Final Report of ACT 6298

Causes and consequences of investor interaction platform activities: from 2018 to 2022

Supervisor: Bin Miao

Author: Hanling Bai

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Abstract

Between 2018 and 2022, Chinese investors asked public companies approximately 2.3 million questions on investor interactive platforms (IIPs). Roughly 90% of these questions were replied within two weeks. I analyze the possible causes of these IIP activities, including firm disclosure, news and the COVID-19 pandemic. Then, controlling for these events, I show that higher IIP activity correlate with increases in trading volume, decreases in return volatility, as well as increases in market liquidity and price informativeness. Both questions and answers increase when the COVID-19 situation becomes severe. Overall, the results show that ordinary investors face substantial information processing costs, especially during the exogenous shock posed by COVID-19, but that IIP activities help reduce these costs, leading to improvements in stock price formation.

Key words Investor Interactive Platform; Firm disclosure; Processing costs; Market liquidity; Price informativeness; COVID-19

1. Introduction

Firm communication is formed by firm-investor interaction (Blankespoor 2018). A substantial body of literature focuses on the endogenous issues, i.e., information events, management behaviors and investor response (Wong et al. 2023; Rennekamp, Sethuraman, and Steenhoven 2022). While exogenous shocks may significantly reshape our society, much less is known about how they affect the interaction in financial market. Specifically, I want to study how COVID-19 affect firm-investor communication.

I study COVID-19 as the shock of interests for several reasons. First, the pandemic encourages online interaction but discourages in-person meetings. Its impact on future firm-investor communication pattern is not clear. *Analyzing how COVID-19 relates to online firm-investor interaction activity* may provide novel insights for the management to make communication strategy and to prepare for potential public crises.

Second, from January 2020 to the December 2022, the pandemic had caused

substantial uncertainty to social life. The increased reliance on online communication may impede or help investors to acquire and interpret specific firm disclosures. On one hand, overloaded information distracts, attracts and panics investors, increasing their costs in processing information. Firms of different regions and industries bored inequal risks, leading to excess trading and lowered social trust. Specifically, management can owe operation failures to the pandemic, adjust accounting estimates and manipulate earnings, claiming that firms will resume once the pandemic ends. Investors, especially less sophisticated ones, may pay more efforts in interpreting public information and assessing corporate prospects to facilitate trading. On the other hand, increased online communication and decreased variety of entertainment may push investors to actively address their problems in integrating firm news into their trading decisions. It is not clear *how COVID-19 affects the information processing costs* which relate closely to stock trading, market liquidity and price informativeness (Lee and Zhong 2022).

To investigate the variation in information processing costs, I choose online investor interactive platform (IIP) as the setting of my thesis. HudongYi and EHudong, IIPs launched by two major exchanges in China, had set Q&A (Question-and-answer) community pages for over 99% of public firms by the end of 2017. These IIPs provide ordinary investors, for the first time, low-cost access to firm management and a gateway to processing information. Each platform user can post questions, most of which are replied in two weeks. Since firms are not allowed to disseminate significant new information[1], their replies only contain public information. Combined, the chronology of questions reflects how investors' processing costs change, and the chronology of replies may partly reflect the extent to which IIP replies mitigate investors' processing costs.

Besides, several years after the launch of IIPs, the platforms are not as novel as before. Investors may adjust their strategy to interact with firms on such platforms over years. It is doubtful whether the prior findings regarding the causes and consequences

[1] According to regulatory notices put forward by SZSE and SHSE, firms cannot use IIPs as alternative disclosure channels. For undisclosed matters, firms should inform investors to refer to future announcements.

of IIP activity persists[2]. Considering the shock of COVID-19 and the changing speed of Chinese society, I use the latest data ranging from 2018 to 2022[3]. The sample period, covers the first outbreak, ups and downs and final lift of COVID-19. To observe whether IIP activity level varies before and after the pandemic, I perform a quarter-to-quarter analysis (See Section 3). The result shows that the IIP activities increase after the first outbreak and surge during serious outbreaks.

To study how the pandemic may affect the causes of IIP activities, I study how the firm-specific information events and the shock of COVID-19 are correlated with IIP activities (See Section 4.1). I use six traditional types of information events: quick earnings announcements, interim reports, earnings guidance, reports of material events, analyst reports and media coverage. For the COVID-19 shock, I used the frequency of Baidu Searches regarding the pandemic, measured in million. The results show that not all firm disclosures are positively correlated with IIP activity level, while the search frequency of COVID-19 has a significant and positive correlation with IIP activity level.

In Section 4.2 to 4.5, I study the consequences of IIP activities. The results show that higher IIP activities are correlated with higher trading volume but lower return volatility, on a daily basis. To address the doubt that whether the increased trading is triggered by the reduction in processing costs or simply by noise, I regressed daily IIP activities to market liquidity measures and find that higher IIP activities are related to higher liquidity. The results are not strongly robust in quarterly analyses, suggesting that the price effect is unclear for a given trading level. Nevertheless, higher IIP activities improve price predictability related to future earnings, providing evidence that IIP activities help reduce information processing costs. In section 4.6, I regressed pandemic-related search index to daily IIP activities and find that the correlation is significantly positive.

Overall, I want to answer three questions: 1) What are the causes and consequences

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[2] Lee and Zhong (2022) used data ranging from 2011 to 2017. In writing this thesis, I refer to their methods and thus use data that begin from 2018. In doing this, I can test whether LZ's findings persist.

[3] I scrapped a full set of IIP dialogues from HudongYi and EHudong for 2018, 2022 and December 2021. I then aggregate these data with the data ranged from January 2019 to November 2021, which is kindly offered by Professor Huang.

of IIP activities, 2) Do IIP activities help reduce investor processing costs, 3) How does COVID-19 affect the IIP activities? The answer is, traditional types of firm disclosure and news events as well as exogenous shock such as the variation in pandemic situation can be the causes of IIP activities. COVID-19 significantly increase IIP activities. The consequences of IIP activities include improvement in investor trading and measurable benefits to firms, i.e., higher liquidity and price informativeness. IIP activities correlate with these outcomes by reducing investor processing costs.

The rest of this report is organized as follows. Section 2 discusses my research motivation and provides literature review. Section 3 presents quarter-by-quarter statistics on IIP activities. Section 4 presents the regression analyses on investor trading, market liquidity and stock price informativeness. Section 5 states the conclusions, application and limitations. The methodologies are fixed effects regression and correlation analysis.

2. Motivation and Literature Review

2.1 Investor processing costs

2.1.1 Awareness, acquisition and integration

Costs of monitoring for, acquiring, and analyzing firm disclosures—collectively, "disclosure processing costs"—affect investor information choices and trading decisions, market liquidity and stock price informativeness, etc. (BDM 2020).

Compared to awareness and acquisition costs, integration costs are the main factor that makes 'public information' costly and private (BDWZ 2019). Integration costs involve processing firm-specific disclosures, i.e., performing financial analysis and analyzing financial reports.

Theory indicates that, when information processing costs are nontrivial, improved disclosure that reduces these costs can 1) increase market liquidity (Amihud and Mendelson 1986), 2) reduce investor integration costs (Barry and Brown 1985; BDM 2020), leading to higher trading and increased market depth.

2.1.2 Firm information events

Firm information events include disclosures and other events, i.e., analyst reports and media coverage. Research suggests complex financial reporting is more costly to parse , and can impair investors' ability or cost investors more time to understand the economic substance of a transaction or firm. Analyst forecast quality declines when firms start using derivatives (Chang, Donohoe, and Sougiannis 2016) or adopt complex accounting standards (Peterson 2012; Filzen and Peterson 2015). The effect of increasing financial reporting complexity (i.e., low readability), associated with lower overall trading (Miller 2010) and higher return synchronicity (Bai, Dong, and Hu 2019), is more obvious on small investors.

Besides, firms most likely to have managed earnings have annual reports (MD&As) that are more complex (Lo, Ramos, and Rogo 2017). As the financial reporting complexity increases over time, investors, especially less sophisticated ones face higher processing costs and thus benefit more from reduced opacity (Indjejikian 1991).

Journalists disseminate and interpret information, reducing awareness and acquisition costs, and integration costs, respectively (Bushee et al. 2010). Media's republishing of information from firm disclosures improves trading volume, returns, liquidity and price-responsiveness, even when articles do not include private information (Huberman and Regev 2001; Bushee et al. 2010; Engelberg and Parsons 2011; Lawrence et al. 2018).

Analyst coverage is positively correlated with market liquidity (Ben-David and Roulstone 2010). Firms that lose all analyst coverage continue to suffer a significant deterioration in bid-ask spreads, trading volumes, and institutional presence. analyst coverage adds value to a firm both because it reduces information asymmetries about the firm's future performance and because it maintains investor recognition for that firm's stock (Mola, Rau, and Khorana 2013)

Overall, firm disclosures should help investors understand firm fundamentals and prospects. But the complexity of financial reporting increases users' processing costs and lead to lower market reactions, including trading, liquidity, price informativeness and returns. Retail investors facing higher processing costs are more subjective to the

increasing complexity of disclosure and low market outcomes. Media and analyst reports can reduce processing costs and improve market outcomes, but contradictory results also exist.

2.2 Information Channels

2.2.1 Characteristics Investor Interactive Platforms

HudongYi and Ehudong have special features. First, the two Chinese IIPs provide topic flows mainly *initiated by any investor*. Most questions are raised by *ordinary investors* who can acquire information that values most to themselves—but not necessarily the value-relevant information—up to their sophistication. This mode is different from disclosure releases, q&a sections in conference calls, comment sections in social media and investor relations programs. Second, the *officially sanctioned status* distinguishes the IIPs from blogs and investing forums which contain unreliable or sensible contents. Third, firms are *not allowed to disclose new information* and have the duty to explain publicized disclosures. Fourth, firms routinely *release announcements related to corporate governance* and shareholder meetings, which are of great interests to investors raising questions. Lastly, acquiring information on these IIPs is *timely* and low-cost. IIP users receive messages on their mobile phones after their questions are posted and replied. Users can also download phone applications and interact with firms anytime, anywhere.

In a similar spirit to that of Schaub 2018 and Akbas et al. 2018, investors' willingness to pay efforts in acquiring firm information indicates that they mitigate disclosure processing costs, with the opportunity costs of enquiring firms being a lower bound on the expected savings of processing costs.

Overall, IIPs are, by definition, great settings to examine investors' daily information needs and processing costs.

2.2.2 Effects of Investor Interactive Platforms

IIPs help reduce processing costs, especially integration costs, and improve trading, liquidity and price informativeness (Lee and Zhong 2022; Wong et al. 2023). Guo, Yu, and Faff (2022) find that questions posted around earnings announcements accelerate

the price discovery of earnings and attenuate post-earnings announcement drift and stock price synchronicity.

2.2.3 Other channels

In conference calls, conversations with greater engagement are more informative to capital markets and facilitate price formation (Rennekamp, Sethuraman, and Steenhoven 2022). EDGAR and XBRL provides financial data, reduce processing costs and improve trading and price informativeness (Gao and Huang 2020; Blankespoor 2019). Gomez et al. (2018) argue that crowdsourced analyses on Seeking Alpha primarily reduce small investors' processing costs, and find that firms with more pre-earnings announcements (EA) analyses have greater liquidity around the EA. Cao et al. (2021) find Guba interaction is positively correlated with price efficiency.

Besides, Schaub (2018) and Akbas et al. (2018) find that delayed dissemination of earnings information by disclosure data providers is associated with delayed price and volume reactions, suggesting investors rely on the intermediary rather than directly accessing disclosures.

Overall, financial data providers and investing forums help reduce processing costs and improves market outcomes.

2.4 Investor attention

Higher trading volume, absolute return and liquidity may be attributed to noise trading instead of reduction in processing costs. Individual investors are net buyers of attention-grabbing stocks, i.e., stocks in news, stocks experiencing high abnormal trading volume and stocks with extreme one-day returns. Attention-driven buying results from the opportunity costs of searching and selecting stocks from thousands of them (Barber and Odean 2008; Ding and Hou 2015). However, since price informativeness reflects the extent to which investors incorporate fundamental information, it is not positively associated with noise trading.

2.5 COVID-19

COVID-19 affects firms' valuations which investors seem to incorporate in their trading decisions. For example, retail investors turn to low-leverage trading and short sell stocks expected to suffer huge losses during the pandemic, i.e., travel-related firms'

stocks. Besides, the increase in trading and opening of new positions (Ortmann, Pelster, and Wengerek 2020; Hsu and Liao 2022) suggest extreme sentiment and disagreement (Baker and Wurgler 2006; Hong and Stein 2007) as well as investor attention. This statement is supported by the findings that COVID-19 affects firms' market valuations (Hassan et al. 2020) and has dominated conference calls, google searches and social media posts during the first outbreak (Ramelli and Wagner 2020). Investors seek for coronavirus-related information.

COVID-19 can increase information processing costs and encourage investors to speak more online. On one hand, online platforms become the only source of information and entertainment due to social isolation, causing information overload and infodemic (Rathore and Farooq 2020) which exacerbates the problem of processing firm disclosure, complicates investor-decision making and hinders price formation. On the other hand, the pandemic leads to social fractionalization, undermining social trust[4] and thus increasing transaction costs (Goodell 2020).

Overall, the observed increase in stock trading during the pandemic can be attributed to investor sentiment and attention, or information processing, or both. The changes in online platform activities, i.e., IIPs, can be attributed to the efforts in mitigating processing costs, or the willingness to participate in online dialogues, or both.

A distinguishing goal in this study is to examine how IIP activity levels change before and after the serious outbreaks of COVID-19. The changes can be attributed to 1) investors' information needs and eagerness to mitigate processing costs, or 2) the tentative to post more on the Internet, or both.

3. Descriptive Analysis

Table 1

Quarter-by-quarter IIP activities.

Panel A. Shenzhen Stock Exchange (SZSE)

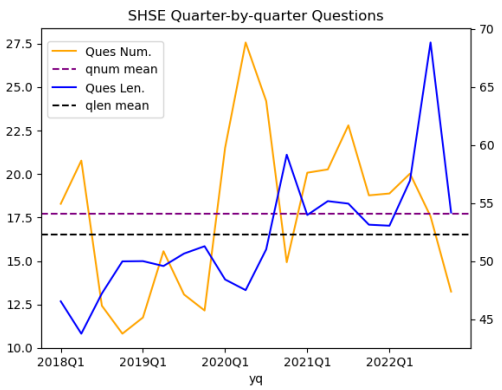
[4] The pandemic poses inequal impacts on different sectors and regions, leading to social fractionalization which undermines social trust (Bjørnskov 2008) and thus leads to additional transaction costs throughout the financial system (Fukuyama 1995). Processing costs, costs in determining whether to invest in certain stocks, partly constitute transaction costs.

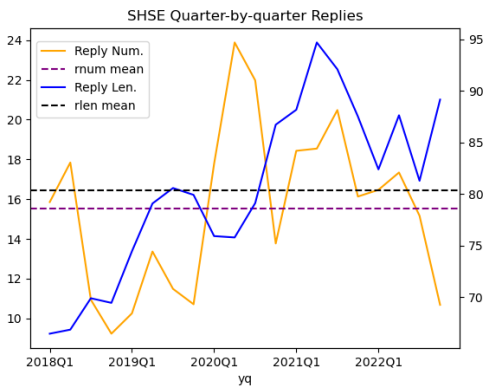
Year-Quarter	Ques Num.	Reply Num.	Reply Time (Calendar Days)	Reply Rate (Firm Average)	Ques Len (Words)	Reply Len (Words)
2018Q1	36.46	34.48	7.41	92.95%	48.75	67.65
2018Q2	41.20	38.49	7.71	91.96%	47.79	69.01
2018Q3	26.32	24.13	8.51	90.99%	49.27	71.46
2018Q4	23.03	21.04	5.61	90.30%	48.72	70.89
2019Q1	26.29	24.40	11.14	90.92%	49.20	70.55
2019Q2	29.17	27.10	9.97	91.31%	49.01	74.98
2019Q3	27.94	26.19	9.41	91.90%	48.03	73.71
2019Q4	30.07	28.39	7.43	92.80%	49.31	72.00
2020Q1	52.20	49.37	9.68	93.82%	48.84	74.29
2020Q2	44.72	41.96	11.88	92.83%	48.30	71.49
2020Q3	35.52	33.36	11.13	92.92%	50.78	72.46
2020Q4	30.39	28.74	8.10	93.91%	52.38	78.03
2021Q1	37.41	35.74	8.41	94.31%	52.62	78.70
2021Q2	46.31	43.54	7.75	93.51%	49.65	80.30
2021Q3	53.06	49.02	7.88	91.93%	47.04	78.27
2021Q4	42.74	39.02	8.15	91.70%	47.25	79.46
2022Q1	40.90	37.97	10.88	92.99%	45.22	79.31
2022Q2	36.10	33.05	10.25	92.04%	46.27	85.36
2022Q3	36.32	33.30	9.93	91.47%	44.41	79.91
2022Q4	28.63	25.92	5.56	90.90%	44.47	84.66
Average	**36.24**	**33.76**	**8.84**	**92.27%**	**48.37**	**75.62**

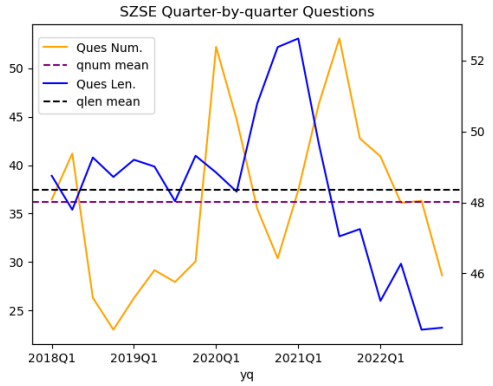
Panel B. Shanghai Stock Exchange (SHSE)

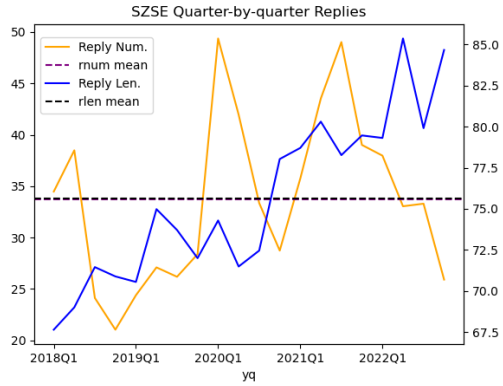
Year-Quarter	Ques Num.	Reply Num.	Reply Time (Calendar Days)	Reply Rate (Firm Average)	Ques Len (Words)	Reply Len (Words)
2018Q1	18.29	15.85	28.94	82.84%	46.53	66.47
2018Q2	20.78	17.84	22.80	81.97%	43.74	66.87
2018Q3	12.43	10.94	18.88	81.89%	47.20	69.91

2018Q4	10.82	9.23	9.68	78.85%	49.97	69.46
2019Q1	11.76	10.25	42.40	84.05%	49.99	74.46
2019Q2	15.57	13.36	37.51	84.21%	49.57	79.09
2019Q3	13.08	11.48	38.23	83.38%	50.64	80.59
2019Q4	12.16	10.71	35.45	83.97%	51.28	79.93
2020Q1	21.52	17.78	40.65	85.68%	48.41	75.93
2020Q2	27.57	23.89	33.96	86.88%	47.49	75.80
2020Q3	24.20	21.98	23.48	90.27%	51.01	79.13
2020Q4	14.93	13.77	17.60	91.31%	59.16	86.74
2021Q1	20.08	18.43	17.04	91.99%	53.97	88.18
2021Q2	20.27	18.54	15.40	91.13%	55.16	94.71
2021Q3	22.81	20.48	11.73	88.82%	54.95	92.11
2021Q4	18.78	16.13	12.46	84.83%	53.13	87.53
2022Q1	18.89	16.47	19.31	88.34%	53.05	82.40
2022Q2	20.03	17.34	16.02	87.73%	56.93	87.65
2022Q3	17.57	15.16	14.77	86.23%	68.84	81.30
2022Q4	13.25	10.68	9.39	82.45%	54.18	89.17
Average	**17.74**	**15.52**	**23.29**	**85.84%**	**52.26**	**80.37**









The quarterly statistics show that questions raised by investors surge in the first quarter of 2020. Two peaks of question number that far outweigh the average occur in the first quarter of 2020 and the third quarter of 2021 in both IIPs. Sharp spikes occur in the length of questions held by IIPs held by SZSE and SHSE around 2021Q1 and 2022Q2, respectively, when Shenzhen and Shanghai went through serious COVID-19 outbreaks and lockdowns. The pattern of firm replies partly corresponds to that of questions. Overall, IIP activities increase after 2020 and fall after 2022Q3.

The above analysis needs more evidence, i.e., timestamps of outbreaks, to become reliable. Nevertheless, it can be inferred that COVID-19 is positively associated with IIP activity levels, especially with investors' tendency to raise questions. When serious outbreaks take place, investors raise longer questions, indicating that they are highly attentive or sensitive, or have more information needs, or both.

4. Causes and Consequences of IIP activities

4.1 Causes of IIP activities

Table 2

The relation between IIP activities and other information events.

Panel A. Correlation Matrix

	QUESTION	REPLY	EAQ	EAI	EG	EVENTS	ANARP	MEDIA	COVID
QUESTION	1								
REPLY	0.952***	1							
EAQ	0.006***	0.006***	1						
EAI	0.020***	0.020***	-0.002***	1					
EG	0.013***	0.013***	0.072***	0.148***	1				
EVENTS	0.033***	0.032***	0.087***	0.238***	0.176***	1			
ANARP	0.034***	0.032***	0.033***	0.164***	0.062***	0.081***	1		
MEDIA	0.068***	0.064***	0.041***	0.073***	0.067***	0.145***	0.119***	1	
COVID	0.048***	0.046***	0.026***	-0.019***	0.004***	-0.012***	-0.006***	-0.007***	1

Panel B. The Effects of Other Information Events on Platform Activities

	(1)	(2)	(3)	(4)
	QUES NUM.	REPLY NUM.	QUES LEN.	REPLY LEN.
EAQ	-0.0046	-0.0029	0.0472**	-0.0471**
	(-0.35)	(-0.22)	(2.18)	(-1.96)
EAI	0.0604***	0.0596***	0.1275***	0.1424***
	(13.57)	(13.08)	(17.41)	(17.41)
EG	0.0313***	0.0326***	0.0456***	0.0008
	(4.88)	(4.96)	(4.31)	(0.07)
EVENTS	0.0196***	0.0196***	0.0356***	0.0544***
	(12.92)	(12.60)	(14.26)	(19.48)
ANARP	0.0274***	0.0241***	0.0971***	0.0537***
	(9.44)	(8.06)	(20.30)	(10.01)
MEDIA	0.1346***	0.1254***	0.1880***	0.1751***
	(73.70)	(66.79)	(62.53)	(51.96)
COVID	0.0880***	0.0848***	0.0861***	0.0785***
	(46.03)	(43.26)	(27.35)	(22.31)
Constant	0.3514***	0.3457***	4.0341***	4.3496***

	(556.11)	(532.76)	(3,877.38)	(3,735.06)
Observations	1,112,008	1,030,167	1,112,008	1,030,159
R-squared	0.008	0.007	0.006	0.005

This table shows the relation between platform activities and 1) other information events and 2) the shock of COVID-19, based on firm-day observations between 2018 and 2021, inclusively.

Panel A presents the correlation matrix for different disclosures using: an indicator variable for questions on a firm's IIP (QUESTION); an indicator variable for replies on the IIP (REPLY); an indicator variable for quick earnings announcements (EAQ); an indicator variable for interim reports (EAI); an indicator variable for earnings guidance (EG); an indicator variable for material events (EVENTS); an indicator variable for analyst reports (ANARP); an indicator variable for

news articles that mention the firm (MEDIA); and a variable for the shock posed by COVID-19 (COVID), proxied by Baidu Search Index, measured in million.

Panel B presents regression results for the influence of 1) other firm-related information events on IIP activities and 2) the COVID-19 shock. Proxies for IIP activities in Columns 1-4 respectively are: (1) the number of questions per day (Ques Num.), in the natural logarithm form; (2) the total number of words in the posted questions per day (Ques Len.), in the natural logarithm form; (3) the number of replies posted by the firm per day (Reply Num.), in the natural logarithm form; and, (4) the total number of words in the replies posted by the firm per day (Reply Len.), in the natural logarithm form.

The results in Table 2 show that both firm events and COVID-19 have a significantly positive correlation with IIP activities, especially media coverage and COVID-19. Not surprisingly, higher questions are posted on days with more replies (referring to the coefficient of REPLY to QUESTION, 0.952, in Panel A). However, the small adjusted R square suggests that the overall ability of these causes to explain the variation in IIP activities is limited.

4.2 IIP activities and stock trading

In this subsection, I examine the relation between daily IIP activity and investor trading. I use two measures of trading. The first measure is daily abnormal trading volume (VOLUME), defined as the residual from firm-by-firm regressions of daily stock turnover rate on the daily market-level turnover rate (see Ferris et al. (1988) and Huang et al. (2022)). The second measure is daily absolute abnormal return (ABSRET), where abnormal return is defined as the residual from a firm-by-firm regression of daily stock return on the daily market return (similar to Ferris et al. (1988) and Ke et al. (2003)).

I estimate the following equation using firm-day observations:

$$Trading_{i,t} = \alpha + \beta IIP_{i,t} + Other\ Disclosures + Controls + Fixed\ Effects + \varepsilon_{i,t} \quad (1)$$

where Trading is the investors' trading response for firm i on day t, as measured by either abnormal trading volume or absolute abnormal return, and IIP is a measure of platform activity for firm i on day t. I use four proxies to measure platform engagement:

Ques Num., Ques Length, Reply Num., and Reply Length. To control for the potential confounding effects of other disclosures, I add a set of indicator variables for six different types of firm-related information events: quick earnings announcements, interim report, earnings guidance, reports of material events, managerial earnings forecasts, analyst reports, and media coverage in a news article. Search index on 'COVID-19' cannot be set as a control variable or dependent variable due to collinearity. Lastly, I control for each firm's daily market value of equity and daily market-to-book ratio as well as firm and day fixed effects. Standard errors are clustered by firm to mitigate possible serial correlation in the error term (Petersen 2009). The results are presented in Table 3.

Table 3

IIP activity and trading behavior (volume and return volatility)

Panel A. Daily Abnormal Trading Volume

	Dependent Variable = Abnormal Trading Volume			
	(1)	(2)	(3)	(4)
Ques Num.	**0.9285*** **			
	(106.82)			
Reply Num.		**0.9202*** **		
		(103.94)		
Ques Len.			**0.2748*** **	
			(51.80)	
Reply Len.				**0.2682*** **
				(51.96)
EAQ	-0.4426***	-0.4577***	-0.4414**	-0.4340**
	(-2.58)	(-2.66)	(-2.57)	(-2.52)
EAI	-0.4866***	-0.4194***	-0.4747***	-0.4164***
	(-8.11)	(-6.96)	(-7.91)	(-6.91)
EG	-0.0297	-0.0106	-0.0269	-0.0048
	(-0.35)	(-0.13)	(-0.32)	(-0.06)

EVENTS	0.6974***	0.6981***	0.6976***	0.7009***
	(35.50)	(35.38)	(35.50)	(35.53)
ANARP	0.3338***	0.3280***	0.3336***	0.3338***
	(8.71)	(8.52)	(8.70)	(8.67)
MEDIA	1.6952***	1.7686***	1.7004***	1.7679***
	(70.82)	(73.61)	(71.02)	(73.58)
MV	-0.3333***	-0.3194***	-0.3334***	-0.3218***
	(-13.62)	(-13.00)	(-13.62)	(-13.10)
MB	0.1901***	0.1918***	0.1906***	0.1930***
	(49.97)	(50.21)	(50.10)	(50.52)
Constant	-0.9437***	-1.7170***	-0.9250***	-1.7736***
	(-86.32)	(-71.38)	(-84.80)	(-71.01)
Observations	1,029,726	1,029,726	1,029,726	1,029,726
Adjusted R^2	0.279	0.273	0.279	0.273
Firm FE	YES	YES	YES	YES
Date FE	YES	YES	YES	YES

Panel B. Daily Absolute Abnormal Return

	Dependent Variable = Absolute Abnormal Return			
	(1)	(2)	(3)	(4)
Ques Num.	**-0.2034*** **			
	(-26.32)			
Ques Len		**-0.0965*** **		
		(-20.54)		
Reply Num.			**-0.1958*** **	
			(-24.88)	
Reply Len				**-0.1009*** **
				(-22.07)
EAQ	0.0704	0.0763	0.0701	0.0680
	(0.46)	(0.50)	(0.46)	(0.45)

EAI	-1.1216***	-1.1277***	-1.1250***	-1.1272***
	(-21.04)	(-21.15)	(-21.10)	(-21.14)
EG	-0.5806***	-0.5810***	-0.5815***	-0.5825***
	(-7.80)	(-7.80)	(-7.81)	(-7.83)
EVENTS	0.1458***	0.1474***	0.1457***	0.1467***
	(8.35)	(8.44)	(8.34)	(8.40)
ANARP	0.6429***	0.6462***	0.6429***	0.6444***
	(18.88)	(18.97)	(18.87)	(18.92)
MEDIA	1.0033***	0.9932***	1.0014***	0.9946***
	(47.15)	(46.69)	(47.06)	(46.75)
MV	-0.0826***	-0.0860***	-0.0827***	-0.0852***
	(-3.80)	(-3.95)	(-3.80)	(-3.91)
MB	0.0683***	0.0676***	0.0681***	0.0671***
	(20.18)	(20.00)	(20.15)	(19.85)
Constant	-0.2542***	0.0634***	-0.2603***	0.1127***
	(-26.16)	(2.97)	(-26.85)	(5.09)
Observations	1,030,148	1,030,148	1,030,148	1,030,148
Adjusted R^2	0.018	0.018	0.018	0.018
Firm FE	YES	YES	YES	YES
Date FE	YES	YES	YES	YES

Table 3 presents conflicting evidence on the correlation between IIP activity and trading. In Panel A, all proxies of IIP activity show a positive and significant correlation with abnormal trading volume, indicating that an increase in IIP activity corresponds to more trading. In Panel B, however, IIP activity has a significant and negative correlation with absolute abnormal return (return volatility).

Besides, to address the possibility that increased trading causes greater IIP activity, I regressed day t trading on day t-1 IIP activities, while maintaining all the same control variables. In these supplemental (untabulated) tests, day t-1 IIP activity also exhibits a significantly positive relation to both day t trading proxies. These results suggest that

higher IIP activities correlate with stronger reaction from investors, consistent with the assumption that IIP activities reduce information processing costs.

However, some traditional information events, notably media coverage, have a significantly positive association with the trading proxies, while earnings announcements have negative associations with the trading proxies. This suggests that IIP activity may attract investor attention and lead to noise trading without reducing processing costs, as is supported by Barber and Odean (2008).

Overall, the results provide weak evidence that higher IIP activities are related to stronger reaction from market participants, but it may be due to increased noise or attention-related trading rather than reduced information costs. To disentangle these possibilities, I thus conducted price-formation tests are conducted.

4.3. Daily IIP activities and market liquidity

In this subsection, I measure the extent to which IIP activities are related to firms' measurable benefits, i.e., stock price formation. Evidence that firms which engage more actively in IIP activities experience improvements in price formation will support that IIP activities help mitigate integration costs. //写到这里

One way by which IIP may improve firms' stock liquidity and price formation is by reducing information asymmetry among market participants (Kyle, 1985; Glosten and Milgrom, 1985). Uninformed investors engage in "price protection" against adverse selection, leading to lowered liquidity (Welker, 1995). Disclosures that decrease adverse selection costs can improve stock liquidity (Leuz and Verrechia, 2000). Thus, if IIPs help reduce information asymmetry costs, firms that participate actively in platform activity should experience improvement in stock liquidity.

Table 4 examines the effect of IIP interaction on daily abnormal trading volume and daily AMIHUD illiquidity measure (the ratio of the daily absolute return to the RMB trading volume). It would be more accurate if I use bid-ask spread to proxy information asymmetry costs, but due to the limitation to data, I switch the variable to abnormal trading volume, the same variable used in Table 3.

Table 4

IIP activity and market liquidity

Panel A. Daily Turnover Rate				
	Dependent Variable = Zeros Illiquidity			
	(1)	(2)	(3)	(4)
Ques Num.	**-0.1060*** **			
	(-15.21)			
Ques Len		**-0.0048**		
		(-1.13)		
Reply Num.			**-0.1028*** **	
			(-14.48)	
Reply Len				**-0.0181*** **
				(-4.40)
EAQ	0.2094	0.2091	0.2093	0.2086
	(1.52)	(1.52)	(1.52)	(1.52)
EAI	0.3254***	0.3114***	0.3238***	0.3145***
	(6.77)	(6.48)	(6.74)	(6.55)
EG	0.1758***	0.1708**	0.1754***	0.1718**
	(2.62)	(2.55)	(2.61)	(2.56)
EVENTS	-0.1357***	-0.1371***	-0.1358***	-0.1366***
	(-8.62)	(-8.71)	(-8.63)	(-8.68)
ANARP	-0.2191***	-0.2199***	-0.2191***	-0.2195***
	(-7.14)	(-7.16)	(-7.14)	(-7.15)
MEDIA	-0.3281***	-0.3408***	-0.3290***	-0.3385***
	(-17.10)	(-17.77)	(-17.15)	(-17.65)
MV	-0.5701***	-0.5715***	-0.5702***	-0.5715***
	(-29.14)	(-29.20)	(-29.14)	(-29.20)
MB	-0.1121***	-0.1122***	-0.1122***	-0.1123***
	(-39.54)	(-39.54)	(-39.56)	(-39.60)

Constant	3.0567***	3.0364***	3.0538***	3.0966***
	(361.10)	(159.31)	(361.70)	(156.39)
Observations	1,029,568	1,029,568	1,029,568	1,029,568
Adjusted R^2	0.284	0.283	0.284	0.283
Firm FE	YES	YES	YES	YES
Date FE	YES	YES	YES	YES

Panel B. The Price Impact of Trading Volume

	Dependent Variable = Amihud Illiquidity			
	(1)	(2)	(3)	(4)
Ques Num.	**-0.3402****			
	(-2.05)			
Ques Len		**-0.3489*****		
		(-3.45)		
Reply Num.			**-0.3177***	
			(-1.88)	
Reply Len				**-0.1317**
				(-1.34)
EAQ	-0.4494***	-0.4643***	-0.4482***	-0.4408**
	(-2.62)	(-2.69)	(-2.61)	(-2.56)
EAI	-0.4795***	-0.4115***	-0.4675***	-0.4094***
	(-7.99)	(-6.83)	(-7.79)	(-6.79)
EG	-0.0665	-0.0470	-0.0637	-0.0416
	(-0.79)	(-0.56)	(-0.76)	(-0.49)
EVENTS	0.6956***	0.6965***	0.6959***	0.6991***
	(35.38)	(35.27)	(35.38)	(35.40)
ANARP	0.3322***	0.3267***	0.3321***	0.3323***
	(8.66)	(8.48)	(8.66)	(8.63)
MEDIA	1.6953***	1.7693***	1.7006***	1.7680***
	(70.76)	(73.56)	(70.96)	(73.51)

MV	-0.3409***	-0.3269***	-0.3409***	-0.3291***
	(-13.95)	(-13.32)	(-13.94)	(-13.41)
MB	0.1801***	0.1816***	0.1806***	0.1828***
	(50.83)	(51.06)	(50.96)	(51.37)
Constant	2.6896***	1.9295***	2.7086***	1.8571***
	(254.36)	(80.71)	(256.76)	(74.78)
Observations	1,029,726	1,029,726	1,029,726	1,029,726
Adjusted R^2	0.297	0.291	0.297	0.291
Firm FE	YES	YES	YES	YES
Date FE	YES	YES	YES	YES

To construct this table, I replace the trading proxies in Eq. (1) with the above-mentioned liquidity proxies. Panel A shows a significantly positive coefficient estimate on all IIP variables, indicating that the stock liquidity is higher with higher IIP activities. Panel B shows a significantly negative coefficient estimate on question-related IIP variables across all four columns, indicating that the stock liquidity is higher with higher level of investor-initiated IIP activities. These results suggest IIP activities are related to improvement in market liquidity, possibly due to lower information asymmetry risk and smaller price impact. To exclude the potential misalignment in the timing of daily IIP activities, I also regressed day t liquidity measures on day t-1 IIP activities. These untabulated tests show that higher day t-1 IIP activity is also associated with higher level of stock liquidity.

4.4 Quarterly IIP activities and market liquidity

As a robustness check, I conduct two long-window tests using quarterly variables. Specifically, I test the impact of the overall level of IIP activity on abnormal trading volume and the Amihud illiquidity ratio, after controlling for the number of other firm events over each firm-quarter. For parsimony, I use a combined measure of platform interaction (*IIP*), defined as the mean of four standardized measures of IIP activity (standardizing means subtract by mean and divide by standard deviation).

Table 5

Quarterly IIP activity and market liquidity

	ABSVOL	AMIHUD
	(1)	(2)
IIP	2.1719***	0.0237
	(60.71)	(1.21)
EAQ	-0.3932***	-0.0057
	(-4.45)	(-0.12)
EAI	-1.0593***	-0.1796***
	(-20.91)	(-6.64)
EG	-0.1220**	0.0108
	(-2.46)	(0.41)
EVENTS	-0.3874***	-0.1116***
	(-10.32)	(-5.66)
ANARP	-0.3411***	-0.0723***
	(-10.51)	(-4.13)
MEDIA	0.6942***	-0.0047
	(25.58)	(-0.32)
MV	-0.2997***	0.0392
	(-3.43)	(0.93)
MB	-43.9756***	-12.8812**
	(-4.22)	(-2.36)
Constant	0.7047***	0.5131***
	(8.82)	(12.30)
Observations	75,518	80,734
R-squared	0.385	0.204
Firm FE	YES	YES
Quarter FE	YES	YES

The results in Table 5 show that IIP activity has a significantly positive correlation with quarterly trading volume but does not a have significant relationship with quarterly Amihud illiquidity measure. Overall, the results provide weak evidence that, on a quarterly basis, higher level of interactive communication is related to higher level of market liquidity, but whether the price effect over a given trading volume is reduced is unclear.

4.5 IIP activity and the price informativeness for future earnings

The positive effect of IIP activities on stock liquidity shows that IIP activities can to some extent improve stock price formation. To further explore the effect of firm-investor interaction on firms' price informativeness—the information content incorporated in stock prices, with respect to future firm fundamentals. Kerr et al. (2020) show that liquidity is positively associated with the predictability of fundamentals. Improvement in stock liquidity can promote the incorporation of information into stock prices, leading to increases in stock price informativeness with respect to future fundamentals, e.g., reported earnings.

To examine this mechanism, I follow Lee and Watts (2021) and estimate the following equation using firm-quarter data:

$$CAR^{[-60,-1]} = \beta_0 + \beta_1\, SUE_{i,t} \times IIP_{i,t} + +\beta_3\, IIP_{i,t} + \; Other\ Disclosures + Controls + Fixed\ Effects + \; \varepsilon \qquad (2)$$

where the dependent variable is the market-adjusted return of the firm over days t-60 to t-1, with respective to quarter t's earnings announcement date (the earliest of the EAQ date, EAI date and EG date). SUE is standardized unexpected earnings for quarter t, defined as quarter t earnings subtracted by quarter t-4 earnings, scaled by market value on day t-60. Since β_1 is the coefficient on the interaction term between SUE and IIP activities, a positive β_1 indicates greater firm-investor interaction is related to improvement in using pre-earnings announcement returns to predict future SUEs. I use four IIP variables measured over days t-60 to t-1 with respective to quarter t's earnings announcement date. I maintain the other firm events consistent with the previous short-window analyses, each measured over days t-60 to t-1 with respective to quarter t's

earnings announcement date. Besides, referring to (Lee and Watts 2021), I control for market-to-book ratio, asset growth, firm size and return on asset, as well as firm and quarter fixed effects, with standard errors corrected for clustering at the firm level.

Table 6

IIP activity and the informativeness of price for future earnings

	Dependent Variable = $CAR^{[-60,-1]}$			
	(1)	(2)	(3)	(4)
Ques Num. × ***SUE***	**0.2863**			
	(1.43)			
Ques Len. × ***SUE***		**0.5157*** **		
		(3.03)		
Reply Num. × ***SUE***			**0.0785**	
			(0.37)	
Reply Len. × ***SUE***				**-0.3453***
				(-1.72)
SUE	1.8620***	-0.4437	2.3024***	4.6444***
	(4.25)	(-0.46)	(4.99)	(3.59)
Ques Num.	-0.0166**			
	(-2.10)			
Ques Len.		-0.0153**		
		(-2.26)		
Reply Num.			-0.0170**	
			(-2.19)	
Reply Len.				-0.0191***
				(-2.85)
EAQ	-0.1160***	-0.1161***	-0.1184***	-0.1181***
	(-4.95)	(-4.95)	(-5.07)	(-5.06)
EAI	0.0169	0.0174	0.0103	0.0103
	(0.76)	(0.78)	(0.46)	(0.46)

EG	0.0107	0.0108	0.0128	0.0135
	(0.79)	(0.79)	(0.95)	(0.99)
EVENTS	0.0534***	0.0535***	0.0559***	0.0560***
	(3.54)	(3.55)	(3.72)	(3.73)
ANARP	0.0573**	0.0569**	0.0651***	0.0654***
	(2.50)	(2.48)	(2.85)	(2.86)
MEDIA	-0.0301	-0.0301	-0.0316	-0.0313
	(-1.53)	(-1.53)	(-1.61)	(-1.60)
COVID	0.1162***	0.1163***	0.1164***	0.1172***
	(5.96)	(5.97)	(5.96)	(5.99)
SIZE	0.0281***	0.0281***	0.0270***	0.0267***
	(5.52)	(5.51)	(5.21)	(5.15)
MB	0.0168	0.0157	0.0057	0.0055
	(0.64)	(0.60)	(0.22)	(0.21)
GROWTH	0.3816*	0.3786*	0.3818*	0.3816*
	(1.91)	(1.90)	(1.91)	(1.91)
ROA	-0.1160***	-0.1161***	-0.1184***	-0.1181***
	(-4.95)	(-4.95)	(-5.07)	(-5.06)
Constant	-2.6380***	-2.5835***	-2.6359***	-2.5686***
	(-6.18)	(-6.04)	(-6.16)	(-5.99)
Observations	54,291	54,291	52,287	52,286
Adjusted R^2	0.108	0.108	0.113	0.113
Firm FE	YES	YES	YES	YES
Quarter FE	YES	YES	YES	YES

The results in Table 6 provide weak evidence that the cumulative pre-earnings announcement return is more positively correlated with SUE when firm-investor interaction is more active—especially when investors ask longer questions. Overall, this test shows that higher IIP activities over a quarter are related to greater price informativeness respective to the earnings surprise prior to the next quarter's earnings

announcement. This finding is consistent with the assumption that IIP activities reduce investor processing costs and thus improve price predictability related to future earnings.

4.6 IIP activity after the outbreak of COVID-19

As a final test, I examine the variation in IIP activity correlated to the outbreak of COVID-19. Integration costs are likely higher when 1) investors experience lockdown and the sharp reduction in physical communication, 2) information overload and uncertainty lead to rumors, panic and chaos, and 3) changes in firms, areas, industries and policy are unpredictable, as investors try to act on firm's financial results under the new situation. Thus, the outbreak of pandemic offers an ideal setting for testing changes in integration costs due to increased exogenous uncertainty. Specifically, I test the effect of this major change in society on IIP activities by estimating the following regression:

$$IIP_{i,t} = \alpha + \beta COVID_{i,t} + Other\ Disclosures + Controls + Fixed\ Effects + \varepsilon \quad (3)$$

where the dependent variable is the four IIP variables measured over days t to t+30, respective to quarter t's earnings announcement date, in natural logarithm form. The variable of interest is the extent to which people care about the pandemic and search for information about it, proxied by daily Baidu Search Index of "COVID-19" (measured in million). As before, I control for other firm disclosures and firm, year and seasonal fixed effects. The data is ranged from January 1, 2020 to December 31, 2022.

Table 7

Baidu Search Index of COVID-19 and $IIP^{[t,\,t+30]}$

	Ques Num.	Ques Len.	Reply Num.	Reply Len.
	(1)	(2)	(3)	(4)
COVID	0.1827***	0.1922***	0.1810***	0.2025***
	(124.50)	(108.93)	(121.38)	(113.32)
EAQ	0.1024***	0.1506***	0.1058***	0.1011***
	(25.79)	(31.55)	(26.22)	(20.90)
EAI	0.0143***	0.0082***	0.0132***	0.0533***
	(8.82)	(4.23)	(8.02)	(27.01)

EG	-0.0708***	-0.0565***	-0.0704***	-0.0877***
	(-31.66)	(-21.02)	(-30.99)	(-32.18)
EVENTS	0.0236***	0.0318***	0.0200***	0.0303***
	(21.30)	(23.91)	(17.78)	(22.52)
ANARP	-0.0530***	-0.0575***	-0.0538***	-0.0558***
	(-39.25)	(-35.44)	(-39.21)	(-33.94)
MEDIA	0.2289***	0.2432***	0.2308***	0.2486***
	(238.55)	(210.81)	(236.73)	(212.72)
SIZE	0.1262***	0.1276***	0.1131***	0.0907***
	(67.49)	(56.79)	(59.53)	(39.83)
MB	-0.0144***	-0.0188***	-0.0144***	-0.0192***
	(-33.13)	(-36.05)	(-32.54)	(-36.20)
GROWTH	0.0086***	0.0036***	0.0094***	0.0081***
	(15.83)	(5.52)	(16.99)	(12.24)
ROA	0.1467***	0.1417***	0.0839***	0.0948***
	(18.35)	(14.75)	(10.33)	(9.74)
Constant	-1.4139***	2.3571***	-1.1927***	3.4581***
	(-34.13)	(47.32)	(-28.33)	(68.52)
Observations	2,472,168	2,472,168	2,472,168	2,472,168
R-squared	0.502	0.447	0.491	0.462
Firm FE	YES	YES	YES	YES
Year & Seasonal FE	YES	YES	YES	YES

The results in Table 7 show that, when the public is more eager to acquire information about COVID-19 (generally when the pandemic becomes severe), the level of IIP activities is significantly higher. The t-values of COVID related to all four IIP proxies, ranged from 108.93 to 124.50, provide strong evidence that the pandemic, as a substantial exogenous change, is associated with higher information needs. This evidence, together with the previous tests that indicate IIP activities reduce information processing costs by satisfying investors' information needs, further supports the

conclusions derived from previous findings.

5. Conclusion

This study analyzes the causes and consequences of IIP activity, an online form of investor-initiated interaction. Between 2018 and 2022, the level of IIP activity generally has an increasing trend. I examine the engagement level of these activities and link activity level to market reactions, after controlling for other types of firm disclosure and news events. I also test the empirical correlation between platform interaction and firms' measurable benefits, i.e., stock liquidity and price informativeness.

My analyses show that 1) controlling for other firm events, higher platform interaction is correlated with higher trading volume but lower return volatility; 2) higher platform interaction is correlated with increase in market liquidity and price informativeness, and 3) the severeness of COVID-19 pandemic correlates with increase in platform activities. Taken together, these results suggest that online firm-investor interaction can reduce investor information costs and improve firm communication, bringing benefits to firms' price formation.

These findings add to the literature that examines that interaction between managers and investors. Studies show such interaction can reduce adverse selection and information asymmetry, while most literature focuses on institutional investors and sell-side analysts, participants that are highly sophisticated and influential. I complement this literature by showing that direct interaction on IIPs can benefit ordinary investors and that engaging in such activities can leverage substantial benefits to public firms. I also complement the literature studying firm-investor communication by adding an exogenous variable, the COVID-19 pandemic, reflected by both the data horizon and the proxy of Baidu Search Index. This exogenous event leads to surges in online interaction, information overload and thus information processing costs, all of which can be closely related to IIP activities and the market reaction variables of our interest. The finding that COVID-19 can increase ordinary investors' information needs and interaction level lends evidence that IIP activities play an important role in reducing information costs during a substantial exogenous shock. My study also suggests that

firms may benefit from including some frequently requested information into future IR program.

These findings can not only benefit firms and investors but are useful to regulators as well. Since dialogues can serve as an effective complement to disclosure files and help investors understand firms better, the regulators can adjust the form of disclosure and strengthen the role of interaction platforms to protect investors and improve market efficiency. Besides, regulators should consider increase online channels for participation and communication for market participants to strengthen the resilience to exogenous shock.

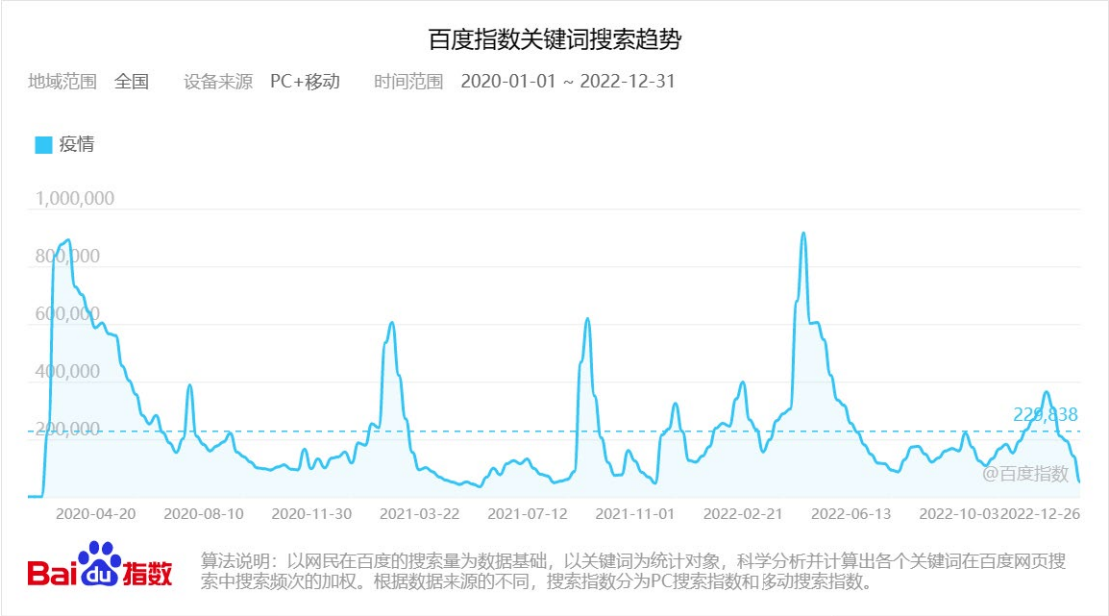
An important caveat is that these results are based on Chinese data and may not be generalizable to other countries. Three features of the Chinese setting should be emphasized. First, the COVID-19 significantly affected China for three years since 2020 due to the strict policy regarding prevention and lockdown. No other jurisdiction takes substantial resources and gives up economic growth like China to fight against COVID-19. Second, the quasi-mandatory participation by firms and quasi-anonymous participation by investors indicate that the sanction posed by SZSE or SHSE can affect behaviors of both parties. In other words, the results can be different without such official sanction. Third, most investors in China are highly unsophisticated and noise trading is significant with political forces intervening the ineffective market. The market situation can also affect the results.

In this study, I tested how the pandemic can be associated with platform interaction level. However, I did not directly examine how the pandemic can affect the correlation between IIP activity and market reaction. One attempt to extend the research is to regress an intersection term of IIP and COVID, instead of SUE-COVID intersection, to cumulated market-adjusted earnings. Since existing research has examined the relationship between IIP activity and price informativeness, and this study examined the correlation between COVID-19 (search index) and IIP activity, I can explore how "online" communication affects price informativeness in the future.

Policymaking has been seeking empirical evidence as basis these years (Leuz 2018). Although this study has the aforementioned limitations, the findings suggest

online interaction between firms and investors is an important development in firm communications, one that improves reporting transparency, inform ordinary investors, strengthen communication resilience, and improve the efficiency of equity markets.

Appendix A. Baidu Searches from 2020 to 2022



This figure presents the changes in Baidu Search Index regarding "COVID-19" from January 1, 2020 to December 31, 2022. The average frequency of searches is 229,838.

Appendix B. Main Variable Definitions

Variable name	Variable definition
Ques Num.	The number of questions posted on a firm's IIP, in the natural logarithm form.
Ques Len.	The total number of words in the questions posted on a firm's IIP, in the natural logarithm form.
Reply Num.	The number of replies posted by the firm on its IIP, in the natural logarithm form.
Reply Len.	The total number of words in the replies posted by the firm on its IIP, in the natural logarithm form.

IIP	A composite measure of platform activity, defined as the mean of four standardized measures: Ques Num., Ques Length, Reply Num., and Reply Length. I standardize each variable by subtracting its mean and dividing by its standard deviation. Higher values of IIP reflect more active participation on the platform.
EAQ	Indicator variable for a quick earnings announcement during the day.
EAI	Indicator variable for an interim report during the day.
EG	Indicator variable for an earning guidance during the day.
EVENTS	In daily analyses, EVENTS=1 if the firm issued a report of material events during the day, 0 otherwise; In longer horizon analyses, EVENTS = ln (1 + the number of reports of material events issued during period).
ANARP	In daily analyses, ANARP=1 if one or more analyst reports are issued during the day, 0 otherwise; In longer horizon analyses, EVENTS = ln (1 + the number of reports of material events issued during period).
MEDIA	In daily analyses, MEDIA=1 if the firm is mentioned in one or more news articles during the day, 0 otherwise; In longer horizon analyses, EVENTS = ln (1 + the number of reports of material events issued during period).
COVID	The number of Baidu searches during the day, measured in million.
VOLUME	Daily abnormal trading volume, defined as the residual from a firm-by-firm regression of daily stock turnover rate on the daily market-level turnover rate (see, for example, (Ferris, Haugen, and Makhija 1988; Huang et al. 2022)).
ABSRET	Daily absolute abnormal return, where abnormal return is defined as the residual from a firm-by-firm regression of daily stock return

	on the daily market return (similar to (Ferris, Haugen, and Makhija (1988)) and (Ke, Huddart, and Petroni 2003)).
AMIHUD	(Amihud 2002) illiquidity measure, defined as the ratio of the daily absolute return to the RMB trading volume. For quarterly analyses, this variable represents the average across all trading days during the quarter.
$CAR^{[-60,-1]}$	Cumulative market-adjusted return of the firm computed over days t-60 to t-1 relative to each quarter t's earnings announcement date. Measured in percent.
SUE	Standardized unexpected earnings, calculated as the current quarter earnings minus earnings from the corresponding quarter a year ago and scaled by market value on day t-60 relative to earnings announcement date. Measured in percent.

REFERENCES

Akbas, Ferhat, Stanimir Markov, Musa Subasi, and Eric Weisbrod. 2018. "Determinants and Consequences of Information Processing Delay: Evidence from the Thomson Reuters Institutional Brokers' Estimate System." *Journal of Financial Economics* 127 (2): 366–88. https://doi.org/10.1016/j.jfineco.2017.11.005.

Amihud, Yakov. 2002. "Illiquidity and Stock Returns: Cross-Section and Time-Series Effects." *Journal of Financial Markets* 5 (1): 31–56. https://doi.org/10.1016/S1386-4181(01)00024-6.

Amihud, Yakov, and Haim Mendelson. 1986. "Asset Pricing and the Bid-Ask Spread." *Journal of Financial Economics* 17 (2): 223–49. https://doi.org/10.1016/0304-405X(86)90065-6.

Bai, Xuelian, Yi Dong, and Nan Hu. 2019. "Financial Report Readability and Stock Return Synchronicity." *Applied Economics* 51 (4): 346–63. https://doi.org/10.1080/00036846.2018.1495824.

Baker, Malcolm, and Jeffrey Wurgler. 2006. "Investor Sentiment and the Cross-Section

of Stock Returns." *The Journal of Finance* 61 (4): 1645–80. https://doi.org/10.1111/j.1540-6261.2006.00885.x.

Barber, Brad M., and Terrance Odean. 2008. "All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors." *The Review of Financial Studies* 21 (2): 785–818.

Barry, Christopher B., and Stephen J. Brown. 1985. "Differential Information and Security Market Equilibrium." *The Journal of Financial and Quantitative Analysis* 20 (4): 407–22. https://doi.org/10.2307/2330758.

Ben-David, Itzhak, and Darren T. Roulstone. 2010. "Idiosyncratic Risk and Corporate Transactions." SSRN Scholarly Paper 972618. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.972618.

Bjørnskov, Christian. 2008. "Social Trust and Fractionalization: A Possible Reinterpretation." *European Sociological Review* 24 (3): 271–83. https://doi.org/10.1093/esr/jcn004.

Blankespoor, Elizabeth. 2018. "Firm Communication and Investor Response: A Framework and Discussion Integrating Social Media." *Accounting, Organizations and Society*, New Corporate Disclosures and New Methods, 68–69 (July): 80–87. https://doi.org/10.1016/j.aos.2018.03.009.

———. 2019. "The Impact of Information Processing Costs on Firm Disclosure Choice: Evidence from the XBRL Mandate." *Journal of Accounting Research* 57 (4): 919–67. https://doi.org/10.1111/1475-679X.12268.

Blankespoor, Elizabeth, Ed deHaan, and Iván Marinovic. 2020. "Disclosure Processing Costs, Investors' Information Choice, and Equity Market Outcomes: A Review." *Journal of Accounting and Economics* 70 (2): 101344. https://doi.org/10.1016/j.jacceco.2020.101344.

Blankespoor, Elizabeth, Ed Dehaan, John Wertz, and Christina Zhu. 2019. "Why Do Individual Investors Disregard Accounting Information? The Roles of Information Awareness and Acquisition Costs." *Journal of Accounting Research* 57 (1): 53–84. https://doi.org/10.1111/1475-679X.12248.

Bushee, Brian J., John E. Core, Wayne Guay, and Sophia J. W. Hamm. 2010. "The Role

of the Business Press as an Information Intermediary." *Journal of Accounting Research* 48 (1): 1–19. https://doi.org/10.1111/j.1475-679X.2009.00357.x.

Cao, Xing, Yongjie Zhang, Xu Feng, and Xiangtong Meng. 2021. "Investor Interaction and Price Efficiency: Evidence from Social Media." *Finance Research Letters* 40 (May): 101747. https://doi.org/10.1016/j.frl.2020.101747.

Chang, Hye Sun, Michael Donohoe, and Theodore Sougiannis. 2016. "Do Analysts Understand the Economic and Reporting Complexities of Derivatives?" *Journal of Accounting and Economics* 61 (2): 584–604. https://doi.org/10.1016/j.jacceco.2015.07.005.

Ding, Rong, and Wenxuan Hou. 2015. "Retail Investor Attention and Stock Liquidity." *Journal of International Financial Markets, Institutions and Money* 37 (July): 12–26. https://doi.org/10.1016/j.intfin.2015.04.001.

Engelberg, Joseph E., and Christopher A. Parsons. 2011. "The Causal Impact of Media in Financial Markets." *The Journal of Finance* 66 (1): 67–97. https://doi.org/10.1111/j.1540-6261.2010.01626.x.

Ferris, Stephen P., Robert A. Haugen, and Anil K. Makhija. 1988. "Predicting Contemporary Volume with Historic Volume at Differential Price Levels: Evidence Supporting the Disposition Effect." *The Journal of Finance* 43 (3): 677–97. https://doi.org/10.1111/j.1540-6261.1988.tb04599.x.

Filzen, Joshua J., and Kyle Peterson. 2015. "Financial Statement Complexity and Meeting Analysts' Expectations." *Contemporary Accounting Research* 32 (4): 1560–94. https://doi.org/10.1111/1911-3846.12135.

Fukuyama, Francis. 1995. "Social Capital and the Global Economy Essay." *Foreign Affairs* 74 (5): 89–103.

Gao, Meng, and Jiekun Huang. 2020. "Informing the Market: The Effect of Modern Information Technologies on Information Production." *The Review of Financial Studies* 33 (4): 1367–1411. https://doi.org/10.1093/rfs/hhz100.

Gomez, Enrique, Frank Heflin, James Moon, and James Warren. 2018. "Crowdsourced Financial Analysis and Information Asymmetry at Earnings Announcements." *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3274644.

Goodell, John W. 2020. “COVID-19 and Finance: Agendas for Future Research.” *Finance Research Letters* 35 (July): 101512. https://doi.org/10.1016/j.frl.2020.101512.

Guo, Shijun, Xin Yu, and Robert Faff. 2022. “When Investors Can Talk to Firms, Is It a Meaningful Conversation? Evidence from Investor Postings on Interactive Platforms.” *European Accounting Review*, 1–25.

Hassan, Tarek Alexander, Stephan Hollander, Laurence van Lent, Markus Schwedeler, and Ahmed Tahoun. 2020. “Firm-Level Exposure to Epidemic Diseases: COVID-19, SARS, and H1N1.” Working Paper 26971. Working Paper Series. National Bureau of Economic Research. https://doi.org/10.3386/w26971.

Hong, Harrison, and Jeremy C. Stein. 2007. “Disagreement and the Stock Market.” *Journal of Economic Perspectives* 21 (2): 109–28. https://doi.org/10.1257/jep.21.2.109.

Hsu, Yu-Lin, and Li-Kai (Connie) Liao. 2022. “Corporate Governance and Stock Performance: The Case of COVID-19 Crisis.” *Journal of Accounting and Public Policy* 41 (4): 106920. https://doi.org/10.1016/j.jaccpubpol.2021.106920.

Huang, Shiyang, Charles M. C. Lee, Yang Song, and Hong Xiang. 2022. “A Frog in Every Pan: Information Discreteness and the Lead-Lag Returns Puzzle.” *Journal of Financial Economics* 145 (2, Part A): 83–102. https://doi.org/10.1016/j.jfineco.2021.10.011.

Huberman, Gur, and Tomer Regev. 2001. “Contagious Speculation and a Cure for Cancer: A Nonevent That Made Stock Prices Soar.” *The Journal of Finance* 56 (1): 387–96. https://doi.org/10.1111/0022-1082.00330.

Indjejikian, Raffi J. 1991. “The Impact of Costly Information Interpretation on Firm Disclosure Decisions.” *Journal of Accounting Research* 29 (2): 277–301.

Ke, Bin, Steven Huddart, and Kathy Petroni. 2003. “What Insiders Know about Future Earnings and How They Use It: Evidence from Insider Trades.” *Journal of Accounting and Economics* 35 (3): 315–46. https://doi.org/10.1016/S0165-4101(03)00036-3.

Lawrence, Alastair, James Ryans, Estelle Sun, and Nikolay Laptev. 2018. “Earnings Announcement Promotions: A Yahoo Finance Field Experiment.” *Journal of Accounting and Economics* 66 (2): 399–414. https://doi.org/10.1016/j.jacceco.2018.08.004.

Lee, Charles M. C., and Edward M. Watts. 2021. “Tick Size Tolls: Can a Trading Slowdown Improve Earnings News Discovery?” *The Accounting Review* 96 (3): 373–401. https://doi.org/10.2308/TAR-2018-0689.

Lee, Charles M.C., and Qinlin Zhong. 2022. “Shall We Talk? The Role of Interactive Investor Platforms in Corporate Communication.” *Journal of Accounting and Economics* 74 (2–3): 101524. https://doi.org/10.1016/j.jacceco.2022.101524.

Leuz, Christian. 2018. “Evidence-Based Policymaking: Promise, Challenges and Opportunities for Accounting and Financial Markets Research.” *Accounting and Business Research* 48 (5): 582–608. https://doi.org/10.1080/00014788.2018.1470151.

Lo, Kin, Felipe Ramos, and Rafael Rogo. 2017. “Earnings Management and Annual Report Readability.” *Journal of Accounting and Economics* 63 (1): 1–25. https://doi.org/10.1016/j.jacceco.2016.09.002.

Miller, Brian P. 2010. “The Effects of Reporting Complexity on Small and Large Investor Trading.” *The Accounting Review* 85 (6): 2107–43. https://doi.org/10.2308/accr.00000001.

Mola, Simona, P. Raghavendra Rau, and Ajay Khorana. 2013. “Is There Life after the Complete Loss of Analyst Coverage?” *The Accounting Review* 88 (2): 667–705. https://doi.org/10.2308/accr-50330.

Ortmann, Regina, Matthias Pelster, and Sascha Tobias Wengerek. 2020. “COVID-19 and Investor Behavior.” *Finance Research Letters* 37 (November): 101717. https://doi.org/10.1016/j.frl.2020.101717.

Petersen, Mitchell A. 2009. “Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches.” *The Review of Financial Studies* 22 (1): 435–80. https://doi.org/10.1093/rfs/hhn053.

Peterson, Kyle. 2012. “Accounting Complexity, Misreporting, and the Consequences of Misreporting.” *Review of Accounting Studies* 17 (1): 72–95. https://doi.org/10.1007/s11142-011-9164-5.

Ramelli, Stefano, and Alexander F Wagner. 2020. “Feverish Stock Price Reactions to COVID-19*.” *The Review of Corporate Finance Studies* 9 (3): 622–55. https://doi.org/10.1093/rcfs/cfaa012.

Rathore, Farooq, and Fareeha Farooq. 2020. “Information Overload and Infodemic in the COVID-19 Pandemic.” *Journal of the Pakistan Medical Association* 70 (May): S-162. https://doi.org/10.5455/JPMA.38.

Rennekamp, Kristina M., Mani Sethuraman, and Blake A. Steenhoven. 2022. “Engagement in Earnings Conference Calls.” *Journal of Accounting and Economics* 74 (1): 101498. https://doi.org/10.1016/j.jacceco.2022.101498.

Schaub, Nic. 2018. “The Role of Data Providers as Information Intermediaries.” *Journal of Financial and Quantitative Analysis* 53 (4): 1805–38. https://doi.org/10.1017/S0022109018000133.

Wong, T. J., Gwen Yu, Shubo Zhang, and Tianyu Zhang. 2023. “Calling for Transparency: Evidence from a Field Experiment.” SSRN Scholarly Paper 4338061. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.4338061.