Mandatory Earnings Forecast Regulation and Stock Price Informativeness

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Abstract

We examine the economic consequences of disclosure regulation using a regulation implemented in a staggered manner that requires publicly listed Chinese firms to issue earnings forecasts under certain conditions. We find the regulation substantially increases the directly affected firms' frequency of management earnings forecasts, but approximately one third of the firms that are required to issue mandatory earnings forecasts fail to issue the required forecasts (noncompliant firms). The stock market reacts positively to the announcements of mandatory earnings forecasts. More importantly, the mandatory earnings forecast regulation helps increase the directly affected firms' future earnings response coefficient (FERC), suggesting that the regulation helps increase the total information available to stock market investors. We also find that the regulation creates a spillover effect on some firms that do not issue earnings forecasts in the post-regulation period. Specifically, we find that the noncompliant firms experience a significant increase in the FERC in the post-regulation period when their peer firms in the same industry issue at least one mandatory forecast. However, we find no evidence of a spillover effect for the firms whose expected earnings do not fall into the scope of the regulation and thus are not obligated to issue any earnings forecasts.

Key words: Disclosure regulation; Management's earnings forecast; Stock price informativeness; Spillover effect; China
JEL codes:

1. Introduction

Even though all financial markets around

regulation because it is unlikely that any confounding events can explain the results consistent with our predictions for all regime changes. Second, we examine whether the mandatory earnings forecast regulation creates any spillover effect on the firms that do not issue management's earnings forecasts in the post-regulation period.

Before discussing our results, we wish to note that it is far from clear that the answer to our first research question is an obvious one for several reasons. First, publicly listed Chinese firms are known for the poor compliance with mandatory regulations (e.g., Ke and Zhang 2017). Hence, there is a possibility that many publicly listed Chinese firms just fail to comply with the earnings forecast regulations. Second, even if a firm does issue a required earnings forecast, the firm could issue the forecast late or with low precision. Third, the mandatory earnings forecasts could crowd out the information acquisition of competing informational intermediaries without changing the total information available to the market. Finally, China's financial markets are dominated by retail investors who are less sophisticated in information processing and can be easily influenced by market sentiments. Hence, the availability of management's earnings forecasts may not necessarily lead to more efficient stock pricing.

With regard to our first research question, we find the following results. First, we find that the mandatory earnings forecast regulation substantially increases the directly affected firms' frequency of management earnings forecasts, suggesting that the regulation is effective in encouraging firms to increase earnings forecasts. However, we still find that approximately one third of the firms that are required to issue mandatory earnings forecasts choose not to issue the required forecasts. Second, except for large earnings decreases, we find that the mandated earnings forecasts are informative in that the stock market reacts positively to the announcements of mandatory earnings forecasts. Third, using the future earnings response coefficient (FERC) methodology per Freeman and Tse (1992) and Ayers and Freeman (2003) and a difference-in-differences regression approach, we find that the mandatory earnings

forecast regulation helps increase the directly affected firms' FERC. This evidence suggests that the mandatory earnings forecast regulation helps increase the total information available to stock market investors. Overall, these results suggest that the earnings forecast regulation has been effective in forcing the directly affected firms to talk and making these firms' overall stock prices more informative.

We next examine the spillover effect of the forecast regulation (i.e., our second question). As noted above, a significant portion of the firms that are required by the regulation to issue the four types of mandatory earnings forecasts failed to issue the required earnings forecasts (referred to as noncompliant firms). Hence, we first examine whether the mandatory earnings forecasts of the four types have any spillover effect on the noncompliant firms' FERC. To do so, we divide all the firms that are required to issue mandatory earnings forecasts into three types. Type One firms are the firm fiscal periods that issued a mandatory forecast in the stock return window used in the FERC regression (compliant firms). Type Two firms are the firm fiscal periods that failed to issue a mandatory forecast but at least one peer firm in the same industry issued a mandatory forecast in the stock return window used in the FERC regression (noncompliant firms). Type Three firms are the firm fiscal periods where neither the firm nor its industry peers issued a mandatory forecast in the stock return window used in the FERC regression (noncompliant firms). As expected, we find that the Type One firms experienced a significant increase in their FERCs. More importantly, we find that the FERCs of Type Two firms also experienced a significant increase in the post-regulation period, suggesting a spillover effect of the regulation. We find no evidence that the regulation has any spillover effect on the FERCs of the Type Three firms, which may not be surprising because no firms in the industry issued any mandatory earnings forecasts.

Second, we examine whether the mandatory earnings forecasts of the four types in the post-regulation period have any spillover effect on the firms whose expected earnings do not

fall into one of the four types and thus are not obligated to issue any earnings forecasts (referred

mandate management earnings forecasts. Notable exceptions are Kato et al. (2009), Gounopoulos et al. (2015), and Huang et al. (2016). Kato et al. examine the properties of mandatory management earnings forecasts in Japan while Gounopoulos et al. compare the accuracy of earnings forecasts under mandatory versus voluntary disclosure environments in Greece. Like us, Huang et al. find that the mandatory earnings forecasts have significant information content but they also find a familiarity effect in that mandatory earnings forecasts appear to stimulate voluntary forecasts by the same firms in the subsequent periods. Our study differs from these studies in two key aspects. First, we examine the market-wide effects of disclosure regulation. Second, we examine the effects of mandatory forecast regulation on the stock price informativeness. As noted above, the fact that mandatory earnings forecasts have information content does not allow one to automatically conclude that the directly affected firms' stock price informativeness would increase due to the possibility that mandatory forecasts could crowd out the information acquisition activities of competing information intermediaries.

The rest of the paper is organized as follows. Section 2 discusses the mandatory earnings forecast regulation in details. Section 3 shows publicly listed firms' degree of compliance with the regulation. Section 4 discusses the information content of the mandatory earnings forecasts. Section 5 analyzes the impact of the regulation on the directly affected firms' stock price informativeness. Section 6 documents the spillover effect of the regulation. Section 7 concludes.

2. Institutional background

2.1. The five mandatory earnings forecast regimes

Both the CSRC and the two domestic stock exchanges jointly designed and enforced the regulation. Since the CSRC introduced the first mandatory management earnings forecast

2002. Firms should issue the semi-annual earnings forecast before July 15 while the third-quarter earnings forecasts before October 15.

The fourth mandatory forecast regime covers the period from September 27, 2004 to September 3, 2008. The fourth regime further expands the scope of mandatory forecasts by requiring firms to issue a forecast when they expect to turn a profit from a loss. Therefore, during the fourth regime all publicly listed firms on the two mainboards must issue annual, semi-annual and third-quarter earnings forecasts before specified deadlines if they meet one or more of the following conditions: (1) turn a profit; (2) expect a loss; (3) expect more than 50% earnings increase; or (4) expect more than 50% earnings decrease.

The final and fifth mandatory forecast regime covers the period from September 4, 2008 to December 31, 2013, the end of our sample period. Regime five is the first time the two stock exchanges diverged in the requirements for mandatory earnings forecasts. The Shanghai Stock Exchange removed the semi-annual and third-quarter management earnings forecasts. That is, only annual earnings forecasts were mandatory under the specified conditions.[1] On the other hand, the Shenzhen Stock Exchange continued to expand the scope of mandatory management earnings forecasts by adding first-quarter earnings forecasts into the management forecast disclosure guidelines. The deadline for the first-quarter earnings forecasts is April 15.

2.2. Enforcement of the regulation

The regulatory enforcement of the mandatory earnings forecast regulation developed unevenly during the five regimes. In this section we provide an overview of this evolution in the regulators' public enforcement efforts.

[1] Unfortunately we could not find the reasons for the Shanghai Stock Exchange's relaxation of the regulation from public sources and discussions with a few anonymous former and current staff at the Exchange.

During regime one the public enforcement of the earnings forecast regulation was relatively light. According to an anonymous staff from the Shanghai stock exchange, there are four main types of penalties available at the stock exchange level, namely public denouncement (the most severe), notice of criticism circulated within the publicly listed firms, regulatory attention and verbal warning (the least severe). Companies that received public denouncements or notices of criticism could be barred from external financing and adopting equity-based compensation schemes. Since the management forecast regulation in regime one was not incorporated into the listing rules of both stock exchanges, violating the regulation had less severe consequences compared with breaking listing rules. For fiscal year 1998, 69 firms expected losses and issued management forecasts, while ex post data shows that 79 firms actually reported losses for 1998, suggesting that 10 firms failed to provide the required management forecasts. Among the 69 forecasting firms, 62 loss forecasts were issued from January 10 to January 31, 1999, the other 7 firms missed the deadline and disclosed their forecasts in March and April of 1999, extremely close to the release of annual reports. However,

management forecasts. However, a new problem arose in regime three. While both stock exchanges emphasized repeatedly that firms must update prior obsolete management forecasts, some Chinese firms seemed to react strategically in order to avoid penalty from issuing inaccurate forecasts. In 2002, more than 10 firms were publicly denounced for flipping and flopping their management forecasts in a dramatic way.

During regimes four and five many listed firms received public denouncements from the stock exchanges for dramatic and belated management forecast revisions. The behavior of these penalized firms seemed to follow a pattern. They tended to issued timely forecasts before the forecast deadlines, and then revised their forecasts (usually downward, from profit to loss in some cases) right before the release of the annual reports. In addition, some of the violation cases were found to be related with illegal insider trading according to a few administrative sanctions issued by the CSRC. For example, management intentionally delayed the forecast revisions or provided inaccurate information in the forecasts in order to gain from insider trading.

Overall, we view the public enforcement of the earnings forecast regulation during our sample period to be a mixed bag. It is difficult to tell whether the public enforcement is becoming better or worse over time because many public enforcement activities are not publicly disclosed. In addition, it appears the behavior of the firms also changed over the period, presumably from learning and experience and therefore it is possible that some firms could become more strategic in releasing the required earnings forecasts.

3. Compliance with the mandatory earnings forecast regulation

Before examining the impact of the mandatory earnings forecast regulation on stock price informativeness, we first check the extent of publicly listed firms' compliance with the regulation. This check is important because prior research shows that publicly listed Chinese

drop the observations whose fiscal periods for UE_t and UE_{t+1} fall in 2002 because both variables are not defined for this transition period. Finally, we exclude observations with missing regression variables used in the stock price informativeness regression model. Our final sample contains 49,483 firm-fiscal period observations, representing 1,490 unique firms.

Table 2 shows the frequencies of both mandatory earnings forecasts and voluntary earnings forecasts. Panel A reports the descriptive statistics for the compliance with the mandatory earnings forecast regulation by earnings category and regulatory regime. Please note that Regime 2 is omitted from Panel A because of our sample selection criteria noted above. For the full sample of 12,002 mandatory earnings forecast fiscal periods as a whole, 88.59% of the observations issued at least one earnings forecast prior to the earnings announcement. It appears that most of the earnings forecasts (76.65%/88.59%=87%) are issued in the *CAR* measurement period. In addition, the majority of the mandatory earnings forecasts in the *CAR* window (73.74%/76.65%=96%) are consistent earnings forecasts in the sense that the types of issued forecasts are consistent with the types of the realized earnings (e.g., a loss forecast that corresponds to a realized loss). The compliance rate of 73.74% for consistent earnings forecasts suggests that we still have about a third of the firm observations that failed to issue the required earnings forecasts in a timely fashion. In addition, judging by the compliance rates across the regulatory regimes, we find little evidence of a significant improvement in compliance over time for any of the four earnings types.

Panels B and C show the earnings forecast frequencies for the voluntary earnings forecasts. Panel B reports the forecast frequencies for the same four earnings types as in Panel A but in the voluntary periods while Panel C reports the forecast frequencies for the types of earnings not subject to mandatory earnings forecasts. As expected, the earnings forecast frequencies are much lower during the voluntary periods (32.27% in Panel A and 6.59% in

Panel B). However, there is evidence of increased frequencies of voluntary earnings forecasts from regime 1 to regime 5.

4. The information content of mandatory earnings forecasts

We next examine whether the mandatory management earnings forecasts have information content by examining the stock market reactions to the announcements of such forecasts. Panel A of Table 3 reports the sample selection procedures for the mandatory forecast sample. Panel B of Table 3 shows the descriptive statistics for the variables of interest for the full sample and for the four subsamples. Panel C of Table 3 shows the results of regressing the stock market reaction to the forecast announcement (*CAR_MF*) on the forecast surprise (*MFnews*). See appendix B for all variable definitions. The coefficient on *MFnews* is significantly positive for the mandatory earnings forecasts as a whole. In addition, exception for the category of large earnings decreases, we find that the coefficients on *MFnews* are always significantly positive for the different categories of mandatory earnings forecast types. Overall, these results suggest that mandated earnings forecasts provide incremental information to stock market investors.

Though we are not interested in the information content of voluntary earnings forecasts, we also tabulate them for the sake of completeness. To be consistent with Table 2, we also decompose the voluntary forecasts into two types: the four earnings types (*NEG*, *DEC*,

5. The impact of the mandatory earnings forecast regulation on the directly affected firms' stock price informativeness

We now examine whether the mandatory earnings forecast regulation helps improve the informativeness of stock prices for the firms directly subject to the regulation. We define stock price informativeness as the speed at which stock prices reflect future earnings. It is important to note that the results in Table 3 do not automatically imply a positive answer to our stock price informativeness question for several reasons. First, the mandatory earnings forecasts could crowd out the information acquisition incentives of competing informational intermediaries such as financial analysts or professional investors, resulting in no change or even a deterioration of a firm's overall information environment. Second, China's financial markets are dominated by retail investors who are less sophisticated in information processing and can be easily influenced by market sentimen

regulation periods. In addition, we also allow the coefficient on UE_{t+1} to vary with a set of common ERC determinants. We follow Ke and Francis (2006), Choi et al. (2011) and Chen et al. (2016) in selecting the ERC control variables. We add *SIZE* to control for systematic differences in the information environment across firms. The standard deviation of daily stock returns (*VOLATILITY*) and the ratio of total liability to total asset (*LEV*) are proxies for firm risk. We include *GROWTH* to control for growth opportunities. We include *QUARTER4* as a control for the difference in the FERC for earnings in the first three quarters versus the last fiscal quarter. The variable $|UE_{t+1}|$ is included to control for the nonlinearity in the FERC (Freeman and Tse, 1992). Finally, we include a set of industry dummies to control for industry effects. All continuous regression variables are winsorized at 1st and 99th percentile and all continuous independent variables are demeaned to mitigate multicollinearity. We also allow the coefficient on UE_{t+1} to vary with $QUARTERLY_{t+1}$ for the observations that fall into the mandatory quarterly reporting regime (i.e., since 2002). In addition, we also allow the coefficient on UE_{t+1} to vary with $IFRS_{t+1}$ for the observations that fall into the IFRS reporting regime, which started in 2007. Therefore, the final regression model is as follows:

$$CAR_{it} = a_0 + a_1 UE_{it} + a_2 UE_{it+1} + a_3 TYPE_{it+1} + a_4 POST\_TYPE + a_5 TYPE_{it+1} \times POST\_TYPE$$
$$+ a_6 TYPE_{it+1} \times UE_{it+1} + a_7 POST\_TYPE \times UE_{it+1} + a_8 TYPE_{it+1} \times POST\_TYPE \times UE_{it+1}$$
$$+ a_9 Control + a_{10} Control \times UE_{t+1} + u_{it} \qquad (2)$$

Where *TYPE* refers to *NEG*, *DEC*, *INC*, or *TURN*. *POST_TYPE* is a dummy variable that equals one for the fiscal periods where an earnings forecast of type i (i.e., *NEG*, *DEC*, *INC*, or *TURN*) is mandated. Please remember that *POST_TYPE* is identical for *DEC* and *INC* because of the deletion of observations in mandatory regime 2 (see Figure 1).

It is important to note that our definitions of the pre-regulation period and post-regulation period are different from the traditional sense because some observations for the pre-regulation period could occur in calendar time after the effective date of the earnings

forecast regulation. For example, the regulation required firms to issue a loss forecast for annual fiscal periods over the period from December 10, 1998 to July 2, 2001. Hence, the annual fiscal periods for 1998, 1999, and 2000 fall into the post-regulation period. However, firms that expected a semi-annual loss for fiscal years 1998, 1999 and 2000 were not required to issue a loss forecast and therefore fall into the pre-regulation period, even though these firm fiscal periods post-date the .8(9ftediv.8(toe te thofhe .8ss forecast)5(reg)5u.8(totion pein l)endath)i8.6(i)e (see Pa

Type Three firms: the firms where neither the firm nor its industry peers issued a mandatory forecast in the *CAR* window (noncompliant firms).

To examine which of the aforementioned three types of mandatory earnings forecast fiscal periods are responsible for the positive coefficient on $TYPE_{it+1} \times POST\_TYPE \times UE_{it+1}$ in Table 4, we break this three-way interaction coefficient into three types. Specifically, we modify regression model (2) as follows:

$$CAR_{it} = a_0 + a_1 UE_{it} + a_2 UE_{it+1} + a_3 TYPE_{it+1} + a_4 POST\_TYPE + a_5 TYPE_{it+1} \times POST\_TYPE \times TYPE\_SELF + a_6 TYPE_{it+1} \times POST\_TYPE \times TYPE\_PEER + a_7 TYPE_{it+1} \times POST\_TYPE \times TYPE\_NONE + a_8 TYPE_{it+1} \times UE_{it+1} + a_9 POST\_TYPE \times UE_{it+1} + a_{10} TYPE_{it+1} \times POST\_TYPE \times TYPE\_SELF \times UE_{it+1} + a_{11} TYPE_{it+1} \times POST\_TYPE \times TYPE\_PEER \times UE_{it+1} + a_{12} TYPE_{it+1} \times POST\_TYPE \times TYPE\_NONE \times UE_{it+1} + a_{13}$$

the noncompliant firm fiscal periods whose industry peer firms issued at least one mandatory forecast in the same fiscal period. Finally, the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_NONE \times UE_{it+1}$ captures the effect of the regulation for the noncompliant firm fiscal periods whose industry peer firms all failed to issue mandatory earnings forecasts in the same fiscal period.

Because no firms in the industry issue a mandatory earnings forecast in the post-regulation period, we expect the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_NONE \times UE_{it+1}$ to be insignificant. On the other hand, we expect the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_SELF \times UE_{it+1}$ to be significantly positive to the extent that a compliant firm's mandatory earnings forecast is viewed as credible by the market and does not crowd out the information acquisition by other competing market participants. Finally, to the extent that a peer firm's mandatory earnings forecast has a spillover effect, we also expect the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_PEER \times UE_{it+1}$ to be significantly positive.

Table 5 shows the regression results of model (3). Panel A reports the relevant descriptive statistics. Panel B shows the regression results. Columns (1) to (4) show the results of model (3) that includes only one of the four mandatory earnings forecast types while column (5) shows the results of model (3) that includes all four earnings forecast types simultaneously. With the exception for the case of *DEC* in column (2), the inferences for our key variable of interest are similar in column (5) versus columns (1) to (4). Hence, we focus the following discussion on the results in column (5) only. The coefficients on the four-way interaction terms are all consistent with our expectations. As expected, the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_NONE \times UE_{it+1}$ is insignificant for all four types of mandatory earnings types. However, the coefficients on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_SELF \times UE_{it+1}$ and $TYPE_{it+1} \times POST\_TYPE \times TYPE\_PEER \times UE_{it+1}$ are both significantly positive for all four types of mandatory earnings types. In addition, we find that these two coefficients are similar

in magnitude except for the case of *INC*. For *INC*, the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_SELF \times UE_{it+1}$ is significantly smaller than the coefficient on $TYPE_{it+1} \times POST\_TYPE \times TYPE\_PEER \times UE_{it+1}$. Overall, we find that a firm's mandatory earnings forecasts in the post-regulation period help accelerate not only the firm's stock price informativeness but also the stock price informativeness of the industry peer firms who should have issued but failed to issue the mandated earnings forecasts of the same type (i.e., a spillover effect).

6.2. The spillover effect of the mandatory forecast regulation on the voluntary firms

As shown in Panel C of Table 2, only 1,800 (or 6.59%) out of the 27,321 voluntary firm fiscal periods issued voluntary earnings forecasts. In this section, we examine whether the mandatory earnings forecast regulation also has any spillover effect on the stock price informativeness for these voluntary earnings forecast periods. To test this idea, we limit our sample to the 27,321 voluntary firm fiscal periods (see Panel C of Table 2) and divide the voluntary observations into three groups:

Group 1: a dummy variable that equals one if $TYPE_{it+1}$=0 for the peer firms in the same industry fiscal period t+1 and *POST_TYPE_VOL*=0, and zero otherwise;

Group 2: a dummy variable that equals one if $TYPE_{it+1}$=1 for at least one peer firm in the same industry fiscal period t+1 and *POST_TYPE_VOL*=0, and zero otherwise; and

Group 3: a dummy variable that equals one if $TYPE_{it+1}$=1 for at least one peer firm in the same industry fiscal period t+1 and *POST_TYPE_VOL*=1, and zero otherwise.

Where $TYPE_{it+1}$ is defined as before. *POST_TYPE_VOL* is a dummy variable that equals one if *POST_NEG*=1 and there is at least one reported *NEG* earnings by the peer firms in the same industry fiscal period t+1, or if *POST_DEC*=1 and there is at least one reported *DEC* earnings by the peer firms in the same industry fiscal period t+1, or if *POST_INC*=1 and there is at least

one reported *INC* earnings by peer firms in the same industry fiscal period t+1, or if *POST_TURN*=1 and there is at least one reported *TURN* earnings by the peer firms in the same industry fiscal period t+1. It is important to note that we have no cases where $TYPE_{it+1}$=0 for the peer firms in the same industry fiscal period t+1 and *POST_TYPE_VOL*=1 because by definition *POST_TYPE_VOL*=1 observations require the peer firms to have at least one peer firm in the same industry fiscal period t+1 to report at least one earnings of the four types.

We have also illustrated our definitions of the three groups in Figure 3 to help the reader to better understand our definitions of the three groups. Essentially, Group 1 firms are the voluntary firm fiscal periods where none of their industry peers in the same fiscal period experienced a reported earnings of *NEG*, *DEC*, *INC*, or *TURN* in either the pre-regulation period or the post-regulation period (examples B and D in Figure 3). Group 2 firms are the voluntary firm fiscal periods in the pre-regulation period where at least one of their industry peers in the same fiscal period experienced a reported earnings of *NEG*, *DEC*, *INC*, or *TURN* (example A in Figure 3). Finally, Group 3 firms are the voluntary firm fiscal periods in the post-regulation period where at least one of their industry peers in the same fiscal period experienced a reported earnings of *NEG*, *DEC*, *INC*, or *TURN* (example C in Figure 3).[2]

To test the spillover effect of the regulation on the voluntary firms, we estimate the following regression model:

$$CAR_{it} = a_0 + a_1 UE_{it} + a_2 UE_{it+1} + a_3 GROUP2_{it+1} + a_3 GROUP3_{it+1} + a_5 GROUP2_{it+1} \times UE_{it+1} + a_5 GROUP3_{it+1} \times UE_{it+1} + a_6 Control + a_7 Control \times UE_{it+1} + u_{it} \quad (5)$$

Except for *GROUP2* and *GROUP3*, all the other variables are defined as before. *GROUP2* is a dummy variable that equals one if a voluntary firm fiscal period belongs to GROUP 2.

[2] For 98 percent of the Group 3 firms, there is at least one peer firm in the same industry fiscal period that issued a consistent mandatory earnings forecast of *TYPE i* (untabulated).

GROUP3 is a dummy variable that equals one if a voluntary firm fiscal period belongs to GROUP 3. To the extent that that the mandatory earnings forecasts of any of the four types

types (i.e., negative earnings, large earnings decreases, large earnings increases, and turning a profit from a loss). A unique feature of the regulation is that it was implemented in a staggered manner, allowing us to demonstrate more convincingly the causal effects of the regulation. We examine two specific research questions. First, we examine whether the regulation helps increase directly affected firms' stock price informativeness (referred to as the future earnings response coefficient or FERC). Second, we examine whether the regulation creates any spillover effect on the firms that do not issue management's earnings forecasts in the post-regulation period.

With regard to our first research question, we find three interesting results. First, the regulation substantially increases the directly affected firms' frequency of management earnings forecasts, suggesting that the regulation is effective in encouraging firms to increase earnings forecasts. However, we still find that approximately one third of the firms that are required to issue mandatory earnings forecasts choose not to issue the required forecasts (noncompliant firms). Second, except for large earnings decreases, we find that the mandated earnings forecasts are informative in that the stock market reacts positively to the announcements of mandatory earnings forecasts. Third, using a difference-in-differences regression approach, we find that the mandatory earnings forecast regulation helps increase the directly affected firms' FERC, suggesting that the regulation helps increase the total information available to stock market investors.

With regard to our second research question, we find two sets of key findings. First, we assess the spillover effect of the regulation on the noncompliant firms. To do so, we divide all the firms that are required to issue mandatory earnings forecasts into three types. Type One firms are the firm fiscal periods that issued a mandatory earnings forecast in the post-regulation period (compliant firms). Type Two firms are the firm fiscal periods that failed to issue a mandatory forecast but at least one peer firm in the same industry issued a mandatory forecast

in the post-regulation period (nonco

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Appendix A. Mandatory and Voluntary management forecasts during 1995-2013

Panel A: Mandatory management earnings forecast during 1995-2013

Regime	**From** (YYYYMMDD)	**To** (YYYYMMDD)	**Forecasted Earnings (UEt+1)**	**POST**[3]	**Mandatory management earnings forecasts**
1	19981210	20010702	1998/1999/2000 annual	POST_NEG=1	Firms whose forthcoming earnings are expected to have a loss are required to issue a respective forecast.
2	20010703	20011218 for SZSE 20011219 for SHSE	2001 semi-annual	POST_NEG=1 POST_DEC=1	Firms whose forthcoming earnings are expected to have a loss or a large decrease (i.e. larger than 50%) are required to issue a respective forecast.
3	20011219 for SZSE 20011220 for SHSE	20040926 for SZSE 20040921 for SHSE	2001/2002/2003 annual 2002/2003/2004 semi-annual 2002/2003 Quarter 3	POST_NEG=1 POST_DEC=1 POST_INC=1	Firms whose forthcoming earnings are expected to have a loss, a large decrease (i.e. larger than 50%), or a large increase (i.e. larger than 50%) are required to issue a respective forecast.
4	20040927 for SZSE 20040922 for SHSE	20080903	2004-2007 annual 2005/2006/2007/2008 semi-annual 2004/2005/2006/2007 Quarter 3	POST_NEG=1 POST_DEC=1 POST_INC=1 POST_TURN=1	Firms whose forthcoming earnings are expected to have a loss, a large decrease (i.e. larger than 50%), a large increase (i.e. larger than 50%), or a change from a loss into a profit are required to issue a respective forecast.
5 For SHSE	20080904	20131231	2008-2013 annual	POST_NEG=1 POST_DEC=1 POST_INC=1 POST_TURN=1	Firms whose forthcoming earnings are expected to have a loss, a large decrease (i.e. larger than 50%), a large increase (i.e. larger than 50%), or a change from a loss into a profit are required to issue a respective forecast.
5 For SZSE	20080904	20131231	2008-2013 annual 2009-2013 semi-annual 2008-2013 Quarter 3 2011-2013 Quarter 1	POST_NEG=1 POST_DEC=1 POST_INC=1 POST_TURN=1	Firms whose forthcoming earnings are expected to have a loss, a large decrease (i.e. larger than 50%), a large increase (i.e. larger than 50%), or a change from a loss into a profit are required to issue a respective forecast.

[3] POST variables equal to zero otherwise.

Panel B: Voluntary management earnings forecast during 1995-2013

Appendix B. Variable definitions

Variable	Definition
CAR_MF	The cumulative abnormal return for the 3-day trading window from 1 trading day before management forecast to 1 trading day after management forecast.
CAR_{it}	The cumulative abnormal return for firm i for the period beginning 1 trading day before the earnings announcement of fiscal period t and ending *N* calendar days before the earnings announcement of fiscal period *t+1* scaled by number of stock trading days in between. *N* equals to 30 before 2002. *N* equals to 30 (15) if period t+1 is the fourth-quarter (first, second or third-quarter) of the year. We multiply cumulative abnormal return by 100.
$MFnews_t$	The difference between estimated net income for period t and realized net income in same period last year deflated by market value 2 trading days before

QUARTERLY = 1 if UE_{it+1}

$E_t<0$

$E_{t+1}>=0$

$E_t>=0$ $(E_{t+1}-E$

$E_{t+1}<0$

Figure 3. The spillover effect of mandatory earnings forecasts on the *OTHER* firms: examples

Example	A	B	C	D
Time period	pre-regulation period	pre-regulation period	post-regulation period	post-regulation period
The earnings type reported by the industry **peer firms** for the same fiscal period	*NEG*, *DEC*, *INC*, or *TURN* earnings reported by peer firms	No peer firms report any of the four earnings types	*NEG*, *DEC*, *INC*, or *TURN* earnings reported by peer firms	No peer firms report any of the four earnings types

Table 1: Sample selection procedures

Sample selection	Obs.
Start with the main board firms with non-missing *CAR*, UE_t and UE_{t+1} in the period 1995-2013	63,374
Minus:	
Obs. with earnings announcement delayed by one week	-189
Obs. with fiscal periods for UE_{t+1} falling on 2001/6/30	-1,018
Obs. with fiscal periods for UE_t and UE_{t+1} falling in 2002	-5,027
Obs. with regression variables	-7,657
Final Sample	49,483

See appendix B for the variable definitions of *CAR*, UE_t and UE_{t+1}.

Table 2: Frequency for mandatory and voluntary earnings forecast

Panel A: Forecast Frequency for the four earnings types in the mandatory regime

Regime	Type	N	Nfcst	Nfcst/N	NfcstCAR	NfcstCAR/N	NCfcstCAR	NCfcstCAR/N
1	*NEG*	228	186	81.58%	162	71.05%	162	71.05%
3	*NEG*	481	404	83.99%	355	73.80%	340	70.69%
4	*NEG*	1,200	1,086	90.50%	1,021	85.08%	952	79.33%
5	*NEG*	1,413	1,360	96.25%	1,097	77.64%	1,006	71.20%
3	*DEC*	354	289	81.64%	257	72.60%	249	70.34%
4	*DEC*	658	545	82.83%	470	71.43%	462	70.21%
5	*DEC*	1,211	1,049	86.62%	885	73.08%	873	72.09%
3	*INC*	608	552	90.79%	477	78.45%	442	72.70%
4	*INC*	2,243	1,924	85.78%	1,680	74.90%	1,673	74.59%
5	*INC*	1,946	1,707	87.72%	1,459	74.97%	1,428	73.38%
4	*TURN*	713	622	87.24%	576	80.79%	527	73.91%
5	*TURN*	947	908	95.88%	760	80.25%	736	77.72%

Panel B: Forecast frequency for the four earnings types in the voluntary regime

Regime	Type	N	Nfcst	Nfcst/N	NfcstCAR	NfcstCAR/N	NCfcstCAR	NCfcstCAR/N
0	*NEG*	153	0	0.00%	0	0.00%	0	0.00%
1	*NEG*	169	66	39.05%	40	23.67%	40	23.67%

Panel C: Forecast frequency for the types of the OTHER types

Regime	Type	N	Nfcst	Nfcst/N	NfcstCAR	NfcstCAR/N	NCfcstCAR	NCfcstCAR/N
0	*OTHER*	792	0	0.00%	0	0.00%		
1	*OTHER*	2,111	0	0.00%	0	0.00%		
3	*OTHER*	3,568	148	4.15%	127	3.56%		
4	*OTHER*	8,440	483	5.72%	245	2.90%		
5	*OTHER*	12,410	1,169	9.42%	729	5.87%		
Total		27,321	1,800	6.59%	1,101	4.03%		

Nfcst is the number of firms which issued at least one earnings forecast (either consistent or inconsistent) prior to the earnings announcement. An earnings forecast is considered to be consistent if the types of issued forecasts are consistent witt/quency5 OTHER

Table 3: Stock market reactions to the announcement of mandatory earnings forecast.

Panel A: Sample Selection

Sample selection	Obs.
Start with the sample in Future ERC regression	49,483
Minus:	
Obs. without qualitative or quantitative earnings forecast	-33,772
Obs. without measurable quantitative earnings forecast for A share mainboard firms	

Panel C: Stock market reaction to the mandatory forecast announcement

Dependent Variable=*CAR_MF*

Table 4: Regression of future earnings response coefficient

Panel A: Summary statistics before demeaning

	N	Mean	Median	Std. Dev	Min.	Q1	Q3	Max.
CAR	49,483	0.0232	-0.0044	0.3757	-1.1479	-0.1631	0.1901	1.3974
UE_t	49,483	0.0003	0.0010	0.0246	-0.1466	-0.0034	0.0064	0.1097
UE_{t+1}	49,483	0.0004	0.0010	0.0301	-0.1518	-0.0044	0.0074	0.1228
NEG_{t+1}	49,483	0.1210	0.0000	0.3261	0.0000	0.0000	0.0000	1.0000
DEC_{t+1}	49,483	0.0840	0.0000	0.2773	0.0000	0.0000	0.0000	1.0000

$INC_{t+1t+1.2857\ TD00t+1.2857\ TDt+1}$

Panel B: Regression results

	Dependent Variable=*CAR*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				NEG	DEC	INC	TURN	combine
UE_t	0.452***		-0.246**	-0.215*	-0.201*	-0.251**	-0.196*	-0.269**
	(0.000)		(0.031)	(0.065)	(0.082)	(0.031)	(0.092)	(0.022)
UE_{t+1}		0.888***	1.002***	4.138***	3.407***	2.968***	3.882***	5.050***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NEG_{t+1}				-0.039***				-0.040***
				(0.000)				(0.000)
POST_NEG				-0.007				-0.027***
				(0.166)				(0.000)
NEG_{t+1} *x* UE_{t+1}				-1.147***				-2.555***
				(0.000)				(0.000)
POST_NEG x UE_{t+1}				-1.092***				-2.160***
				(0.000)				(0.000)
NEG_{t+1} *x POST_NEG*				0.017				0.009
				(0.212)				(0.501)
NEG_{t+1} *x POST_NEG x* UE_{t+1}				1.247***				1.942***
				(0.000)				(0.000)
DEC_{t+1}					-0.052***			-0.055***
					(0.000)			(0.000)
POST_DEC					-0			,8b3227*
					(23600)			(0.000)
DEC								

			(0.000)		(0.000)
POST_INC			-0.001		
			(0.846)		
INC_{t+1} *x* UE_{t+1}			-0.769		-2.779***
			(0.139)		(0.000)
POST_INC x UE_{t+1}			-0.460**		
			(0.020)		
INC_{t+1} *x POST_INC*			-0.024*		-0.015
			(0.066)		(0.254)
INC_{t+1} *x POST_INC x* UE_{t+1}			1.289**		2.396***
			(0.022)		(0.000)
$TURN_{t+1}$				-0.004	0.001
				(0.808)	(0.955)
POST_TURN				0.023***	0.066***
				(0.000)	(0.000)
$TURN_{t+1}$ *x* UE_{t+1}				-1.237***	-1.930***
				(0.001)	(0.000)
POST_TURN x UE_{t+1}				-0.251	0.112
				(0.142)	(0.591)
$TURN_{t+1}$ *x POST_TURN*				-0.038	-0.007
				(0.112)	(0.751)
$TURN_{t+1}$ *x POST_TURN x* UE_{t+1}				0.967**	1.009**
				(0.021)	(0.015)
SIZE	-0.024***	-0.023***	-0.024***	-0.023***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VOLATILITY	-0.321*	-0.313*	-0.496***	-0.610***	-0.990***
	(0.066)	(0.072)	(0.004)	(0.001)	(0.000)
GROWTH	0.050***	0.055***	0.042**	0.053***	0.031*
	(0.003)	(0.001)	(0.013)	(0.002)	(0.068)
LEV	-0.003	-0.009	-0.009	-0.010	-0.004
	(0.714)	(0.294)	(0.314)	(0.256)	(0.667)
QUARTER4	0.067***	0.066***	0.068***	0.054***	0.064***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

$\lvert UE_{t+1} \rvert$	0.341***	0.249***	0.243***	0.521***	0.509***		
	(0.000)	(0.000)	(0			(00.3257	8

Panel B: Regression results

	Dependent Variable=*CAR*				
	(1)	(2)	(3)	(4)	(5)
	NEG	DEC	INC	TURN	combine
UE_t	-0.217*	-0.203*	-0.251**	-0.196*	-0.272**
	(0.063)	(0.079)	(0.032)	(0.092)	(0.020)
UE_{t+1}	4.155***	3.416***	2.965***	3.878***	5.088***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NEG_{t+1}	-0.039***				-0.040***
	(0.000)				(0.000)
POST_NEG	-0.007				-0.027***
	(0.164)				(0.000)
NEG_{t+1} x UE_{t+1}	-1.145***				-2.595***
	(0.000)				(0.000)
POST_NEG x UE_{t+1}	-1.082***				-2.139***
	(0.000)				(0.000)
NEG_{t+1} x *POST_NEG* x *NEG_SELF*	0.021				0.013
	(0.113)				(0.343)
NEG_{t+1} x *POST_NEG* x *NEG_PEER*	-0.010				-0.015
	(0.709)				(0.585)
NEG_{t+1} x *POST_NEG* x *NEG_NONE*	-0.022				-0.021
	(0.727)				(0.741)
NEG_{t+1} x *POST_NEG* x *NEG_SELF* x UE_{t+1}	1.302***				1.998***
	(0.000)				(0.000)
NEG_{t+1} x *POST_NEG* x *NEG_PEER* x UE_{t+1}	1.048***				1.757***
	(0.009)				(0.000)
NEG_{t+1} x *POST_NEG* x *NEG_NONE* x UE_{t+1}	0.188				0.993
	(0.828)				(0.270)
DEC_{t+1}		-0.052***			-0.056***
		(0.000)			(0.000)
POST_DEC		-0.006			-0.031***
		(0.230)			(0.000)
DEC_{t+1} x UE_{t+1}		-0.742			-2.300***

	(0.139)	(0.000)
POST_DEC x UE_{t+1}		

INC_{t+1} x POST_INC x INC_NONE x UE_{t+1}			-0.519		0.640
			(0.826)		(0.790)
$TURN_{t+1}$				-0.004	0.002
				(0.808)	(0.931)
POST_TURN				0.023***	0.065***
				(0.000)	(0.000)
$TURN_{t+1}$ x UE_{t+1}				-1.239***	-1.999***
				(0.001)	(0.000)
POST_TURN x UE_{t+1}				-0.253	0.114
				(0.139)	(0.585)
$TURN_{t+1}$ x POST_TURN x TURN_SELF				-0.041*	-0.010
				(0.084)	(0.684)
$TURN_{t+1}$ x POST_TURN x TURN_PEER				-0.069	-0.049
				(0.309)	(0.474)
$TURN_{t+1}$ x POST_TURN x TURN_NONE				0.031	0.056
				(0.701)	(0.492)
$TURN_{t+1}$ x POST_TURN x TURN_SELF x UE_{t+1}				0.980**	1.017**
				(0.019)	(0.013)
$TURN_{t+1}$ x POST_TURN x TURN_PEER x UE_{t+1}				1.855	2.123*
				(0.143)	(0.088)
$TURN_{t+1}$ x POST_TURN x TURN_NONE x UE_{t+1}				0.447	0.622
				(0.841)	(0.786)
SIZE	-0.024***	-0.023***	-0.024***	-0.023***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VOLATILITY	-0.317*	-0.314*	-0.498***	-0.614***	-0.988***
	(0.069)	(0.071)	(0.004)	(0.001)	(0.000)
GROWTH	0.050***	0.055***	0.042**	0.053***	0.030*
	(0.003)	(0.001)	(0.013)	(0.002)	(0.071)
LEV	-0.003	-0.009	-0.009	-0.010	-0.004
	(0.706)	(0.283)	(0.317)	(0.261)	(0.657)
QUARTER4	0.067***	0.066***	0.068***	0.054***	0.064***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\|UE_{t+1}\|$	0.344***	0.251***	0.246***	0.521***	0.527***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
QUARTERLY	-0.004	-0.005	-0.005	-0.026***	-0.019***
	(0.464)	(0.422)	(0.462)	(0.000)	(0.002)
IFRS	0.050***	0.049***	0.049***	0.053***	0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE x UE_{t+1}	-0.076	-0.063	-0.127**	-0.127**	-0.136**
	(0.168)	(0.254)	(0.020)	(0.020)	(0.016)
VOLATILITY x UE_{t+1}	-30.883***	-29.486***	-33.527***	-31.615***	-36.042***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GROWTH x UE_{t+1}	0.597	0.653	0.242	0.535	0.294
	(0.279)	(0.234)	(0.654)	(0.322)	(0.587)
LEV x UE_{t+1}	-0.444*	-0.577**	-0.396	-0.611**	-0.358
	(0.080)	(0.021)	(0.105)	(0.013)	(0.142)
$\lvert UE_{t+1} \rvert$ *x* UE_{t+1}	-16.983***	-16.286***	-13.376***	-17.581***	-7.630***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
QUARTER4 x UE_{t+1}	-0.282**	-0.358***	-0.341**	-0.413***	-0.330**
	(0.039)	(0.009)	(0.012)	(0.002)	(0.018)
QUARTERLY x UE_{t+1}	-0.474***	-0.321	-0.322	-0.572***	-0.764***
	(0.007)	(0.184)	(0.176)	(0.009)	(0.007)
IFRS x UE_{t+1}	-0.223*	-0.178	-0.171	-0.126	-0.209
	(0.077)	(0.170)	(0.171)	(0.309)	(0.108)
Constant	-0.027***	-0.027***	-0.043***	-0.019***	-0.007
	(0.000)	(0.000)	(0.000)	(0.006)	(0.413)
Observations	49,483	49,483	49,483	49,483	49,483
Adjusted R-squared	0.026	0.025	0.028	0.026	0.031

***, **, * Denote statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively. Two-tailed robust p-values are clustered at the firm level. See Appendix B for variable definitions. The regressions with control variables also control a set of industry dummies and their interaction with UE_{t+1}.

Table 6: The spillover effect of the mandatory forecast regulation on the voluntary firms

Panel A: Summary statistics

	N	Mean	Median	Std. Dev	Min.	Q1	Q3	Max.
CAR	27,321	0.0125	-0.0117	0.3449	-1.1479	-0.1561	0.1620	1.3974
UE_t	27,321	0.0000	-0.0002	0.0129	-0.1475	-0.0030	0.0032	0.1088
UE_{t+1}	27,321	0.0000	0.0005	0.0091	-0.1068	-0.0025	0.0034	0.0711
GROUP2	27,321	0.1790	0.0000	0.3834	0.0000	0.0000	0.0000	1.0000
GROUP3	27,321	0.7707	1.0000	0.4204	0.0000	1.0000	1.0000	1.0000
SIZE	27,321	0.0000	-0.1719	1.1194	-2.1575	-0.7871	0.5932	3.4704
VOLATILITY	27,321	0.0000	-0.0021	0.0101	-0.0162	-0.0076	0.0063	0.0391
GROWTH	27,321	0.0000	-0.0163	0.0946	-0.2369	-0.0480	0.0268	0.5792
LEV	27,321	0.0000	0.0017	0.1881	-0.4041	-0.1332	0.1327	0.7922
QUARTER4	27,321	0.3393	0.0000	0.4735	0.0000	0.0000	1.0000	1.0000
$\lvert UE_{t+1} \rvert$	27,321	0.0000	-0.0024	0.0074	-0.0054	-0.0043	0.0013	0.1016
QUARTERLY	27,321	0.8711	1.0000	0.3352	0.0000	1.0000	1.0000	1.0000
IFRS	27,321	0.5529	1.0000	0.4972	0.0000	0.0000	1.0000	1.0000

Panel B: Regression result

	CAR
	Coefficient
UE_t	-0.421*
	(0.090)
UE_{t+1}	6.376***
	(0.000)
GROUP2 x UE_{t+1}	-0.412
	(0.725)
GROUP3 x UE_{t+1}	-1.282*
	(0.056)
GROUP2	0.025**
	(0.018)
GROUP3	0.007
	(0.387)
SIZE	-0.019***
	(0.000)
VOLATILITY	-0.276
	(0.214)
GROWTH	-0.023
	(0.297)
LEV	-0.022**
	(0.048)
QUARTER4	0.062***
	(0.000)

$\|UE_{t+1}\|$	2.835***
	(0.000)
QUARTERLY	0.003
	(0.639)
IFRS	0.037***
	(0.000)
SIZE x UE_{t+1}	-0.255
	(0.205)
VOLATILITY x UE_{t+1}	-87.139***
	(0.000)
GROWTH x UE_{t+1}	0.521
	(0.809)
LEV x UE_{t+1}	-2.967***
	(0.008)
QUARTER4 x UE_{t+1}	-1.676***
	(0.000)
$\|UEt+1\|$ *x* UE_{t+1}	-29.972***
	(0.002)
QUARTERLY x UE_{t+1}	-1.540*
	(0.057)
IFRS x UE_{t+1}	0.565
	(0.235)
Constant	-0.043***
	(0.000)
Observations	27,321
Adjusted R-squared	0.019