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The Effects of a Mixed Approach toward Management Earnings Forecasts: Evidence from China

ABSTRACT

Chinese regulators mandate management earnings forecasts when managers' earnings expectations meet bright-line thresholds and allow voluntary forecasts in other circumstances. We examine the effects of this mixed approach. We find that Chinese mandatory forecasts have significant information content. Moreover, we observe a learning effect: mandatory forecasts appear to stimulate voluntary forecasts in subsequent periods as managers become familiar with the forecasting and disclosing procedures through forced experience. We find one negative consequence of the mixed approach, however: managers appear to manipulate earnings to avoid the forecast threshold of large earnings decreases. Overall, we document the pros and cons of a mixed approach toward management earnings forecasts in a major emerging market.

Keywords: management earnings forecast; forecast mandate; voluntary disclosure; China.

1. Introduction

For decades, regulators, managers, and investors have grappled with the question of whether financial disclosure should be regulated or left to market forces. The public-good view holds that financial disclosure tends to be under-produced even when it is socially desirable because the disclosing party bears all the costs but does not reap commensurate benefits (Hirshleifer 1971). Regulation can overcome this problem by forcing firms to communicate with investors. Applying this argument to specific types of financial disclosure is complicated, however, because of the difficulty of identifying and estimating the costs and benefits of a given disclosure to the information provider and the recipients.[1]

The regulation of management earnings forecasts (MEF) has attracted regulatory attention in many countries. In the US, the SEC considered mandating MEF in the 1970s, and the debate on mandatory vs. voluntary disclosure generated a large body of research in the 1970s and 1980s.[2] The proponents of mandatory earnings forecasts argued that the forecasts would reduce information asymmetry and level the playing field. Opponents made three arguments (Till 1980). First, it is unclear that mandatory earnings forecasts are useful. Managers who are forced to disclose may use their discretion to delay or obfuscate the disclosure. Second, early disclosure is especially costly for some firms either due to the proprietary costs of disclosure or a lack of familiarity with the required procedures. Last, it would be difficult for

[1] Dye (1990) and Admati and Pfleiderer (2000) demonstrate this problem analytically. Dye models the firm's *potential* shareholders as free riders of the disclosure and shows that a disclosure mandate is not necessarily preferable even if disclosure has no proprietary cost. In Admati and Pfleiderer's model, free riders can use the information to value other firms. The authors show that a socially inefficient equilibrium is one of several that may exist and that regulation can improve social welfare by eliminating this possibility and establishing standards for firms to communicate information to the market (p. 513). They acknowledge that it is difficult to design effective regulation to achieve this goal.

[2] See the report of the SEC Advisory Committee on Corporate Disclosure published on November 3, 1977; Daily (1971); McDonald (1973); Burton (1974); Patell (1976); Gonedes, Dopuch, and Penman (1976); Penman (1980); Waymire (1984); Pownall and Waymire (1989); etc.

regulators to formulate forecast rules that will not be abused. The SEC eventually decided to encourage voluntary management forecasts instead of requiring forecasts.[3]

In this study we examine the effects of China's mixed approach toward regulating MEF in light of the above arguments. In any capital market, managers arguably know more about the firm than do outside investors. Serious information asymmetry could develop if managers restrict their disclosures to required periodic financial reports. Previous debates on MEF have focused on the choice between using the visible hand ("regulation") and the invisible hand ("market forces") to alleviate these information problems. Chinese regulators avoid this binary choice and use a mixed approach to address the information problems—the visible hand for some firms and the invisible hand for others. We examine four economic effects of this mixed approach: (1) the usefulness of mandatory forecasts to market participants, (2) the effect of forced forecast experience on subsequent-period voluntary forecast behavior, referred to as the managerial learning effect, (3) insider trading, and (4) earnings management.[4]

Publicly-listed Chinese firms are required to issue forecasts for fiscal-year earnings if managers anticipate an earnings increase or decrease of at least 50% from the prior year, a loss, or a profit in the current year after reporting a loss in the prior year ("turning profit"). Forecasts must be issued by January 31 after the fiscal year end of December 31.[5] Firms may issue forecasts voluntarily in other circumstances. Thus, the mandatory and voluntary forecast

[3] Market forces are an alternative to regulation. Managers' private information may unravel in a market with few frictions, such as one with credible managers, efficient information flow, and rational investors (Grossman 1981). While *full* unravelling only occurs in an ideal world, since 2001 about a quarter of US firms have been issuing forecasts of annual earnings, attesting to the strong market forces in the US. Unraveling is less likely in a market with many frictions, such as the emerging market of China.

[4] We do not examine the relative usefulness of mandatory vs. voluntary forecasts in this study.

[5] All Chinese firms end their fiscal year on December 31. The deadline for an annual report is April 30, and 75% of the financial reports in our sample period were filed after late March. Regulators encourage, but do not require, firms to provide mandatory forecasts of annual earnings when they report third-quarter earnings.

regimes (hereinafter "M-regime" and "V-regime") coexist, separated by bright-line earnings level and change cutoffs. A firm may be in different regimes from one year to the next.

The mixed approach toward regulating MEF is novel and could be used by regulators across a wide range of economies to address the information problems in their respective economies. This may be especially appropriate in emerging markets where the capital markets are still developing and market forces are weak. A mixed approach can also be of interest in developed economies.[6] The pros and cons of this mixed approach are unclear, however, particularly in an emerging market where regulatory enforcement might be weak. Despite five decades of research in the US, the literature offers little guidance about the effects of a mixed approach because MEF have always been voluntary in the US. Kato, Skinner, and Kunimura (2009) provide evidence on MEF in Japan; however, their findings are not applicable to the mixed approach because earnings forecasts, along with their timing and precision, are effectively mandated for *all* firms in Japan, leaving managers with little discretion. To the best of our knowledge, Taiwan is the only other economy with a mixed mandatory-voluntary forecast regime. However, unlike China, earnings forecasts are only mandatory in Taiwan when significant events occur. Such events include (1) mergers and acquisitions, (2) replacement of more than one-third of the board members, and (3) significant changes in the firm's stock price. In the absence of bright-line forecasting rules based on earnings levels or changes, Taiwanese firms likely face quite different reporting incentives from those in China. We gain insights into a mixed approach toward MEF by analyzing Chinese data.

[6] In fact, some securities regulations in the US already use a mixed approach. For example, the Sarbanes-Oxley Act sets a $75 million public float threshold for firms to meet accelerated filing requirements and to obtain auditor attestation of their internal controls for financial reporting. The Jumpstart Our Business Startups Act of 2012 also uses thresholds to define categories of firms that are exempt from certain disclosure requirements for going public.

In a larger picture, examining MEF in China is important in its own right for three reasons. First, China is a large economy that surpassed Japan as the world's second largest economy in 2010, and has since kept growing. The full potential of the Chinese economy may only be unlocked by a well-functioning capital market. Second, China's stock market also surpassed Japan in November 2014 to become the second largest one based on total market capitalization (Bloomberg 2014). The Chinese stock market influences global capital flows and resource allocation (Strumpf and Driebusch 2015). MEF have played a large role in developed capital markets and are likely to eventually play a substantial role in the Chinese capital market.[7] Third, China has experienced growing pains in developing its capital market, and our study provides feedback on a major disclosure regulation in this market.

We collect MEF of fiscal-year earnings issued by Chinese companies from 2004 to 2011 and classify firm-years in the M- or V-regime based on their reported earnings relative to the four forecast-mandate thresholds. We classify forecasts as mandatory if the issuing firms' earnings fall in the earnings regions prescribed by the mandate and classify other forecasts as voluntary. Regulators enacted the mandate to expedite the disclosure of material information, and this is what we observe—81 to 85% of the firms in the M-regime issue forecasts, compared with 18 to 22% in the V-regime. The forecast mandate appears to expedite the disclosure of material corporate information to investors by at least three months—the interval between the forecast deadline and the annual financial report deadline.

Although the mandate appears to expedite disclosures, there is no guarantee that the resulting forecasts are useful to market participants. Managers who are forced to provide information might use their discretion to obfuscate the disclosure and reduce its usefulness. So,

[7] For example, Beyer, Cohen, Lys, and Walther (2010, p.300) conclude that in the past decade or so MEF provided about 55% of the accounting information available to US investors.

we first investigate the usefulness of mandatory forecasts by examining investor and analyst reactions at the mandatory-forecast date. We find that stock prices react significantly to mandatory forecasts and are in a direction consistent with the forecast news. When forecasting firms subsequently report earnings, investors react to the remaining earnings surprise, that is, the difference between reported earnings and the previously disclosed earnings forecast. We find that financial analysts respond to mandatory forecasts by immediately issuing or revising their earnings forecasts for the forthcoming year and that analyst forecast dispersion decreases substantially after the release of mandatory forecasts. Thus, market participants find mandatory forecasts useful.

Second, we examine the effects of mandatory forecasts on managerial learning. Managers can learn to comply more efficiently with new accounting rules, and can also learn new information from complying with the rules (e.g. Shroff, 2017). Although firms plan their use of resources, including cash, for internal operations, such information is not necessarily aggregated at the corporate level in a form that is suitable for external reporting. The demand for managers to estimate financial reporting-compliant earnings before the fiscal period ends arises externally. Managers can learn about reporting procedures by producing forecasts for external users. Chinese managers should have incentives to learn the craft of improving and publicly releasing earnings projections because violating the forecast regulation may result in significant negative market reaction, a ban from issuing shares in the next 12 months, and reputational and career damages to the managers.[8] Moreover, given the popularity of MEF in developed markets, Chinese managers may wish to learn how to use this disclosure tool to appeal to their investors. Managers who invest additional resources to comply with the

[8] The 51 firms that the CSMAR database shows as having been sanctioned for annual forecast violations experienced a statistically significant median return of -2.5% in the three-day window around the sanction.

regulation and go through the steps of issuing mandatory forecasts are likely to learn new forecasting procedures that could reduce their subsequent direct disclosure costs, in turn increasing the likelihood of issuing voluntary forecasts in the future (see the corollary in Verrecchia 1983). Thus, we expect current-year V-regime firms that had forced forecast experience in the prior year (the "treatment group") to be more likely to forecast and provide higher-quality forecasts than current-year V-regime firms that were not required to forecast in the prior year (the "benchmark group"). Both groups are in the V-regime in the current year, and their contrasting forecast experience in the prior year is due to the mandate.

The treatment and benchmark groups differ on several observable firm characteristics. To address this self-selection issue, we use the propensity-score matching method to identify a control observation from the benchmark group for each treatment observation. We find that firms in the treatment group are more likely to provide voluntary forecasts in the current year than firms in the matched control group. In addition, when we condition on voluntary forecast issuance, we find that firms in the treatment group issue more timely forecasts than firms in the matched control group. We find no difference in forecast precision and forecast accuracy between the two groups, though, after controlling for forecast timeliness. We conclude that forced forecast experience facilitates managers' learning and thus increases the likelihood and timeliness of subsequent voluntary forecasts.

In supplementary tests, we match a control firm with a treatment firm in the *same* category of state-owned enterprise (SOE) or non-SOE firms. We find similar learning effects for SOEs and non-SOEs regarding the likelihood of issuing subsequent-period voluntary forecasts. We find a learning effect on the timeliness of subsequent-period voluntary forecasts

only for non-SOEs. Our findings suggest that mandatory forecasts increase the quantity and timeliness of voluntary forecasts, primarily benefiting investors of non-SOEs.

The third effect we examine is insider trading. A major argument for mandating forecasts is to level the playing field. Chinese regulators are concerned that, without mandatory forecasts, corporate insiders would take advantage of the increasing information asymmetry between regulatory financial report dates. We examine whether mandatory forecasts affect insider trading. Our insider trading data are from 2007-2011. For firms that provide mandatory forecasts (mandatory forecast group), we collect the aggregate trading share percentage of company executives and directors from 30 days before the mandatory-forecast date to 30 days afterwards. We collect data separately on sales and purchase transactions and on companies with good news versus bad news. We select non-forecasting firms in the V-regime as our control group and assign a pseudo-event date that is the median forecast date of the mandatory forecast group. Although insiders of mandatory-forecast firms appear to delay their stock sales around good-news forecasts until after the forecast deadline, insider transactions are generally infrequent. Thus, the forecast mandate appears to have little effect on insider trading.

The last issue we investigate is the effect of bright-line thresholds used in the mixed approach. One argument against mandatory forecasts is that it is challenging for regulators to make rules that will not be abused. This may be especially true for a mixed approach. Managers who are reluctant to issue forecasts may manage earnings to avoid the bright-line thresholds specified in the forecast mandate. Managers may also manage earnings to cover up their failure to anticipate, and therefore forecast, significant earnings news as required by the regulation. The forecast regulation uses bright-line earnings thresholds to determine whether a firm-year is in the M- or V-regime. Reticent managers may exploit financial reporting discretion and

manipulate reported earnings to avoid issuing forecasts or cover their failure to issue forecasts when they should. We find evidence that after the mandate took effect, some firms managed earnings to avoid the 50% earnings *decrease* forecast threshold. This finding suggests that another negative consequence of the mixed approach is that it induces earnings management to avoid the bright-line forecast threshold of earnings decreases.

Our study makes two contributions to the literature. First, we provide feedback on one of the most important disclosure regulations in China.[9] We find that mandatory forecasts have significant information content and that forced forecast experience increases the likelihood and timeliness of voluntary forecasts in subsequent periods, especially for non-SOE firms. These findings are signs of success of the forecast regulation. On the other hand, we find evidence of earnings management induced by the bright-line threshold for mandatory forecasts of earnings decreases. These findings show the negative consequences of the forecast regulation. Overall, out study provides feedback to Chinese regulators.

Second, our study provides guidance to other markets, especially emerging markets. Despite some unique characteristics of the Chinese stock market, our findings could be useful for other emerging markets (e.g., South Korea, Brazil, Turkey, and South Africa) because the private (non-governmental) sectors across emerging markets face similar information problems and would benefit most from well-functioning capital markets. Thus, the evidence from our study may be useful to regulators and investors in other emerging markets.

[9] There is limited management forecast research published in the accounting literature in China. Jiang, Tong, and Yang (2003) test the market reaction to warnings; Qin (2004) discusses forecasts by IPO firms; Guo and Qi (2010) examine the accruals management of forecasting firms; and Song (2009) and Song, Li, and Ji (2011) report the penalties for forecast violations.

2. Institutional background

As an emerging market, China has experienced phenomenal growth in its capital market in the past two decades, with a doubling of the number of listed companies and a ten-fold increase in stock market capitalization to about $6 trillion at the end of 2011. China's stock market plays a vital role in supporting overall economic growth (e.g. Carpenter et al. 2015). Research suggests that even though the Chinese stock market responds to accounting information, it is not as informationally efficient as the US market.[10] A further concern is that mechanisms for reducing information asymmetry were not fully developed in China during our sample period. For example, before 1998, Chinese firms rarely forecasted or disclosed earnings before the mandated report date, and financial analysts seldom issued earnings forecasts (Xue 2001). As recently as 2004, only 40% of Chinese firms were covered by analysts, though coverage increased to 91% in 2011.[11] Short selling and arbitrage forces are more limited in China than in the US. These frictions have limited the role of market forces in addressing the information problems, thus increasing the importance of regulation.

Chinese regulators have attempted to reduce information asymmetry in three ways. First, they encourage, but do not require, companies to adopt practices that are common in developed countries, such as announcing earnings before regulatory filings. With the Chinese stock exchanges' encouragement, the percentage of firms announcing earnings before the filing date increased from 5% in 2004 to 52% in 2011. Second, the regulators control market activities

[10] Huang and Li (2014) find that Chinese firms experience significant return reaction and trading volume when annual earnings are reported, but have more information leakage prior to the report date and more prolonged return drift after the report date than US firms. Du, Tang, and Zhang (2014) find that the earnings-return correlations for a given return interval are lower in China than in the US.

[11] A survey of individual investors indicates that they rank analyst research reports as only the fourth most important information resource after price movements, media, and corporate disclosure (Shenzhen Stock Exchange 2011). Both the media and academic research have questioned the credibility of analyst reports in China (Pan and Wu 2011; Gu, Li, and Yang 2013).

using a central-planner's mindset. For example, the Chinese IPO market has been tightly controlled by the central government and heavily bottlenecked because of regulatory scrutiny of new listings (Hong 2016). Last, the regulators use a mixed approach of regulation and market forces, such as the approach toward MEF.

In December 2000, Chinese stock exchanges required firms to expedite information release by issuing warnings if managers anticipate a loss for the current year. In December 2001, the exchanges expanded the scope of mandatory forecasts to include anticipated large earnings changes (i.e., an earnings increase or decrease of at least 50% from the previous year). In 2004, another circumstance for mandatory forecasts was added: anticipated profit for the current year after a loss in the prior year. These earnings change and level thresholds define earnings information that regulators deem especially material.[12] Managers may voluntarily issue earnings forecasts in other circumstances.

The stock exchanges provide forms to standardize forecast releases, and require firms to update a previously issued earnings forecast if the reason for the forecast has changed or if the new estimate differs by 50% or more from the previous estimate. The requirement for updating obsolete forecasts applies to both mandatory and voluntary forecasts. Regulators may punish firms that omit or delay mandatory forecasts or issue inaccurate mandatory or voluntary forecasts, often by publicly denouncing a violating company along with its executives and directors. To restore investors' trust, the company typically issues an apology in a national newspaper (Qin 2004). Prior research finds, however, that the enforcement of forecast rules is

[12] In private communication, an official who was employed at the China Securities Regulatory Commission (CSRC) when the forecast rules were made stated that their main purpose was to reduce information asymmetry and protect investors from being exploited by informationally advantaged parties.

weak: only a small percentage of violations have been sanctioned, mostly for failure to forecast bad news (Song 2009; Song et al. 2011).[13]

3. Data and descriptive statistics

Our data source for Chinese forecasts of annual earnings is RESSET, a commercial database covering MEF and financial reporting of publicly traded Chinese companies.[14] The database coverage begins in 2002. Appendix 1 presents an example of MEF, translated from the original press release. Most forecasts (56%) are of earnings levels and the remainder are of earnings changes, which we convert to earnings levels for consistency.[15] We collect financial and stock price data from CSMAR database. We start our sample period in 2004 to ensure that all the forecast rules were in effect and end the sample period in 2011. Our sample starts with A shares listed on the Shanghai or Shenzhen Stock Exchange during 2004-2011, a total of 13,248 firm-years. We exclude 1,114 IPO firms and 751 firms that report an EPS of RMB0.05 or less in the prior year (and are exempted from the earnings-change forecast rule). Our sample is reduced to 11,383 firm-years.

The database does not distinguish between mandatory and voluntary forecasts. We use reported earnings to classify a firm-year into either the M- or V-regime, as demonstrated in Appendix 2, and refer to forecasts issued in the M-regime as "mandatory forecasts" and those

[13] According to the sanctions data available from the CSMAR database, 51 companies were denounced for annual forecast violations during our sample period and all of these cases were related to bad news.

[14] To check the accuracy of the dataset, we randomly sampled 50 observations and were able to verify the MEF and major accounting variables using the original forecast announcements and financial reports. We discovered and made adjustments for a recording irregularity in the database about range forecasts: for an earnings increase forecast, say 30% to 50%, the database records "30%" in the first column and "50%" in the second column; for an earnings decrease forecast of -30% to -50%, the database records "-30%" in the first column and "-50%" in the second column.

[15] Managers provide an estimate of earnings per share (EPS) in addition to an estimate of total earnings for only 9% of the forecasts.

in the V-regime as "voluntary forecasts."[16] The mandatory requirements are based on the assumption that by January 31, managers have perfect foresight for earnings. To the extent that this assumption does not hold, two types of mismatch occur. The first type is a "false alarm," where the stated forecast falls into one of the four mandatory categories, but realized earnings do not qualify for the M-regime. For example, a firm forecasted an earnings decrease of 60% but the actual earnings decrease is only 30%. We exclude 390 false alarms and have 10,993 firm-years remaining. The second type of mismatch is "inconsistent mandatory forecasts" (ICF): a firm belonging to one of the four mandatory categories provides a prediction indicating either a different type of mandatory forecast or a voluntary forecast. For example, realized earnings decrease by 60% from the previous year, but the firm forecasted a decrease of 30% (a V-regime category). Such observations account for 4% of the M-regime firm-years; we tabulate ICF in Table 1 for completeness but exclude them from subsequent analyses.

We present Tables 1 and 2 and Figures 1 and 2 to summarize the sample of 10,993 firm-years, from which we select a subset for our empirical analysis. Panel A of Table 1 shows the 5,317 firm-years in the M-regime, with separate columns for CF (consistent mandatory forecast), ICF, and NF (no forecast). The compliance rate (CF%) is the percentage of CF firms in a given M-regime category and ranges from 81% to 90% during the sample period. The compliance rates for "loss" and "turning profit" are higher than those for large earnings increases/decreases perhaps because the former receive more scrutiny from regulators.

Panel B of Table 1 shows the 5,676 firm-years in the V-regime, with separate columns for F (forecast) and NF (no forecast) observations. The forecast rates (F%) for both the earnings

[16] If a firm issues more than one type of mandatory forecast for the same year (e.g., forecasting a loss and an earnings decrease of at least 50%), we prioritize "loss" and "turning profit" over the other categories because of the importance of zero as a performance benchmark in China.

decrease and earnings increase categories climb rapidly during our sample period from 2% in 2004 to about 40% in 2011. In the last three years of the sample period, the forecast rate for earnings increases is clearly higher than that for earnings decreases, consistent with the economic theory that managers are more likely to disclose good news than bad news (Verrecchia 1983; Dye 1985).

To provide context for interpreting the above forecast rates, we report MEF statistics for US firms over the same period as our Chinese sample. We select US firms in Compustat with non-missing total assets, stock price, the number of shares outstanding, and earnings before extraordinary items and discontinued operations, and obtain these firms' MEF from First Call's Company Issued Guidelines database. Although there are vast differences in the two countries' information environments, the US analysis serves two purposes. One is to serve as a benchmark for the MEF behavior in China. For example, is the Chinese forecast rate of 40% high or low relative to the rate in developed markets? The second is to describe variation in forecast behavior *within* the US across the earnings change regions similar to those of Chinese companies. This enables us to determine whether US firms tend to withhold earnings forecasts in the circumstances identified by Chinese regulators as warranting mandatory disclosure.

Panel A of Figure 1 depicts the Chinese forecast rate across earnings changes. Chinese firms exhibit a U shape with the base ranging from 10 to 30% for voluntary forecasts and crests of up to 100% that are elevated by the forecast mandate for large-percentage earnings changes. Waymire (1985) finds that managers are reluctant to forecast in highly uncertain situations even though the demand for corporate disclosure peaks at these times. In other words, managers' voluntary supply of information dwindles precisely when the demand for such information is highest. Consistent with Waymire's finding, Panel B of Figure 1 shows the inverted V-shape

of the forecast rate in the US. The contrast of the Chinese vs. US patterns suggests that the Chinese forecast regulation overrides managers' reluctance to supply information when uncertainty is high and, therefore, significantly increases the amount of forward-looking information available to investors. In addition, the average forecast rate in the US for earnings decreases of less than 50% is 29% and that for earnings increases of less than 50% is 38%. The comparison of these percentages with the Chinese forecast rates suggests that near the end of our sample period the *voluntary* forecast rate in China is comparable to the US rate over similar earnings-change regions. These results provide some preliminary evidence on the benefits of the Chinese forecast regulation—it encourages disclosure by otherwise unincentivized managers and potentially improves the transparency of the markets as a whole.

Table 2 summarizes forecast frequency, venue, and form—forecast properties that are often discussed in the MEF literature. Panel A presents forecast frequency by firm-year and shows that 84% of the forecasting firms issue only one forecast in a given year. In contrast, only 14% of US forecasting firms forecast just once (untabulated). Panel B presents the frequency of forecasts issued in different venues—65% of mandatory forecasts and 28% of voluntary forecasts are standalone. We classify a forecast as standalone if there are no earnings announcements or actual earnings reports within three trading days of the forecast. In contrast, only 26% of US forecasts are standalone (untabulated). Panel C presents the frequency of different forecast forms. About half of mandatory forecasts are open-interval estimates, whereas point and range estimates account for 85% of voluntary forecasts. In contrast, 87% of US forecasts are range estimates and 10% are point estimates (untabulated). These contrasts indicate that forecast venue and form are similar for Chinese *voluntary* forecasts and US forecasts, but Chinese mandatory forecasts possess different features.

We next examine forecast timeliness, defined as the number of days between the fiscal year end and the forecast date. Forecast timeliness is a negative number if a forecast is issued after the fiscal year end. If a firm issues more than one forecast for a given year, we keep the initial forecast. Panel A of Figure 2 shows that Chinese mandatory forecasts cluster around two dates: the third-quarter report date and the forecast deadline. In contrast, Chinese voluntary forecasts occur throughout the year, with a cluster around the third-quarter report date and a large proportion (15%) issued 200 or more days before the fiscal year end. These patterns suggest that mandatory forecasts are on average less timely than voluntary forecasts, with a large proportion issued near the compliance deadline. Panel B shows forecast timeliness in the US and reveals little difference in the timeliness of forecasts issued by firms anticipating large vs. small earnings changes.

4. The usefulness of mandatory forecasts

4.1 ***Price reaction to mandatory forecasts***

We calculate *CAR_MF*, the firm's cumulative market-adjusted stock return in the event window [-1, +1], where the mandatory-forecast date ("MF date") is day 0, as the firm's cumulative raw return minus the cumulative market return during the same window. We regress *CAR_MF* on *MFnew*s, measured as the forecast minus prior-year earnings scaled by the market value of equity two days before the return window. This measure uses prior-year earnings as a proxy for earnings expectations. This proxy is reasonable because prior-earnings are an important benchmark, as confirmed by regulators' basing a forecast rule on earnings changes. In supplementary analysis, we use the median of analyst earnings forecasts issued in the six months before the MF date as the benchmark and refer to the variable as *MFnews_A*. The

variable is missing for 55% of our test sample because analyst coverage is quite low in the early years of our sample period. We estimate Equation (1):

$$CAR\_MF = a_0 + a_1 MFnews + e. \quad (1)$$

We estimate the regression using the robust-regression estimation method, which is robust to outliers and violation of the normality assumption in the error term (Anderson 2008). We report the results in Panel A of Table 3 using all mandatory forecasts as well as only standalone forecasts. To be consistent with the timeliness analysis, if a firm issues multiple forecasts for a given year, we keep the earliest one. However, we find similar results (untabulated) by restricting the sample to firm-years with only one forecast. For each sample, we first present the results when the forecast news is measured by *MFnews_A*. Its coefficient is significantly positive at 0.081 for the full sample and 0.144 for the standalone sample, suggesting that investors consider mandatory forecasts useful, rejecting the null of H1a. When we use *MFnews* instead, the coefficient remains significantly positive for both the full (coefficient = 0.050, z = 8.41) and standalone (coefficient =0.109, z = 15.79) samples, but the magnitude drops slightly from that for *MFnews_A*.

We further separate the sample into good-news and bad-news mandatory forecasts based on the sign of *MFnews* and find a significantly larger coefficient for bad news than for good news using either all (z=3.67) or standalone (z=2.31) forecasts. This finding suggests that investors perceive bad-news mandatory forecasts to be more credible than good-news mandatory forecasts.

4.2 Price reaction to subsequent earnings announcement or financial report

If mandatory forecasts have information content, then the market would only react to the incremental news contained in the subsequent earnings announcement or financial report.

We use the earnings announcement date as the event date if the firm announced earnings before filing the financial report and use the filing date otherwise. For firm-years with mandatory forecasts, we calculate *CAR_RP*, the firm's cumulative market-adjusted stock return in the event window [-1, +1], as its raw return minus the cumulative market return in this window. We regress *CAR_RP* on earnings surprise in Equation (2), where *Surprise* is a place holder for two alternative variables of earnings surprise:

$$CAR\_RP = b_0 + b_1 Surprise + e. \quad (2)$$

In the first column of Panel B of Table 3, we consider the *incremental* news contained in the report as the surprise and measure *Surprise1* as the difference between reported earnings and the previously disclosed forecast, scaled by the market value of equity two days before the return window. We find a positive and significant coefficient at 0.030 for *Surprise1*, suggesting that the market reacts to the incremental news. In the second column, we consider the total news contained in the report to be the surprise variable and measure *Surprise2* as the difference between the reported and prior-year earnings, scaled by the market value of equity two days before the return window. The coefficient on *Surprise2* is significantly positive, but the magnitude is smaller than that on *Suprrise1*. Total earnings news can be decomposed into forecasts news (*MFnews*) and incremental news (*Surprise1*). We interpret the smaller magnitude of the coefficient on total news as a consequence of *MFnews* adding noise to *Surprise2*, consistent with mandatory forecasts partially preempting earnings news in the report.

As a reference, in the last column we estimate the same regression as in the second column but restrict the estimation to firm-years in the V-regime without any forecast. The coefficient on *Surprise2* is significantly positive at 0.173 and can be viewed as the price reaction to earnings surprises for firms in the V-regime that provide no early earnings information.

4.3 ***Analyst responses to mandatory forecasts***

We conduct two tests to examine whether financial analysts respond to mandatory forecasts. In the first test, we examine whether analysts issue or revise earnings forecasts right after firms provide mandatory forecasts. In US capital markets, the majority of analyst earnings forecasts during a year are issued within three trading days after earnings announcement events (Keskek, Tse, and Tucker 2014), suggesting that these events are especially informative. For our Chinese sample firms, we collect analyst forecasts of year t's earnings issued within five calendar days after the earnings report dates for year t-1 and the fiscal quarters Q1-Q3 of year t. Panel C of Table 3 shows that the total number of analyst forecasts issued in these 5-day windows for firms that provide mandatory forecasts is 10,957, with 30.1% after the report date for year t-1, 38.0% after the semi-annual report date for year t, and 15.8% and 16.1% after the report dates for the first and third quarters of year t. A total of 2,158 analyst forecasts are issued within five days of the MF date, equivalent to 19.7% of the total number of analyst forecasts issued after the earnings report events, suggesting that analysts consider mandatory forecasts informative.

In the second test, we examine the change in analyst forecast dispersion from the 180-day window before the MF date to the 60-day window after this date, scaled by the absolute value of realized earnings. Panel D of Table 3 reports that the mean analyst forecast dispersion decreases from 0.388 in the pre-event window to 0.211 in the post-event window and the decrease is statistically significant. We follow the same procedure for the control group—firms in the V-regime that do not issue any earnings forecast—and assign the median forecast date (60 days before the fiscal year end) of the mandatory forecast group as a pseudo-event date. We find that the decrease in forecast dispersion for the mandatory forecast group is substantially

larger than that for the control group. These results suggest that mandatory forecasts reduce analysts' uncertainty in forecasting earnings.

5. The learning effect

5.1 Treatment vs. benchmark groups

The treatment group for testing the learning effect is the firm-years that provided mandatory forecasts in year t-1 and are in the V-regime in year t. The benchmark group is the firm-years that were in the V-regime in year t-1 but issued no forecast and are again in the V-regime in year t. Panel A of Table 4 presents the number of benchmark and treatment firm-years sorted by forecast behavior in year t-1. In the small-earnings-decrease category, the treatment group accounts for 28% of the observations and the benchmark group accounts for 60%. In the small-earnings-increase category, the treatment group accounts for 24% and the benchmark group accounts for 62%. Thus, in each category the benchmark group has over twice as many observations as the treatment group.

We compare the forecast rate and firm characteristics between the treatment and benchmark groups separately for the small earnings decrease and increase categories. *Forecast* is 1 if the firm issues a forecast in year t and 0 otherwise. The firm characteristics are measured at the beginning of year t. *SOE* is 1 if the firm is directly owned or ultimately controlled by the government and 0 otherwise. *Total Assets* are the firm's total assets and *Size* is the natural logarithm of total assets. *Competition* is measured by the sum of absolute changes in the sales rankings (the raw rankings are divided by the number of firms in the industry) from year t-2 to t-1 for all firms in the firm's industry. Intense industry competition would lead to large changes in firms' rankings from one year to the next. *BM* is the book-to-market ratio. *StdROA* is the standard deviation of accounting return on assets in the five years before year t. Analyst

coverage, *Follow*, is measured as the number of analysts who provided estimates of the firm's year t-1 earnings. Institutional ownership, *IO*, is the percentage ownership by institutional investors. *Regulate* is 1 for mining, utilities, financial services, media, and transportation and 0 otherwise. In addition, we construct *Finance*, which takes the value of 1 if the firm accesses the stock market in year t+1 and 0 otherwise. Appendix 3 summarizes the variable definitions.

Panel B of Table 4 presents the mean values of dummy variables and the mean and median values (in parentheses) of the remaining variables. The forecast rate for the treatment group is 13.3% for small earnings decreases and 16.9% for small earnings increases. In contrast, the benchmark group's forecasts rates are substantially lower at 4.0% for small earnings decreases and 5.4% for small earnings increases. Panel C presents pairwise Pearson correlations, none of which is high enough to warrant concerns of multicollinearity.

The treatment and benchmark groups differ in most observable firm characteristics and these differences present challenges in drawing inferences from comparing the groups. To address this selection problem, for each treatment observation we use propensity score matching based on Equation (3) to identify a control observation from the benchmark group that has the closest propensity score:[17]

$$\Pr(Treatment = 1) = F\begin{pmatrix} c_0 + c_1 SOE + c_2 Size + c_3 Competition + c_4 BM \\ + c_5 StdROA + c_6 Follow + c_7 IO + c_8 Regulate \\ + c_9 Finance \end{pmatrix}. \qquad (3)$$

[17] We distinguish treatment firms from benchmark firms, but do not further distinguish the four circumstances that lead a firm to the treatment group for two reasons. First, the most important distinction here is whether a firm has material earnings news, indicated by large earnings changes from the previous year and by entering or exiting the loss zone. The forecast regulation requires that firms anticipating material news provide such news well before the financial report date. Thus, regardless of the circumstances that lead a firm into the treatment group, treatment firms have one thing in common: they all have forced forecast experience in year t-1, which is the property of interest to us. Second, the sample size, especially for forecast quality analysis, would be substantially reduced if we further separate treatment firms by the four circumstances.

The first column in Table 5 presents the logit model estimation that generates the propensity score. We have 1,183 treatment-control matched pairs, which are similar on all dimensions as reported in the last three columns of the table.

5.2 The likelihood of subsequent voluntary forecasts

We use the matched pairs to examine whether treatment firms are more likely to issue voluntary forecasts in year t than are control firms. Because of the use of a matched sample, we estimate a conditional logit model in Equation (4), which allows a different intercept for each pair (Cram, Karan, and Stuart 2009). The dependent variable is *Forecast.* The explanatory variable is *Treatment,* and it takes the value of 1 for an observation in the treatment group and 0 for the matched control observation:

$$\Pr(Forecast = 1) = F\begin{pmatrix} d_0 + d_1 Treatment + d_2 SOE + d_3 Size + d_4 Competition \\ + d_5 BM + d_6 StdROA + d_7 Follow + d_8 IO + d_9 Regulate \\ + d_{10} Finance \end{pmatrix}. \quad (4)$$

We control for *SOE* because SOE firms rely more heavily on government resources than the capital market for financing (Chen, Chen, Lobo, and Wang 2011; He, Wong, and Young 2012). We expect SOEs' limited need for external public financing to reduce their incentives to provide voluntary disclosure (Firth, Wang, Wong 2015). The other control variables are identified in the US literature (e.g., Kasznik and Lev 1995; Tucker 2007; Li 2010). *Size* captures reputational costs in China; *Competition* proxies for proprietary disclosure costs; *BM* captures the firm's growth prospects; *StdROA* reflects the supply of or demand for earnings predictions when earnings are uncertain; *Follow* proxies for the information demand from financial analysts; *IO* captures the information demand from institutional investors; *Regulate* reflects

different information environments of firms in the regulated industries; and *Finance* reflects the firm's incentive for being transparent before planned funding.[18]

Table 6 reports the estimation results. The coefficient on *Treatment* for forecasting small earnings decreases is 2.826 with a z-statistic of 7.86 and that for forecasting small earnings increases is 2.664 with a z-statistic of 8.34. These results indicate that the forced forecast experience makes these firms more likely to issue forecasts voluntarily in the subsequent year, consistent with the learning effect. These associations could be due to treatment firms' commitment to issuing voluntary forecasts if they have done so in the past. To address this concern, we eliminate treatment-control pairs where the treatment firm issued voluntary forecasts in year t-2 or, for a stricter test, in any sample year before year t. Our primary finding holds (untabulated).

5.3 The properties of subsequent voluntary forecasts

The learning effect predicts that the forced forecast experience increases the quality of voluntary forecasts. We consider forecast timeliness, precision, and accuracy as indicators of quality. *Timeliness* is measured by the number of days between the fiscal year end and the forecast date. *Precision* is 0 for qualitative, 1 for open-interval, 2 for range, and 3 for point forecasts. *Error* is the absolute difference between the forecast and reported earnings, scaled by the absolute value of the realization. We use the midpoint of a range forecast and the stated number of an open-interval forecast in the calculation and set the value as missing for qualitative forecasts. Table 4 presents the mean and median values of *Timeliness*, *Precision*, and *Error* separately for the treatment and benchmark groups for the small earnings decrease and increase

[18] Analyst coverage has grown substantially from 40% in the first year to 91% in the last year of our sample. We control for analyst coverage in all our analyses of the managerial learning effect.

categories. Note that these three variables are available for the *subsets* of treatment and benchmark groups that *issue* voluntary forecasts in year t and, as a result, some of the original 1,183 treatment-control matched pairs identified in Table 5 are lost.

We use two approaches to select treatment-control pairs for forecast quality analyses. Under the first approach we retain observations in the original 1,183 pairs only if both the treatment and control firms issue voluntary forecasts in year t, and we are left with a sample of only 37 pairs. Given the small sample size, we pool the earnings decrease and increase categories and estimate Equation (5) for forecast timeliness:

$$\begin{aligned} Timeliness = {} & e_0 + e_1 Treatment + e_2 SOE + e_3 Size + e_4 Competition \\ & + e_5 BM + e_6 StdROA + e_7 Follow + e_8 IO + e_9 Regulate \\ & + e_{10} Finance + e. \end{aligned} \qquad (5)$$

We control for firm characteristics in the regression in case the pairs are not perfect matches.

Under the second approach we retain the treatment observations that issue voluntary forecasts in year t, return to the original pool of 3,784 benchmark observations, and select from the *forecasting* benchmark observations the one with the closest propensity score to each *forecasting treatment* observation. We obtain 53 pairs with available data for the small earnings decrease analysis and 92 pairs for the small earnings increase analysis. We prefer this approach because it yields a much larger sample.

Table 7 reports the robust-regression estimation results. Under the first approach, the coefficient on *Treatment* is 48.144 and is significantly positive, suggesting that the forced forecast experience increases forecast timeliness of subsequent voluntary forecasts by 48 days on average. Under the second approach, the coefficient is significantly positive at 30.253 for small earnings decreases and 53.296 for small earnings increases. These results are robust to excluding treatment-control pairs if the treatment firm issued a voluntary forecast in year t-2.

In untabulated analysis we examine whether forced forecast experience increases the precision of subsequent voluntary forecasts and find little evidence. In Table 8, we replace *Timeliness* in Equation (5) with *Error* and add *Timeliness* as a control variable (e.g., forecasts with a longer horizon are expected to be less accurate). The coefficient on *Treatment* is not significantly different from zero in any model. Thus, we find no effect of forced forecast experience on the precision and accuracy of subsequent voluntary forecasts.

Figure 3 plots the voluntary forecast rate for the full sample. The forecast rates started from almost nil in 2004 and gradually increased in the next four years. After that, the voluntary forecast rates for small earnings decreases and increases continue to trend upward, with a higher pace for forecasts of small earnings increases. The upward trends are consistent with the learning effect as well as increased demand for disclosure from the steadily increasing coverage of financial analysts and institutional ownership. Because we control for analyst coverage and institutional ownership in the regression, we conclude that the learning effect contributes to the upward trends of voluntary forecasts.

5.4 SOE vs. non-SOE firms

A notable feature of Chinese economy is governmental ownership. SOEs may behave differently from non-SOEs because SOEs rely more on governmental resources than the capital market. We classify firms as SOEs or non-SOEs using data from CSMAR, which lists the controlling shareholder as well as the actual controller (calculated by the equity control chain).[19] Panel A of Table 9 provides the descriptive statistics for SOE vs. non-SOE observations within

[19] We use the China Center for Economic Research (CCER) database from Peking University as an alternative data source to classify SOEs. CCER identifies a firm as an SOE based on the ultimate controller of the largest shareholder and whether the ultimate controller is owned by state entities or SOEs. We find similar results using this alternative classification.

each category that is reported earlier in Panel B of Table 4. In each category, non-SOEs have a higher voluntary forecast rate than SOEs. We modify the propensity score matching procedure so that a control observation for an SOE (non-SOE) treatment observation is the SOE (non-SOE) firm in the benchmark group with the closet propensity score. Using these matched treatment and control observations, we re-estimate Equation (4) separately for SOEs and non-SOEs. Panel B reports that for both SOEs and non-SOEs, treatment firms are more likely to provide voluntary forecasts than control firms. In untabulated tests we find no differences between the *Treatment* coefficients for SOEs and non-SOEs. In Panel C, however, when we re-estimate Equation (5), we find that the coefficient on *Treatment* is only significantly positive for non-SOEs. This contrast suggests a larger learning effect for non-SOEs than for SOEs.[20]

6. Insider trading

We collect insider trading data from the CSMAR database, which classifies company executives and directors as insiders and has coverage from 2007. In the first analysis, we collect a firm's aggregate shares traded by insiders in sale and purchase transactions as percentages of total shares outstanding in the 30 days before vs. after the mandatory-forecast date. We define a pseudo-event date for the control group (i.e., firms in the V-regime that do not provide any forecast) to be the median date of mandatory forecasts by the treatment group (i.e., firms that provide mandatory forecasts). We examine good news and bad news firms separately.

Table 10 reports that there are purchase or sales transactions among fewer than 2% of the firms in both the mandatory-forecast and control firm groups for either good news or bad news. The exception is sales transactions for good news in mandatory-forecast firms, which

[20] In untabulated analysis we find no difference between SOEs controlled by the central government vs. SOEs controlled by local governments. We also find no differential market reaction to mandatory forecasts issued by SOEs vs. non-SOEs.

occur for 3.8% of those firms. The proportion of mandatory-forecast firms with pre-forecast sales transactions related to good news is substantially smaller by 2.4%, suggesting that managers delay their sales transactions until after the firm announces mandatory good-news forecasts. The nonparametric test results for bad news firms suggest that managers of mandatory forecast firms also tend to delay sales transactions until after the forecast date, but the economic magnitude of this delay is rather small. Given the low frequency of insider transactions around management earnings forecast events and the tendency of managers to delay sales until after both good- and bad-news forecasts, we conclude that insiders do not exploit their information advantage related to mandatory forecasts (e.g., the timely information that managers learn by formulating mandatory forecasts) to trade at the expense of outside shareholders.

In untabulated analysis, we separately examine insider trading patterns for SOEs and non-SOEs and find a significantly higher proportion of non-SOEs with insider trades relative to SOEs. This finding is consistent with that in Lu et al. (2017) that managers of SOEs trade less than non-SOE managers around management earnings forecasts. We also find that SOE managers own substantially fewer shares than non-SOE managers, on average, and this difference might explain observed less insider trading by SOE managers. Our finding could also be explained by different incentives SOE and non-SOE managers face: SOE managers are often motived by future promotions, whereas non-SEO managers are more likely to be motivated by monetary benefits.

7. The earnings management effect

We follow Burgstahler and Dichev (1997) and present graphical evidence of the discontinuity at 50% in the earnings change distribution.[21] Panel A of Figure 4 presents the distributional graph for 1999-2000 and Panel B shows the graph for 2002-2003. The width of each bin is 0.05, or 5% of earnings. The bin marked as "-0.50" includes firms with earnings change percentages between -55% (exclusive) and -50% (inclusive). The bin marked as "-0.45" includes firms with earnings change percentages between -50% (exclusive) and -45% (inclusive). There is no noticeable discontinuity at either -50% or +50% for 1999-2000, but a clear discontinuity at -50% for 2002-2003, suggesting that some firms manipulate earnings to avoid the 50% earnings-decrease threshold for mandatory forecasts.

Table 11 presents our formal statistical tests of discontinuity. Under the null hypothesis of no earnings manipulation, we expect the number of observations in adjacent bins to change at a constant rate (i.e., smoothness). Following the method specified in Burgstahler and Dichev (1997), we calculate the difference between the actual number of observations and the predicted number, assuming smoothness. The standardized difference has a standard normal distribution. This statistic is -4.24, significant at the 1% level, for the bin of "-0.50" for 2002-2003, indicating that unexpectedly few firms report earnings decreases of 50% or worse. The corresponding statistic for the bin of "-0.45" is 3.93, also significant, corroborating the statistic to the left of the threshold. In contrast, none of the test statistics for 1999-2000 are statistically significant, suggesting that earnings manipulations to avoid the -50% threshold are associated with the

[21] We do not examine whether firms manipulate earnings to avoid forecasting losses because the event year is unclear. Although the stock exchanges imposed the loss threshold for mandatory forecasts in December 2000, the CSRC enacted a relatively vague rule for forecasting losses in December 1998. Moreover, firms may avoid reporting losses for reasons unrelated to earnings forecasts (Burgstahler and Dichev 1997; Degeorge, Patel, and Zeckhauser 1999).

forecast mandate. We find no evidence of manipulations to avoid the +50% threshold, perhaps because managers could have incentives to disclose good news even without a mandate. The asymmetric earnings management behavior could also be an indication that managers are more likely to cover up missing a bad-news forecast than a good-news forecast, as failing to forecast bad news is more likely to be sanctioned by regulators. Overall, we find evidence of earnings management around the 50% earnings-decrease mandatory-forecast threshold.

8. Conclusion

To function well, any capital market must effectively address information problems that arise in the market. Increasing corporate disclosure between regulatory filing dates, such as through MEF, is an important step in reducing information problems. Whether the visible hand (regulation) or the invisible hand (market forces) results in a cost-beneficial mechanism for increasing managers' propensity to provide quality earnings forecasts has been an issue of enduring interest to financial theorists and empiricists. Our study examines a novel idea—the visible hand for some firms and the invisible hand for the others. We use the Chinese setting to examine this idea because China is the only country so far that has adopted this mixed approach.

We find four economic effects of the mixed approach toward MEF. First, investors and financial analysts react to mandatory forecasts as if they are informative. Thus, the forecast mandate expedites the disclosure of material corporate information to investors by at least three months—the interval between the forecast deadline and the annual financial report deadline. Second, mandatory forecasts seem to stimulate subsequent-period voluntary forecasts, perhaps through managerial learning: managers become familiar with the forecasting and disclosing procedures through forced forecast experience. Third, even though Chinese regulators were concerned about insiders' taking advantage of their information advantage absent mandatory

forecasts, we do not find strong evidence that insider trading behavior changes around mandatory forecasts. Last, some managers appear to manipulate reported earnings to avoid the threshold of 50% earnings decreases stipulated in the forecast regulation.

Our study provides evidence of the pros and cons of a novel approach toward regulating MEF. We provide feedback on one of the most important disclosure regulations in China. The evidence might be useful to regulators, managers, and investors in other economies, especially other emerging markets.

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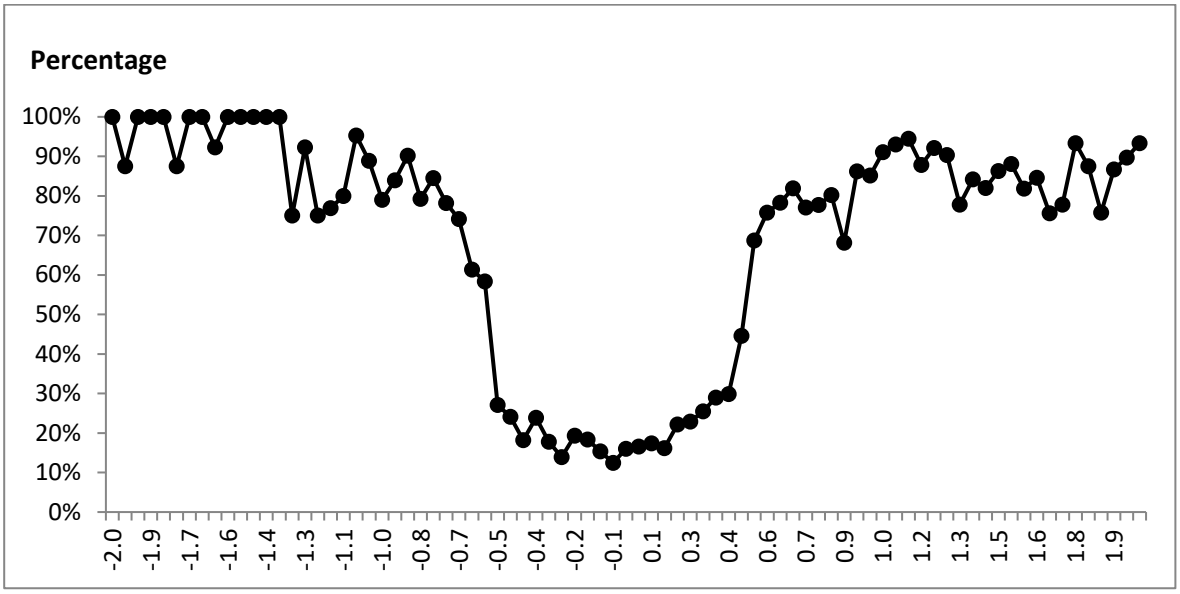
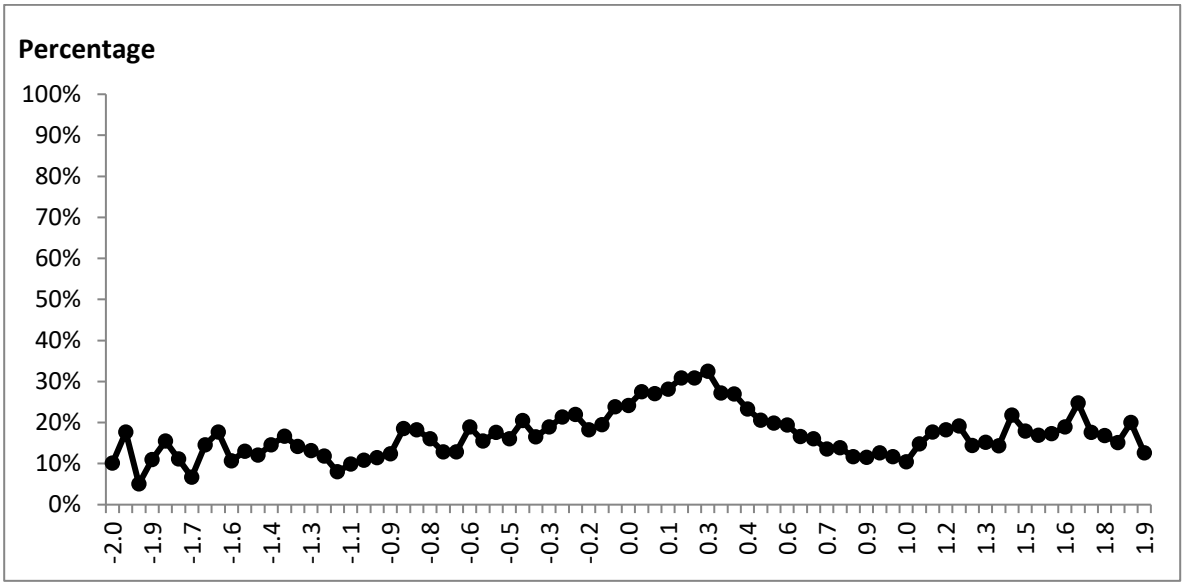
FIGURE 1
Percentage of Firms Issuing Management Forecasts of Annual Earnings

Panel A: Chinese firms



Panel B: US firms

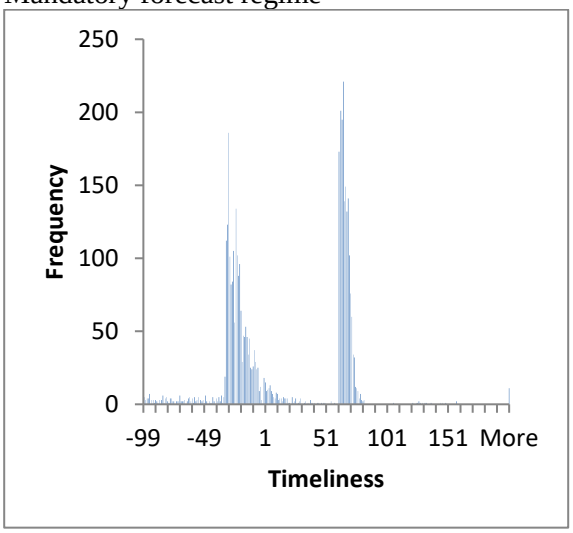


Note: In Panel A we plot the percentage of Chinese firms publicly listed during 2004-2011 that issued forecasts of annual earnings for intervals of proportionate earnings change from the previous year. In Panel B we do the same for US publicly listed firms over the same sample period.

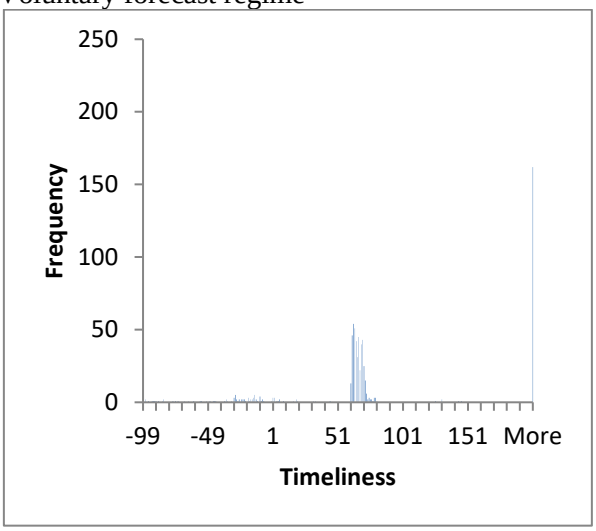
FIGURE 2
Forecast Timeliness

Panel A: Chinese forecasts

Mandatory forecast regime

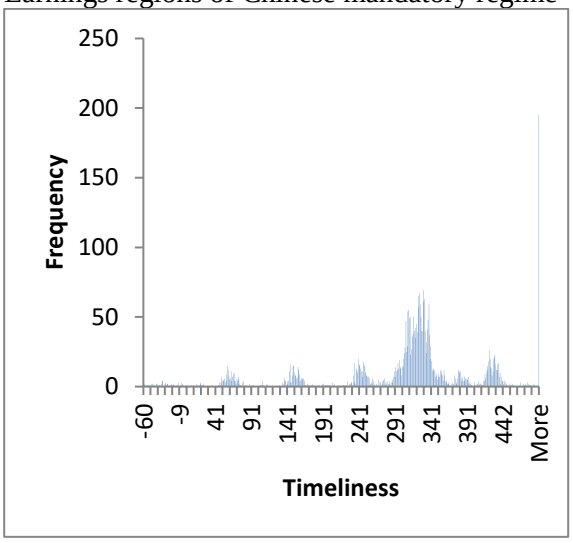


Voluntary forecast regime

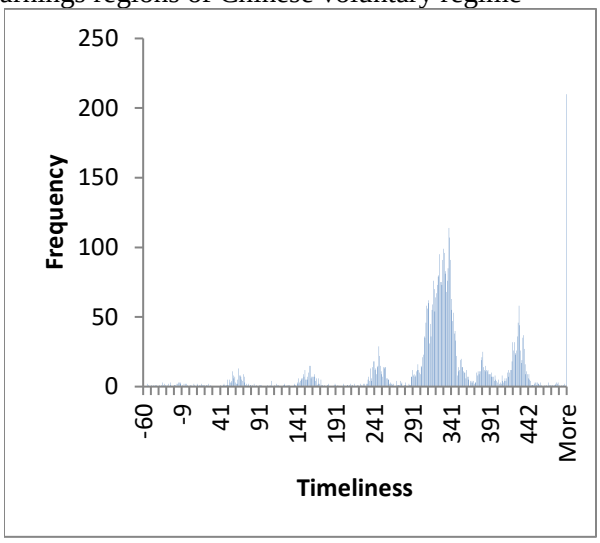


Panel B: US forecasts

Earnings regions of Chinese mandatory regime

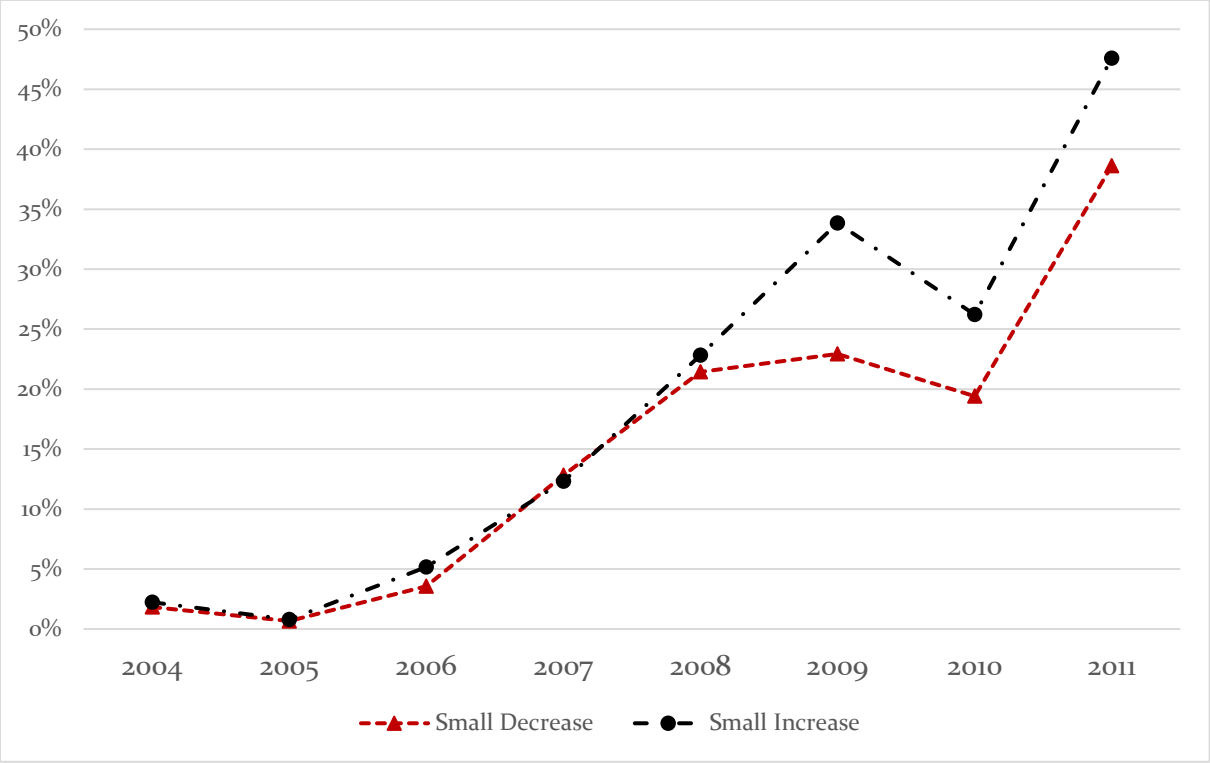


Earnings regions of Chinese voluntary regime



Note: *Timeliness* is the number of days between the fiscal year end date and the forecast date. A higher value indicates a more timely forecast. Note that timeliness increases from left to right on the horizontal axis, so the earliest forecasts are at the right end of the scale. The bars at the end of the spectrum are observations beyond the end of the x-axis. In Panel A we plot the timeliness of forecasts issued by Chinese publicly listed firms during 2004-2011. In Panel B we plot the timeliness of forecasts issued by US publicly listed firms during the same period. The Chinese mandatory regime comprises firms that anticipate an earnings decrease or increase from the previous year of at least 50%, a loss, or a profit after reporting a loss in the previous year; the rest belong to the Chinese voluntary regime.

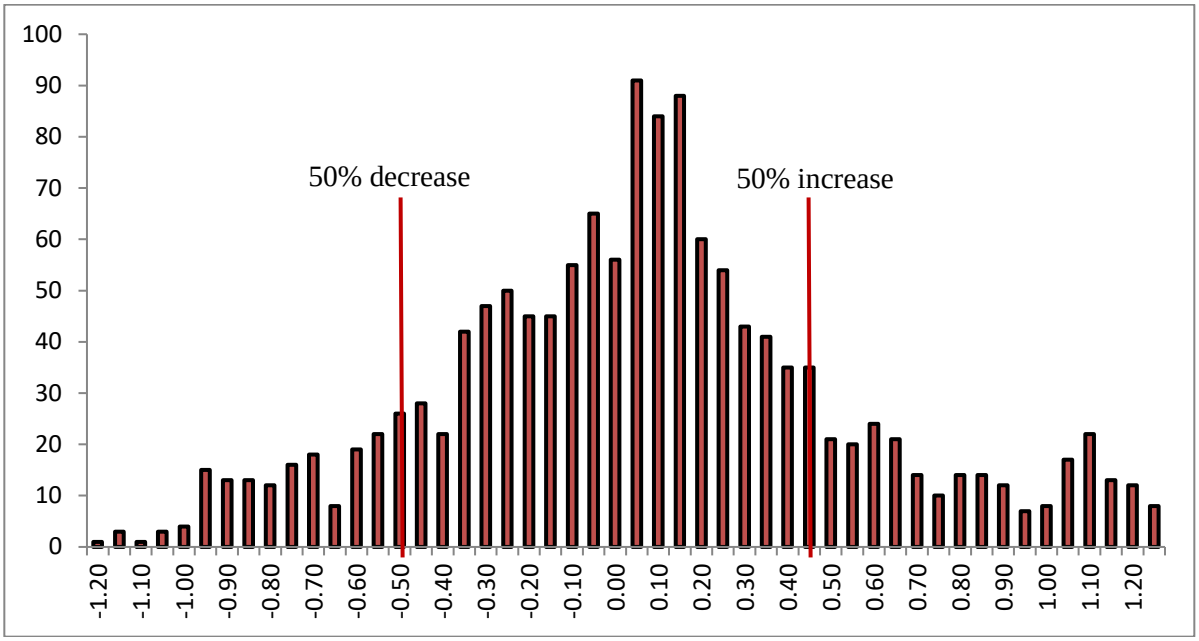
FIGURE 3
Trends of Voluntary Forecast Rate



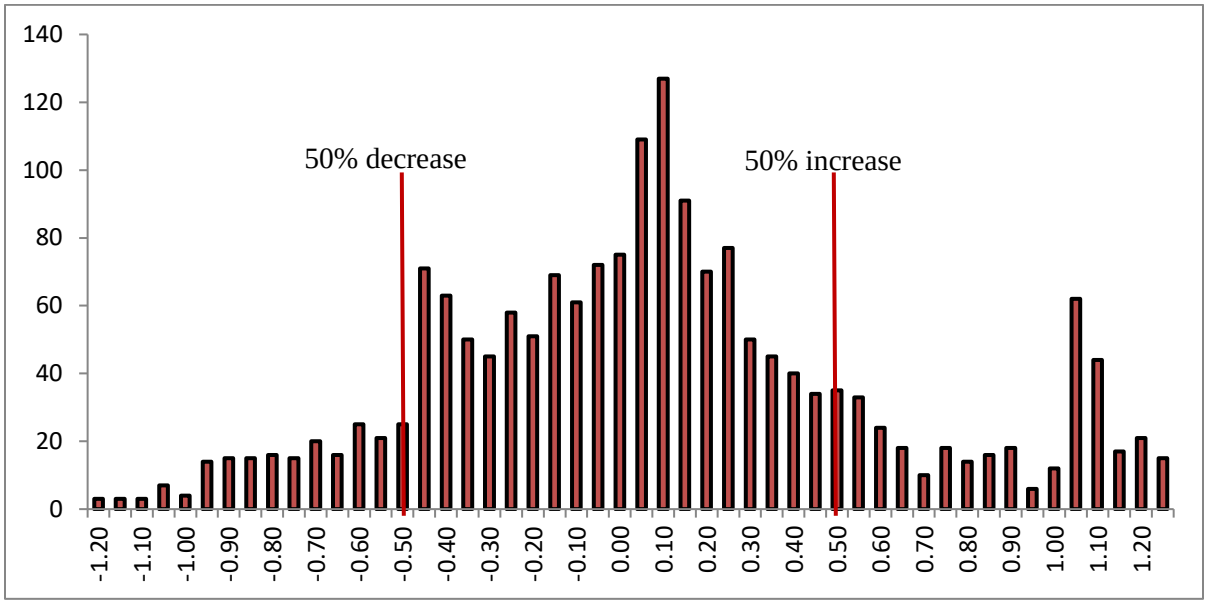
Note: Chinese firms are required to forecast an earnings decrease from the previous year of at least 50%, a loss, a profit after reporting a loss in the previous year, and an earnings increase of at least 50%. Forecasts in other situations are voluntary and these situations are referred to as "Small Decrease" and "Small Increase." Forecast rate is the percentage of firms in a given category that provide forecasts as tabulated in Table 1.

FIGURE 4
Distribution of Chinese Firms Reporting Earnings Changes

Panel A: Before the forecast mandate regarding earnings changes (1999-2000)



Panel B: After the forecast mandate regarding earnings changes (2002-2003)



Note: The requirement that firms issue forecasts for earnings changes of at least 50% in magnitude took effect in December 2001. The x-axis is the proportionate earnings change from the previous year. The y-axis is the number of firm-years. The "50% decrease" line goes through the data point of earnings change between -0.55 (excluded) and -0.50 (included). The "50% increase" line goes through the data point of earnings change between 0.45 (included) and 0.50 (excluded).

APPENDIX 1
Example of Chinese Management Earnings Forecast

Stock code: 600132 *Ticker*: ChongqingBeer *Public Release*# 2011-002

Chongqing Beer Incorporated
2010 Earnings Forecast Release

Our company and the board of directors guarantee the truthfulness, accuracy, and completeness of the content in this release and are responsible for any errors, omissions, or misleading statements.

1. Forecast
(1) *Forecasting period*: 1/1/2010 to 12/31/2010.
(2) *Content*: Based on our preliminary estimates, we anticipate the net income for 2010 to be higher than that for the previous year by 50% or more.
(3) *This forecast is not audited by CPAs.*

2. *Earnings reported for the previous year* (1/1/2009 to 12/31/2009)
(1) *Net income*: RMB 181,478,933.93.
(2) *EPS*: RMB 0.37.

3. Explanation
The company has made a profit from selling land in Yuanshiqiaopu factory district in 2010. The sale is based on the decision made at the company's second shareholder meeting in 2009 (Release #2009-026). Under this decision, the company transfers the ownership of the land to Chongqing Yufu Asset Management Corporation at the sale price of RMB 250 million. The company received the first instalment of RMB 130 million in March 2010.

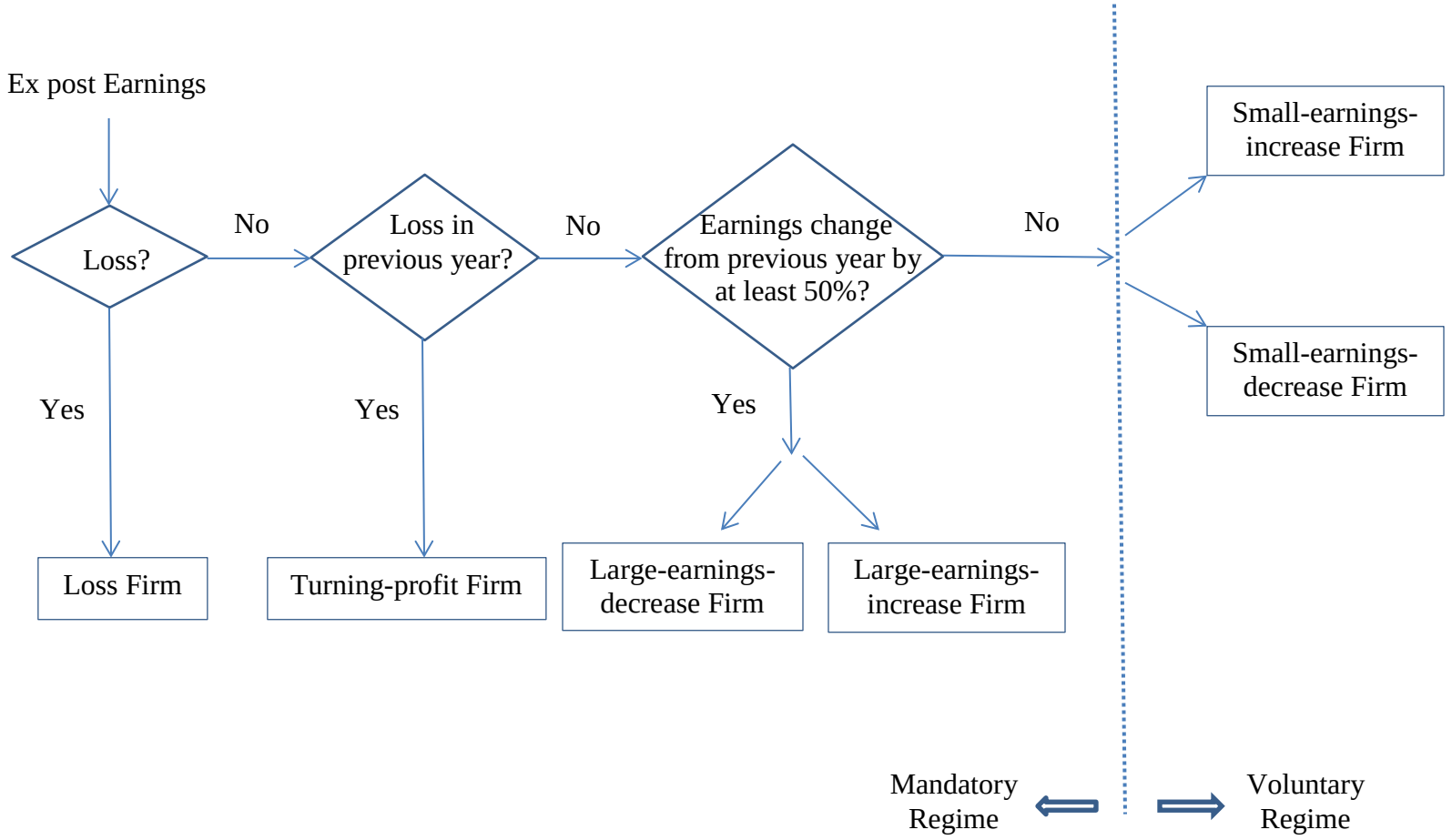
4. Other
Please see the details of our operating results in our forthcoming financial report for 2010. We would like to remind investors of investment risks.

End of the release.

Chongqing Beer Incorporated
Board of Directors
January 28, 2011

Note: The release is translated from Chinese by the authors of this paper. The standard language in the management earnings forecast release form (provided by the exchanges) is in italics.

APPENDIX 2
Chinese Management Earnings Forecast Regimes



APPENDIX 3
Variable Definitions

Variables used in the tests of market reaction	
CAR_MF	= reaction to mandatory earnings forecast. It is the three-trading-day, [-1, +1], market-adjusted stock return around the forecast date.
MFnews	= mandatory earnings forecast news. It is the difference between the forecast for year t and the reported earnings for year t-1, scaled by the market value of equity two days before the forecast date.
CAR_RP	= reaction to financial report. It is the three-trading-day, [-1, +1], market-adjusted stock return around the earlier date of earnings announcement or financial report (referred to as the "report date").
Surprise1	= remaining news. It is the difference between the reported earnings for year t and the mandatory earnings forecast for year t, scaled by the market value of equity two days before the report date.
Surprise2	= total news. It is the difference between the reported earnings for year t and the reported earnings for year t-1, scaled by the market value of equity two days before the report date.
Variables used in the tests of the learning effect	
Treatment	= 1 if the firm issued a mandatory earnings forecast in year t-1 and is in the voluntary regime in year t ("treatment group") and 0 if the firm was in the voluntary regime in year t-1 and did not any forecast and is in the voluntary regime again in year t ("benchmark group").
Forecast	= 1 if the firm issues a voluntary management forecast in year t and 0 otherwise.
Timeliness	= the number of days between the fiscal year end date and the voluntary management forecast date. The higher the number, the more timely the forecast.
Precision	= 0 for qualitative, 1 for open-interval, 2 for range, and 3 for point forecasts.
Error	= the absolute difference between the voluntary management forecast and earnings realization, scaled by the absolute value of the realization.
SOE	= 1 if the firm is directly owned or ultimately controlled by the government at the beginning of year t and 0 otherwise.
Size	= the natural logarithm of the firm's total assets (in millions of RMB) at the beginning of year t.
Competition	= the sum of absolute changes in the sales ranking (each raw ranking in the industry is divided by the number of firms in the industry) from year t-2 to t-1 for all firms in the industry.
BM	= the book-to-market ratio of the firm at the beginning of year t.
StdROA	= the standard deviation of the firm's accounting return on assets during years t-5 to t-1.
Follow	= the number of financial analysts following the firm in year t-1.
IO	= the number of shares owned by institutional investors as a percentage of total shares outstanding at the beginning of year t.
Regulate	= 1 if the firm is in a regulated industry and 0 otherwise. The regulated industries in China are mining, electricity/water/gas, financial services, media, and transportation.
Finance	= 1 if the firm issues equity in year t+1 and 0 otherwise.

Note: We use the point forecast, the midpoint of a range forecast, or the stated number of an open-interval estimate in calculating *MFnews, Surprise1,* and *Error*.

TABLE 1
Management Earnings Forecast Regimes

Panel A: Firms in the mandatory forecast regime

Year	Large earnings decrease				Loss				Turning profit				Large earnings increase				Total
	CF	ICF	NF	CF%	CF	ICF	NF	CF%	CF	ICF	NF	CF%	CF	ICF	NF	CF%	
2004	44	2	15	72%	153	12	8	88%	84	2	8	89%	124	0	44	74%	496
2005	83	0	13	86%	242	16	8	91%	67	1	5	92%	97	3	18	82%	553
2006	35	2	19	63%	157	10	12	88%	150	7	11	89%	171	2	43	79%	619
2007	25	3	13	61%	110	2	8	92%	126	10	5	89%	344	6	46	87%	698
2008	198	9	21	87%	238	15	8	91%	60	3	4	90%	152	4	29	82%	741
2009	90	6	16	80%	183	15	5	90%	161	13	6	89%	243	8	35	85%	781
2010	60	1	12	82%	104	9	9	85%	147	12	8	88%	322	2	33	90%	719
2011	148	17	8	86%	149	7	3	94%	73	4	2	92%	259	29	11	87%	710
Total	683	40	117	81%	1,336	86	61	90%	868	52	49	90%	1,712	54	259	85%	5,317

Panel B: Firms in the voluntary forecast regime

	Small earnings decrease			Small earnings increase			Total
Year	F	NF	F%	F	NF	F%	
2004	5	270	2%	8	349	2%	632
2005	2	298	1%	3	375	1%	678
2006	7	190	4%	20	367	5%	584
2007	20	136	13%	44	313	12%	513
2008	74	271	21%	71	240	23%	656
2009	58	195	23%	130	254	34%	637
2010	46	191	19%	136	383	26%	756
2011	183	291	39%	355	391	48%	1,220
Total	395	1,842	18%	767	2,672	22%	5,676

Note: The sample includes Chinese firms with A shares listed on the Shanghai or Shenzhen Stock Exchange that have non-missing total assets, stock price, and net income. We determine the mandatory and voluntary regimes (M-regime and V-regime) by reported earnings. Chinese firms are required to issue a forecast if they expect an earnings decrease from the previous year of at least 50%, a loss, a profit after reporting a loss in the previous year (turning profit), or an earnings increase of at least 50%. In Panel A, CF (consistent forecast) means that a firm issued a forecast under one of the four anticipated situations consistent with the subsequently reported earnings. CF is referred to as "mandatory forecast" in the text, figures, and other tables. ICF (inconsistent forecast) means that a firm belongs to an M-regime category according to reported earnings, but issued a forecast for a different M-regime category or a V-regime category. NF means that no forecast is issued. CF% is the percentage of CF firms in a given category. In Panel B, F means forecasting firms and F% is the percentage of F firms in a given category.

TABLE 2
Frequency, Venues, and Forms of Management Earnings Forecasts

Panel A: Firm-years with single vs. multiple forecasts

	Mandatory-forecast firm-years					Voluntary-forecast firm-years			
	Large earnings decrease	Loss	Turning profit	Large earnings increase	Subtotal	Small earnings decrease	Small earnings increase	Subtotal	Total firm-years
Single	614	984	762	1477	3,837	328	688	1,016	4,853
	(90%)	(74%)	(88%)	(86%)	(83%)	(83%)	(90%)	(87%)	(84%)
Multiple	69	352	106	235	762	67	79	146	908
Total firm-years	683	1,336	868	1,712	4,599	395	767	1,162	5,761

Panel B: Forecasts sorted by forecast venue

	Mandatory forecasts					Voluntary forecasts			
	Large earnings decrease	Loss	Turning profit	Large earnings increase	Subtotal	Small earnings decrease	Small earnings increase	Subtotal	Total forecasts
Standalone	533	1,147	633	1,215	3,528	148	222	370	3,898
	(71%)	(64%)	(65%)	(62%)	(65%)	(32%)	(26%)	(28%)	(58%)
At interim earnings ann.	0	3	0	3	6	2	1	3	9
At interim earnings report	220	635	347	732	1,934	315	627	942	2,876
Total forecasts	753	1,785	980	1,950	5,468	465	850	1,315	6,783

Panel C: Forecasts sorted by forecast form

	Mandatory forecasts				Voluntary forecasts		
	Large decrease	Loss	Turning profit	Large increase	Small decrease	Small increase	Total forecasts
Point	105 (15%)	335 (25%)	168 (19%)	194 (11%)	62 (16%)	126 (16%)	990 (17%)
Range	259 (38%)	234 (18%)	184 (21%)	765 (45%)	269 (68%)	516 (67%)	2,227 (39%)
Open Interval	319 (47%)	767 (57%)	516 (60%)	753 (44%)	58 (14%)	115 (16%)	2,528 (44%)
Qualitative					6 (2%)	10 (1%)	16 (0%)
Total forecasts	683 (100%)	1,336 (100%)	868 (100%)	1,712 (100%)	395 (100%)	767 (100%)	5,761 (100%)

Note: "Interim earnings ann." ("Interim earnings report") means that a forecast is issued at the earnings announcement (financial report filing) event for year t-1 or the first three fiscal quarters of year t. In Panel A, we report the percentage of single-forecast firm-years among total firm-years in parentheses. In Panel B, we report the percentage of standalone forecasts among total forecasts in parentheses. We classify a forecast standalone if there are no earnings announcements or actual earnings reports within three trading days of the forecast.

TABLE 3
Perceived Usefulness of Mandatory Earnings Forecasts

Panel A: Price reaction to mandatory earnings forecasts

$$CAR\_MF = a_0 + a_1 MFnews + e$$

	All forecasts				Standalone forecasts			
	Total		Good news	Bad news	Total		Good news	Bad news
Intercept	0.005***	-0.005***	0.009***	-0.019***	0.013***	0.001	0.016***	-0.018***
	(3.93)	(-5.22)	(5.88)	(-8.60)	(7.53)	(0.591)	(8.64)	(-6.90)
MFnews		0.050***	-0.015*	0.045**		0.109***	0.030***	0.072***
		(8.41)	(-1.96)	(2.56)		(15.79)	(3.14)	(4.57)
MFnews_A	0.081***				0.144***			
	(4.61)				(6.57)			
Model F	21.21***	70.8***	3.85***	6.54**	43.23***	249.36***	9.83***	20.88***
N	2,013	4,510	2,797	1,713	1,438	3,213	1,932	1,281

Panel B: Price reaction to the earlier date of earnings announcement or financial report

$$CAR\_RP = c_0 + c_1 Surprise + e$$

	Firms with mandatory forecasts		V-regime firms with no forecast
	Surprise = remaining news	*Surprise* = total news	*Surprise* = total news
Intercept	-0.006***	-0.007***	-0.005***
	(-5.45)	(-6.70)	(-6.85)
Surprise1	0.030***		
	(4.46)		
Surprise2		0.010**	0.173***
		(2.25)	(5.62)
Model F	19.88***	5.06***	31.59***
N	4,312	4,312	4,393

Panel C: Responsiveness (within five days) of financial analysts to mandatory earnings forecasts

	Mandatory forecast group (4,127)		Control group (3,652)	
Report date	# analyst forecasts	% analyst forecasts	# analyst forecasts	% analyst forecasts
Year t-1	3,294	30.1%	6,044	31.8%
Q1 of Year t	1,735	15.8%	2,874	15.1%
Q2 of Year t	4,162	38.0%	6,012	31.7%
Q3 of Year t	1,766	16.1%	4,054	21.4%
Total	10,957	100%	18,984	100%
MF date	2,158	19.7% of 10,957		

Panel D: Change in analyst forecast dispersion after mandatory earnings forecasts

	Mandatory forecast group (677)	Control group (984)	Between-group difference
180 days before MF date:			
Mean	0.388	0.206	
Median	0.130	0.116	
60 days after MF date:			
Mean	0.211	0.129	
Median	0.067	0.062	
Change from pre to post:			
Mean (t-stat)	-0.176 ***	-0.077 ***	0.099 (3.02)
Median (z-stat)	-0.063 ***	-0.054 ***	0.009 (2.74)

Note: For Panels A and B, we use the first forecast if a firm issues multiple forecasts in a year. See Appendix 3 for variable definitions. *MFnews_A* is similar to *MFnews* except for using analysts' median earnings forecasts in the six months before the mandatory-forecast date ("MF date") as the earnings expectation. The "Good news" column uses observations with non-negative values of *MFnews*. The "Bad news" column uses observations with negative values of *MFnews*. The coefficient on *MFnews* in the "Bad news" column is significantly higher than that in the "Good news" column, with z-statistic of 3.67 for total forecasts and 2.31 for standalone forecasts (untabulated). We use the robust-regression estimation method, which is robust to outliers, to estimate the regressions. The standard errors are robust to heteroscedasticity. We report z–statistics in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively. Panel C reports the frequency of analyst forecasts for year t's earnings issued within five days after a corporate disclosure event. Panel D reports the dispersion of analyst forecasts for a firm-year's earnings issued in the 180 days before the MF date vs. 60 days after it (including the MF date), each scaled by the absolute value of realized earnings. For firms that are in the V-regime and do not provide any forecast ("control group"), we use the median mandatory-forecast date of 60 days before the fiscal year end by the mandatory forecast group as a pseudo-event date. The final column compares the change in analyst forecast dispersion between the mandatory forecast group and the control group, with the t or z statistic reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 4

Descriptive Statistics of the Test Sample for the Learning Effect

Panel A: Year t V-regime firms partitioned by Year t-1 forecast regime and behavior

Year t-1		V-regime in year t	
		Small Decrease	Small Increase
M-regime	Forecasted (treatment group)	520 (28%)	664 (24%)
	Did not Forecast (rule breakers)	100 (5%)	125 (5%)
V-regime	Forecasted	123 (7%)	249 (9%)
	Did not forecast (benchmark group)	1,094 (60%)	1,690 (62%)
	Total firm-years	1,837 (100%)	2,728 (100%)

Panel B: Means (medians) of treatment vs. benchmark groups

	Small Decrease		Small Increase	
	Treatment	Benchmark	Treatment	Benchmark
N	520	1,094	664	1,690
Forecast	0.133	0.040	0.169	0.054
Timeliness	89	111	103	96
	(66)	(64)	(68)	(67)
Precision	2.108	2.094	2.088	2.261
	(2)	(2)	(2)	(2)
Error	0.332	0.388	0.163	0.183
	(0.221)	(0.129)	(0.120)	(0.109)
SOE	0.594	0.680	0.613	0.701
Total Assets	7,584	5,575	17,442	17,372
(In millions of RMB)	(2,765)	(2,390)	(2,869)	(2,754)
Competition	6.485	5.837	5.905	5.412
	(4.639)	(4.284)	(4.409)	(4.082)
BM	0.694	0.731	0.595	0.640
	(0.666)	(0.761)	(0.567)	(0.632)
StdROA	0.030	0.024	0.037	0.022
	(0.042)	(0.020)	(0.021)	(0.011)
Follow	8.2	6.0	9.5	8.5

	(3)	(1)	(4)	(3)
IO	0.182	0.151	0.207	0.197
	(0.115)	(0.067)	(0.158)	(0.130)
Regulate	0.227	0.249	0.239	0.283
Finance	0.102	0.042	0.104	0.063

Panel C: Pearson correlations using the treatment and benchmark observations

	Size	*Competition*	*BM*	*StdROA*	*Follow*	*IO*	*Regulate*	*Finance*
SOE	**0.105**	**-0.092**	**0.131**	**-0.096**	**-0.083**	0.007	**0.126**	**-0.031**
Size		**-0.103**	**0.366**	**-0.191**	**0.516**	**0.076**	**0.129**	**0.052**
Competition			0.007	**0.093**	**0.069**	**-0.037**	**-0.194**	**0.034**
BM				**-0.244**	**-0.127**	**-0.195**	-0.029	**-0.049**
StdROA					-0.026	-0.003	-0.031	-0.006
Follow						**0.178**	0.015	**0.101**
IO							**0.036**	**0.076**
Regulate								-0.007

Notes: See Appendix 3 for variable definitions. In Panel B we report the mean value of each variable and additionally report the median value in parentheses of a variable that is not a dummy. For *Timeliness*, *Precision*, and *Error*, only the forecasting observations of the treatment and benchmark groups are used. For *Timeliness*, the initial forecast is used if a firm provided more than one forecast for the year. For descriptive purposes, we winsorize *timeliness* at the 95%. In Panel C the correlations that are statistically significant at least at the 5% level are in bold.

TABLE 5
Logit Model of Treatment vs. Benchmark and Subsequent Propensity-Score Matching

		Comparison after propensity-score matching		
Logit model		Treatment	Control	t-statistic
SOE	-0.139***	0.605	0.616	0.55
	(-2.97)			
Size	0.067***	21.791	21.781	-0.20
	(2.80)			
Competition	0.010*	6.156	6.108	-0.26
	(1.77)			
BM	-0.099	0.626	0.634	0.67
	(-0.83)			
StdROA	9.815***	0.039	0.035	1.03
	(13.41)			
Follow	-0.006**	9.0	9.3	0.64
	(-2.16)			
IO	0.124	0.196	0.195	-0.21
	(1.03)			
Regulate	-0.054	0.234	0.233	-0.10
	(-1.03)			
Finance	0.380***	0.102	0.106	0.34
	(4.58)			
Constant	-2.091***			
	(-4.30)			
Year fixed effects	Yes			
N	3,965	1,183	1,183	
Wald χ^2	453.47***			
Pseudo R^2	9.4%			

Note: In the logit model the dependent variable is 1 for a firm-year in the treatment group and 0 for a firm-year in the benchmark group. The treatment group includes firm-years that issued a mandatory forecast in year t-1 and are in the V-regime in year t. The benchmark group includes firm-years that were in the V-regime in year t-1 and did not issue any earnings forecast and are in the V-regime again in year t. See Appendix 3 for variable definitions. We report z–statistics for the logit model in parentheses. After the logit model estimation, for each observation in the treatment group we select a firm-year in the benchmark group that has the closest propensity score and refer to it as the "control" observation. The right columns compare the means of the treatment and control observations and report the between-group t-test statistics. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 6
The Effect of Forced Forecast Experience in Year t's Decision to Issue Voluntary Forecasts

	Conditional logit model	
	Small earnings decrease	Small earnings increase
Treatment	2.826***	2.664***
	(7.86)	(8.34)
SOE	-0.793***	-1.060***
	(-3.62)	(-5.76)
Size	-0.230*	-0.189*
	(-1.85)	(-1.84)
Competition	0.000	0.006
	(-0.00)	(0.33)
BM	-1.451***	-2.110***
	(-2.60)	(-4.22)
StdROA	-3.617	-7.188**
	(-1.19)	(-2.55)
Follow	0.029**	0.013
	(2.47)	(1.28)
IO	0.194	-0.784
	(0.34)	(-1.46)
Regulate	-0.127	-0.306
	(-0.44)	(-1.23)
Finance	0.481	0.612**
	(1.50)	(2.32)
Year fixed effects	Yes	Yes
N	1,040	1,326
Pseudo R^2	24.3%	33.3%

Note: We estimate the conditional logit model using the treatment and control firm-years matched by propensity scores and identified in Table 5. The dependent variable, *Forecast*, is 1 for a firm-year in the V-regime in year t that issues a voluntary forecast and 0 for a non-forecasting V-regime firm-year. *Treatment* is 1 for a firm-year in the treatment group (firm-years that issued a mandatory forecast in year t-1) and 0 for the matched control observation. See Appendix 3 for other variable definitions. We report z–statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 7
The Effect of Forced Forecast Experience on the Timeliness of Year t's Voluntary Forecasts

	First approach	Second approach	
	Small earnings increase or decrease	Small earnings decrease	Small earnings increase
Treatment	48.144***	30.253***	53.296***
	(4.22)	(3.02)	(3.38)
SOE	-9.809	3.422	47.788***
	(-0.77)	(0.30)	(3.07)
Size	-5.674	-11.400**	14.995*
	(-0.91)	(-2.00)	(1.78)
Competition	-1.078	-0.575	-0.351
	(-0.97)	(-0.52)	(-0.23)
BM	-11.383	13.388	-47.383
	(-0.35)	(0.45)	(-1.02)
StdROA	-94.253	-207.308	238.416
	(-0.52)	(-1.29)	(1.05)
Follow	0.514	0.628	-0.356
	(0.94)	(1.11)	(-0.36)
IO	-3.293	16.517	-46.168
	(-0.12)	(0.62)	(-1.05)
Regulate	-18.347	2.006	30.789
	(-1.15)	(0.15)	(1.51)
Finance	-5.528	8.177	7.246
	(-0.21)	(0.42)	(0.35)
Constant	176.460	549.420***	-366.576**
	(1.47)	(4.93)	(-2.10)
Year fixed effects	Yes	Yes	Yes
N	74	106	184
Model F-statistic	43.86***	40.15***	8.87***

Note: Under the first approach we retain observations in the original 1,183 pairs only if *both* the treatment and control firms issue voluntary forecasts in year t. Given the small sample size, we pool the two categories in the test. Under the second approach we keep the treatment observations that issue voluntary forecasts in year t, return to the original pool of 3,784 benchmark observations, and select from the *forecasting* benchmark observations the one with the closest propensity score for the forecasting treatment observation. The dependent variable is *Timeliness*. We estimate the linear regression using the robust-regression estimation method with standard errors robust to heteroskedasticity. We report z–statistics in parentheses. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 8
The Effect of Forced Forecast Experience on the Accuracy of Year t's Voluntary Forecasts

	First approach	Second approach	
	Small earnings increase or decrease	Small earnings decrease	Small earnings increase
Treatment	0.034	0.023	0.001
	(0.74)	(0.40)	(1.54)
SOE	0.049	-0.078	0.000
	(0.93)	(-1.14)	(0.70)
Size	-0.005	-0.011	-0.001**
	(-0.23)	(-0.34)	(-2.57)
Competition	0.003	-0.001	0.000
	(0.62)	(-0.14)	(0.49)
BM	-0.018	0.178	0.003*
	(-0.16)	(0.91)	(1.72)
StdROA	0.236	0.144	-0.007
	(0.35)	(0.16)	(-0.83)
Follow	-0.001	-0.001	0.000*
	(-0.30)	(-0.25)	(1.89)
IO	-0.063	0.270	-0.001
	(-0.56)	(1.65)	(-0.62)
Regulate	0.257**	0.160	-0.001
	(2.12)	(1.37)	(-1.01)
Finance	-0.086	-0.126	0.001
	(-1.45)	(-1.62)	(1.13)
Timeliness	0.000**	0.001***	0.000
	(2.16)	(3.06)	(1.21)
Constant	0.190	0.443	0.018***
	(0.42)	(0.70)	(2.85)
Year fixed effects	Yes	Yes	Yes
N	65	85	158
Model F-statistic	2.20**	3.30***	1.54*

Note: Under the first approach we retain observations in the original 1,183 pairs only if *both* the treatment and control firms issue voluntary forecasts in year t. Given the small sample size, we pool the two categories in the test. Under the second approach we keep the treatment observations that issue voluntary forecasts in year t, return to the original pool of 3,784 benchmark observations, and select from the *forecasting* benchmark observations the one with the closest propensity score for the forecasting treatment observation. The dependent variable is *Error*. The variable would inflate when the scalar is close to 0; the number of observations used in this table is less than that in Table 6. We estimate the linear regression using the robust-regression estimation method with standard errors robust to heteroskedasticity. We report z–statistics in parentheses. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 9
The Effect of Forced Forecast Experience on SOEs vs. Non-SOEs

Panel A: Means (medians) of treatment vs. benchmark groups partitioned by SOEs vs. Non-SOEs

	Small Decrease				Small Increase			
	Treatment		Benchmark		Treatment		Benchmark	
	SOE	Non_SOE	SOE	Non_SOE	SOE	Non_SOE	SOE	Non_SOE
N	309	211	744	350	407	257	1,185	505
Forecast	0.081	0.209	0.028	0.091	0.096	0.284	0.035	0.099
Timeliness	105	70	136	91	123	80	151	82
	(70)	(66)	(64)	(63)	(70)	(67)	(71)	(66)
Precision	2.16	1.977	2.048	2.125	2.231	0.161	2.357	2.18
	(2)	(2)	(2)	(2)	(2)	(1)	(3)	(2)
Error	0.326	0.335	0.299	0.359	0.168	0.161	0.292	0.096
	(0.170)	(0.233)	(0.145)	(0.109)	(0.103)	(0.136)	(0.187)	(0.068)
Total Assets	10,793	5,682	7,109	5,564	46,561	10,218	30,524	13,806
(In millions of RMB)	(3,733)	(2,091)	(2,340	2,091)	(3,259)	(2,084)	(2,956)	(2,430)
Competition	5.982	7.222	5.634	6.269	5.538	6.487	5.396	5.449
	(4.130)	(7.223)	(4.132)	(4.469)	(4.082)	(4.639)	(4.033)	(4.284)
BM	0.711	0.603	0.746	0.714	0.635	0.537	0.654	0.618
	(0.749)	(0.566)	(0.771)	(0.729)	(0.621)	(0.509)	(0.655)	(0.587)
StdROA	0.039	0.031	0.024	0.028	0.036	0.043	0.021	0.026
	(0.020)	(0.030)	(0.010)	(0.020)	(0.020)	(0.030)	(0.010)	(0.010)
Follow	8.738	8.161	9.060	4.260	10.718	9.350	10.070	8.270
	(3)	(3)	(4)	(1)	(5)	(4)	(5)	(2)
IO	0.180	0.179	0.153	0.146	0.204	0.212	0.194	0.204
	(0.120)	(0.107)	(0.064)	(0.084)	(0.143)	(0.174)	(0.123)	(0.158)
Regulate	0.285	0.142	0.278	0.186	0.265	0.198	0.309	0.224
Finance	0.120	0.107	0.048	0.020	0.104	0.105	0.096	0.020

Panel B: The decision to provide voluntary forecasts in year t

	Conditional logit model			
	SOE		Non-SOE	
	Small earnings decrease	Small earnings increase	Small earnings decrease	Small earnings increase
Treatment	2.752***	3.156***	2.868***	3.305***
	-3.89	-6.63	-6.16	-6.78
Size	0.011	-0.107	-0.666***	-0.379**
	-0.06	(-0.75)	(-3.24)	(-2.28)
Competition	-0.144***	-0.002	0.054*	-0.011
	(-2.74)	(-0.07)	-1.69	(-0.41)
BM	-0.492	-1.415**	-0.979	-2.580***
	(-0.55)	(-2.08)	(-1.28)	(-3.34)
StdROA	-7.867	-6.837	-4.428	-9.595**
	(-1.27)	(-1.51)	(-1.14)	(-2.54)
Follow	0.015	-0.008	0.047***	0.032**
	-0.8	(-0.46)	-2.83	-2.1
IO	1.127	-0.567	-0.111	-1.780**
	-1.4	(-0.78)	(-0.14)	(-2.11)
Regulate	-0.27	-0.613*	-0.338	-0.034
	(-0.66)	(-1.71)	(-0.72)	(-0.10)
Finance	-0.13	0.393	0.668	0.790**
	(-0.24)	-0.99	-1.46	-1.97
Year fixed effects	Yes	Yes	Yes	Yes
N	618	820	422	506
Pseudo R^2	16.65	18.7%	29.3%	38.0%

Panel C: The timeliness of voluntary forecasts in year t

	The second approach of selecting treatment-control pairs			
	SOE		Non-SOE	
	Small earnings decrease	Small earnings increase	Small earnings decrease	Small earnings increase
Treatment	20.151	44.68	97.131***	86.705***
	(0.39)	(1.54)	(77.18)	(49.68)
Size	3.682	22.410	-3.038***	-1.962*
	(0.16)	(1.58)	(-3.78)	(-1.96)
Competition	-4.206	-3.622	-0.149	-0.067
	(-0.60)	(-1.33)	(-1.46)	(-0.45)
BM	-129.391	-169.355***	3.254	7.367
	(-0.89)	(-3.09)	(0.87)	(1.29)
StdROA	-131.780	-272.786	4.892	-31.525
	(-0.18)	(-0.60)	(0.41)	(-1.36)
Follow	1.097	-5.492***	0.145**	0.060
	(0.54)	(-3.37)	(2.46)	(0.61)
IO	-38.069	54.210	-4.830*	2.226
	(-0.34)	(0.77)	(-1.75)	(0.43)
Regulate	78.051	122.160***	0.446	5.241**
	(1.44)	(3.38)	(0.27)	(2.10)
Finance	25.653	25.491	-0.985	-1.426
	(0.42)	(0.73)	(-0.68)	(-0.65)
Constant	132.109	-169.131	32.305**	19.746
	(0.29)	(-1.59)	(2.00)	(0.99)
Year fixed effects	Yes	Yes	Yes	Yes
N	46	74	80	90
Model F-statistic	2.29**	5.07***	491.13***	513.72***

Note: As in Table 5, we use the propensity score matching method in identifying a control observation for each treatment observation. Different from Table 5, for a SOE (non-SOE) treatment observation we select an SOE (non-SOE) from the benchmark group with the closest propensity score as the control observation. We estimate the SOE and non-SOE matched samples separately for the likelihood of voluntary forecasts in Panel B and for forecast timeliness in Panel C. See other notes for Tables 5, 6, and 7.

TABLE 10
Insider Trading Analysis

	Mandatory forecast group (3,192)		Control group (2,665)		Between-group difference	
			Good News Firms			
30 days before mandatory forecast date:						
	Sales	Purchases	Sales	Purchases	Sales	Purchases
# firm-years with insider trading (%)	46 (1.44%)	36 (1.13%)	41 (1.65%)	32 (1.20%)		
Mean	0.0004	0.0000	0.0001	0.0002		
30 days starting with mandatory forecast date:						
# firm-years with insider trading (%)	122 (3.82%)	37 (1.16%)	33 (1.24%)	16 (0.60%)		
Mean	0.0022	0.0001	0.0001	0.0001		
Change from pre to post	-0.0018	-0.0001	0.0000	0.0001	-0.0018	-0.0002
t-statistic	-4.52***	-1.57	0.96	0.72	-4.86***	-1.70*
Nonparametric test Z-statistic	-5.15***	-1.63*	2.63***	2.30**	-5.98***	-1.95**
			Bad News Firms			
30 days before mandatory forecast date:						
	Sales	Purchases	Sales	Purchases	Sales	Purchases
# firm-years with insider trading (%)	13 (0.41%)	9 (0.28%)	15 (0.56%)	24 (0.90%)		
Mean	0.0003	0.0000	0.0017	0.0002		
30 days starting with mandatory forecast date:						
# firm-years with insider trading (%)	37 (1.16%)	25 (0.78%)	20 (0.75%)	16 (0.60%)		
Mean	0.0004	0.0001	0.0001	0.0000		
Change from pre to post	-0.0001	-0.0001	0.0016	0.0002	-0.0017	-0.0003
t-statistic	-0.44	-1.58	1.80*	0.15	0.43	-0.03
Nonparametric test Z-sat.	-3.41***	-2.76***	0.84	0.18	-3.66***	-0.79

Note: Insider trading data are available for 2007-2011 from CSMAR. The database classifies executives and board of directors as insiders. We classify firms as having "Good news" if they have non-negative values of *MFnews*, and use reported earnings for year t as the pseudo-earnings forecast to calculate *MFnews* for the control firms. We classify all other firms as having "Bad news." For each firm-year, we calculate the aggregate number of shares sold and purchased separately in the specified window and scale it by the number of outstanding shares at the beginning of the fiscal year. For firms in the V-regime that provide no forecasts ("control group"), we use the median mandatory forecast date of

60 days before the fiscal year end by the mandatory forecast group as a pseudo-event date. We pool the firm-years with positive insider trading from the four windows and winsorize the insider trading variable at 99th percentile and then add the firm-years with zero insider trading. We conduct the parametric t test and nonparametric Wilcoxon test. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 11
Tests of Distribution Discontinuity around 50% Earnings Changes

	Left of the 50%-change threshold						**Right** of the 50%-change threshold				
	Actual	Predict	Diff.	Std.	Test Statistic		Actual	Predict	Diff.	Std.	Test Statistic
50% decrease threshold:											
1999-2000 (before)											
(-0.60,-0.55]	22					(-0.55,-0.50]	26				
(-0.55,**-0.50**]	26	25	1.0	4.62	0.22	(**-0.50**,-0.45]	28	24	4.0	4.70	0.85
(-0.50,-0.45]	28					(-0.45,-0.40]	22				
2002-2003 (after)											
(-0.60,-0.55]	21					(-0.55,-0.50]	25				
(-0.55,**-0.50**]	25	46	-21.0	4.96	-4.24***	(**-0.50**,-0.45]	71	43.5	27.5	6.99	3.93***
(-0.50,-0.45]	71					(-0.45,-0.40]	62				
50% increase threshold:											
1999-2000 (before)											
[0.40, 0.45)	35					[0.45, 0.50)	21				
[0.45, **0.50**)	21	27.5	-6.5	4.36	-1.49	[**0.50**, 0.55)	20	22.5	-2.5	4.16	-0.6
[0.50. 0.55)	20					[0.55, 0.60)	24				
2002-2003 (after)											
[0.40, 0.45)	34					[0.45, 0.50)	35				
[0.45, **0.50**)	35	33.5	1.5	5.36	0.28	[**0.50**, 0.55)	33	29.5	3.5	5.14	0.68
[0.50. 0.55)	33					[0.55, 0.60)	24				

Note: We use two years' data before the forecast mandate regarding 50% earnings changes and two years' data after the mandate. "(" and ")" mean the number at the boundary is excluded and "[" and "]" mean the number at the boundary is included. *Actual* is the actual number of firm-years falling into a given interval. *Predict* is the number of firm-years falling into the interval assuming the distribution across the interval and its two adjacent intervals is smooth; that is, the value is the average number of observations in the adjacent intervals. *Diff* is *Actual* minus *Predict*. *Std* is the standard deviation calculated using the formula provided in Footnote 6 of Burgstahler and Dichev (1997). The test statistic is *Diff / Std* and follows a standard normal distribution. *** indicates statistical significance at 1%.