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**Article**

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China Journal of Accounting Research

**Provided in Cooperation with:**

Sun Yat-sen University

*Suggested Citation:* Song, Yunling; Ji, Xinwei (2012) : Enforcement actions and their effectiveness in securities regulation: Empirical evidence from management earnings forecasts, China Journal of Accounting Research, ISSN 1755-3091, Elsevier, Amsterdam, Vol. 5, Iss. 1, pp. 59-81,  
<https://doi.org/10.1016/j.cjar.2012.03.003>

This Version is available at:

<https://hdl.handle.net/10419/187566>

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# Enforcement actions and their effectiveness in securities regulation: Empirical evidence from management earnings forecasts

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## ARTICLE INFO

### Article history:

Received 28 April 2011

Accepted 15 December 2011

Available online 11 May 2012

### JEL classification:

C31

D73

M41

### Keywords:

Enforcement actions

Management earnings forecasts

Irregularities

Selection bias

## ABSTRACT

Due to resource constraints, securities regulators cannot find or punish all firms that have conducted irregular or even illegal activities (hereafter referred to as fraud). Those who study securities regulations can only find the instances of fraud that have been punished, not those that have not been punished, and it is these unknown cases that would make the best control sample for studies of enforcement action criteria. China's mandatory management earnings forecasts solve this sampling problem. In the A-share market, firms that have not forecasted as mandated are likely in a position to be punished by securities regulators or are attempting to escape punishment, and their identification allows researchers to build suitable study and control samples when examining securities regulations. Our results indicate that enforcement actions taken by securities regulators are selective. The probability that a firm will be punished for irregular management forecasting is significantly related to proxies for survival rates. Specifically, fraudulent firms with lower return on assets (ROAs) or higher cash flow risk are more likely to be punished. Further analysis shows that selective enforcement of regulations has had little positive effect on the quality of listed firms' management forecasts.

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## 1. Introduction

Due to resource constraints, securities regulators cannot discover and punish all instances of fraud. Therefore, many firms escape exposure and/or punishment. This leads to an important line of questioning, namely how do securities regulators identify questionable firms to examine? Is their targeting random or selective? Unfortunately, due to the absence of suitable control samples,<sup>1</sup> explorations of securities regulation preferences are rare. Management earnings forecasts (hereafter referred to as MFs) provide us with the opportunity to solve this issue. In the A-share market, MFs are mandatory. Firms with performance that meets specific criteria must forecast within specified time periods. Since 2000, some of the firms that have not forecasted as mandated have been punished by securities regulators, but most escaped punishment. Under these conditions, samples of firms that have been fined and firms that have escaped punishment can be built simultaneously (and used as a control sample) with homogeneous instances of fraud, which solves the sampling problems confronted by researchers.

Our results indicate that the enforcement actions of securities regulators are selective. The probability that a firm will be punished for irregular forecasting is significantly correlated with proxies for survival rates. Specifically, fraudulent firms with lower return on assets (ROAs) or higher cash flow risk are more likely to be punished.

From a conservatism perspective, selective enforcement is unquestionable. In China's one-way trading system, investors can only profit from increases in stock prices, and the principle of value investment states that a price increase is the result of good news, while a lower survival rate is the result of bad news. Therefore, the punishment of firms using bad news becomes a breaking point. In a market with perfect delisting regulations, most punished firms disappear from the capital markets (Beasley et al., 1999), making the study of their post-punishment disclosure behavior impossible. In the A-share market, however, the delisting mechanism plays almost no role and most punished firms survive year after year without any instances of delisting. This provides us with a good opportunity to examine the effects of enforcement actions.

The majority of the enforcement actions against MF irregularities occurred from 2000 to 2002. We examine the effects of the enforcement actions on the quality of MFs disclosed during the period from 2002 to 2009. Our results indicate that the effects of enforcement actions were different to expectations. First, the preference for selective enforcement has not proven a significant threat. The forecasting precision and accuracy of firms with a lower survival probability are still significantly lower than those with a higher survival probability. Second, the enforcement actions did not significantly improve the precision and accuracy of the subsequent forecasts issued by the punished firms.

This study makes two main contributions. First, we resolve the sampling problem that has previously limited the research on securities regulations. Specifically, we simultaneously create punished and unpunished samples with the same irregularity, complementary to the literature represented by Chen et al. (2011). Second, we examine the effects of enforcement actions on MF quality as one of the important aspects of listing firms' information disclosure (Bai, 2009).

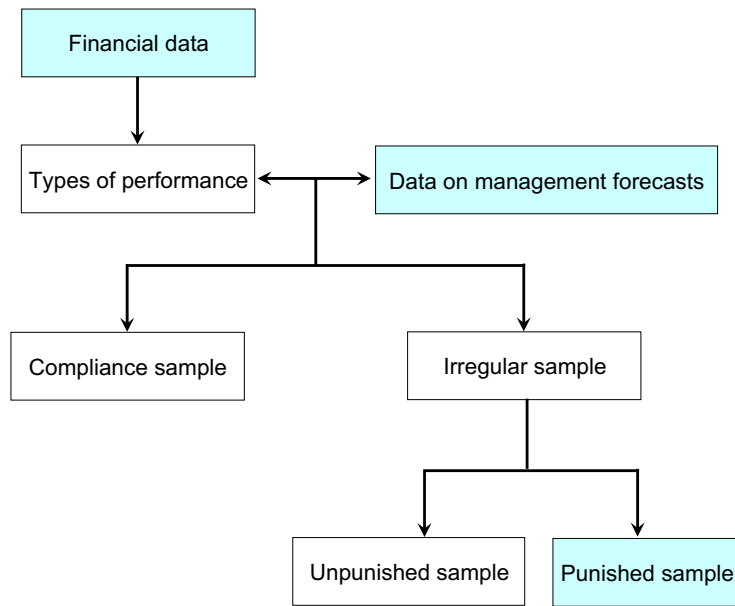
The remainder of this paper is organized as follows. Section 2 reviews the related literature and discusses our research logic. Section 3 discusses the institutional background of management forecasting in China. Section 4 analyzes the enforcement actions applied to MF irregularities. Section 5 discusses the effects of these enforcement actions. Conclusions are presented in Section 6.

## 2. Literature and research logic

### 2.1. Preferences in securities regulation

Beneish (1999) and Dechow et al. (1996) note that due to resource constraints securities regulators cannot detect and punish all instances of fraud. This reality presents the question: what types of fraud do securities

<sup>1</sup> Previous studies have only used sample firms with punished irregularities. They have not used firms that have not been punished but have actually had irregularities.



Note: The colored cells represent external data with some hand collection when necessary.

Fig. 1. Sampling map. Note: The colored cells represent external data with some hand collection when necessary.

regulators prefer to investigate? Unfortunately, there are few studies that address this question. Pincus et al. (1988) points out that the SEC pays more attention to newly listed firms because they are more likely to commit fraud. According to an analysis of select regulators, Kedia and Rajgopal (2011) suggest that securities regulators in the US prefer to target listed firms within 100 miles of their offices, but that this focus does not necessarily lead to an increase in the probability of being punished. Therefore, their research cannot be classified as a strict study of enforcement preference. Chen et al. (2011) make a breakthrough by studying firms under the special institutional environment in China. They provide evidence that fraudulent firms owned by the state received a less serious punishment than those that are not state-owned. These results only cover fraudulent firms that have been punished, however, and do not apply to those that have not. Therefore, although they can examine the degree of punishment, it is impossible for them to study the probability of being punished. It is this probability that this study aims to explore.

Fig. 1 presents the sampling map. We use the financial data of listed firms to determine performance and infer the observations obliged by regulation to issue MFs. Comparing the MF records then allows us to find observations that are consistent with MF irregularities, called fraud firms. Based on enforcement action records, these fraud firms can be further classified into two subgroups: punished and unpunished. Then we can study the factors influencing the probability of being punished.

## 2.2. Effects of enforcement actions

From the perspective of securities regulators, punishment is an instrument, not the aim – the fraud occurred and while punishment cannot change history it can deter future instances of fraud. Therefore, an effective punishment warns all firms, including punished firms. Luo et al. (2005) examine the effect of enforcement actions by studying whether punished firms were punished again after the first punishment. They find that many firms have been punished again, many times in some cases, after the first punishment. This suggests that the effects of enforcement actions are not as expected, and although their results are interesting, their sample design has the same drawback as that of Chen et al. (2011). That is, they only cover the fraudulent firms that have been punished without considering their unpunished counterparts – a group that may even represent a majority.

Chen et al. (2005) analyze the market reaction to the disclosure of enforcement actions. They argue that the CSRC is far from a “toothless tiger” because the market reacts negatively to the disclosure of enforcement

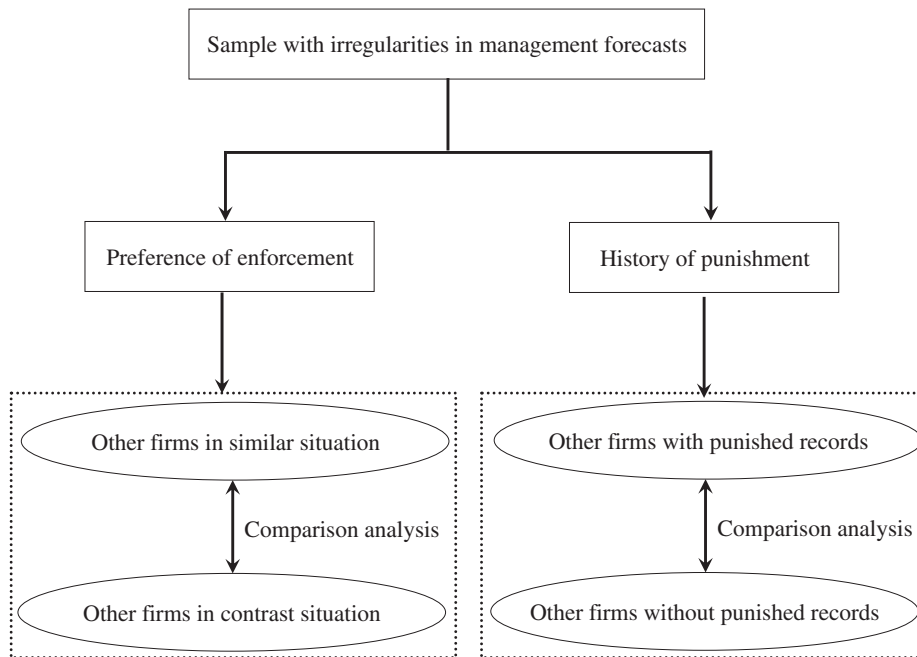


Fig. 2. Research logic for studying the effects of enforcement actions.

actions. This line of reasoning is questionable, because the market reaction reflects the informational content of fraud disclosure rather than the CSRC's effectiveness.<sup>2</sup>

We argue that research on the effects of enforcement actions should focus on a longer window. For example, Farber (2005) finds that punished firms take actions to improve their governance, because investors appear to value governance improvements.<sup>3</sup> In line with that theory, Li (2007) examines how the credit-file system established in the Shanghai Securities Exchange and the Shenzhen Securities Exchange impacts the improvement of the quality of listed firms' accounting information. Li uses accounting conservatism as an indicator of accounting information quality to find that the credit-file system enhances the quality of accounting information to a certain extent, but that the result is not as significant as expected.

Another method of measuring the effect of fraud punishments is to examine whether regulatory preferences influence the behavior of listed firms. If regulators prefer to target certain fraudulent firms, the expectation would be that other firms in that category would work harder to avoid detection and punishment. In other words, regulatory preferences should push such firms to improve the quality of their information disclosure. Kedia and Rajgopal (2011) provide evidence of this, specifically that listed firms within 100 miles of the offices of securities regulators display a significantly lower probability of restatements than their counterparts that are located further away, because securities regulators in the US are inclined to pay more attention to listed firms within 100 miles of their offices.

We use MF quality as an indicator of listed firms' information disclosure quality and examine the effects of enforcement actions in two ways: regulatory preferences and punishment history. Fig. 2 shows our research logic. If regulatory preferences can change the information disclosure behavior of listed firms, then other firms in similar situations should make MFs of a higher quality. In contrast, if other firms in similar situations have not provided MFs of a higher quality, or even of lower quality, then we argue that regulatory preferences do not provide a sufficiently strong deterrence.

<sup>2</sup> Event studies usually examine information content. In the announcement of enforcement actions, the most informative is not the punishment, but the fraud. In fact, most event studies of enforcement actions (such as Feroz et al., 1991; Wu and Gao, 2002) examine the information content of fraud disclosures rather than the effectiveness of securities regulators.

<sup>3</sup> Firms that take action to improve governance have superior stock price performance, even after controlling for earnings performance.

Similarly, if regulators' punishments warn previously punished fraudulent firms, they should provide a higher quality of information when forecasting in subsequent periods. If they have not provided a higher quality of MFs in subsequent periods, we argue that the punishment did not provide a sufficiently strong deterrence.

### 3. Institutional background

#### 3.1. MF regulations

A-share firms began to issue MFs in the 1998 fiscal year. Before that, listed firms only provided MFs for approximately three subsequent years when they were targeting an IPO. Following the success of an IPO, few firms provided additional information about future earnings. Due to this lack of information, stock prices had a tendency to fluctuate substantially on future earnings, particularly when loss firms released their annual reports. In 1998, securities regulators in China required firms with a three-year continuous loss or a one-year material loss to make their MFs on time,<sup>4</sup> aiming to alleviate the information asymmetry between listed firms and their investors and reduce price fluctuations around the announcements of annual reports (Xue, 2001). This regulation did not change<sup>5</sup> in 1999 and at the close of 2000, MF regulations began to evolve. Panel A of Table 1 summarizes the key changes to MF regulations.

In the first phase, the firms expected to make MFs were expanded from "a three-year continuous loss or a one-year material loss" to "a one-year loss". Meanwhile, the deadline for forecasting was specified. According to the *Notice* with regards to 2000 annual reports,<sup>6</sup> "Firms that forecast a loss in 2000 should make MFs within two months after December 31, 2000. Firms that forecast a three-year continuous loss should make at least three forecasts within 2 months after December 31, 2000".

In the second phase, firms expected to make MFs also included from "loss" to "profit" firms. According to the *Notice* with regards to the interim reports of 2001, firms that forecast a loss or a big decline in earnings should make MFs in a timely manner before July 31, 2001 and suspended firms should make their loss forecasts within 15 working days after June 30, 2001. At that time, there were no clear definitions regarding what qualified as a "big" decline in earnings. On September 4, 2001 the Shanghai Securities Exchange and the Shenzhen Securities Exchange simultaneously criticized firms that had experienced a big decline in earnings, but had not forecast them.<sup>7</sup> The number of firms criticized quickly rose to 24, making that day one of the most notable in the history of securities punishments.

In the third phase, firms expected to make MFs extended from "bad news" to "good news", meeting investors' fundamental information needs. According to the *Notice* with regards to the annual reports of 2001, after the end of the 2001 fiscal year firms that forecasted a big loss or change (an increase or decrease of 50% or more) in total income compared to the previous year should make MFs within 30 working days after December 31, 2001, while firms with relatively small comparison bases were exempt from forecasting.<sup>8</sup> That *Notice* also implemented two changes. First, good news was included for the firms expected to make MFs, in contrast

<sup>4</sup> Specified in the second item of "Notice on the Work of 1998 Annual Reporting".

<sup>5</sup> Specified in the seventh item of "Notice on the Work of 1999 Annual Reporting".

<sup>6</sup> Specified in the 10th and 8th items of "Notice on the Work of 2000 Annual Reporting" issued by the Shanghai Securities Exchange and the Shenzhen Securities Exchange, respectively. Subsequently, the contents of "Notice on the Work of ×× Periodic Reporting" issued by the Shanghai Securities Exchange and the Shenzhen Securities Exchange are fundamentally indeterminate. Therefore, we refer to them hereafter as *Notice* without pointing out the particular items.

<sup>7</sup> According to the *Basic Maxim on the Investigation and Settlement of Securities Frauds by Chinese Securities Regulation Commission* and the *Maxim on the Evidence of the Investigation and Settlement of Securities Frauds by the Chinese Securities Regulation Commission*, the CSRC can settle a case in one of the following ways: withdraw, circulate a notice of criticism, pay an administrative penalty or transfer to another institution. Public criticism voiced by the securities exchange is included in the administrative penalty. From August, 1997 the Shanghai Securities Exchange and the Shenzhen Securities Exchange became subordinate units of the CSRC, making "the behavior preference of securities exchanges fundamentally similar to that of the CSRC" (Liu, 2006, p. 28). Based on the reality of the authority system, "securities exchanges really have no authority to settle instances of fraud without the permission of the CSRC" (Liu, 2006, p. 28). Therefore, we view the "public criticism" voiced by securities exchanges as the intention of the CSRC.

<sup>8</sup> The comparison basis is the absolute value of total earnings per share. For annual forecasting, the exempt criterion is 0.05 or less.

Table 1  
Changes and details of MF regulations in China.

	Criteria of forecasting	Forecasting period	Definition of performance	Timing of forecasting	
<i>Panel A: key changes to MF regulations</i>					
December, 1998	Successive losses or material loss	Annual	Not defined	Before disclosure of annual report	
December, 2000	Loss			After the end of fiscal periods	
July, 2001	+ Big decrease	+ Interim			
December, 2001	+ Big increase <sup>a</sup>		Total income		
March, 2002	<sup>b</sup>		Net income	In the last periodic report	
June, 2002		+ Quarterly			
May, 2006	+ Loss to Profit <sup>c</sup>				
	Interim forecasts		Annual forecasts		
Year	Deadline	Reference	Deadline	Reference	
<i>Panel B: specified forecasting deadlines<sup>d</sup></i>					
2000	NA	NA	2001.2.28	Notes	
2001	2001.7.31	Notes	2002.2.28	Notes	
2002	Not mentioned	Notes	2003.2.21	Listing Rules	
2003	Not mentioned	Notes	2004.2.24	Listing Rules	
2004	2004.7.15	Notes	2005.2.1	Notes	
2005	2005.7.15	Notes	2006.1.25	Notes	
2006	2006.7.31	Listing Rules	2007.1.31	Notes	
	Net earnings or total earnings				
Types	Forecasting period	Prior period	Direction of change	Percent of change	Exemption
<i>Panel C: definitions of MF types</i>					
Loss	Negative	Negative or Positive			
Loss to profit	Positive	Negative			
Big decrease	Positive	Positive	Negative	[50%, 100%)	Yes
Big increase	Positive	Positive	Positive	≥ 50%	Yes

In Panel A, + represents when a new regulation was added. The blank cell represents no change compared to the upper line.

<sup>a</sup> Exemption is applied. In the forecasting of 2001 annual performance, the exemption basis (comparison basis) was that the absolute value of total earnings per share was no more than 0.05.

<sup>b</sup> From 2002, the exemption basis is defined according to the absolute value of net earnings per share. The specified numbers are 0.05, 0.03 and 0.04 for annual, interim and third-quarter forecasting, respectively.

<sup>c</sup> Firms with loss to profit are definitely expected to increase by more than 100%. Before 2006, they were regulated as firms with big increases and, therefore, were probably exempt from forecasting. From 2006, they are regulated as an independent class with no exemption.

<sup>d</sup> Notes are the “Notes on the work of ×× Reports” issued by the Shanghai (or Shenzhen) Securities Exchanges, which are fundamentally identical. Listing Rules are the Listing Rules of the Shanghai (or Shenzhen) Securities Exchanges. Forecasting deadlines not specified in the Notes are defined according to whatever Listing Rules were effective in the corresponding periods. Regulations on management forecasts as specified in the Listing Rules are reported in Table 2.

to the previous focus on bad news. Second, the definitions of performance, percent of change and comparison basis were clearly specified to improve the feasibility of MFs.

In the fourth phase, the timing of forecasts was shifted from “after the end of fiscal periods” to “before the end of fiscal periods”, making the “forecasting” more literal.<sup>9</sup> According to the Notice with regards to the first quarter reports of 2001, firms forecasting a big loss or change (an increase or decrease of 50% or more) in interim net income should make MFs in their first quarter reports. Thus, investors could obtain information about listed firms’ future earnings at least two months earlier.

In the fifth phase, beginning from the third quarter reports of 2002, the forecasting of quarterly earnings was included. Finally, “loss-to-profit” was separated from “big increase”, which makes little difference. Before

<sup>9</sup> According to the definition established by King et al. (1990), MFs are the voluntary disclosure of future earnings before announcements of actual earnings are made, including forecasts disclosed after the end of fiscal periods, but before the announcements of actual earnings. Research on voluntary disclosure, however, usually focuses on forecasts that have been disclosed before the end of fiscal periods (e.g., Baginski et al., 2008).

Table 2  
Regulations for MFs specified in Listing Rules.

Time	Sections	Forecasting criteria	Forecasting period	Timing of forecasting	Forecast in advance	Definition of performance	Exemption
May, 2000	7.4.1	Loss	Annual	Before disclosure of annual report	No	No	No
June, 2001	7.4.1	Loss	Annual	Within 30 working days after the end of the fiscal year	No	No	No
Amendment in the year 2002 did not change regulations for MFs							
November, 2004	6.4 11.3	Loss, changes in performance $\geq 50\%$	All	No	Yes	Net income	Yes
May, 2006	11.3	Loss, loss to profit, changes in performance $\geq 50\%$	All	Within one month after the end of a fiscal period <sup>a</sup>	Not mentioned	Net income	Yes
October, 2008	11.3	Loss, loss to profit, changes in performance $\geq 50\%$	All	Annual forecast must be disclosed within one month after the end of the fiscal year, other forecasts are not specified	Not mentioned	Net income	Yes <sup>b</sup>

<sup>a</sup> The Listing Rules of the Shenzhen securities exchange do not specify forecasting deadlines, except for the annual forecast.

<sup>b</sup> Exemption criteria are clearly defined for every period, namely the absolute value of net income per share. The specified numbers are 0.05, 0.03 and 0.04 for annual, interim and third-quarter forecasting, respectively.

this separation, some “loss-to-profit” firms were exempt from forecasting. After separation, there was no exemption for “loss-to-profit” firms.

The securities exchange also magnified their consideration of MFs when amending their Listing Rules. Table 2 summarizes the specifications for management forecasts in the current and historic revisions of the Listing Rules. It is clear that there is always a time lag between the amending of Listing Rules and their practice. For example, in practice, firms that experienced big changes were required to forecast from 2001, but the 2002 amendments to the Listing Rules did not reflect corresponding changes. In fact, the aforementioned changes were not made until December 2004.

### 3.2. Punishments for irregular management forecasts

The punishment of irregular management forecasts began with the annual forecasting of 2000 and peaked during the interim forecasting of 2001. There were sporadic instances after that period, but those punishments were usually enforced on firms that had experienced an annual loss. Table 3 summarizes the details of punishments for irregular management forecasts in the period from 2000 to 2006.<sup>10</sup>

The efficiency of securities regulations, with respect to the period that firms escaped punishment, is relatively high. Most irregularities are punished within three months. Unreported results indicate that the longest escape was 239 days and the shortest was a single day.

There are four types of irregular MFs: face-change forecasts, wrong forecasts, no forecasts and delayed forecasts. “No forecasts” and “delayed forecasts” are easily defined as firms that are expected to make an MF (i.e., they fall into one of the four situations listed in Panel C of Table 1) but do not actually make a forecast or forecast after the deadline, respectively (see Table 1 for details). Because the punishment of delayed forecasts tends to be associated with annual reports, delayed forecasts are usually issued in March or April, with more concentrated in April.

The term “face-change” is from a unique technique of Chuan opera in which characters appear to magically shift from one painted face to another. When related to capital markets, it is used to portray a dramatic change in the performance of listed firms. When talking about MFs specifically, a face-change forecast is when

<sup>10</sup> There are a total of 72 observations. We deleted one observation from the financial industry, one observation after delisting and one observation with regards to third-quarter earnings, so 69 observations remain.



Table 3  
Details of MF irregularities from releases of enforcement actions.

Escape days <sup>a</sup>	All <sup>b</sup>	Single	Irregularity types	All	Single	Actual performance	All	Single	Period	All	Single
≤10	7	5	Face-change	21	17	Big decrease	28	26	Interim	25	24
10–20	9	8	Wrong MF	2	1	Loss	40	25	Annual	44	28
20–30	14	13	No MF	29	26	Small increase	1	1		69	52
30–60	25	20	Delayed MF	16	8		69	52			
60–90	9	3	Others	1							
>90	5	3		69	52						
	69	52									

Face-change map	All	Single	Disclosure time of face-change MF <sup>c</sup>	All	Single	Disclosure time of delayed MF <sup>c</sup>	All	Single
Big decrease → Loss	6	5	January	1	1	March	2	2
Loss to profit → Continuous loss	14	11	February	1	1	April	13	6
Big increase → Loss	1	1	March	5	4	June	1	0
	21	17	April	14	11		16	8
				<u>21</u>	<u>17</u>			

<sup>a</sup> Escape days = gaps between the announcement day for enforcement actions and the discovery day for irregularities, the latter of which included face-change day for firms with face-change MFs, forecasting day for firms with delayed MFs and the announcement day of periodic reports for firms with no forecast or wrong forecasts.

<sup>b</sup> All represents the sample of firms that engaged in other kinds of fraud besides irregularities in MF; Single represents the sample of firms with irregularities in MF only.

<sup>c</sup> All refers to the month after the end of the forecasting fiscal year.

a firm issues an MF that is significantly different from an earlier one with regards to the same period. Luo and Song (2011) provide a detailed summary of this concept. Although a face-change forecast is covered by the changes between “continuous loss” and “loss-to-profit”, only firms that shift from “good news” to “bad news” or from “bad news” to “worse news” are punished (Table 3). Due to the uncertainty inherent in forecasting, regulators usually permit listed firms to revise their disclosed forecasts when necessary, but always before the deadlines listed in Panel A of Table 1. That is, firms that change their forecasts before the deadline will not be classified as irregularities by regulators. Therefore, face-change forecasts that are punished are usually disclosed in March or April of the following year, with the majority concentrated in April.

Theoretically, a wrong forecast means that the forecast performance is significantly different from actual performance. It is almost impossible to make a 100% correct forecast, however, and it is considered reasonable to allow for some error. As Table 3 shows, wrong forecasts are defined as firms that forecast profits when they actually experience losses. That is, there are qualitative errors.

As for actual performance, most of the punished observations are losses in the forecasting periods, while the others have a decline that is significant enough that only one firm is punished for overestimating a “small increase” as a “big increase”. In other words, the probability of being punished is low for firms with “good news”, even if they make irregular MFs.

### 3.3. Reasons for the existence of selective enforcement

Chen et al. (2011) provide detailed discussion of the reasons for the existence of selective enforcement in Chinese securities markets and pay particular attention to the ultimate nature of firms (i.e., whether they are state-owned) than to the quality of listed firms, which is our focus. We argue that in a multiple-player game, the dominant strategy is to punish fraud firms whose survival rates are lower in order to maximize the utility of regulators for the following two reasons.

First, it is a self-protective incentive under the extant regulatory system. Liu (2006) portrays CSRC regulations as “all-around”, noting that, under an all-around regulatory system, the CSRC does not have the incentive to actively disclose listed firms’ fraud. The CSRC has an incentive to supervise and publicly disclose

that information when, and only when, the fraudulent information is detected before a firm's IPO, such as in the Kaili case mentioned by Chen et al. (2011). The CSRC is reluctant to publicly disclose fraudulent information detected after a firm's IPO. For example, the suspicion that surrounded Lantian's financial data prompted the CSRC to continuously decline Lantian's refinancing proposals, despite the fact that the survey that generated the data did not take place until the break-down of Lantian's cash chain (Liu, 2006).

Second, it meets the political demands under government control. Luo et al. (2005) pointed out that, "under the dual pressure to develop and regulate the market, the value orientation of the CSRC is partly dissimilated as maintaining the stability of stock prices and the securities market, which acquiesces the existence of fraud. There are different penalty criteria in different times due to different regulatory demands and policies. Sometimes more firms are punished and the degree of punishment is heavier. In other times, fewer firms are punished and the degree of punishment is lighter. That is, the policy-orientation is significantly evident". The one-way trading system enforces that effect. When investors can only profit from an increase in stock prices, firms with "good news" are inevitably protected and favored by stakeholders while firms with "bad news" may be neglected. When firms with "good news" commit fraud, stakeholders are more likely to actively lobby that those firms not be punished. When firms with "bad news" commit fraud, the resulting absence of lobby pressure allows securities regulators to exercise their authority by punishing them. At that time, stakeholders tend to stop resisting in the hope that they might receive some compensation in the future.<sup>11</sup>

#### 4. Selective enforcement actions for MF irregularities

##### 4.1. Sample and descriptive statistics

According to the penalty records, we can classify the following observations as firms with irregular MFs: (1) firms expected to make a "loss" or "big decline" forecast that fail to make any forecast; (2) firms expected to make a "loss" or "big decline" forecast that fail to make any forecast before a stated deadline<sup>12</sup>; (3) firms expected to make a "loss" or "big decline" forecast that fail to forecast correctly before a stated deadline<sup>13</sup> and (4) firms not included in the previous three classes that overestimate their earnings through forecasts that are inconsistent with actual earnings.<sup>14</sup> The details of these observations are reported in Table 4.

Overall, the probability of being punished for MF irregularities is relatively low.<sup>15</sup> After 2002, the attention that regulators paid to irregular annual forecasts and the probability of being punished was significantly lower than it was in 2001. Another interesting point is that about 10% of firms with MF irregularities were punished in the following year without any reference to MF irregularities in the announcements of the enforcement actions.

The financial data and market reactions of fraud observations are reported in Table 5. Because our observations include both annual and interim examples, we use the deciles of financial data to avoid potential confusion induced by the different lengths of fiscal periods.<sup>16</sup> We examine the difference between the punished sample and the control sample from the perspective of survival rates. The financial variables with regards to survival rates include ROA, CFO, Growth and LEV. ROA measures accounting profitability, CFO measures liquidity, Growth measures growth ability and LEV measures solvency. The ROA of the punished observations is concentrated in the lowest quintile, while the observations with ROA in the highest quintile are

<sup>11</sup> Chen et al. (2011) find that punished firms were given priority in their subsequent refinancing.

<sup>12</sup> The deadline for annual forecasting is March 1 of the subsequent year and the deadline for interim forecasting is August 1 of the current year.

<sup>13</sup> The deadline for annual forecasting is March 1 of the subsequent year and the deadline for interim forecasting is August 1 of the current year.

<sup>14</sup> Observations with a "small decrease" or "small increase" in performance (Table 3) fall into this class. Firms with a "small decrease" in performance might forecast a "small increase" or "big increase". Firms with a "small increase" in performance might forecast a "big increase". Observations with wrong forecasts also include some firms expected to forecast "big decrease" or "loss" that actually forecasted higher performance.

<sup>15</sup> Among the 697 observations with MF irregularities, firms punished for irregular MFs represent less than 10%.

<sup>16</sup> The corresponding financial data of all A-share firms available in the database are ranked by fiscal periods and classified into ten groups (deciles).

Table 4  
Summary of firms with MF irregularities.

Form of irregularities	Total	Those without any punishment next year	Those that are punished the next year		
			MF not involved	MF involved	Only MF
<i>Panel A: according to the form of irregularities</i>					
Face-change	92	63	9	20	16
Delayed MF	164	121	27	16	8
No MF	274	225	21	28	25
Wrong MF	167	152	13	2	1
	697	561	70	66	50
<i>Period</i>					
<i>Panel B: according to the forecasting period</i>					
2000-12-31	16	7	5	4	1
2001-6-30	92	65	4	23	23
2001-12-31	80	63	3	14	13
2002-6-30	76	70	6		
2002-12-31	88	76	6	6	4
2003-6-30	24	21	3		
2003-12-31	77	59	15	3	3
2004-6-30	26	20	6		
2004-12-31	76	60	10	6	4
2005-6-30	19	17	2		
2005-12-31	46	36	4	6	1
2006-6-30	43	39	4		
2006-12-31	34	28	2	4	1
	697	561	70	66	50
Annual	417	329	45	43	27
Interim	280	232	25	23	23
<i>Actual performance<sup>a</sup></i>					
<i>Panel C: according to actual performance</i>					
Small decrease	12	12			
Small increase	51	50		1	1
Big decrease	296	253	16	27	25
Loss	338	246	54	38	24
	697	561	70	66	50

As indicated, there are a total of 697 observations with MF irregularities, among which 561 observations were free of any punishment in the following year and will be used as a control sample. The others were punished in the following year for numerous reasons. Among the 136 observations with punishment, 70 observations were punished for irregularities that were not related to MF; the others were punished for irregularities including irregular MF, and will be used as study sample 1, among which the 50 observations that are punished for irregular MF only will be used as study sample 2.

<sup>a</sup> For firms with small decreases or increases, and those with big decreases or big increases the actual performance of the forecasting period and that of the compared prior period are both positive. The difference lies in the direction and magnitude of changes in performance. Small decrease (increase) refers to a negative (positive) change in performance of less than 50%. Big decrease (increase) refers to a negative (positive) change in performance of no less than 50%.

rarely punished. Fraudulent firms with CFO in the lowest quintile are more likely to be punished than other firms, and those with CFO in the highest quintile are also rarely punished. Fraudulent firms with Growth in the highest quintile are significantly less likely to be punished than those with Growth in the lowest quintile.

Moreover, we analyze whether investor losses and the nature of the ultimate controller influence the probability of being punished, as per Chen et al. (2011). As for the nature of the ultimate controller, most of the punished firms are owned by the state, which is in contrast to the results of Chen et al. (2011). We argue that the difference is due to different sample periods. As Table 4 shows, the punishment of irregular management forecasts was concentrated in 2001, when almost all firms were owned by the state. Chen et al. (2011) use a sample period that ended in 2008. From 2002 to 2008 many private firms went public through IPOs or the acquisition of listed firms, significantly lowering the percentage of SOEs among listed firms. The following

Table 5  
Description of independent variables.

	Total	Those without any punishment next year	Those that are punished the next year		
			MF not involved	MF involved	Only MF
<i>Net income deflated by total assets (ROA)</i>					
Lowest 20% <sup>a</sup>	413	305	57	51	38
Median	263	236	12	15	12
Highest 20%	21	20	1	0	0
<i>CFO deflated by total assets (CFO)</i>					
Lowest 20%	218	160	27	31	22
Median	414	341	38	35	28
Highest 20%	65	60	5	0	0
<i>Growth of sales (Growth)</i>					
Lowest 20%	251	179	36	36	24
Median	352	300	26	26	22
Highest 20%	94	82	8	4	4
<i>Leverage ratio (LEV)</i>					
Lowest 20%	105	92	6	7	4
Median	394	327	34	33	28
Highest 20%	198	142	30	26	18
<i>Nature of ultimate control (State)</i>					
0	227	179	32	16	8
1	470	382	38	50	42
<i>CAR(-1, +1)</i>					
Positive	202	170	22	10	8
Negative	495	391	48	56	42

As indicated, there are a total of 697 observations with MF irregularities, among which 561 observations are free of any punishment in the following year and will be used as a control sample. The others are punished in the following year for numerous reasons. Among the 136 observations with punishment, 70 observations are punished for irregularities that do not relate to MF; the others are punished for irregularities including irregular MF and will be used as study sample 1, among which the 50 observations that are punished for irregular MF only will be used as study sample 2.

ROA = Net income deflated by total assets; CFO = Cash flow from operating activities deflated by total assets; Growth = Change in sales deflated by lagged sales; LEV = Total debt deflated by total assets; State = 1 if the ultimate controller is state and zero otherwise; CAR = Cumulative abnormal returns around [-1, +1], and the event day is the discovered day of irregular MF.

<sup>a</sup> The data of all A-share firms in the corresponding periods are ranked into five groups and the quintile distribution of observations used as our sample is reported.

regression results also show that after controlling for timing differences, the influence of SOEs almost disappears.

Chen et al. (2011) also find that the degree of punishment is significantly positively related to investor losses. This study also examines the influence of investor losses, but through an event window around the detection day<sup>17</sup> of the fraud to measure investor losses – a much shorter period than that used by Chen et al. (2011).<sup>18</sup> As Table 5 shows, most of the punished frauds have negative CARs (losses to investors).

<sup>17</sup> For observations with “wrong forecasts” or “no forecasts”, the detection day is the announcement day of the corresponding periodic reports. For observations with “delayed forecasts”, the detection day is the forecasting day. For observations with “face-change forecasts”, the detection day is the day on which the face-change forecasts are released.

<sup>18</sup> In the Chen et al. (2011) sample, there is usually a two year or longer “escape period” before the fraudulent firms are punished by regulators. Before the announcements of enforcement actions, it is difficult for investors to get information on the existence of fraud by other measures. Our sample is different from theirs in three ways. First, the detection of MF irregularities is relatively simple, with no need to wait for punishment. Second, we do not find when the fraudulent activity begins for “delayed” and “no” forecasts. Finally, there might be an overlap between the announcements of MFs and actual earnings if we choose a longer event window, which would also introduce more confounding factors.

#### 4.2. Regression results

Because the punished observations make up a relatively small percentage of all observations and different sample sizes might influence the robustness of our results, we use both all sample observations and a matched sample in our regressions. The regression model is shown as follows:

$$\begin{aligned} \text{Probability (Fined} = 1) &= \alpha_0 + \alpha_1 \text{ Investors' loss} + \alpha_2 \text{ Deciles of ROA} \\ &+ \alpha_3 \text{ Deciles of CFO} + \alpha_4 \text{ Deciles of Growth} \\ &+ \alpha_5 \text{ Deciles of LEV} + \alpha_6 \text{ State} + \alpha_7 \text{ Size} \\ &+ \text{Control Variables} + \varepsilon \end{aligned}$$

Where, *Investors' loss* = the negative of *CARs*  $[-1, +1]$ ;

*Deciles of var<sub>m</sub>* = the deciles ranked according to *var<sub>m</sub>* of all *A* – share firms for the same fiscal period, where *var<sub>m</sub>* represents *ROA*, *CFO*, *Growth* and *LEV*, respectively;

*State* = 1 for *SOEs* and 0 otherwise;

*Size* = Natural log of total assets. (1)

In the regressions with the full sample, control variables include industry and year dummies. In the regressions with the matched sample, these control variables are not included because we select matched firms based on the same industry, the same forecasting period and the nearest total assets.

Because some observations are punished for reasons besides irregular management forecasts, we exclude them in the regressions reported in Table 6. That is, in the regressions reported in Table 6, we only use observations that are punished for irregular management forecasts as our study sample and those without any punishment in the following year as our control sample. The results indicate that investors' loss is the most important factor influencing the probability of being punished, which is consistent with Chen et al. (2011). After controlling for investors' loss, liquidity and growth potential also have significant influences on the probability of being punished. For example, in regression 3 of panel B, the estimated coefficient on Deciles of CFO is  $-0.292$ , significant at the 1% level. In regression 4, the estimated coefficient on Deciles of Growth is  $-0.156$ , significant at the 10% level.

#### 4.3. Other potential factors

In the regressions reported in Table 6, observations punished for multiple reasons, including irregular management forecasts, are excluded. Does that exclusion influence the robustness of our results? We re-ran the regressions reported in Table 6 with those observations included and the results (Table 7) are fundamentally consistent with those in Table 6.

In summary, investor losses resulting from fraud is the primary factor influencing the probability of being punished. After controlling for investor losses, enforcement actions still exhibit some "selection bias". The probability of being punished is negatively related to the fraudulent firms' accounting profitability, liquidity and growth potential. In other words, firms with lower survival rates are more likely to be punished.

### 5. Effects of enforcement actions on quality

In a market with perfect delisting regulations, fraudulent firms with lower survival rates delist from capital markets (Beasley et al., 1999), making the study of their post-punishment disclosure behavior impossible. In the A-share market, however, due to the scarcity of "shell resources",<sup>19</sup> most fraudulent firms survive year after year without any instances of delisting, even if their survival rates are lower or they are technically bankrupt. This may impair the efficient allocation of resources, but it also provides us with an opportunity to examine the subsequent effects of punishments.

<sup>19</sup> "Shell resources" means the qualification of listing.

Table 6  
Results for sample with irregular MF only.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Panel A: results for all sample (N = 548)</i>					
Intercept	-2.654 (1.662)	-2.328 (1.668)	-2.837* (1.694)	-2.723 (1.663)	-2.489 (1.702)
CAR	25.683*** (4.531)	24.059*** (4.589)	24.459*** (4.567)	25.302*** (4.544)	22.590*** (4.656)
Deciles of ROA		-0.305* (0.170)			-0.286* (0.171)
Deciles of CFO			-0.152* (0.085)		-0.142 (0.087)
Deciles of growth				-0.127* (0.075)	-0.107 (0.076)
Deciles of LEV	0.062 (0.074)	0.016 (0.077)	0.072 (0.075)	0.078 (0.075)	0.041 (0.080)
State	0.775 (0.551)	0.660 (0.545)	0.823 (0.556)	0.895 (0.555)	0.791 (0.554)
Size	-0.119 (0.230)	-0.037 (0.234)	-0.049 (0.238)	-0.080 (0.229)	0.048 (0.241)
Industry & year Rescaled R <sup>2</sup> (%)	Controlled 43.20	Controlled 44.38	Controlled 44.30	Controlled 44.18	Controlled 46.11
<i>Panel B: results for matched sample (N = 96)</i>					
Intercept	-1.061 (2.027)	-1.020 (2.023)	-1.285 (2.059)	-0.923 (2.025)	-1.052 (2.070)
CAR	14.384*** (4.810)	14.057*** (4.848)	12.185** (4.799)	14.989*** (4.885)	12.522** (4.913)
Deciles of ROA		-0.087 (0.169)			-0.072 (0.188)
Deciles of CFO			-0.292*** (0.104)		-0.293*** (0.105)
Deciles of growth				-0.156* (0.091)	-0.173* (0.099)
Deciles of LEV	0.023 (0.081)	0.007 (0.087)	0.023 (0.085)	0.007 (0.083)	-0.010 (0.093)
State	0.610 (0.660)	0.594 (0.660)	0.746 (0.687)	0.806 (0.664)	0.922 (0.695)
Size	-0.030 (0.284)	-0.003 (0.288)	0.123 (0.299)	-0.005 (0.284)	0.172 (0.303)
Rescaled R <sup>2</sup> (%)	17.06	17.38	27.47	20.69	31.02

The study sample is only firms punished for MF irregularities. In panel A, the control sample did not receive any punishment in the following year despite having MF irregularities. In panel B, the control sample is matched with the same forecasting period, industry, form of MF irregularities and the nearest size of total assets based on the control sample in panel A.

Standard error in parentheses.

\* Significance at the 10% level.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

We examine the effects of enforcement actions through the quality of management forecasts for three reasons. First, management forecasts are an important part of listed firms' information disclosure and the quality of management forecasts can represent the quality of information disclosure (Bai, 2009).<sup>20</sup> Second, it is easier to measure the quality of management forecasts without any sophisticated statistical models or subjective

<sup>20</sup> Bai (2009) finds that there is a significant positive relation between the information disclosure rating issued by the Shenzhen Securities Stock Exchange and the quality of management forecasts. Research on developed markets reveals that the quality of management forecasts is often used as a proxy for the quality of listed firms' information disclosure: see, for example, Graham et al. (2005) and Wang (2007).

Table 7  
Results for sample with irregularities including irregular MF.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Panel A: results for all sample (N = 564)</i>					
Intercept	-1.799 (1.357)	-1.477 (1.358)	-1.932 (1.385)	-1.877 (1.372)	-1.605 (1.407)
CAR	20.024*** (3.397)	18.775*** (3.459)	18.781*** (3.436)	19.720*** (3.441)	17.328*** (3.532)
Deciles of ROA		-0.303** (0.143)			-0.279* (0.143)
Deciles of CFO			-0.187*** (0.072)		-0.186*** (0.075)
Deciles of growth				-0.167** (0.066)	-0.158** (0.066)
Deciles of LEV	0.081 (0.060)	0.040 (0.062)	0.096 (0.062)	0.098 (0.061)	0.072 (0.065)
State	0.393 (0.397)	0.304 (0.396)	0.408 (0.403)	0.511 (0.399)	0.405 (0.405)
Size	-0.146 (0.188)	-0.075 (0.190)	-0.069 (0.196)	-0.093 (0.190)	0.036 (0.199)
Industry & year Rescaled R <sup>2</sup> (%)	Controlled 33.84	Controlled 35.32	Controlled 35.95	Controlled 35.89	Controlled 39.08
<i>Panel B: results for matched sample (N = 124)</i>					
Intercept	-0.353 (1.767)	-0.359 (1.764)	-0.640 (1.819)	-0.210 (1.776)	-0.503 (1.832)
CAR	9.368*** (3.564)	9.161** (3.571)	7.636** (3.579)	9.907*** (3.668)	8.213** (3.682)
Deciles of ROA		-0.075 (0.156)			-0.052 (0.174)
Deciles of CFO			-0.318*** (0.094)		-0.318*** (0.095)
Deciles of growth				-0.183** (0.079)	-0.195** (0.086)
Deciles of LEV	0.049 (0.069)	0.037 (0.073)	0.048 (0.072)	0.035 (0.070)	0.024 (0.078)
State	0.670 (0.480)	0.665 (0.481)	0.801 (0.506)	0.879* (0.493)	1.004* (0.519)
Size	-0.124 (0.251)	-0.100 (0.255)	0.043 (0.264)	-0.093 (0.251)	0.097 (0.270)
Rescaled R <sup>2</sup> (%)	11.00	11.23	23.44	16.46	28.21

The study sample is firms punished for items including MF irregularities. In panel A, the control sample did not receive any punishment in the following year despite having MF irregularities. In panel B, the control sample is matched with the same forecasting period, industry, form of MF irregularities and the nearest size of total assets based on the control sample in panel A.

Standard error in parentheses.

\* Significance at the 10% level.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

judgments. Third, there is consistency in the nature of the information disclosed. We examine the punishments for irregular management forecasts, but the best way to examine the effects of these punishments is to measure their effects on subsequent management forecasts.

We examine the precision and accuracy of annual MFs issued by A-share firms from 2002 to 2009.<sup>21</sup> Extant research argues that MF quality is positively related to their precision and accuracy.

We examine the effects of punishments in two ways. First, we ask whether the preference of enforcement actions influences the disclosure behavior of other firms. Kedia and Rajgopal (2011) find that listed firms

<sup>21</sup> We use the latest forecasts for firms that issue more than one forecast with regards to the same forecasting year.

Table 8  
MF precision for observations with extreme values from 2002 to 2009.

Precision	Highest deciles		Lowest deciles		Totals	
	Obs.	Percent (%)	Obs.	Percent (%)	Obs.	Percent (%)
<i>CFO deflated by total assets (CFO)</i>						
Qualitative estimate	106	19.70	253	38.70	359	30.10
Open-end estimate	190	35.40	133	20.30	323	27.10
Interval estimate	142	26.40	144	22.00	286	24.00
Point estimate	99	18.40	124	19.00	223	18.70
	537		654		1191	
Ratio test <sup>a</sup>	$\chi^2 = 49.37^{***}$					
<i>Net income deflated by total assets (ROA)</i>						
Qualitative estimate	54	9.90	622	60.70	676	43.00
Open-end estimate	193	35.30	28	2.70	221	14.10
Interval estimate	196	35.90	103	10.00	299	19.00
Point estimate	103	18.90	272	26.50	375	23.90
	546		1025		1571	
Ratio test <sup>a</sup>	$\chi^2 = 372.84^{***}$					
<i>Growth of sales (Growth)</i>						
Qualitative estimate	187	26.50	421	52.80	608	40.40
Open-end estimate	210	29.70	104	13.00	314	20.90
Interval estimate	180	25.50	103	12.90	283	18.80
Point estimate	129	18.30	170	21.30	299	19.90
	706		798		1504	
Ratio test <sup>a</sup>	$\chi^2 = 106.25^{***}$					
<i>Leverage ratio (LEV)</i>						
Qualitative estimate	475	57.10	90	19.20	565	43.50
Open-end estimate	79	9.50	115	24.60	194	14.90
Interval estimate	93	11.20	176	37.60	269	20.70
Point estimate	185	22.20	87	18.60	272	20.90
	832		468		1300	
Ratio test <sup>a</sup>	$\chi^2 = 173.19^{***}$					

\* Significance at the 10% level.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

<sup>a</sup> The ratio test examines whether the distribution of qualitative and quantitative forecasts in the highest and lowest deciles of the corresponding financial data is significantly different.

within 100 miles of the offices of securities regulators are significantly less likely to have restatements than their counterparts located further away because securities regulators in the US are inclined to pay more attention to listed firms within 100 miles of their offices. This means that the preferences of regulators can change the expectation of listed firms and has a significant influence on the disclosure behavior of other firms. We find that regulators are inclined to punish fraudulent firms with lower profitability, lower liquidity and lower growth potential. Does this regulatory preference improve the quality of MFs issued by firms in similar situations? We rank the corresponding financial data of all of the A-share firms available to get deciles by fiscal year. Then we choose MFs issued by firms that fall in the highest deciles or lowest deciles with the aim of examining whether there is a significant difference in the MF quality among firms in different deciles.

Second, we examine whether firms that have been punished for MF irregularities improve the quality of their subsequent forecasts to improve their image. Farber (2005) finds that punished firms take actions to improve their governance and improve the quality of their information disclosure. Because there is still controversy over whether corporate governance plays a role in A-share markets,<sup>22</sup> we use the quality of information disclosure to directly measure the effects of punishment. The dependent variables are the precision and

<sup>22</sup> Another consideration is that most governance mechanisms for A-share firms are mandatorily planted, rather than voluntarily developed.



Table 9  
Distribution of MF precision from 2002 to 2009.

Precision	All observations	Not fined	Fined_MF	Fined_ALL
Qualitative estimate	1613	1274	75	339
Open-end estimate	1320	1244	13	76
Range estimate	1361	1244	12	117
Point estimate	1068	887	26	181
	5362	4649	126	713

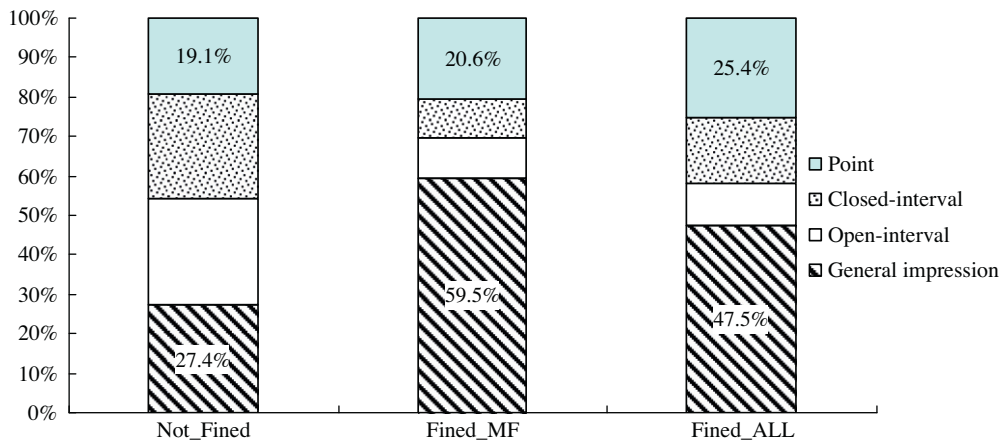


Fig. 3. Distribution of forecast precision. *Note:* “Not-Fined” indicates firms that did not receive any punishment during the previous three years. “Fined\_MF” indicates firms that were punished for MF irregularities, while “Fined\_ALL” indicates firms that were punished for irregularities that did not necessarily include MF irregularities during the previous three years.

accuracy of MFs, which are our proxies for MF quality. We use the models shown in Eqs. (2) and (3) to examine the effect of punishment after controlling for other factors that influence MF quality.

$$\text{Precision} = f(\text{Fined\_MF}, \text{Control Variables}) \quad (2)$$

$$\text{Accuracy} = f(\text{Fined\_MF}, \text{Control Variables}) \quad (3)$$

where Fined\_MF equals 1 if the firm has been punished for an irregular MF in the past three years, and 0 otherwise.

The control variables are chosen according to the extant literature, including earnings volatility (Rank of EV, measuring forecasting difficulty), the level of earnings (ROA), the timing of forecasts (Month), an index of financial distress (ST) and indices of corporate governance (State and Herf5), firm size, industry and year dummies.<sup>23</sup>

We also examine whether the punishments induced by other irregularities influence MF quality. The regression models are shown as follows:

$$\text{Precision} = f(\text{Fined\_ALL}, \text{Control Variables}) \quad (4)$$

$$\text{Accuracy} = f(\text{Fined\_ALL}, \text{Control Variables}) \quad (5)$$

<sup>23</sup> Baginski and Hassell (1997) find that firms of small size with less earnings volatility are more likely to issue management forecasts with higher precision. Ajinkya et al. (2005) find that firms with higher earnings volatility provide less accurate management forecasts. Johnson et al. (2001), Ajinkya et al. (2005) and Karamanou and Vafeas (2005) all find that the accuracy of management forecasts that are disclosed earlier is lower than that of those that are disclosed later. Eames and Glover (2003) argue that the level of earnings must be controlled for when examining forecasting errors. Koch (2002) finds that firms in financial distress are more likely to issue misleading management forecasts. Johnson et al. (2001) find that the accuracy of management forecasts has a significantly negative relation to firm size.

where Fined\_ALL equals 1 if the firm has been punished (not necessary for MF irregularities) in the past three years, and 0 otherwise. The control variables are the same as those in Eqs. (2) and (3).

### 5.1. Effects of punishment on MF precision

Table 8 analyzes whether regulatory punishment preferences influence MF precision. It is evident that punishment preferences do not efficiently deter other firms. For example, observations with CFO in the highest

Table 10  
Effects of enforcement on MF precision from 2002 to 2009.

	All samples	Matched samples	All samples	Matched samples
<i>Panel A: MF precision is grouped into two levels</i>				
Intercept	1.622*** (0.347)	2.886** (1.381)	1.603*** (0.347)	2.308*** (0.505)
Fined_MF	0.176 (0.242)	0.027 (0.320)		
Fined_ALL			0.234** (0.115)	0.119 (0.134)
Rank of EV	-0.457*** (0.018)	-0.375*** (0.067)	-0.459*** (0.018)	-0.292*** (0.027)
ROA	2.663*** (0.274)	1.851** (0.724)	2.721*** (0.278)	2.367*** (0.324)
Month	0.621*** (0.041)	0.518*** (0.117)	0.618*** (0.041)	0.547*** (0.059)
ST	-1.320*** (0.107)	-0.242 (0.354)	-1.369*** (0.110)	-0.667*** (0.147)
State	-0.145 (0.091)	-0.075 (0.339)	-0.132 (0.091)	-0.297** (0.133)
Herf5	0.952*** (0.339)	-1.328 (1.249)	0.986*** (0.340)	-0.546 (0.581)
Size	-0.105*** (0.041)	-0.151 (0.182)	-0.105*** (0.041)	-0.045 (0.067)
Industry & year	Controlled		Controlled	
Rescaled R <sup>2</sup> (%)	53.21	32.78	53.27	30.19
Obs.	5362	252	5362	1414
<i>Panel B: MF Precision is Grouped into Four Levels</i>				
Intercept 3	-2.516*** (0.232)	0.486 (1.165)	-2.552*** (0.232)	-0.530 (0.396)
Intercept 2	-1.058*** (0.231)	1.238 (1.166)	-1.091*** (0.231)	0.466 (0.396)
Intercept 1	0.394* (0.230)	2.091* (1.171)	0.363 (0.230)	1.237*** (0.397)
Fined_MF	0.233 (0.188)	0.139 (0.282)		
Fined_ALL			0.315*** (0.085)	0.185* (0.111)
Rank_EV	-0.154*** (0.010)	-0.256*** (0.053)	-0.157*** (0.010)	-0.142*** (0.020)
ROA	1.427*** (0.163)	1.311** (0.519)	1.472*** (0.165)	1.597*** (0.222)
Month	0.624*** (0.026)	0.491*** (0.096)	0.621*** (0.026)	0.537*** (0.044)
ST	-0.594*** (0.080)	-0.064 (0.316)	-0.668*** (0.082)	-0.255** (0.126)
State	-0.016 (0.058)	-0.053 (0.290)	-0.004 (0.058)	-0.196* (0.108)

(continued on next page)

Table 10 (continued)

	All samples	Matched samples	All samples	Matched samples
Herf5	0.308 (0.221)	-1.372 (1.093)	0.330 (0.221)	-0.785* (0.475)
Size	-0.150*** (0.025)	-0.155 (0.157)	-0.148*** (0.025)	-0.052 (0.053)
Industry & year	Controlled		Controlled	
Rescaled $R^2$ (%)	33.89	22.52	34.03	17.99
Obs.	5362	252	5362	1414

In panel A, MF precision is grouped into two levels: for quantitative forecasts, precision equals 1 and for qualitative forecasts, precision equals 0.

In panel B, MF precision is grouped into four levels: for general impression forecasts, precision equals 0 while for open-interval, closed-interval and point estimates, precision equals 1, 2 and 3, respectively.

Fined\_MF equals 1 if the observation was punished for MF irregularities in the past three years, and 0 otherwise.

Fined\_ALL equals 1 if the observation was punished (not necessarily for MF irregularities) in the past three years, and 0 otherwise.

The RANK of EV is calculated as follows. We first calculated EV as the standard deviation of net incomes in the past three years, deflated by the absolute value of their mean. Then we ranked the EV of all the observations (5362) by year into ten groups.

ROA = net income/total assets, winsorized at 1% and 99% of all samples by fiscal year.

ST is equals 1 if the firm was in ST, or \*ST when the MF was disclosed, and 0 otherwise.

Month is equals 1 if the MF was disclosed before the end of the fiscal year and the month of disclosure otherwise.

State is equals 1 if the ultimate controller or local government were central, and 0 otherwise.

Herf5 is the sum of the square of the percentage holdings for the five largest shareholders.

Size equals the log of the total assets.

The study sample was chosen from firms with Fined\_MF (or Fined\_ALL) values equaling 1, and the control sample was chosen from firms with Fined\_ALL values equaling 0, matched with the same forecasting period, industry and nearest total assets.

Standard error in parentheses.

\* significance at the 10% level.

\*\* significance at the 5% level.

\*\*\* significance at the 1% level.

Table 11

Errors of MFs for Observations with Extreme Values from 2002 to 2009.

MFE	Highest deciles		Lowest deciles		Totals	
	Obs.	Percent (%)	Obs.	Percent (%)	Obs.	Percent (%)
<i>CFO deflated by total assets (CFO)</i>						
≤-10%	42	9.80	139	34.70	181	21.80
(-10%, 10%]	207	48.30	165	41.10	372	44.80
>10%	180	42.00	97	24.20	277	33.40
	429		401		830	
<i>Net income deflated by total assets (ROA)</i>						
≤-10%	26	5.30	173	42.90	199	22.30
(-10%, 10%]	294	59.90	201	49.90	495	55.40
>10%	171	34.80	29	7.20	200	22.40
	491		403		894	
<i>Growth of sales (Growth)</i>						
≤-10%	61	11.80	162	43.00	223	24.90
(-10%, 10%]	240	46.20	139	36.90	379	42.30
>10%	218	42.00	76	20.20	294	32.80
	519		377		896	
<i>Leverage ratio (LEV)</i>						
≤-10%	118	33.10	91	24.10	209	28.40
(-10%, 10%]	127	35.60	199	52.60	326	44.40
>10%	112	31.40	88	23.30	200	27.20
	357		378		735	

MFE =  $(NET_{actual} - NET_{forecasted}) / |NET_{forecasted}|$ , where  $NET_{actual}$  is actual net income and  $NET_{forecasted}$  is the forecasted net income in the MF.

Table 12  
MF accuracy for observations with extreme values from 2002 to 2009.

Quartile of accuracy	Highest deciles		Lowest deciles		Totals	
	Obs.	Percent (%)	Obs.	Percent (%)	Obs.	Percent (%)
<i>CFO deflated by total assets (CFO)</i>						
1	91	21.2	124	30.9	215	25.9
2	93	21.7	88	21.9	181	21.8
3	128	29.8	94	23.4	222	26.7
4	117	27.3	95	23.7	212	25.5
	429		401		830	
Ratio test <sup>a</sup>	$\chi^2 = 6.56^{**}$					
<i>Net income deflated by total assets (ROA)</i>						
1	64	13.0	89	22.1	153	17.1
2	94	19.1	95	23.6	189	21.1
3	149	30.3	101	25.1	250	28.0
4	184	37.5	118	29.3	302	33.8
	491		403		894	
Ratio test <sup>a</sup>	$\chi^2 = 14.18^{***}$					
<i>Growth of sales (Growth)</i>						
1	118	22.7	137	36.3	255	28.5
2	122	23.5	80	21.2	202	22.5
3	141	27.2	82	21.8	223	24.9
4	138	26.6	78	20.7	216	24.1
	519		377		896	
Ratio test <sup>a</sup>	$\chi^2 = 13.92^{***}$					
<i>Leverage ratio (LEV)</i>						
1	125	35.0	68	18.0	193	26.3
2	84	23.5	86	22.8	170	23.1
3	87	24.4	96	25.4	183	24.9
4	61	17.1	128	33.9	189	25.7
	357		378		735	
Ratio test <sup>a</sup>	$\chi^2 = 39.06^{***}$					

<sup>a</sup> The ratio test examines whether the distribution of highest deciles and lowest deciles in the lowest and highest quartile of accuracy is significantly different, where Accuracy = 1/|MFE|.

\* Significance at the 10% level.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

deciles issued more quantitative forecasts than those with CFO in the lowest deciles. That is, the quality of the former's MFs are higher than those of the latter's.

Table 9 reports the precision of annual MFs issued by A-share firms from 2002 to 2009, and Fig. 3 portrays the distribution of forecast precision. We can see that the precision of subsequent MFs issued by firms punished for irregular MFs are significantly lower than that of unpunished firms. The precision of subsequent MFs issued by firms punished for all irregularities is higher than that of unpunished firms. This difference might be the result of timing, with punishments for MF irregularities concentrated in 2001 and with subsequent MFs issued from 2002 to 2004, when the quality of all listed firms' MFs was improving. Therefore, it is necessary to control for other factors that influence MF quality.

Because the precision of MFs is an ordinal variable, we run the regressions with logit or ordered-logit. As the percentage of punished observations is relatively low, we also use a matched sample to avoid potential confusion introduced by different sample sizes. The regression results are reported in Table 10.

It is clear that after controlling for factors influencing MF precision, the estimated coefficient of Fined\_MF is not significantly different from zero – indicating that the effects of such punishments are not as expected. The estimated coefficient of Fined\_ALL is significantly positive, indicating that the effects of such punishments are somewhat significant. Comparing the results of Fined\_MF and Fined\_ALL, we argue that one explanation for

Table 13  
Distribution of annual MF accuracy from 2002 to 2009.

MFE	All observations	Not_Fined	Fined_MF	Fined_ALL
$\leq -80\%$	170	150	3	20
$(-80\%, -50\%]$	192	171	5	21
$(-50\%, -20\%]$	327	292	5	35
$(-20\%, -10\%]$	293	262	5	31
$(-10\%, 10\%]$	1629	1465	21	164
$(10\%, 20\%]$	394	361	6	33
$(20\%, 50\%]$	400	369	2	31
$(50\%, 80\%]$	121	110	1	11
$>80\%$	218	191	3	27
	3744	3371	51	373

$MFE = (NET_{actual} - NET_{forecasted}) / |NET_{forecasted}|$ , where  $NET_{actual}$  is the actual net income while  $NET_{forecasted}$  is the MF's forecasted net income.

Not\_Fined represents observations that did not receive any punishment in the past three years.

Fined\_MF represents observations that were punished for MF irregularities in the past three years.

Fined\_ALL represents observations that were punished (not necessarily for MF irregularities) in the past three years.

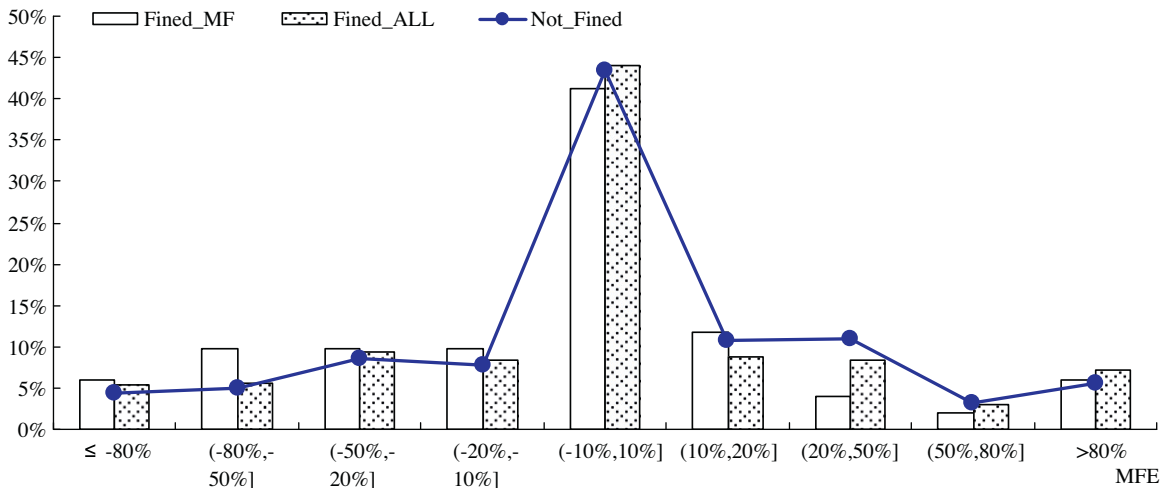


Fig. 4. Distribution of forecast errors. Note:  $MFE = (NET_{actual} - NET_{forecasted}) / |NET_{forecasted}|$ , where  $NET_{actual}$  is actual net income and  $NET_{forecasted}$  is the forecasted net income in the MF. “Not-Fined” are firms that were not punished during the previous three years. “Fined\_MF” are firms that were punished for MF irregularities and “Fined\_All” are firms that were punished for irregularities that did not necessarily include MF irregularities during the previous three years.

the difference might be that the degree of punishment for MF irregularities is relatively lighter, indicating an insufficiently strong deterrence effect.<sup>24</sup>

## 5.2. Effects of punishment on MF accuracy

We classify MFs into three groups: overestimated, accurate and underestimated. MFs predict activities and it is almost impossible to be 100% accurate. An accurate forecast is one for which forecasted earnings are

<sup>24</sup> Punishment for irregular management forecasts usually takes the form of public criticism, which is lighter than a public fine. For example, the influence of public criticism on the qualification of refinancing is only one year, while that of a public fine is three years. Moreover, Luo et al. (2005) find that the probability of being punished again is lower for firms that have received a public fine, suggesting that public fines offer the strongest deterrence.

Table 14  
Effects of enforcement on the accuracy of annual MFs from 2002 to 2009.

	All samples	Matched samples	All samples	Matched samples
Intercept	6.477*** (0.400)	9.925*** (2.018)	6.434*** (0.401)	5.716*** (0.676)
Fined_MF	0.110 (0.383)	0.432 (0.605)		
Fined_ALL			0.197 (0.154)	0.215 (0.220)
Rank of EV	-0.331*** (0.017)	-0.522*** (0.103)	-0.334*** (0.018)	-0.267*** (0.040)
ROA	3.873*** (0.463)	6.126*** (2.042)	3.903*** (0.463)	3.034*** (0.678)
Loss	1.515*** (0.172)	1.686** (0.802)	1.514*** (0.171)	1.202*** (0.330)
Month	0.541*** (0.045)	0.759*** (0.193)	0.538*** (0.045)	0.544*** (0.089)
State	0.037 (0.097)	0.757 (0.588)	0.043 (0.097)	0.492** (0.211)
Size	-0.199*** (0.039)	-0.697** (0.287)	-0.193*** (0.039)	-0.159* (0.089)
Industry and year	Controlled		Controlled	
Adjusted R <sup>2</sup>	12.91%	31.51%	12.95%	10.96%
Obs.	3744	100	3744	740

Notes: The dependent variable RANK of ACCURACY was calculated as follows. First, we first calculated FE as the absolute value of the difference between actual net income and the net income forecasted by management, deflated by the absolute value of the net income forecasted by management with ACCURACY as the inverse of FE. Then we ranked the ACCURACY of all observations (3744) by year into 10 groups.

Fined\_MF equals 1 if the observation was punished for MF irregularities in the past three years, and 0 otherwise.

Fined\_ALL equals 1 if the observation was punished (not necessarily for MF irregularities) in the past three years, and 0 otherwise.

The RANK of EV was calculated as follows. First, we calculated EV as the standard deviation of net incomes in the past three years, deflated by the absolute value of their mean. Then we ranked the EV of all observations (3744) by year into 10 groups.

ROA = net income/total assets, winsorized at 1% and 99% of all samples by fiscal year.

Loss is equals 1 if the actual net income for the forecasting year is negative, and 0 otherwise.

Month is equals 1 if the MF is disclosed before the end of the fiscal year, and the month of disclosure otherwise.

State equals 1 if the ultimate controller or local government is central, and 0 otherwise.

Size is equal to the log of total assets.

The study sample is those firms with Fined\_MF (or Fined\_ALL) values equaling 1, and the control sample is chosen from those firms with Fined\_ALL values equaling 0, matched with the same forecasting period, industry and the nearest total assets.

Standard error in parentheses.

\* Significance at the 10% level.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

within a 10% deviation from actual earnings. If the forecasted earnings deviate from the actual earnings by more than 10%, we classify the forecast as “overestimated” or “underestimated”, according to the sign of the difference between the forecast earnings and the actual earnings. Our previous results indicate that punishment for MF irregularities is rarely enforced on “good news”. The only times “good news” is punished is when the forecast is “overestimated”. In other words, overestimation is not welcomed by regulators, but does this preference impact the tendency of target firms to overestimate? The results in Table 11 indicate that it does not.

For example, the percentage of overestimation is 9.8% and 34.7% for observations in the highest deciles of CFO and those in the lowest deciles, respectively, with the latter three times higher than the former. In contrast, their corresponding percentage of underestimation is 42.0% and 24.2%, respectively, with the latter much lower than the former.

Accuracy is measured by the inverse of absolute MFE (MF error, see Table 12 for its definition). To avoid the influence of extreme values, we use the rank of Accuracy (from 9 for the highest deciles to 0 for the lowest deciles) in our regressions. To save space, the results reported in Table 12 are based on quintiles.

We still find that punishment preferences do not provide a sufficiently strong deterrence. For example, the percentage of lowest accuracy is 30.9% for observations with CFO falling in the lowest deciles, which is higher than that of observations with CFO falling in the highest deciles (21.2%). In contrast, the percentage of highest accuracy is 23.7% and 27.3% for observations with CFO falling in the lowest and highest deciles, respectively. The  $\chi^2$  of the ratio test is 6.56, which is significant at the 5% level.

The accuracy of all MFs issued by A-share firms from 2002 to 2009 is reported in Table 13. Fig. 4 portrays the distribution of forecast accuracy. The accuracy results are similar to those for forecast precision. That is, firms punished for MF irregularities still have lower accuracy in their subsequent forecasts than other firms, indicating no significant improvements. Meanwhile, the accuracy of subsequent MFs issued by firms punished for all irregularities is not significantly different from that of unpunished firms.

The regression results are reported in Table 14. After controlling for factors that influence MF accuracy, the estimated coefficients for Fined\_MF and Fined\_ALL are all insignificantly different from zero, indicating that the punished firms did not improve their subsequent forecast accuracy to please regulators.

## 6. Conclusions

We use irregular MFs from 2000 to 2006 to examine whether the resulting enforcement actions are selective. Our results indicate that enforcement actions by securities regulators are selective. All things being equal, the probability of being punished for irregular MF is significantly related to proxies for survival rates. Specifically, fraud firms with a lower ROA or a higher risk of cash flows are more likely to be punished.

Most enforcement actions for MF irregularities occurred from 2000 to 2002. Therefore, we examine the effects of enforcement actions based on MF quality, in disclosures from 2002 to 2009. Our results indicate that the effects of enforcement actions fall far from expectations. First, the preference for selective enforcement has not proven a significant threat. The forecasting precision and accuracy of firms with a lower survival probability were still significantly lower than those with a higher survival probability. Second, enforcement actions did not significantly improve the precision and accuracy of subsequent forecasts issued by punished firms.

## Acknowledgements

We appreciate the comments of seminar participants at the Symposium of the China Journal of Accounting Research. We are particularly indebted to Donghua Chen for his valuable comments and advice. We also thank the anonymous referees for their constructive comments. However, we are completely responsible for the content of this paper. Yunling Song thanks the National Natural Science Foundation of China (Project Number: 71102084) for their financial support of this work.

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