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**Article**

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## Discretionary stock halt and analyst forecast

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### ABSTRACT

The increasing number of discretionary stock halts, has attracted the attention of regulatory authorities and scholars. They have also become a significant obstacle to the internationalization of China's capital market. This article systematically examines the impact of discretionary halts on the information environment from the perspective of analysts. The study finds that discretionary halts lead to a decrease in the number of analysts following, a decline in analysts' forecast accuracy, and an increase in analysts' forecast dispersion. Further research finds that reducing the amount and the decline of the quality of information disclosure are two crucial channels for discretionary stock halts deteriorating the information environment. Cross-sectional tests show that the impact of discretionary stock halts is more pronounced in samples with lower investor protection and higher agency costs. Above results indicate that the discretionary halt deteriorates the company's information environment, which provides important policy implications for China's capital market reform.

### KEYWORDS

Discretionary stock halt;  
information environment;  
analyst forecast

## 1. Introduction

As an emerging market, China's capital market has successively adopted and implemented various theoretically controversial transaction stabilisation mechanisms in order to protect the interests of investors and promote the stability and development of the capital market. The most important of these is the price limit and trading suspension policy (Liao et al., 2009). Trading suspension means that the listed company or the exchange/supervisory authority temporarily suspends the stock trading before the company releasing important news or when the buying and selling orders are extremely unbalanced. The direct consequence is that the circulation rights of stocks are restricted and shareholders are unable to buy or sell stocks. The original intention of the trading halts is to give investors time to collect and digest important information in order to protect the interests of uninformed traders, thereby increasing transparency and stabilising the market (Shi et al., 2019). This is the so-called 'cooling-off hypothesis'. However, 'learning by trading model' argues that stock halts may also deprive traders' opportunity to learn from the transaction and impair the transmission of market information, and the

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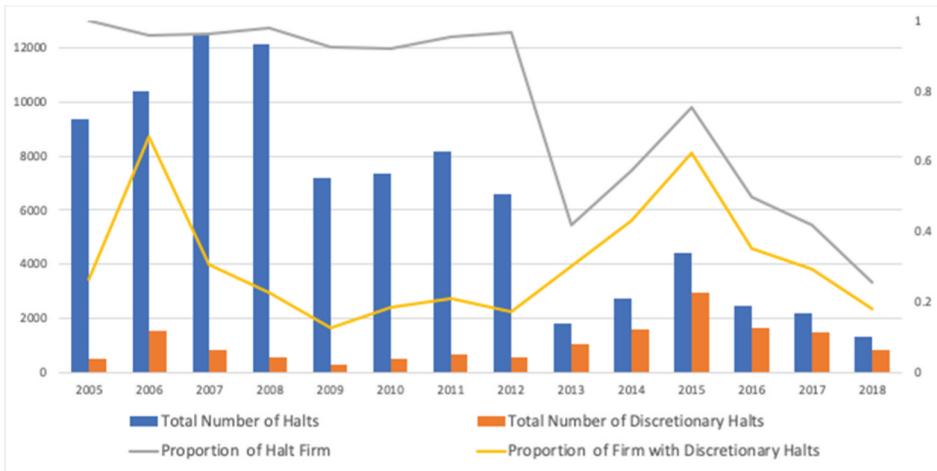
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gross damage to the right of circulation will also hinder investors' normal trading needs, which in turn will have a negative spillover effect on other companies without suspension (Cui & Gozluclu, 2016). In addition, specific to the Chinese market, the arbitrary use of stock halts also creates opportunities for insiders to seek personal gain, and ultimately damage the interests of external investors (Shi et al., 2019).

Stock halts are regulated by the 'Stock Listing Rules' of Shanghai and Shenzhen Stock Exchange, under the guidance and supervision of the China Securities Regulatory Commission. Trading halts can be divided into warning suspensions initiated by regulatory agencies and routine suspensions initiated by listed companies. Regulators use warning suspension to ask for the firm to rectify its violations and protect investors' rights and interests by alerting them. Routine suspension aims at avoiding overreaction by the market and promoting information transmission when listed companies make major decisions. In order to comply with the development of the capital market and the changes in the stock trading system, the regulatory authorities have made many adjustments to stock halts. For example, the 'Stock Listing Rules' has been revised 12 times since its implementation in 1998, and the revision in 2004 still allows routine halts on matters such as the publication of regular reports and holding shareholder meetings. However, at the end of 2018, it limits the shortest suspension duration, and only allows few reasons to apply for a halt, such as failure to disclose financial reports in a timely or sufficient manner and major errors requiring rectification and insufficient disclosure of regular reports, and so on. As major events are the main reason for stock halts, Shanghai and Shenzhen Stock Exchange issued supplementary explanatory documents in May 2016, namely the 'Guidelines for the Trading Suspension and Resumption of Listed Companies on Major Events' and the 'Memorandum of Information Disclosure – Trading Suspension and Resumption of Listed Firms', which clarified how to connect different types of halts and calculate the duration continuously, reasonably determine the maximum time limit of suspensions, and disclose information in stages during stock halts. Those policies also quantitatively regulate the reasons, duration and information disclosure during the trading halt period. Institutional adjustments have shown a trend of gradual reduction in the scope of halts, refinement of suspension requirements, transfer of suspension decision-making power from listed companies to the exchanges, and ever-increasing penalties for violations.

Figure 1 shows that since 2005, with the gradual cancellation of routine trading halts due to the publication of periodic reports and other reasons, the number and proportion of halt firm have declined, but different from the normal trading halts, suspension anomalies emerged one after another, such as 'abuse the right of trading halt', 'arbitrary halt application', 'delayed the time to resume', and 'inadequate information disclosure during trading halts'. The number and percentage of companies with discretionary halts increased year by year after 2012, and reached a peak in 2015. Compared with normal trading halts, discretionary halts show the main characteristics of long time, low compliance, and insufficient information disclosure. Compared with 0.2%, the average halt percentage in the MSCI market index, China A-share market reached 10%. This also makes the liquidity risk and traceability problems caused by the company's trading suspension become the key concern in the process of China's A-shares entering the MSCI index. MSCI clearly pointed out that only if A-shares rectify their trading problems



**Figure 1.** Annual trend of trading halts in China's capital market.

can they be included in the emerging market index. What is more, if the company suspends stock trading for more than 50 days, it will also be removed from the index. This means that criticised discretionary halts have become a major obstacle to the internationalisation of China's capital markets (MSCI, 2016, 2017). Therefore, it is urgent to accurately and systematically evaluate the economic consequences of the decades-long trading suspension system. Most of the existing literatures directly examine the influence of stock halts on the micro-market structure by using micro-trading data, and all of them find that China's suspension system seriously damages the liquidity of stocks and leads to the increase in stock price volatility (Liao et al., 2009). Compared with normal trading suspensions, discretionary halts may be more harmful. For this reason, Shi et al. (2019) first distinguished trading halts and use event study to test the negative impact of discretionary halts on investor wealth. Different from the above-mentioned researches, which are based on secondary market transactions and focus on a single suspension, we examine the economic consequences of discretionary halts from the perspective of information environment, and pay attention to the cumulative consequences. Specifically, we explore the impact of company's discretionary halts on analyst following, forecast accuracy, and forecast divergence.

Information is the cornerstone of the capital market. On the one hand, the information environment affects the efficiency and fairness of the capital market, which determines the degree of international recognition. On the other hand, it also affects the judgement and evaluation of various stakeholders on the enterprise, which determines firms' resource acquisition and business decision-making, and it is significant to the stability of the capital market and the long-term development of the enterprise. For this purpose, the regulatory authorities of various countries are committed to completing the information disclosure rules and strengthening their implementation in order to improve the efficiency of market information. Plenty of studies have found that the improvement of information environment can help to reduce transaction risks, restrain the opportunistic behaviour of insiders, alleviate external financing constraints (Diamond and Verrechia, 1991; Jin & Myers, 2006), and ultimately promote the improvement of firm value and the

development of national economy. As important information intermediaries, not only analysts' behaviour of collecting information and publishing research reports directly affects the information environment of the capital market (Schipper, 1991), but the characteristics of their forecasts can also be used to measure the quality of the information environment (Chen et al., 2015). Therefore, we are concerned about the impact of the company's arbitrary suspension of trading on the information environment, specifically, whether discretionary halts affect analysts' forecast behaviour. Since stock price changes reflect various private information owned by market traders, analysts will naturally pay attention to the information contained (Clement et al., 2011). Discretionary halts with poor information disclosure also reduce the amount and quality of public information available to analysts. If discretionary halts affect the behaviour of analysts, specifically reducing analyst following, deteriorating forecast accuracy, and increasing forecast divergence, then it is not difficult to infer that discretionary halts do harm to the information environment. Of course, discretionary halts may reduce the uncertainty of trading by increasing the time for investors to digest information, while analysts have more sources and stronger processing capabilities of information, so the lack of trading information also increases demand of analysts' reports. Therefore, discretionary halts may not affect the decision-making behaviour of analysts. Such tension also makes our research topic as an empirical question.

Our empirical analysis is based on a sample of A-share companies in Shanghai and Shenzhen stock exchanges from 2005 to 2018, and finds that discretionary halts led to fewer analysts following, a decline in forecast accuracy, and an increase in the degree of forecast divergence. The decrease in the amount of information that can be collected by information users and the decrease in the quality of information disclosed by information providers are two important channels for discretionary halts deteriorating information environment: For one thing, discretionary halts abnormally terminate stock circulation, which reduces information content of stock price and hinders the price discovery process of information users. Insufficient information related to discretionary halts also reduces the amount of information available, increases the cost for information obtaining. For the other, discretionary halts deprive shareholders' trading rights and weaken the supervisory role of investors, so suspension companies have opportunities to cover up their illegal disclosure and transactions, which decreases the information quality and increases forecast risk of analysts. Further, we find that better investor protection and lower agency costs alleviate the negative impact of discretionary halts on analyst forecast. Finally, we show that the guidance attracts analysts' attention on discretionary halts and sends an alarm to their decision-making. We also test how discretionary halts affect the quality of public and private information obtained by analysts. The above research findings mean that discretionary halts seriously damage firm's information environment.

Our study contributes to the literature in several ways. First, this article enriches the research on economic consequences of stock suspensions, especially discretionary halts. Existing literature examines the impact of stock suspension on investors from the perspective of secondary market transactions and evaluates the short-term effects of the implementation of the suspension policy (Liao et al., 2009; Shi et al., 2019), but discretionary stock halts, which attract much attention from the international capital market and the media, are less discussed. This study helps us to investigate the

economic consequences of trading halts more comprehensively from the angle of the third-party stakeholders, and estimates the effect of policy improvement from a long-term perspective.

Second, this article further expands studies on the influencing factors of the information environment. Existing researches mainly focus on the perspective of regular reports, management performance forecasts, and social responsibility, ranging from mandatory disclosure to voluntary disclosure, from financial information to non-financial information (Dhaliwal et al., 2011; X. Li & Xiao, 2015). This article finds that in addition to being directly disclosed by the company, the valuable information transmitted through stock transactions is necessary and helpful to understand how firm's decision-making behaviour and their deeper motivation affect the information environment, and then influences the decisions of other stakeholders.

Third, this article contributes to a growing body of the literature on determinants of analyst forecasts. On the one hand, from the perspective of institutional changes and social development, an increasing number of studies focus on the impact of specific events in China, such as margin trading and the opening of high-speed rails (Chu et al., 2019). As one of the important systems for stable transactions in the capital market and a prominent phenomenon in China, the impact of discretionary halts on analyst forecasts is a new topic worthy of studying, which helps us understand the decision-making process of analysts more comprehensively. On the other hand, from the angle of information acquisition, previous studies mostly concentrate on the overall information quality as a determinant of analyst forecast, and ignore the difference between public information and private information. Following Barron et al. (1998), we examine the impact of discretionary halts on the quality of information obtained by analysts from two sources, and further reveal how does information quality affect analyst forecasts.

The remainder of the paper proceeds as follows. Section 2 reviews the literature and develops research hypotheses. Section 3 shows research design and sample selection. Section 4 presents empirical results. Section 5 is the conclusion.

## **2. Literature review and hypothesis development**

### **2.1. *Economic consequences of stock halts***

Stock suspension is an important transaction stabilisation mechanism in the capital market, generally existing in various countries, and its regulations are slightly different. For example, in the U.S. market the exchanges decide whether the stock can be suspended, and according to the suspension reasons, suspensions can be divided into regulatory suspension and price limit suspension, with relatively short duration and high probability. According to statistics, between 2012 and 2015, the number of days that NASDAQ and NYSE suspended for more than 5 times accounted for 97% of the total trading days. Similar to the U.S. market, stock halts in China's capital market is mainly under the guidance of the China Securities Regulatory Commission, and Shanghai and Shenzhen Stock Exchange makes provisions in their 'Stock Listing Rules' and guidance documents for supplementary explanations. However, the restraint power of exchanges is limited, and companies have great flexibility to decide on stock halts, compared to the US

market. The phenomenon of suspension in China still presents three characteristics: higher frequency, longer duration and lower compliance of information disclosure during trading suspension (Shi et al., 2019).

Stock suspension means that the listed company or the exchange/supervisory authority temporarily suspends stock trading before the company is about to release important news or when the buying and selling orders are extremely unbalanced. The direct result is that the circulation rights of the stocks are restricted and shareholders are unable to do any market operation. Regarding the economic consequences of stock halts, the academic community has not reached a consensus. On the one hand, stock halts may have positive consequences by speeding up price discovery and reducing trading uncertainty. The original intention of the trading suspension system is to protect the interests of uninformed traders by reducing information asymmetry, thereby increasing market transparency and stabilising the market environment (Liao et al., 2009). This is the so-called 'cooling-off period'. Temporary interruption of trading gives investors an amount of time to collect and digest important information, and at the same time quickly respond to new information, reconsiders their buying and selling transaction decisions, and speeds up the process of forming a new equilibrium price in the market (Corwin & Lipson, 2000). The theoretical analysis of Greenwald and Stein (1991) shows that the incomplete trading mechanism causes market crash, and stock halts will help the market cope with information shocks, thereby maintaining trading stability. The above prediction is supported by empirical evidence in Hauser et al. (2006) by showing that investors can adjust their buying and selling decisions based on new information, while price fluctuations on the halt announcement day are the process of price discovery, and the rate of price discovery increases more than 40% after trading suspension, partly because of the management's disclosure of sensitive information during the trading suspension period (Kryzanowski & Nemiroff, 1998).

However, on the other hand, stock halts may also deprive traders of the opportunity to learn in the transaction and damage the transmission of market information because of the interruption of trading. Existing studies show that stock trading is a process of continuous absorption and release of information. The "Learning by doing" mechanism means that investors can obtain the information contained in the stock price by observing stock price changes, and then continuously adjust their investment decisions (Grundy & Maureen, 1989), while stock halts hinder the channel of information transmission through stock price changes. Lee et al. (1994) tested the effect of trading suspension on stock information efficiency by setting up a virtual control group and found that the trading volume and fluctuation of the real suspension group on the first day after trading suspension are about twice that of the control group, which means that stock halts did not play a role in stabilising the market. Frino et al. (2011) supplemented that trading halts impair market efficiency by increasing the volatility of price and trading volume. Drawing on the method of Lee et al. (1994), Liao et al. (2009) found similar results in China's capital market, indicating that stock halts do not play a role in improving market efficiency. Moreover, gross damage to liquidity rights will also hinder investors from fulfilling their normal trading needs, which in turn have a negative spillover effect on companies without suspension (Cui & Gozluklu, 2016).

Specific to the Chinese market, because the trading suspension system gives companies more flexibility, listed companies generally use suspension randomly, which is manifested in higher frequency, longer duration, and insufficient information disclosure. Compared with normal halts, discretionary halts are more harmful for depriving trading rights and losing trading time more strongly, with fundamentally different motivations of the company's decision-making. Simultaneously, discretionary halts also have more problems in terms of information disclosure because management and major shareholders use them as a tool to grab self-interest. Wu et al. (2013) found that controlling shareholders manipulate stock halts before private placement to achieve the purpose of tunnelling. Shi et al. (2019) distinguished trading suspensions to figure out the negative impact of discretionary halts on investor wealth and found that discretionary halts create opportunities for insiders to seek self-interest, leading to a substantial reduction in investor wealth, and firms with discretionary halts have a higher probability of restatement.

## **2.2. Determinants of analysts' forecasts**

As an important participant in the capital market, analysts rely on their professional analysis capabilities to collect, process and transmit information to the market. By providing earnings forecasts, stock recommendations and rating reports, analysts ultimately alleviate information asymmetry between internal and external stakeholders, improve the efficiency of resource allocation and promote the sound development of the financial market (Fang, 2007). Analysts' forecast behaviours include a series of decisions, such as selecting a target company, forecasting earnings performance, and issuing reports, depending on the trade-off between the predicted benefits and costs (Bradshaw, 2011).

As an information intermediary, the optimal amount of service provided by analysts is an equilibrium after considering the market's information demand and the difficulty of information supply (Bhushan, 1989). On the one hand, investors' information demand is an important determinant of analyst following (Brown et al., 2015). If the relative value of forecasts is greater, analysts are more likely to follow those of related companies. In terms of time series, companies with fewer analysts' attention in previous years will have more analyst following in the future. One possible explanation is that institutional investors have greater demand for information from these companies (O'Brien and Bhushan, 1990). From a cross-sectional point of view, firms with opaque environment attract analyst following because at this time analyst's private information have greater value (Lobo et al., 2012; Loh & Stulz, 2018). On the other hand, the difficulty of the forecast itself is also an important factor that affects the analyst following decision. Using data from the US and China, studies confirm that business diversification significantly reduces analyst following, because of the increasing workload of analysts' information processing (Moreton, 2004). Studies use voluntary disclosure and internal control quality data to reach similar conclusions because a better information environment reduces the difficulty of forecasting, and as a result improves the probability of analyst following (Healy & Hutton, 1999).

The accuracy and divergence of analyst forecasts are affected by the process of analysts obtaining information and the target company's disclosure of information. For one thing, analyst's stronger ability to obtain and interpret information contributes to the quantity and quality of information, and thus improves their forecast accuracy and consistency

(Clement, 1999). Also, practical experience and unique channels of private information acquisition are conducive for analysts to perform better. Further, simple operations and transparent information disclosure of target firms lower the difficulty of analyst forecasts. For example, analysts issue inaccurate forecasts to companies engaged in multinational businesses, especially in developing countries (Riahi and Belkoui, 2002). In addition, economic benefits are also an important factor affecting analyst forecasts. Lin and McNichols (1998) and Michaely and Womack (1999) examined the influence of investment banking and underwriting relationships on analyst forecasts. It turns out that forecasts from related analysts are more optimistic because of damaged independence. Specific to China, many scholars combine China's special institutional factors and social background to investigate its impact on analyst forecasts. For example, Huang et al. (2018) take the implementation of the margin trading as a natural experiment and find that short-selling mechanism can restrain management's opportunistic behaviour, improve information transparency and reduce analyst forecast errors. Yang et al. (2019) found that the accuracy and consistency of analyst forecasts increase after the opening of high-speed rail, which facilitates analysts' information acquisition.

For a long time, stock prices as an important source of information have attracted the attention of financial scholars. Stock price changes reflect various private information owned by market traders, and analysts can learn from them (Lys & Sohn, 1990). Stock halts may either improve the information efficiency of stock price due to the 'cooling-off effect', or damage it for blocking 'learning by doing' mechanism. In particular, the proliferation of discretionary halts in China, the impact of discretionary halts on the information environment becomes an important empirical question. What we care about is whether analysts are aware of this situation and then make adjustments in their forecasts. Specifically, do discretionary halts change the analyst following decisions, and whether the accuracy and divergence of their forecasts are affected? Through the examination of the above problems, we can get the net effect.

### **2.3. Discretionary stock halts and analyst forecasts**

Costs and benefits are important considerations for analysts to make following decisions (Brown et al., 2015). Discretionary stock halts increase in the cost of obtaining information for analysts. First, suspension interrupts stock trading and hinders information transmission channels through stock price changes. Compared with normal suspension, discretionary halts take up more trading time and therefore have more serious consequences, including greater damage to the efficiency of stock price (Frino et al., 2011; Lee et al., 1994; Liao et al., 2009), while stock price is an important public channel for analysts to obtain information (Clement et al., 2011). Second, discretionary halts, accompanied by insufficient information disclosure, reduce the amount of public information. These two sources of information reduction force analysts to make more efforts to discover ignored public information or obtain private information through other channels, which greatly increases the cost of obtaining information and the difficulty of accurate forecasting (Schipper, 1991). As the frequency and duration of discretionary halts increase, the cumulative impact of the above effects becomes more and more obvious. Third, discretionary halts also reduce the benefit of analyst forecasts, because they reflect the occurrence of self-interested behaviour of internal controllers (Luo et al., 2020; Shi et al., 2019), which leads

to investors wealth loss. As institutional investors are less willing to invest in suspension firms, they will naturally have less demand for the analysis report of those targets, and the lack of attention or recognition of analysts' opinions will affect gains and career development of analysts (Gu et al., 2013). Finally, discretionary halts are often accompanied by negative information such as restatements, which do harm to the reputation of analysts, thereby greatly increasing forecast risks (Hong & Kubik, 2003), reducing analysts' willingness to follow suspension firms. Based on the above analysis, our first hypothesis is stated formally as follows:

**H1:** *Ceteris paribus*, discretionary stock halts decrease analyst following.

The accuracy and divergence of analyst forecasts are affected by the quantity and quality of information available to analysts. With the increasing number of discretionary halts, analysts own a smaller information set of firm's true situation so the negative consequences are stronger. First, the more public information, the higher the accuracy and consistency of analyst forecasts (Bowen et al., 2004). On one hand, discretionary halts temporarily interrupt stock trading, so that the stock price cannot reflect the information it contains in a timely and sufficient manner, and reduces the information content of it. On the other hand, discretionary halts mean that information disclosure during the suspension period is insufficient. Adequately, the reduction of public information not only directly affects the quantity and quality of public information available to analysts, but also has a negative impact on the quantity and quality of the entire information set, preventing analysts from completely and deeply interpreting the information they have obtained. It is foreseeable that as the quantity and quality of information available decrease, the accuracy of analyst forecasts naturally decreases, and the divergence between forecasts increases (Fang, 2007). Second, if China's analyst market is a competitive market; then, the incremental information will be more valuable for companies with discretionary halts, and analysts will be more motivated to obtain information through other channels (Bradshaw, 2011; Jia et al., 2015), and consequently the heterogeneity of information further increases the divergence of analyst forecasts. Simultaneously, the decreasing analyst following leads to a reduction of information release, which intensifies the lack of information, hinders the positive externalities generated by the role of information intermediary, and increases forecast errors. While analysts cannot accurately judge the validity of those analyses, they lower the degree of follow-up to consistent forecasts, and as a result, the forecast divergence increases. Third, discretionary halts usually represent poor accounting information on listed firms, and low-quality information cannot truly reflect operating activities, which reduces the accuracy and consistency of analyst forecasts (D. Li & Jia, 2009). Finally, stock suspensions are often accompanied by large fluctuations in prices and trading volumes (Hu et al., 2017). What is worse, discretionary halts imply that firms deliberately conceal negative or insider trading information with greater uncertainty, which increases the difficulty of analyst forecasts, thereby reducing the accuracy and consistency of their forecasts. Based on the above analysis, our second and third hypothesis is stated formally as follows:

**H2:** *Ceteris paribus*, discretionary stock halts decrease the accuracy of analyst forecasts.

**H3:** *Ceteris paribus*, discretionary stock halts decrease the consistency of analyst forecasts.

Discretionary stock halts may not have an impact on analyst forecast behaviours. On the one hand, increasing number of suspensions or the extension of time gives investors more opportunities for trading adjustments and price discovery. The decrease in uncertainty also reduces the difficulty of analyst forecasts, which offsets the negative consequences of discretionary halts. On the other hand, the ability of analysts to obtain information may be stronger than that of various investors in the capital market. Analysts can obtain the necessary information for their analysis through other alternative channels, and have the ability to identify firm's misconducts and avoid negative impact to their self-interests. The existence of the above effects also makes our research topic a question that needs empirical testing.

### 3. Research design and sample selection

#### 3.1. Main variable measurement

##### 3.1.1. Analyst forecast

Following Byard et al. (2011) and Chu et al. (2019), we examine analyst forecast behaviours, including analyst coverage, analyst forecast accuracy, and analyst forecast divergence. Among them, analyst coverage is measured by the natural logarithm of the number of analysts forecasting EPS plus 1 at the year end. We calculate forecast accuracy and divergence by using methods as follows:

$$\text{FERROR} = |\text{MEPS} - \text{MEDIAN}(\text{FEPS})| / \text{PRICE} \quad (1)$$

$$\text{FDISP} = \text{SD}(\text{FEPS}) / \text{PRICE} \quad (2)$$

MEPS refers to firm's actual earnings per share for the year. FEPS refers to the latest EPS forecast value of all analysts at the year end. MEDIAN (FEPS) and SD (FEPS), respectively, refer to the median and standard deviations of the latest EPS forecast value of all analysts at the year-end. PRICE is the market value per share at the end of last year.

##### 3.1.2. Discretionary stock halt

Firstly, referring to Shi et al. (2019), we divide trading suspensions into private placement, material asset reorganisations, other major events and other matters according to the reasons for stock halts. According to the requirements of Shanghai and Shenzhen Stock Exchange in 2016, discretionary stock halt refers to: (1) The halt reason is private placement without material asset reorganisation and the suspension duration exceeds 10 trading days, or involving material asset reorganisation and the suspension duration exceeds 1 month; (2) The halt is due to other major matters and the suspension duration exceeds 10 trading days; (3) The reason for the stock halt is material asset reorganisation and the suspension duration exceeds 3 months; (4) Suspension caused by other matters for more than 10 trading days. Then, we add up the duration of firm's discretionary stock halts, and finally calculate the ratio of the duration of discretionary stock halts to the normal trading time that year (PER\_ABNORHALT).

Considering that this article explores long-term economic consequences of discretionary stock halts, we only consider the reasons and duration of suspensions, because the accumulation of halt duration is more in line with our research scenario. Luo et al. (2020) also found that major shareholders suspend stocks for a long time to cover up their violations of equity pledges and such manipulation actually damages the efficiency of the capital market. The reason why we use the ratio of discretionary halt duration to normal trading time rather than absolute number is that the ‘abnormal’ part of the lost trading time affects the analyst’s decision, and using our method describes the research question more accurately. We also use a number of discretionary stock halts (NO\_ABNORHALT) and last year suspensions in robustness tests.

### 3.2. Model specification

Following Fang (2007), D. Li and Jia (2009), we construct the following regression model to test the impact of discretionary stock halts on analyst forecasts:

$$\begin{aligned}
 FA = & \alpha + \beta_1 * PER\_ABNORHALT + \beta_2 * LNTA + \beta_3 * LEV + \\
 & \beta_4 * ROA + \beta_5 * INST + \beta_6 * MB + \\
 & \beta_7 * BH + \beta_8 * PRIVATE + \beta_9 * OWNERSHIP + \\
 & \beta_{10} * BIG10 + \beta_{11} * MINDEX + \beta_{12} * STAR + \beta_{13} * BROKERSIZE + \beta_{14} * EXPERIENCE + \\
 & \sum INDUSTRY + \sum YEAR
 \end{aligned} \tag{3}$$

The dependent variable FA stands for three variables (FELLOW, FERROR, FDISP) to describe analyst forecast behaviours, and the independent variable PER\_ABNORHALT is the duration of discretionary stock halts. With reference to previous literature, we also control other variables that may affect analyst forecasts, such as firm size, profitability, marketisation index, star analyst ratio, and brokerage size, etc. See Table 1 for details.

### 3.3. Data and sample selection

The data for the analyst forecast comes from CSMAR. Considering that the sample of analyst forecasts collected by CSMAR before 2005 is small, the sample interval of this article is 2005–2018. The basic data on stock halts comes from CSMAR and we supplement the halting reasons announced by listed companies in the iFinD database. Other data also comes from the CSMAR database. Then, some data are removed according to the following criteria: (1) Listed companies classified as financial industry by the China Securities Regulatory Commission in 2012; (2) The analyst’s name and report release date are missing; (3) According to the existing literature (Byard et al., 2011), in the case of multiple reports issued by the same analyst, only the latest forecast data as of the end of the year will be retained; (4) Samples with less than 3 analysts forecasts data (to calculate the degree of analyst forecast divergence); (5) Samples with negative net assets; (6) ST companies; (7) Samples with missing data. According to the above criteria, 16,424 firm-year observations are finally obtained. In order to eliminate the influence of outliers, we winsorise all variables on 1% and 99% level. In order to control possible cross-sectional effects, all regression standard errors were clustered at firm level.

**Table 1.** Main variable definition.

	Symbol	Name	Definition
Dependent Variables	FOLLOW	Analyst Following	Number of analysts forecasting EPS at the year end
	FERROR	Forecast Accuracy	The absolute value of the difference between the forecast and actual EPS
Independent Variables	FDISP	Forecast Divergence	Standard deviation of the last analyst forecast
	PER_ABNORHALT	Duration of Discretionary Stock Halts	The ratio of the duration of discretionary stock halts to the normal trading time
	NO_ABNORHALT	Time of Discretionary Stock Halts	The natural logarithm of the time of discretionary stock halts plus 1
Control Variables	LNTA	Firm Size	Log (Total asset)
	LEV	Leverage	Long-term debt/total assets
	ROA	Return on Assets	Profit/total assets
	INST	Shareholding of Institutional Investors	Institutional investors' shareholding/total shares
	MB	Market to Book Ratio	The ratio of the market value of total assets to the book value
	BH	B/H Share	Binary indicator equals 1 if the company has B/H shares
	PRIVATE	Ultimate controller	Binary indicator equals 1 if the ultimate controller is private
	OWNERSHIP	Control	Ultimate controller's shareholding/total shares
	BIG10	Big 10 Audit Firm	Binary indicator equals 1 if the auditor is from the top 10 firms in audit income
	MINDEX	Marketisation Index	Marketisation index, sorted by decile (Fan et al., 2011)
	STAR	Star Analyst Ratio	Proportion of star analysts among analysts following
	BROKERSIZE	Brokerage Size	Natural logarithm of the number of unique analysts at a brokerage in a year.
	EXPERIENCE	Analyst Experience	Natural logarithm of the average quarters of analyst practice
INDUSTRY	Industry Dummy Variables	Binary indicator equals 1 if the firm belongs to a certain industry	
YEAR	Year Dummy Variable	Binary indicator equals 1 if the observation belongs to a certain year	

**Table 2.** Descriptive statistics.

	N	Mean	STD	Min	Median	Max
FOLLOW	16424	2.581	0.699	1.386	2.565	4.407
FERROR	16424	0.009	0.012	0	0.004	0.121
FDISP	16424	0.009	0.010	0	0.006	0.065
PER_ABNORHALT	16424	0.038	0.104	0	0	0.539
NO_ABNORHALT	16424	0.126	0.285	0	0	1.609
LNTA	16424	22.345	1.293	20.082	22.164	26.244
LEV	16424	0.075	0.101	0	0.028	0.447
ROA	16424	0.065	0.047	-0.060	0.056	0.232
INST	16424	0.321	0.239	0.001	0.281	0.865
MB	16424	3.591	2.649	0.601	2.818	15.192
BH	16424	0.068	0.252	0	0	1
PRIVATE	16424	0.578	0.494	0	1	1
OWNERSHIP	16424	0.383	0.156	0.002	0.371	0.900
BIG10	16,424	0.548	0.498	0	1	1
MINDEX	16424	0.747	0.274	0	0.889	1
STAR	16424	0.188	0.145	0	0.167	0.667
BROKERSIZE	16424	3.664	0.310	2.708	3.670	4.346
EXPERIENCE	16424	2.569	0.413	1.135	2.636	3.361

Descriptive statistics are shown in Table 2. The average analyst following of listed companies during the sample period is 2.581, the mean of analyst forecast error is 0.009, and the mean of analyst forecast divergence is 0.009, which are similar to the existing literature (Chu et al., 2019). The mean of discretionary stock halt duration is 0.038, and the standard deviation is 0.104. In terms of control variables, institutional investors hold 32.1% of the total shares, while 6.8% of the companies have B/H shares, and 54.8% of the listed companies are audited by the top 10 audit firms.

The correlation matrix in Table 3 shows that the duration of discretionary stock halts (PER\_ABNORHALT) and analyst following (FELLOW) are significantly negatively correlated, which means that discretionary stock halt reduces analyst following. The coefficient between PER\_ABNORHALT and FDISP is significantly negative, but the results of univariate tests may be affected by company's operating performance, corporate governance, and the local institutional environment. For example, D. Li and Jia (2009) found that higher earnings quality and better regional institutional environment contribute to higher accuracy and smaller divergence of analyst forecasts. Therefore, in regression analysis, we control variables that may affect analyst forecasts or the relationship between discretionary stock halts and analyst forecasts, in order to obtain the causal relationship between main variables.

## 4. Empirical results

### 4.1. Main results

Table 4 lists the impact of discretionary stock halts on analyst forecasts. The dependent variable in column (1) is analyst coverage (FELLOW), and the coefficient of the independent variable PER\_ABNORHALT is  $-0.329$  with significance level of 1%, which means discretionary stock halts reduce analysts following. The dependent variable in column (2) is the analyst's forecast accuracy (FERROR), the coefficient of PER\_ABNORHALT is  $0.003$ , significantly positive at 1% level, indicating that discretionary stock halts reduce analyst forecast accuracy. In column (3), the dependent variable is the divergence of analyst forecast (FDISP), and the coefficient of PER\_ABNORHALT is significantly positive, indicating that discretionary stock halts force analysts to rely more on differentiated information and the degree of forecast divergence increase. At the same time, we find that stronger profitability, better growth opportunities contribute to more analyst following, higher forecast accuracy and smaller divergence. Results of control variables are consistent with existing literature (Wang et al., 2015). The above results show that discretionary stock halts lead to a decrease in the number of analysts following, a decrease in the accuracy of analyst forecasts, and an increase in the degree of analyst forecast divergence, which means that discretionary stock halts do worsen company's information environment.

The t-values are adjusted according to individual company clusters (cluster). \*, \*\*, \*\*\* represent the significance level of 10%, 5%, and 1%, respectively.

### 4.2. Robustness tests

In the robustness tests, we change the measurements of independent variables and dependent variables. In terms of independent variables, we count the number of discretionary stock halts. In terms of dependent variables, we use the mean of analyst forecast



**Table 4.** Main results.

	(1) FOLLOW	(2) FERROR	(3) FDISP
PER_ABNORHALT	-0.329*** (-7.301)	0.003*** (3.551)	0.002*** (3.352)
LNTA	0.299*** (34.049)	0.001*** (5.391)	0.001*** (10.557)
LEV	-0.474*** (-5.059)	0.008*** (5.390)	0.007*** (5.938)
ROA	4.587*** (27.433)	-0.023*** (-8.252)	-0.010*** (-4.157)
INST	0.216*** (6.865)	-0.000 (-0.256)	0.000 (0.233)
MB	0.047*** (14.553)	-0.000*** (-5.972)	-0.000*** (-3.863)
BH	-0.046 (-1.157)	-0.001** (-2.387)	-0.001** (-2.537)
PRIVATE	0.113*** (5.373)	0.000 (1.412)	0.000* (1.955)
OWNERSHIP	-0.379*** (-7.369)	-0.001 (-1.503)	-0.001 (-1.151)
BIG10	0.030** (2.011)	-0.000* (-1.891)	-0.000* (-1.774)
MINDEX	0.095*** (2.991)	-0.001* (-1.900)	-0.001*** (-2.574)
STAR	-0.371*** (-8.786)	0.003*** (3.634)	0.001* (1.776)
BROKERSIZE	0.015 (0.642)	0.000 (1.116)	0.001*** (2.821)
EXPERIENCE	0.022 (1.359)	0.001** (2.398)	0.001*** (2.610)
CONS	-4.382*** (-21.033)	-0.001 (-0.234)	-0.016*** (-5.824)
Year	YES	YES	YES
Industry	YES	YES	YES
Observations	16,424	16,424	16,424
Adj. R <sup>2</sup>	0.379	0.102	0.171

divided by the book value per share at the year end to measure FERROR and FDISP. The results are consistent with the main regression, indicating that the measurement of variables does not affect the main conclusions of this article.

### 4.3. Endogeneity tests

In order to alleviate the endogeneity problems, we use the following methods to conduct endogeneity tests.

1. Omitted variables. In order to rule out alternative explanations caused by omitted variables, we first control the firm's fixed effect to exclude the missing variables related to firm characteristics. Second, referring to existing literature, we add more control variables related to decision-making and corporate governance. As shown in Table 5 Panel A, after controlling the firm's fixed effect and other possible influencing factors, the coefficients of the independent variables still meet our expectations.

2. Propensity score matching (PSM). To alleviate the problem of self-selection, we use propensity score matching to perform one-to-one matching, and regress model (3) on the matched sample. Specifically, we first construct a PSM sample, in which the treatment

Table 5. The results of endogeneity tests.

	Firm Fixed Effect			Add Control Variables		
	(1)	(2)	(3)	(4)	(5)	(6)
PER_ABNORHALT	FOLLOW -0.116*** (-2.956)	FERROR 0.002** (1.993)	FDISP 0.002** (2.248)	FOLLOW -0.308*** (-5.729)	FERROR 0.002** (2.047)	FDISP 0.002** (2.563)
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	NO	NO	NO	YES	YES	YES
Firm	YES	YES	YES	NO	NO	NO
Observations	16,424	16,424	16,424	7824	7824	7824
Adj. R <sup>2</sup>	0.331	0.044	0.082	0.431	0.159	0.214

	(1)	(2)	(3)
	DUM = 0	DUM = 1	DIFF
FOLLOW	2.501	2.430	-0.071***
FERROR	0.008	0.009	0.001**
FDISP	0.0086	0.0092	0.0006**
PER_ABNORHALT	0	0.228	0.228***
NO_ABNORHALT	0	0.738	0.738***
LINTA	22.293	22.239	-0.054
LEV	0.071	0.072	0.001
ROA	0.0582	0.0580	-0.0002
INST	0.294	0.291	-0.003
MB	4.277	4.329	0.052
BH	0.056	0.052	-0.004
PRIVATE	0.645	0.655	0.010
OWNERSHIP	0.368	0.365	-0.003
BIG10	0.571	0.559	-0.012
MINDEX	0.750	0.754	0.004
STAR	0.228	0.225	-0.003
BROKERSIZE	3.651	3.650	-0.001
EXPERIENCE	2.560	2.556	0.006
Observations	2246	2246	0

(Continued)



Table 5. (Continued).

Panel C: Results of PSM Method						
	(1)	(2)	(3)	(4)	(5)	(6)
	FOLLOW	FERROR	FDISP	FOLLOW	FERROR	FDISP
PER_ABNORHALT	-0.305*** (-5.960)	0.004*** (3.911)	0.003*** (3.376)	-0.070*** (-3.415)	0.001*** (3.245)	0.001*** (3.138)
NO_ABNORHALT						
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	4892	4892	4892	4892	4892	4892
Adj. R <sup>2</sup>	0.340	0.119	0.180	0.337	0.119	0.180
Panel D: Reverse Causality						
	Lag Independent Variables			Lag All Explanatory Variables		
	(1)	(2)	(3)	(4)	(5)	(6)
	FOLLOW	FERROR	FDISP	FOLLOW	FERROR	FDISP
LAG_PER_ABNORHALT	-0.225*** (-4.968)	0.002* (1.765)	0.002*** (2.837)	-0.116** (-2.410)	0.002** (2.299)	0.003*** (3.536)
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	16,424	16,424	16,424	15,097	15,097	15,097
Adj. R <sup>2</sup>	0.378	0.102	0.171	0.351	0.090	0.177

Table 6. Channel inspection.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Panel A: Illiquidity</b>							
		Path A		Path B		Path C	
	FOLLOW	FERROR	FDISP	ILLIQ	FOLLOW	FERROR	FDISP
PER_ABNORHALT	-0.332*** (-7.294)	0.003*** (3.583)	0.002*** (3.246)	0.054*** (9.096)	-0.247*** (-5.402)	0.003*** (3.334)	0.002*** (2.821)
ILLIQ					-1.581*** (-14.537)	0.004* (1.764)	0.006*** (3.642)
CONTROLS	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES	YES
Observations	15,963	15,963	15,963	15,963	15,963	15,963	15,963
Adj. R <sup>2</sup>	0.375	0.103	0.170	0.415	0.386	0.103	0.171
<b>Panel B: Earnings Quality</b>							
		Path a		Path b		Path c	
	FOLLOW	FERROR	FDISP	AQ	FOLLOW	FERROR	FDISP
PER_ABNORHALT	-0.341*** (-7.215)	0.003*** (3.005)	0.002*** (2.746)	0.018** (2.398)	-0.336*** (-7.086)	0.003*** (2.943)	0.002*** (2.646)
AQ					-0.107* (-1.685)	0.003*** (2.400)	0.005*** (4.386)
CONTROLS	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES	YES
Observations	13,824	13,824	13,824	13,824	13,824	13,824	13,824
Adj. R <sup>2</sup>	0.389	0.099	0.163	0.054	0.390	0.100	0.165

(Continued)



Table 6. (Continued).

	(1)		(2)		(3)		(4)		(5)		(6)		(7)
	FOLLOW	Path a FERROR	FOLLOW	Path a FERROR	FDISP	Path b OPACITY	FDISP	Path b OPACITY	FOLLOW	Path c FERROR	FDISP	Path c FERROR	FDISP
PER_ABNORHALT	-0.398*** (-7.444)	0.004*** (3.652)	-0.398*** (-7.444)	0.004*** (3.652)	0.002*** (2.765)	0.572*** (9.898)	0.002*** (2.765)	0.572*** (9.898)	-0.304*** (-5.779)	0.003*** (2.819)	0.002** (2.116)	0.003*** (2.819)	0.002** (2.116)
OPACITY									-0.167*** (-13.310)	0.001*** (7.186)	0.001*** (5.550)	0.001*** (7.186)	0.001*** (5.550)
CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833
Adj. R <sup>2</sup>	0.376	0.118	0.376	0.118	0.188	0.103	0.188	0.103	0.394	0.124	0.191	0.124	0.191

Table 7. Cross-sectional tests.

	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Investor Protection</b>						
	FOLLOW	FOLLOW	FERROR	FERROR	FDISP	FDISP
	High Investor Protection	Low Investor Protection	High Investor Protection	Low Investor Protection	High Investor Protection	Low Investor Protection
PER_ABNORHALT	-0.236*** (-3.885)	-0.446*** (-6.656)	0.002* (1.785)	0.005*** (3.309)	0.001 (1.467)	0.004*** (3.598)
<b>DIFF</b>		<b>-0.210**</b>		<b>-0.003*</b>		<b>-0.003**</b>
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	8983	7441	8983	7441	8983	7441
Adj. R <sup>2</sup>	0.370	0.401	0.100	0.105	0.164	0.179
<b>Panel B: Agency Cost</b>						
	(1)	(2)	(3)	(4)	(5)	(6)
	FOLLOW	FOLLOW	FERROR	FERROR	FDISP	FDISP
	High Agency Cost	Low Agency Cost	High Agency Cost	Low Agency Cost	High Agency Cost	Low Agency Cost
PER_ABNORHALT	-0.479*** (-7.616)	-0.191*** (-3.018)	0.005*** (3.800)	0.001 (0.886)	0.004*** (3.162)	0.001 (1.403)
<b>DIFF</b>		<b>0.288***</b>		<b>0.004**</b>		<b>0.003</b>
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	7608	8816	7608	8816	7608	8816
Adj. R <sup>2</sup>	0.386	0.385	0.108	0.103	0.159	0.186

group is a sample with discretionary stock halts, and the control group is a sample without discretionary stock halts that year. Second, we calculate the propensity matching score and use the Logit model to calculate the probability of discretionary stock halts, where the dependent variable is a binary variable for whether discretionary stock halts occur, and explanatory variables are the same as model (3). The third step is to match the sample using a one-to-one nearest neighbour matching method, and the matched sample contains 4892 (2246 pairs) firm-year observations. Table 5 Panel B shows the differences between the treatment and control samples. Fourth, we use the matched sample to perform the multiple regression. As shown in Table 5 Panel C, the coefficients of independent variables are consistent with the results in the main regression, indicating that discretionary stock halts decrease analyst coverage, increases the error of analyst forecasts, and makes forecasts more divergent.

3. Reverse causality. A possible explanation for reverse causality in this article is that firms with opaque information environment and less analyst coverage receive less external supervision, which makes them more likely to take a halt at will. In order to overcome the influence of reverse causality, and the endogenous problems that may be caused by cross-sectional data, we lagged the independent variables by using firm's stock suspension last year. We also lagged all explanatory variables by one period. The results are shown in Table 5 Panel D. In both cases, the coefficients of LAG\_PER\_ABNORHALT show the same results as the main regression. The longer discretionary stocks halt, the fewer the number of analysts following, the lower the forecast accuracy, and the higher the forecast divergence.

#### 4.4. Channel inspection

The reduction in the amount of information that users can collect and the decline in the quality of information disclosed by providers are two important channels for discretionary stock halts deteriorating information environment. On the one hand, discretionary stock halts terminate stock trading, reduces stock price information content and hinders the process of information users' stock prices discovery. Insufficient information disclosure related to discretionary halts also reduces the amount of information available to information users. The reduction of public information will naturally have an impact on analysts' forecasting behaviour (Clement et al., 2011). On the other hand, depriving shareholders' trading rights, discretionary stock halts weaken the supervisory role of investors. Suspension companies have opportunities to conceal their illegal information disclosure and transactions, which do great harm to the information quality (Shi et al., 2019). Higher analysis costs and forecast risks reduce the analyst's willingness to follow the firm, and less information and lower information quality reduce the accuracy and consistency of analyst forecasts (D. Li & Jia, 2009).

Following the methods of Baron and Kenny (1986), from the perspective of information users obtaining information and information disclosure by information providers, we separately test whether the information content of stock prices and the quality of information have an intermediary effect on the relationship between discretionary stock halts and analyst forecasts. Specifically, we first use stock illiquidity (ILLIQ) as a proxy for stock price information content. The larger the ILLIQ, the higher the stock illiquidity and the lower the stock price information content. Secondly, referring to Dechow and Dichev

**Table 8.** The impact of the guidance of Shanghai and Shenzhen Stock Exchanges in 2016.

<b>Panel A: PSM-DID</b>						
	Include the Sample of 2016			Exclude the Sample of 2016		
	(1)	(2)	(3)	(4)	(5)	(6)
	FOLLOW	FERROR	FDISP	FOLLOW	FERROR	FDISP
TREAT	-0.018 (-0.787)	0.00001 (0.016)	0.001 (1.402)	-0.027 (-1.161)	0.0001 (0.203)	0.001 (1.460)
POST	-0.094*** (-3.605)	-0.003*** (-6.595)	-0.003*** (-9.018)	-0.180*** (-4.695)	-0.002*** (-2.684)	-0.002*** (-3.849)
TREAT*POST	-0.067* (-1.847)	0.001** (1.980)	0.0002 (0.471)	-0.121** (-2.537)	0.002** (2.419)	-0.0003 (-0.477)
CONTROLS	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	3497	3497	3497	2705	2705	2705
Adj. R <sup>2</sup>	0.278	0.092	0.122	0.315	0.079	0.095

<b>Panel B: Placebo test</b>						
	Advance 1 Year			Advance 2 Years		
	(1)	(2)	(3)	(4)	(5)	(6)
	FOLLOW	FERROR	FDISP	FOLLOW	FERROR	FDISP
TREAT	-0.038 (-1.187)	0.001 (1.161)	0.001** (2.250)	-0.022 (-0.415)	0.002 (1.542)	0.002** (2.232)
FPOST	-0.172*** (-6.073)	-0.002*** (-4.434)	-0.002*** (-6.207)	-0.271*** (-6.833)	-0.002*** (-2.723)	-0.003*** (-6.052)
TREAT*FPOST	-0.004 (-0.118)	-0.0004 (-0.512)	-0.0005 (-0.845)	-0.007 (-0.132)	-0.002 (-1.378)	-0.001 (-1.512)
CONTROLS	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	3654	3654	3654	3260	3260	3260
Adj. R <sup>2</sup>	0.300	0.088	0.107	0.317	0.083	0.116

(2002), we use DD model to calculate earnings quality (AQ), the larger the AQ, the lower the earnings quality. Third, following Fang (2007), the information disclosure assessment rating (Opacity) issued by the Shenzhen Stock Exchange is used to measure the quality of information disclosure, and higher value of Opacity means lower disclosure quality. The results are shown in Table 6. Panel A shows the result of illiquidity. The coefficient of PER\_ABNORHALT in Path A is consistent with expectations. Discretionary stock halts reduce analyst coverage, and increase the forecast error and forecast divergence. The coefficient of the independent variable in Path B is 0.054, which is significantly positive at the 1% level, indicating that discretionary stock halts increase the illiquidity and reduces the information content of stock price. The coefficients of the independent variable PER\_ABNORHALT and the intermediary variable ILLIQ in Path C are both significantly positive, meaning that the stock price information content is one of the channels that affects the relationship between discretionary stock halts and analyst forecasts, and it plays a partial mediating role. Panel B and Panel C, respectively, list the results of the earnings quality and the quality of information disclosure. Both show that the quality of information has achieved partial mediating effect between discretionary stock halts and the analyst's forecast behaviour.

#### 4.5. Cross-sectional tests

The above study finds that discretionary stock halts reduce analyst coverage, the accuracy and consistency of analyst forecasts. Subsequently, we are concerned about whether the above findings are different under various circumstances. Specifically, we consider investor protection from the perspective of information users obtaining information, and agency costs from the perspective of information providers disclosing information.

In terms of information acquisition, the direct restraint of external information users on corporate behaviour is relatively limited, which requires favourable market development and institutional environment to restrict improper behaviours of enterprises. Existing literature finds that investor protection is an important institutional determinant of corporate governance (La Porta et al., 2000). Better investor protection secures external information users' right to obtain information, restrains internal controllers, opportunistic behaviours, and improves the quality of the firm's information disclosure. We expect that when the degree of investor protection is low, external investors have greater resistance to obtain information, and the negative impact of discretionary stock halts on the information environment will be more significant. We use the regional marketisation index constructed by Fan et al. (2011) as a proxy for investor protection. The higher the degree of marketisation, the better the investor protection. As shown in Table 7 Panel A, compared with the lower degree of investor protection group, the absolute value of PER\_ABNORHALT coefficient is smaller in the group with higher degree of investor protection, and the difference between groups is significant, indicating that improving investor protection limits firm's improper behaviours and therefore alleviates the negative impact of discretionary stock halts on analysts' forecasts.

In terms of information disclosure, the internal controller has an information advantage over other stakeholders. Internal controllers more frequently use the information advantage to harm the interests of other shareholders (Li et al., 2009) under the situation of higher agency cost. As a result, the quality of information disclosure will decrease, and the transparency of the company will be lower. On the contrary, internal controllers always disclose voluntary information to improve the information environment when the agency cost is lower. We predict that insiders have stronger motivation and ability to disclose low-quality information for their own benefit under higher agency costs, and the negative impact of discretionary stock halts on the information environment will be more significant. Drawing on the existing literature, we use the separation of control and ownership rights to measure the principal agency problem. The higher the separation, the higher the agency cost of the enterprise. As shown in Table 7 Panel B, the magnitude and significance of the coefficient are smaller in the group with higher agency costs, which indicates that the reduction of agency costs alleviates the opportunistic behaviour of management, thereby reducing the negative impact of stock halts on analyst forecasts.

Table 9. Additional analyses.

	(1) PUBLIC	(2) PRIVATE	(3) CONSENSUS	(4) PUBLIC	(5) PRIVATE	(6) CONSENSUS
PER_ABNORHALT	-5.311 (-1.154)	-2.504*** (-8.348)	-0.001 (-0.082)	-2.769* (-1.690)	-0.681*** (-5.400)	-0.004 (-0.814)
NO_ABNORHALT						
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	16,377	16,377	16,377	16,377	16,377	16,377
Adj. R <sup>2</sup>	0.061	0.186	0.181	0.061	0.185	0.181
<b>Panel B: All Trading Halts</b>						
	(1) FOLLOW	(2) FERROR	(3) FDISP	(4) FOLLOW	(5) FERROR	(6) FDISP
PER_HALT	-0.329*** (-7.322)	0.004*** (4.161)	0.003*** (4.334)	-0.041*** (-3.555)	0.001*** (5.321)	0.001*** (8.273)
NO_HALT						
CONTROLS	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	16,424	16,424	16,424	16,424	16,424	16,424
Adj. R <sup>2</sup>	0.379	0.103	0.172	0.378	0.104	0.175

#### **4.6. The impact of the guidance of Shanghai and Shenzhen stock exchange's in 2016**

In order to minimise the occurrence of discretionary stock halts, prevent abuse of halts, and ultimately improve information efficiency, Shanghai and Shenzhen Stock Exchanges issued the 'Guidelines for the Trading Suspension and Resumption of Listed Companies on Major Events' and the 'Memorandum of Information Disclosure – Trading Suspension and Resumption of Listed Firms' on 27 May 2016, including tighter suspension standards, shorter halt duration, and requiring more efforts of implementation. For example, it stipulates that 'The Exchange may conduct on-site inspections and take supervisory or disciplinary measures against listed companies and responsible persons when listed companies apply for stock halts randomly, or listed companies, controlling shareholders, and other related parties abuse trading halts, delay trading resumption time, violate commitments, fail to perform corresponding decision-making procedures, and disclose untrue, inaccurate, or incomplete information'. What impact will the introduction of policies have on the decision-making behaviour of analysts? On the one hand, the penalties for discretionary stock halts in the guidelines are stricter, which encourage listed companies to reduce discretionary halts and improve information environment, so that analyst coverage, forecast accuracy, and forecast consistency will increase. However, with the guidance issuance, discretionary stock halts will indeed be restricted to a certain extent. In the case of overall improvement, analysts have negative comments on firms that still have discretionary halts. Such phenomenon will be more prominent, which will lead to further adjustment of decision-making, and therefore analysts' following willingness and their forecast accuracy and consistency will decline. Therefore, the impact of policies is an empirical question.

We use PSM-DID to further test the impact of the 'Major Events Guidelines Document'. Specifically, on the basis of the PSM sample, TREAT is a binary variable that equals 1 if discretionary halts occur and 0 otherwise. POST is a binary variable that equals 1 in the policy announcement and subsequent years. We select the two years before and after the policy as window period. Since the policy was announced and implemented in the middle of 2016, in order to eliminate the possible complex situation that year, we also delete those observations. The results are shown in Panel A [Table 8](#). Regardless of whether the sample of 2016 is deleted, the coefficient of TREAT\*POST is significant in the tests, except for using the forecast divergence as a dependent variable. Following the placebo test in [Chen et al. \(2015\)](#), we advance the event year by one or 2 years as a fake event year. As shown in Panel B of [Table 8](#), the coefficients of TREAT\*FPOST are not significant. The above results indicate that after the policy comes out discretionary halts have a more obvious impact on analysts. In other words, the release of the policy indeed brings warnings to analysts, so analysts pay more attention to discretionary stock halts and adjust their behaviours timely.

#### 4.7. Additional analysis

Analysts' information sources can be divided into public information and private information. An opposing hypothesis in this article is that discretionary stock halts hinder the release of stock price information and reduces the amount of public information. Analysts will obtain more private information to meet the requirements of forecasting, while private information will increase the value of analyst forecasts, so the number of analysts following increases, and the accuracy and consistency of forecasts improve (Lobo et al., 2012). In order to verify the rationality of the theoretical analysis above, following Barron et al. (1998), we calculate the average accuracy of public information (PBULIC) and private information (PRIVATE), and the relative accuracy of public information and private information (CONSENSUS), in order to examine the impact of discretionary stock halts on the accuracy of information from different sources. Specific measurements are as follows:

$$\text{PUBLIC} = (\text{SE} - \text{D}/\text{N}) / [(1 - 1/\text{N})\text{D} + \text{SE}]^2 \quad (4)$$

$$\text{PRIVATE} = \text{D} / [(1 - 1/\text{N})\text{D} + \text{SE}]^2 \quad (5)$$

$$\text{CONSENSUS} = \text{PUBLIC} / (\text{PUBLIC} + \text{PRIVATE}) \quad (6)$$

Where D represents the variance predicted by all analysts in the company that year. SE represents the mean square error of all analyst forecasts. N represents the number of analysts following. As shown in Table 9 Panel A. The duration of discretionary halts significantly reduces the accuracy of private information, while the negative impact on the accuracy of public information is not significant. The frequency of discretionary halts does harm to both the accuracy of public and private information, especially to private information. The above conclusions negate the antithesis hypothesis from the perspective of information quality. That is, when a firm suspends randomly, analysts cannot obtain high-quality private information to increase the value of their forecasts. Therefore, the damage to the quantity and quality of information caused by discretionary halts affect analyst forecast behaviours.

Taking into account the actual situation of China capital market, we find that in addition to discretionary halts, there are a large number of normal halts. In fact, the classification of discretionary and normal halts is somewhat arbitrary (Shi et al., 2019). Therefore, for the robustness of our conclusion, we use the duration and frequency of all stock halts as independent variables to re-examine, where the total duration of stock halts (PER\_HALT) equals to the ratio of all halts of the company and the exchange's annual trading hours, and the frequency of stock halts (NO\_HALT) equals to the natural logarithm of total suspension time plus 1. As shown in Table 9 Panel B, the direction and significance of independent variables coefficients are the same as those described above, which means the results are consistent.

## 5. Conclusion

The increasing proliferation of trading halts, especially discretionary stock halts, has become a major obstacle to the internationalisation of China's capital market, and it has also attracted the attention of regulatory authorities and scholars. This article systematically examines the

impact of discretionary halts on the information environment from the perspective of analysts, and we find that the more listed companies suspend at will, the fewer analysts following, the lower the accuracy and consistency of analyst forecasts. This effect is mainly achieved through two channels: (1) Discretionary stock halts abnormally terminated stock trading, reduces the information content of the stock price and hinders the process of stock price discovery. Insufficient information disclosure related to the stock halts also reduces the amount of information available to information users and increases the cost of analysts' information acquisition. (2) Depriving shareholders' trading rights, discretionary stock halts weaken the supervisory role of investors, so firms have the opportunity to conceal their illegal information disclosure and transactions. The decline in the quality of information disclosed to the outside users increases the forecast risk of analysts. Further, this article explores the impact of investor protection and agency costs on the above findings from the perspectives of information users obtaining information and information providers' disclosing information. Higher investor protection and lower agency costs significantly alleviate the above relationship between discretionary stock halts and analyst forecast behaviours. Finally, this article examines the impact of the 2016 Shanghai and Shenzhen Stock Exchange's guidance, and finds that the guidance sends an alarm to analysts. As a result, analysts adjust their forecast behaviours after identifying discretionary halts. Further, additional analysis shows that compared with public information, discretionary stock halts have a greater impact on the quality of private information obtained by analysts, which negates the antithesis hypothesis. In summary, the findings of this article confirm that discretionary stock halts damage firm's information environment, which means that the stock halt system has not achieved the expected effect of maintaining the stable development of the market and protecting the interests of investors but on the contrary (Liao et al., 2009; Shi et al., 2019).

The conclusions of this article enrich the research on the economic consequences of trading halts, especially discretionary stock halts. Unlike existing event studies that examine short-term consequences, this article focuses on the long-term effects of discretionary stock halts on analyst forecasts, from the perspective of the information environment. The conclusion shows that, as one of the stakeholders of listed companies, analysts' decision-making process is closely related to the behaviours of their target firms. At the same time, policy changes will cause analysts to pay attention to certain market activities. Further research can explore how auditors, creditors, and other stakeholders react to discretionary stock halts. This article also expands the determinants of information environment and analyst forecasts, especially in the developing capital market. This allows us to have a more comprehensive understanding of what kind of firm attracts analyst following and what are the possible impacts on the accuracy and consistency in the context of the Chinese system.

The conclusions also have practical significance: Firstly, for listed companies, unnecessary trading halts, especially discretionary stock halts, should be reduced. Firms are supposed to follow laws and regulations, and appropriately use market trading tools. Secondly, for policy-makers, it is necessary to clarify the specific reasons for the company to apply for stock halts, and make quantitative guidance for operations. Finally, in order to reduce negative impacts, the regulator should correctly understand principles of policy, grasp the policy direction, and intensify supervision in advance, especially for those activities where firms have autonomous operating authority, while the Securities Regulatory Commission, exchanges or other regulatory agencies can detect and decide.

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