providing valuable information to retail investors. And on average, firms opt to provide answers with faster speed when they experience abnormal surges in trading volumes, in order to maintain that high volume.

6 Conclusion

In this paper, we investigate the motivations of listed firms to pay attention to retail investors' requests. Our study focuses on the answering behaviour of listed firms on two analogous Chinese online Q&A platforms, where retail investors can initiate direct communication with these firms. We introduce two metrics for measuring firm attention: the speed and the informativeness of answers, measured by the time difference between an answer and its corresponding question, and the answer textual similarities, respectively.

To begin with, we explore the influence of question and answer characteristics to firm attention. we find that firms pay more attention to positive questions, and during periods when there is an abnormal surge in the total volume of questions they receive from retail investors. We then find that growth firms, firms experiencing better stock performance in recent weeks, and those with lower agency conflicts tend to provide more comprehensive answers. Finally, at the managerial level, we observe that board secretaries, who are directly tasked with providing answers, demonstrate more effective answering behaviour when they are male and receive lower salaries. Overall, our analysis indicates that firms pay close attention to retail investors using their time strategically.

In summary, our findings address a gap in the existing literature by elucidating the motivations behind a listed firm's attention to retail investors' requests. Furthermore, our paper contributes to the attention literature by specifically investigating the focus of listed firms on retail investors, distinguishing itself from the current body of research that predominantly explores investors' attention to companies.

Figure 1: **Distribution of questions by years**. This figure illustrates the weighting of questions across years within the sample period (2010.01-2022.06). The decline in frequency for year 2022 therefore do not indicate a material decline in platform popularity among retail investors, but a consequence of being counted over only half a year horizon.
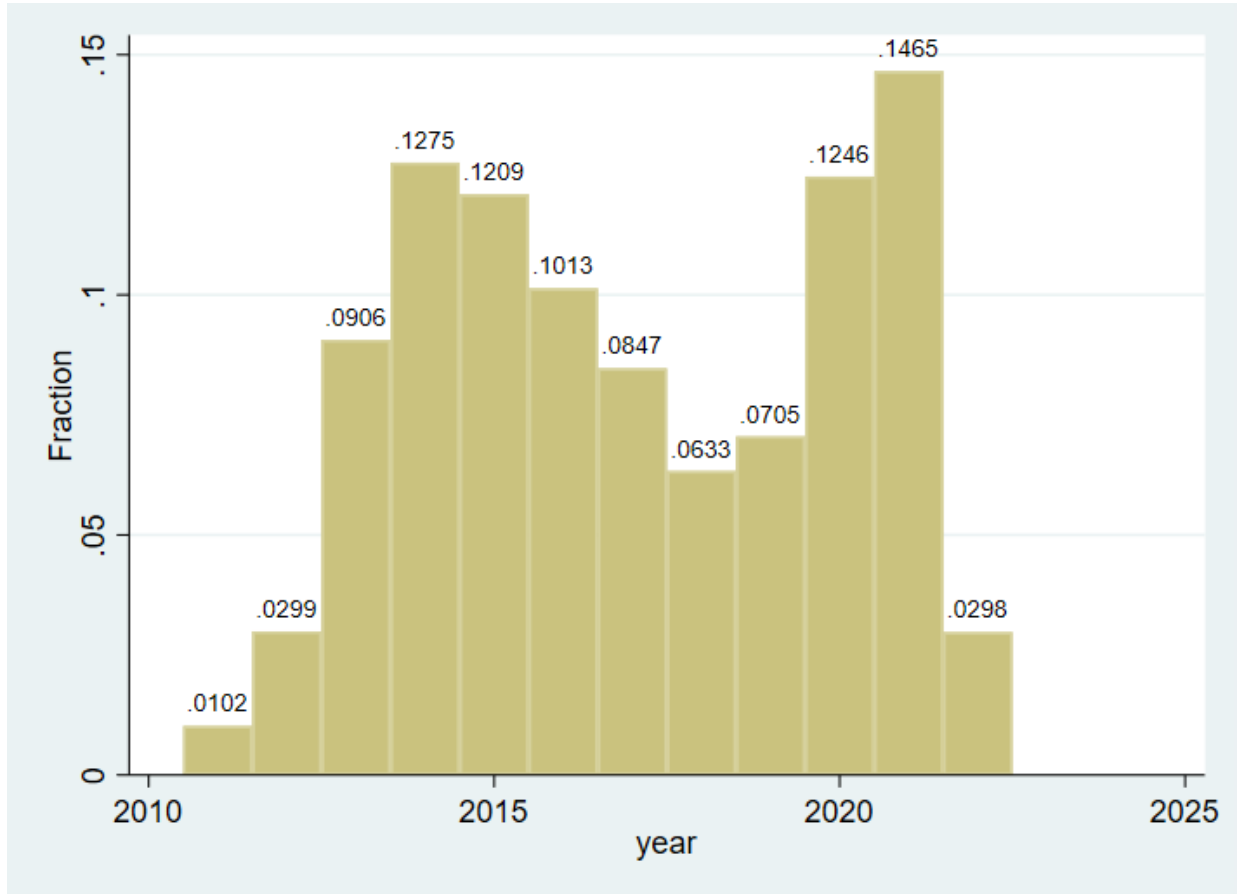
Table 1: **Top 10 Industry Concentration.** This table displays the top 10 industries which receive most question from retail investors on online Q&A platforms, and their corresponding frequency and proportions. Industries are determined according to the Shenwan industry classification standard, which classifies all A-share stocks on Shanghai Stock Exchange and Shenzhen Stock Exchange into 31 industries. For more information regarding Shenwan industry classification standard, please refer to link `https://www.swsresearch.com/institute_sw/allIndex/downloadCenter/industryType`.

Industry	Frequency	Proportion
Healthcare	328918	10.73%
Electronics	289218	9.44%
Computer	281245	9.18%
Machinery Equipment	233762	7.63%
Basic Chemicals	222416	7.26%
Electrical Equipment	213128	6.96%
Automotive	137596	4.49%
Media	121818	3.98%
Nonferrous metals	117225	3.83%
Food	93265	3.04%
Total	2038591	66.54%

Table 2: **Correlation matrix for firm attention.** This table reports the correlation coefficients across five variables measuring firm attention to retail investors: answer similarity and similarity difference, calculated under two different algorithms, finBERT and Word2Vec; and the time gap. The detailed definition of these variables can be found in Table A1.

		finBERT		Word2Vec		
		answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
finBERT	answer sim.	1				
	sim. diff.	0.724	1			
Word2Vec	answer sim.	0.820	0.551	1		
	sim. diff.	0.607	0.766	0.722	1	
	time gap	0.0575	0.0608	0.0439	0.0402	1

Table 3: **Summary Statistics.** This table displays several key statistic descriptions for variables, including mean, standard deviation, minimum, the maximum, skewness, kurtosis, 1th percentile, 10th percentile, 25th percentile, 50th percentile (median), 75th percentile, 90th percentile and 99th percentile. *question len.* and *answer len.* is the text length of a question and an answer, respectively; *tone* refers to the sentiment of a question; *time gap* is the difference in time between an answer to its corresponding question; *question no.* and *answer no.* is the total number of questions or answers received or replied by firms on a specific day; *institution* is the proportion of institutional holdings, and *top holdings* is the proportion of top executive holdings. Detailed description of all variables can be found in Table A1. All firm financials, including firm size (*firm size*), book-to-market ratio (*bm*), leverage ratio (*leverage*), growth in total assets (*changeta*) and return on equity (*roe*), are winsorized at 1% level to avoid any incorrect accounting records.

VARIABLES	(1) mean	(2) sd	(3) min	(4) max	(5) skewness	(6) kurtosis	(7) p1	(8) p10	(9) p25	(10) p50	(11) p75	(12) p90	(13) p99
question len.	35.77	31.76	0	1,716	3.356	60.52	4	9	14	25	47	81	134
answer len.	43.09	54.19	0	2,109	5.139	66.26	2	6	13	26	53	96	255
tone	0.491	0.500	0	1	0.0349	1.001	0	0	0	0	1	1	1
time gap	5.130	8.970	0.000336	100.00	4.797	34.16	0.0290	0.246	0.904	2.275	5.394	12.09	47.98
question no.	4.236	6.660	1	218	10.84	240.5	1	1	1	2	5	9	28
answer no.	9.687	14.12	1	408	7.990	146.6	1	1	3	6	11	22	64
firm size	22.46	1.130	20.09	25.70	0.429	3.098	20.09	21.08	21.70	22.36	23.14	23.98	25.67
past week return	1.45e-05	0.0301	-0.289	11.59	150.0	44,246	-0.0558	-0.0190	-0.00867	-0.000279	0.00803	0.0189	0.0600
past month return	0.000936	0.0173	-0.222	3.286	17.45	2,621	-0.0433	-0.0150	-0.00660	0.000580	0.00829	0.0175	0.0463
past quarter return	0.000379	0.00842	-0.166	0.942	15.57	1,393	-0.0175	-0.00696	-0.00327	3.88e-05	0.00360	0.00767	0.0231
firm age	4.457	0.857	0.717	5.950	-0.618	3.140	2.073	3.329	3.924	4.527	5.158	5.528	5.798
stock volatility	0.0313	0.0463	0	11.35	135.8	25,810	0.0111	0.0173	0.0220	0.0283	0.0370	0.0479	0.0709
stock turnover	0.0329	0.0296	2.84e-05	0.916	3.664	52.72	0.00322	0.00787	0.0132	0.0243	0.0433	0.0686	0.141
roe	0.0441	0.0625	-0.145	0.278	0.856	5.803	-0.145	-0.00839	0.00946	0.0311	0.0702	0.121	0.276
bm	0.574	0.249	0.107	1.159	0.233	2.321	0.107	0.251	0.380	0.562	0.756	0.922	1.159
leverage	0.388	0.211	0.0345	0.897	0.300	2.244	0.0345	0.118	0.214	0.375	0.544	0.679	0.892
changeta	0.0921	0.210	-0.170	1.299	3.372	17.13	-0.170	-0.0457	-0.00719	0.0345	0.112	0.267	1.288
sec rating	1.929	0.661	1	4	0.512	3.786	1	1	2	2	2	3	4
secretary gender	0.275	0.433	0	1	1.005	2.093	0	0	0	0	1	1	1
secretary salary	12.95	0.742	4.394	16.32	0.200	3.932	11.27	12.04	12.47	12.93	13.40	13.85	15.00
secretary age	43.25	6.566	25	73	0.296	2.788	30	35	38	43	48	52	59
institution	0.343	0.226	0	0.998	0.260	2.098	0.00100	0.0451	0.143	0.333	0.514	0.655	0.845
top holdings	0.0855	0.149	0	0.889	2.024	6.405	0	0	1.48e-05	0.00651	0.101	0.319	0.617
sim. diff. finBERT	3.877	12.61	-65.99	74.77	-0.252	3.462	-28.96	-12.45	-3.731	4.515	12.13	19.10	32.48
answer sim. finBERT	62.30	11.22	6.923	100.0	-0.400	3.413	32.21	47.39	55.57	63.24	69.92	75.54	86.30
question sim. finBERT	58.41	8.939	11.75	100.00	-0.319	3.279	35.31	46.63	52.67	59.02	64.70	69.24	76.93
sim. diff. Word2Vec	1.422	14.51	-96.37	99.47	0.396	4.344	-31.60	-15.98	-7.787	0.913	9.881	19.01	42.35
answer sim. Word2Vec	30.94	14.97	-20.99	100.0	0.722	4.356	1.637	13.20	20.89	29.74	39.31	49.39	77.00
question sim. Word2Vec	29.51	10.95	-17.95	100	0.612	5.015	6.127	16.31	22.29	29.05	36.01	42.74	60.25

Table 4: **Question and Answer Characteristics.** This table reports the OLS regression results with dependent variables being the informativeness and the speed of answers, and indepedent variables being the question sentiment (*tone*), the total number of questions or answers received or replied on a specific day (*question no.* and *answer no.*, respectively), a dummy variable indicating whether an answer is made during business hours (*business time*), and a dummy variable indicating whether a question is made during 7-day window of an earnings announcement (*near announcement*). Please refer Table A1 for detailed variable descriptions. For much straightforward interpretation of coefficients, we flip the sign of all dependent variables, such that a positive coefficient represents a positive association between the independent variable and firm attentions. Industry, weekday and month fixed effects are implemented, and standard error is clustered at firm level.

	(1)	(2)	(3)	(4)	(5)
	\multicolumn{4}{c}{Informativeness of Answer}			Speed of Answer
	FinBERT		Word2Vec		
	answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
tone	0.0680*	0.2442***	0.1640***	0.1791***	0.0661**
	(2.392)	(7.798)	(4.486)	(5.221)	(3.210)
question no.	0.0826**	0.0968***	0.0817**	0.0583*	0.2903***
	(3.155)	(3.394)	(2.586)	(2.128)	(5.419)
answer no.	0.0216*	0.0133	0.0159	0.0015	-0.1922***
	(1.996)	(1.373)	(1.043)	(0.112)	(-6.702)
business time	0.3892**	0.5440***	0.3047*	0.3320*	-0.4076**
	(2.667)	(3.624)	(1.657)	(1.996)	(-2.986)
near announcement	0.1707*	0.2514**	0.2138*	0.2390*	0.0169
	(1.923)	(2.701)	(2.050)	(2.433)	(0.192)
Industry FE	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
R^2	0.007	0.007	0.004	0.003	0.074
N	2871880	2870718	2893652	289365 2	2893652

Table 5: **Agency Conflicts.** This table reports the OLS regression results with dependent variables being the informativeness and the speed of answers, and independent variables being the top executive holding ratio (*top holdings*), institution holding ratio (*institution*), rating by Chinese SEC about the quality of firms' public disclosure (*sec rating*), and the total number of analyst following (*analyst*). Please refer Table A1 for detailed variable descriptions. For much straightforward interpretation of coefficients, we flip the sign of all dependent variables, such that a positive coefficient represents a positive association between the independent variable and firm attentions. Industry, weekday and month fixed effects are implemented, and standard error is clustered at firm level.

	(1)	(2)	(3)	(4)	(5)
	\multicolumn{4}{c}{Informativeness of Answer}			Speed of Answer
	FinBERT		Word2Vec		
	answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
top holdings	2.7675***	3.0631***	3.3607***	2.3598**	2.3363***
	(4.253)	(5.140)	(4.059)	(3.134)	(5.633)
institution	0.2450	0.0455	-0.2127	-0.1321	-1.0592***
	(0.553)	(0.102)	(-0.420)	(-0.289)	(-3.369)
sec rating	0.4737	0.2071	0.4038	0.1353	0.6436*
	(1.079)	(0.412)	(0.787)	(0.272)	(1.991)
analyst	0.0288*	0.0457***	0.0456***	0.0427**	-0.0218**
	(2.468)	(3.368)	(3.457)	(3.222)	(-2.759)
Industry FE	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
R^2	0.005	0.007	0.004	0.004	0.014
N	2871304	2870142	2893076	2893076	2893076

Table 6: **Business Cycle Characteristics.** This table reports the OLS regression results with dependent variables being the informativeness and the speed of answers, and with independent variables being firm total capitalisation (*firm size*), book-to-market ratio (*bm*), leverage ratio (*leverage*), growth rate in total assets (*changeta*), return on equity (*roe*), and firm age (*firm age*). Please refer Table A1 for detailed variable descriptions. For much straightforward interpretation of coefficients, we flip the sign of all dependent variables, such that a positive coefficient represents a positive association between the independent variable and firm attentions. Industry, weekday and month fixed effects are implemented, and standard error is clustered at firm level.

	(1)	(2)	(3)	(4)	(5)
	\multicolumn{4}{c}{Informativeness of Answer}	Speed of Answer
	FinBERT		Word2Vec		
	answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
firm size	-0.1350	-0.4114***	-0.0957	-0.2470*	-0.8718***
	(-1.356)	(-3.368)	(-0.823)	(-2.072)	(-6.970)
bm	-2.7506***	-2.0022***	-2.3131***	-1.6783***	-2.5657***
	(-6.840)	(-4.602)	(-4.897)	(-3.875)	(-5.409)
leverage	-0.5216	-1.2899*	-0.8764	-0.7616	-0.6372
	(-0.907)	(-2.215)	(-1.259)	(-1.253)	(-1.401)
changeta	0.8548*	0.5229	0.6630*	0.7081*	0.4117*
	(2.450)	(1.361)	(1.675)	(1.888)	(2.017)
roe	0.1298	2.6271	0.4331	2.6821	2.3901*
	(0.062)	(1.179)	(0.193)	(1.290)	(2.000)
firm age	-0.0351	-0.1216	-0.4419**	-0.2685*	-0.5129***
	(-0.277)	(-0.880)	(-2.979)	(-1.985)	(-4.967)
r2	0.006	0.008	0.005	0.004	0.033
N	2780589	2779492	2801476	2801476	2801476
Industry FE	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
R^2	0.006	0.008	0.005	0.004	0.034
N	2780589	2779492	2801476	2801476	2801476

Table 7: **Board Secretary Characteristics.** This table reports the OLS regression results with dependent variables being the informativeness and the speed of answers, and with independent variables the average age, gender and annual salary of board secretaries (*secretary age*, *secretary gender*, and *secretary salary*, respectively). Please refer Table A1 for detailed variable descriptions. For much straightforward interpretation of coefficients, we flip the sign of all dependent variables, such that a positive coefficient represents a positive association between the independent variable and firm attentions. Industry, weekday and month fixed effects are implemented, and standard error is clustered at firm level.

	(1)	(2)	(3)	(4)	(5)
	Informativeness of Answer				Speed of Answer
	FinBERT		Word2Vec		
	answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
secretary age	-0.0014	-0.0000	-0.0112	0.0010	0.0349**
	(-0.108)	(-0.004)	(-0.734)	(0.073)	(2.673)
secretary gender	-0.5785**	-0.8986***	-0.6470*	-0.7161**	0.2406
	(-2.678)	(-4.322)	(-2.522)	(-3.252)	(1.345)
secretary salary	-1.2492***	-1.6669***	-1.2065***	-1.1738***	-1.3268***
	(-10.138)	(-12.102)	(-7.860)	(-8.468)	(-10.305)
Industry FE	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
R^2	0.009	0.013	0.006	0.006	0.021
N	2814946	2813807	2836168	2836168	2836168

Table 8: **Market Conditions.** This table reports the OLS regression results with dependent variables being the informativeness and the speed of answers, and with independent variables being the average past week return (*past week return*), the average past quarter return (*past quarter return*), and the average quarter trading volume ratio (*stock turnover*). Please refer Table A1 for detailed variable descriptions. For much straightforward interpretation of coefficients, we flip the sign of all dependent variables, such that a positive coefficient represents a positive association between the independent variable and firm attentions. Industry, weekday and month fixed effects are implemented, and standard error is clustered at firm level.

	(1)	(2)	(3)	(4)	(5)
	Informativeness of Answer				Speed of Answer
	FinBERT		Word2Vec		
	answer sim.	sim. diff.	answer sim.	sim. diff.	time gap
past week return	1.8648**	1.1581*	2.2717**	1.5087*	-3.2847*
	(3.163)	(1.693)	(2.794)	(1.912)	(-2.021)
past quarter return	2.0517	3.1529	1.2353	1.1104	-0.5682
	(0.464)	(0.810)	(0.236)	(0.243)	(-0.226)
stock turnover	-4.9235*	-7.0322**	-3.8045	-2.8016	12.9334***
	(-1.974)	(-2.880)	(-1.291)	(-0.997)	(6.250)
Industry FE	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
R^2	0.054	0.070	0.031	0.027	0.048
N	2735771	2734667	2756416	2756416	2756416

7 Appendix

Table A1: **Variable definitions**. This table provides a summary of detailed definitions of all variables employed in this study, which are classified under four different categories: question and answer characteristics, firm characteristics, market conditions, and board secretary characteristics.

Panel A: Question and Answer Characteristics	
time gap	The time difference between an answer and a question, expressed in calendar days
answer sim. finBERT	The average percentage textual similarity between an answer with its preceding ones within a month, generated through cosine similarity under finBERT algorithm.
sim. diff. finBERT	The difference between answer similarity and its corresponding question similarity under finBERT algorithm.
answer sim. Word2Vec	The average percentage textual similarity between an answer with its preceding ones within a month, generated through cosine similarity under Word2Vec algorithm.
sim. diff. Word2Vec	The difference between answer similarity and its corresponding question similarity under Word2Vec algorithm.
tone	A dummy variable that equals to 1 if the tone of the question is positive, and 0 otherwise. Positive/negative words are determined through a sentiment dictionary.
question len.	The length of a question, after eliminating stop words and inconsequential greeting expressions
answer len.	The length of an answer, after eliminating stop words and inconsequential greeting expressions.
question no.	The total number of questions that firm receives on a specific day.
answer no.	The total number of answers that firm provides on a specific day.
near announcement	A dummy variable indicating whether a question is posted within 7-day window ([-3, 3]) of a quarterly earning announcement.

business time	A dummy variable indicating whether an answer is posted within business hours, defined as 8am-8pm on trading days and full days on public holidays.

Panel B: Firm Characteristics

top holdings	The stock holding of the top executives from the most recent reported year by the time of providing an answer.
institution	The total stock holding of all institutional investors (including funds, brokers, and insurance) of the firm from the most recent reported year by the time of providing an answer.
firm age	The firm age by the time of providing an answer, expressed in the natural logarithm of the number of months.
sec rating	The quality of firms' public disclosure, determined by the stock exchange that they operate upon, from the most recent reported year by the time of providing an answer. 1 represents the highest quality while 4 represents the lowest.
size	The product of the most recent stock price and the most recent total number of outstanding shares by the time of providing an answer.
bm	The book-to-market ratio of the firm from the most recent reported quarter by the time of providing an answer.
leverage	The leverage-to-asset ratio of the frim from the most recent reported quarter by the time of providing an answer.
changeta	The growth rate of total asset of the firm from the most recent reported quarter by the time of providing an answer.
roe	The return on equity ratio of the firm from the most recent reported quarter by the time of providing an answer.
analyst	The total number of following analysts from the most recent reported year by the time of providing an answer. Observations with missing values are valued as 0 analyst following.

Panel C: Market Conditions

past week return	The historical 5-trading-day average stock return from the answering day.
past month return	The historical 20-trading-day average stock return from the answering day.
past quarter return	The historical 60-trading-day average stock return from the answering day.
stock volatility	The standard deviation of the daily stock return of a firm from the most recent quarter by the time of providing an answer.
stock turnover	The average ratio of daily number of trading stocks over the total number of the outstanding stocks for the most recent quarter by the time a firm provides an answer.

Panel D: Board Secretary Characteristics

secretary age	The average age of all board secretaries by the time of providing a specific answer.
secretary gender	The average gender of all board secretaries by the time of providing a specific answer, where secretaries being female are valued as 1 and secretaries being male are valued at 0.
secretary salary	The natural logarithm of the average salary of all board secretaries by the time of providing a specific answer.

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