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Management earnings forecast decisions in a regulated regime : evidence from China

Jingyu YANG

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MANAGEMENT EARNINGS FORECAST DECISIONS IN A REGULATED REGIME: EVIDENCE FROM CHINA

YANG JINGYU

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MANAGEMENT EARNINGS FORECAST DECISIONS IN A REGULATED REGIME: EVIDENCE FROM CHINA

by
YANG Jingyu

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ABSTRACT

Management Earnings Forecast Decisions in a Regulated Regime: Evidence from China

by

YANG Jingyu

Master of Philosophy

Since 2000, China has required publicly listed firms to issue management earnings forecasts when they expect extreme changes in earnings or are likely to become loss-making. This study examines managers' forecast decisions under this unique regulatory environment. I find an increase over time in the proportion of firms issuing voluntary earnings forecasts when they do not expect extreme changes in their earnings or losses. I also find an improvement in the quality—in terms of the precision, accuracy and bias—of both mandatory and voluntary forecasts over time. Further detailed analysis shows that the introduction of the regulation on management earnings forecasts is one of the underlying forces driving firms' decisions to provide voluntary earnings forecasts. Specifically, I find that a firm is more likely to issue a voluntary forecast if the firm was required by regulation to issue an earnings forecast in the previous year. Peer pressure also explains firms' decisions to issue voluntary forecasts. I then investigate the reasons underlying the improvement in the quality of management earnings forecasts. I find that learning effects and peer pressure are the driving forces behind the improvement. Specifically, I find that the forecasts issued by more experienced firms are more specific, accurate and conservative. Furthermore, the quality of a firm's forecast is positively related to the quality of its peer firms. Overall, my results show that requiring some listed firms to issue management earnings forecasts in China might have built up a momentum that has promoted the issuance of voluntary forecasts and improved the quality of forecasts over time.

DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

杨敬宇

YANG JINGYU

Date 21/09/2015

CERTIFICATE OF APPROVAL OF THESIS

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by

YANG Jingyu

Master of Philosophy

Panel of Examiners:

_____ (Chairman)
(Prof. LUI Man-ching, Gladie)

_____ (External Member)
(Prof. MIAN Ghulam, Mujtaba)

_____ (Internal Member)
(Prof. ZHANG Yuanyuan, Karen)

_____ (Internal Member)
(Prof. GAO Jin)

Chief Supervisor:

Prof. GAO Jin

Co-supervisor:

Prof. WONG Man-lai, Sonia

Approved for the Senate:

_____
Prof. Mok Ka Ho, Joshua
Chairman, Postgraduate Studies Committee

25 August 2015
Date

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Management Earnings Forecast Decisions in a Regulated Regime: Evidence from China

Chapter 1. Introduction

Since 2000, China has required publicly listed firms to issue management earnings forecasts when they expect extreme changes in earnings or are likely to become loss-making. Based on management earnings forecast data obtained for 2007-2013, I find that the quantity of management earnings forecasts in China has increased over these years, with the number of firms issuing forecasts increasing from 515 to 1,004. More importantly, I also find an increase over time in the proportion of firms issuing voluntary forecasts. Specifically, the proportion of voluntary forecasters increased from 12% in 2007 to 60% in 2013, which is higher than the corresponding proportion in countries where decisions about forecasts are voluntary (25% obtained from Hamn et al. 2014). Furthermore, the quality of the management earnings forecasts has also improved consistently and substantially over time. For example, I find that during this period the average forecast error level decreased by 99.6% while the average precision level increased by about 60%.

My study examines the determinants of management forecast decisions in China's unique regulatory environment. Specifically, I determine whether the selective mandatory forecast requirement outlined above leads to the issuing not only of mandatory earnings forecasts, but also of voluntary earnings forecasts. Furthermore, I also examine whether the selective mandatory forecast requirement induces peer and learning effects that result in an improvement in the quality of management earnings forecasts.

I expect that China's selective mandatory forecasting requirement promotes the issuing of voluntary earnings forecasts, for two reasons. First, recent theoretical studies on corporate disclosure policies suggest that firms display intertemporal stickiness in their disclosure behavior (Einhorn and Ziv, 2008). Specifically, firms tend to refrain from making voluntary disclosures if they have not made them in the past. However, the selective mandatory forecast requirement means that publicly listed firms in China are mandated to issue forecasts from time to time, which tends to break the stickiness in non-disclosure. As Einhorn and Ziv (2008) argue, once the firm has made a disclosure, then that firm will face a higher cost of non-disclosure and/or a lower cost of disclosure. As a result, I expect that firms will be more likely to issue a voluntary forecast if they have previously been mandated to issue a forecast.

Second, the existence of the selective mandatory forecast requirement leads to a significant number of firms being mandated to issue forecasts from time to time. Recent studies of corporate disclosure suggest that firms may compete to disclose more firm information to outsiders to signal their quality to investors (Hidalgo Cabrillana, 2013) or to reduce the cost of capital (Botosan, 1997; Graham et al., 2005; Healy and Palepu, 2001). The presence of a large number of forecasters potentially gives rise to peer effects in which firms are pressured to issue voluntary forecasts to compete with peer firms. Such peer effects may be stronger when the selective mandatory forecast requirement also promotes the issuing of voluntary forecasts, further increasing the number of forecasters in an industry.

I obtain evidence that is consistent with the above predictions. Specifically, I find

that firms are more likely to issue a voluntary forecast if they were required to issue an earnings forecast in the previous year. More importantly, I find a significant positive association between the proportion of peer firms issuing both mandatory and voluntary forecasts and the likelihood of a firm issuing a voluntary forecast.

Regarding the determinants of forecast quality, I also expect that peer effects will have driven the improvement in forecast quality evident in China. To the extent that firms have to compete not only in providing forecasts but also in producing good-quality forecasts (Hidalgo Cabrillana, 2013), I expect to find a positive relationship between a firm's forecasting quality and the average forecasting quality of peer firms in the same industry. I also expect that the selective mandatory forecast requirement will give rise to learning effects, because the selective mandatory forecast requirement mandates firms to issue earnings forecasts from time to time. The learning effect will be stronger if the selective mandatory forecast requirement also encourages firms to issue voluntary forecasts, further increasing the forecasting experience accumulated by a firm. To the extent that an effective learning effect exists (Anand and Khanna, 2000; Huber, 1991), I expect the forecasts made by firms with a longer forecasting experience to be more precise, more accurate and less biased.

I also obtain evidence that is consistent with the hypotheses above; that is, firms tend to issue earnings forecasts that are more precise, accurate and conservative if they have more forecasting experience. Furthermore, the forecasting quality of a firm is positively correlated with that of its peers. Overall, my results suggest that China's selective mandatory forecast requirement may have given rise to an information

environment that encourages firms to issue voluntary forecasts and promotes an improvement in forecast quality over time.

My study makes several contributions to the literature on management earnings forecasts. First, it contributes to the literature by offering evidence on management earnings forecast decisions in a regulated environment that has not yet been investigated by previous research. Previous studies examined management earnings forecast decisions in which disclosure is either purely voluntary (e.g. Baginski et al. 2002; Ajinkya et al. 2005) or effectively mandated (e.g. Kato et al. 2009; Jelic et al. 1998). China's selective mandatory forecast requirement integrates elements of both mandatory and voluntary regimes, as firms are required to issue forecasts under certain conditions while remaining free to issue forecasts voluntarily under other conditions. This regulatory regime applies not only to mainland China but also to other markets such as that of Taiwan. China has the largest emerging market that has gradually been opened up to foreign investors. Research on this topic will thus be of great interest to investors.

Second, previous studies identify several factors that may influence management forecast decisions, such as legal environment, disclosure regulations, the political economy, corporate governance, product market competition and customer relationships (Ajinkya et al., 2005; Boesso and Kumar, 2007; Chin et al., 2006; Heflin et al., 2012; Hidalgo Cabrillana, 2013; Johnson et al., 2001; Li, 2010; Radhakrishnan et al., 2012). My study highlights two determinants that are new to the literature, namely peer effects and learning effects, and demonstrates how these influence management forecast decisions. My results enhance our understanding of

the determinants of management forecast decisions.

Third, in contrast to previous research based on the management earnings forecasts made by firms in developed countries such as the U.S. (e.g. Karamanou and Vafeas 2005; Ajinkya et al. 2005), Canada (Baginski et al., 2002) and Japan (Kato et al., 2009), my research is conducted in an emerging market. It is well known that emerging markets tend to have a more primitive investor protection framework and a weaker information environment than mature markets (La Porta et al., 2000). How to regulate corporate disclosure policies in such markets has been intensely debated. The results of my study should have important policy implications for China and other emerging markets.

My study also contributes to the literature on financial reporting regulations. First, my study shows that China's selective mandatory forecast requirement can serve as a policy intervention that changes the costs of non-disclosure/disclosure faced by publicly listed firms and promotes voluntary disclosure. Second, in a recent review of the literature on financial reporting regulations, Leuz and Wysocki (2015) suggest that "we generally lack evidence on market-wide effects and externalities from regulation, yet such evidence is obviously central to the economic justification of regulation." My study examines the peer effects and learning effects that have emerged since the introduction of the selective mandatory disclosure requirement in China and demonstrates how they influence both the quantity and the quality of management forecasts. In doing so, my study offers evidence on how this requirement can generate market-wide spillover effects and long-term effects in a financial system. Thus, my study can further enhance the understanding of financial

reporting regulations.

My study is also related to a working paper by Huang et al. (2014), which also examines how China's selective mandatory forecast requirement influences the issuing and quality of voluntary disclosures. However, my study differs in three respects. First, I use a different sample period. While Huang et al. (2014) focus on 2004-2011, my study examines management earnings forecasts from 2007 to 2013. Second, Huang et al. (2014) only examine how the issuing of a mandatory forecast in the previous year influences the probability of a firm issuing a voluntary forecast in the current year. I examine an additional determinant, namely the peer effect. Indeed, my evidence shows that the determinants examined in my study have a stronger explanatory power regarding the decision to make a voluntary disclosure in China. Third, Huang et al. (2014) measure forecast quality according to precision and timeliness, whereas I examine it in terms of precision, error and bias. I focus on peer effects and learning effects as the determinants of forecast quality, rather than the forecasting experience in the previous year, as Huang et al. (2014) study.

The remainder of this paper is organized as follows. Chapter 2 introduces the institutional setting in China, reviews previous papers and develops testable predictions. Chapter 3 describes the sample and the data. Chapter 4 examines the forces underlying voluntary disclosure and Chapter 5 discusses drivers of improvements in forecast quality. Chapter 6 summarizes and concludes the paper.

Chapter 2. Research Background

2.1. Regulation of Management Earnings Forecasts in China.

Unlike the U.S. stock market, where management earnings forecasts are voluntary, management earnings forecasts on the Shanghai and Shenzhen stock exchanges have been semi-mandatory since the end of 2000. Initially, only publicly listed firms that anticipated making a loss were required to issue management earnings forecasts. The conditions under which firms are required to issue forecasts have since been continuously extended and modified, with firms being required to issue forecasts under a broader range of conditions. In 2001, the Shanghai and Shenzhen stock exchanges required listed firms to issue management earnings forecasts not only if they expected to make a loss, but also if they expected an increase or decrease in earnings of more than 50%. In 2006, firms were further required to issue forecasts if they expected to make a profit in a particular year after making a loss in the previous year. This essentially completed the management earnings forecast regulations in China. Table 1 gives a brief summary of the development of the management earnings forecast regulations of the Shanghai Stock Exchange and the Shenzhen Stock Exchange since 2000.

[Insert Table 1]

According to the 2006 regulations, all earnings forecasts are classified by issuers into nine types: slight earnings increase (positive change but less than 50%), slight earnings decrease (negative change but less than 50%), uncertain, profit making again (making a profit), loss making again (making a loss), large earnings increase

(positive change and more than 50%), large earnings decrease (negative change and more than 50%), turning loss into profit (making a profit) and loss for the first time (making a loss). Of these categories, loss making again, large earnings increase, large earnings decrease, turning loss into profit and loss for the first time represent the circumstances under which firms have been required to issue management earnings forecasts since 2007.

2.2. Literature Review.

In this section, I review the relevant literature on management earnings forecast decisions and explain how my study contributes to the literature. My study is directly related to the literature on the determinants of management earnings forecasts. Previous studies suggest that many factors, such as the legal environment, disclosure regulations, board composition, ownership structure, managerial incentives and market competition, affect the management earnings forecast decisions of firms. Of these factors, research on the effects of disclosure regulations on management earnings forecast decisions is particularly relevant to my study. Using a sample of high-tech firms, Johnson et al. (2001) study the effects of the Private Securities Litigation Reform Act (PSLRA), enacted in 1995 by the U.S. Congress to reduce frivolous securities class actions related to the voluntary disclosure of forward-looking information. They find that the PSLRA reduces the litigation risk faced by firms and thereby increases the incentive of managers to release forward-looking information. They also show that the PSLRA does not have a negative effect on the quality of forward-looking information. Subsequently, in 2000, the SEC passed the Regulation Fair Disclosure (Reg FD), which prohibits firms from disclosing information to selected analysts without simultaneously

providing the same earnings guidance to the public. Several studies, including those of Heflin et al. (2003), Bailey et al. (2003) and Ajinkya et al. (2005), find that Reg FD increases voluntary disclosure. Moreover, Kothari et al. (2009) find that Reg FD constrains managers' incentives to withhold bad news. However, the study conducted by Wang (2007) suggests that disclosure decisions taken after the implementation of Reg FD depend on firm' characteristics. Firms reduce their earnings guidance if they have lower information asymmetry and higher propriety information costs. Heflin et al. (2012) investigate the effect of Reg FD on the properties of management earnings forecasts. They find that Reg FD reduces optimistic bias in management earnings forecasts and thereby increases forecast accuracy.

Despite the existence of a large body of literature on the effects of various disclosure regulations on management earnings forecast decisions, my study extends the literature in two important ways. First, the existing studies focus on management earnings forecast decisions in either purely voluntary or purely mandatory regimes. Few studies examine how China's unique regulations (i.e. the selective mandatory disclosure requirement) can influence both the quantity and the quality of management earnings forecast decisions. Many studies that examine the issuing of management earnings forecasts in voluntary regimes find that this is affected by managers' incentives (Ajinkya et al., 2005; Baginski et al., 2002; Brockman et al., 2008; Cheng et al., 2013; Frankel et al., 1995; Koch, 2002; Li et al., 2012; Matsumoto, 2002; Noe, 1999; Rogers and Stocken, 2005; Ruland et al., 1990). For example, Baginski et al. (2002) find that managers in Canada are more likely to issue forecasts than managers in the U.S., due to lower litigation risks.

Other studies show that managerial incentives influence the quality of voluntary earnings forecasts. Matsumoto (2002) finds that managers are likely to release downward-biased forecasts to avoid negative earnings surprises when actual earnings are disclosed. Previous studies also find that ownership structure and board composition influence the occurrence of voluntary disclosures and their quality. Ajinkya et al. (2005), Karamanou and Vafeas (2005) and El-Gazzar (1998) show that institutional ownership is associated with a greater likelihood of earnings forecasts. Furthermore, the findings of Ajinkya et al. (2005) suggest that an increase in the proportion of outside directors leads to more earnings forecasts. They also find that a higher proportion of outside directors and greater institutional ownership are associated with more-specific, more-accurate and less-optimistically biased forecasts.

Other streams of research look at management earnings forecasts in purely mandatory regimes. For example, Kato et al. (2009) study management earnings forecasts in Japan, where these forecasts are effectively mandated. Similar to the quality of management earnings forecasts in voluntary environments, their study indicates that forecast optimism is affected by the incentives of managers and by the ownership structure. Jelic et al. (1998) study the accuracy of earnings forecasts in IPO prospectuses in Malaysia, where firms are required to include earnings forecasts in their prospectuses. However, they do not find evidence that corporate governance is associated with forecast accuracy. Instead, they find that firm operating age is inversely related to forecast error.

The majority of the existing studies focus on management earnings forecasts in

either voluntary or mandatory regulated regimes. In this paper, I study management earnings forecast decisions and the quality of the forecasts under a unique regulation that integrates elements of both the mandatory and voluntary regimes. I specifically examine the interaction between the voluntary and the mandatory elements of the regulation—how a firm's decision to make a voluntary disclosure is related to the mandatory forecasting experience/requirements of that firm and of its peers.

Second, previous studies tend to focus on how the regulations themselves can affect the disclosure incentives of forecasting firms. My study focuses on some of the market-wide and intertemporal effects of the regulations (i.e. peer and learning effects) that can affect forecast decisions. Learning effects have been shown to be an important factor in influencing the earnings forecasts of analysts (Clement and Tse, 2003; Hilary and Shen, 2013; Mikhail et al., 2003). However, there is little evidence on whether and how the quality of management earnings forecasts is related to the forecasting experience of firms. Several recent studies examine the spillover effects of accounting restatements. For example, Xu et al. (2006) and Gleason et al. (2008) find that restatement results in an increase in the cost of capital not only for the restating firm, but also for its competitors. Sadka (2006) and Beatty et al. (2013) find that misreporting by firms can have spillover effects on real investment. However, no previous study examines whether there are peer effects on these corporate disclosure decisions. I extend the literature by examining whether and how management earnings forecast decisions in China are influenced by peer effects.

2.3. Hypotheses Development.

According to Einhorn and Ziv (2008), a long history of no disclosure will build a reputation of being uninformed, which alleviates the negative market reaction to the withholding of information in the current period and facilitates the continued suppression of information in the future. Once such a reputation is built, it is difficult to break the stickiness of not providing disclosures, because the high indirect disclosure costs [1] generated by such stickiness inhibit firms from disclosing information. Thus, if a firm has a long history of withholding information, it is difficult to motivate that firm to make a voluntary disclosure. However, the selective mandatory forecast requirement acts as an intervention that breaks such stickiness because it mandates firms to issue a forecast under certain conditions. Once a firm has been mandated to issue a forecast, it reveals to the public that the firm was in possession of private information and is capable of issuing a forecast. This will weaken the firm's reputation for being uninformative and will increase its costs of non-disclosure. Furthermore, the previous mandatory forecast will already have revealed some information to market participants such as competitors, labor unions, regulators and tax authorities. This will lower the proprietary costs of disclosure faced by firms if they choose to issue a forecast in the future. In addition, there are also direct costs involved in preparing management earnings forecasts. Issuing a forecast involves information collection and estimation, which is often difficult and costly, especially given the forward-looking nature of the forecasts (Coates and Srinivasan, 2014). As the establishment of data collection and forecasting technology often entails a fixed cost, the existence of previous forecasting experience will lower the direct costs

[1] The indirect disclosure costs include (a) future incremental disclosure costs; (b) reduced leeway to withhold information in the future; (c) increased price volatility due to the dependence of future stock prices on uncertain information.

involved in issuing a subsequent forecast.

Given that a firm will gain benefits from issuing a voluntary forecast, the increase in the cost of non-disclosure and the reduction in both the direct and the indirect costs of disclosure will increase the probability of the firm issuing a voluntary forecast if that firm was previously required to make a forecast according to the regulations. This leads to my first hypothesis:

H_1: A firm is more likely to participate in the disclosure of management earnings forecasts if it was required to issue a forecast in the past.

China's selective mandatory forecast requirement means that some firms are required to issue management earnings forecasts from time to time. Forecasters may become more attractive to investors than non-forecasters because investors have more information about the former. If peer effects exist, a firm is more likely to issue earnings forecasts voluntarily if more firms in its industry are required to issue such forecasts. Furthermore, the existence of a large number of forecasters in an industry will also lower the proprietary cost of disclosure faced by a firm because market participants can obtain information on that firm through the forecasts issued by its peer firms, even if the firm itself does not issue a forecast. The lower proprietary costs of disclosure will also increase the likelihood of a firm issuing a voluntary forecast. Thus, I hypothesize the following:

H_{2a}: A firm is more likely to issue a voluntary earnings forecast if more peer firms have issued mandatory management earnings forecasts

Peer effects may emerge when a significant proportion of a firm's peers issue

mandatory earnings forecasts. If H_{2a} is true, the mandatory requirement will also give rise to a large number of voluntary forecasters. For the same reasons as given above for mandatory forecasters, I also expect the existence of a large number of voluntary forecasters in an industry to increase the probability of a firm issuing a voluntary forecast. My hypothesis is as follows:

H_{2b}: A firm is more likely to issue a voluntary earnings forecast if more of its peer firms have issued voluntary management earnings forecasts.

Previous studies (Clement and Tse, 2003; Hilary and Shen, 2013; Mikhail et al., 2003) show that the accuracy of analyst forecasts increases with analysts' firm-specific forecasting experience because more-experienced analysts can incorporate more prior earnings information. Gilson et al. (2001) show that forecasts issued by specialist analysts are more accurate than those issued by non-specialists, which also suggests the benefit of experience. Gong et al. (2011) find that earnings forecast error is smaller for a firm with a longer forecasting experience. Although managers tend to possess inside information on their firms, the issuing of management earnings forecasts involves expertise, the ability to understand the operations of the firm and the ability to predict the state of the industry, market conditions and development. Thus, I expect that learning effects will also exist in management earnings forecasts. Hence:

H_3: Management earnings forecast quality increases with a firm's forecasting experience.

A major insight from corporate voluntary disclosure is that firms can obtain various benefits from providing accurate and good-quality corporate information, such as

increases in liquidity (e.g. Lang and Maffett 2011), lower capital costs (e.g. Botosan 1997) and a greater capacity to raise external capital (e.g. Shroff et al. 2013). If investors tend to evaluate and choose firms on the basis of their disclosure quality, there will be a peer effect whereby firms must compete with or at least match their peers in terms of disclosure quality. Hidalgo Cabrillana (2013) suggests that industry competition increases the quality of financial accounting reports because in more-competitive environments, more firms are competing for funds and thus firms will react by offering high-quality financial reporting as a signal to the capital market. Thus, if more firms in an industry are offering higher-quality management earnings forecasts to attract funds, then all of the firms in that industry will come under greater pressure to increase the quality of their management earnings forecasts. This leads to my final hypothesis:

H_4: A firm is more likely to issue high-quality forecasts if the management earnings forecasts issued by its peers are of a high quality.

Chapter 3. Data and Sample

3.1. Sample Selection.

This study uses management earnings forecast data collected from the WIND database. Because major revisions to the management earnings forecast regulations were completed in 2006, I only use observations for 2007-2013. This gives 29,908 observations in the initial sample. I exclude pre-announcements from the sample because these are made after the end of the accounting period, when managers already know what has happened during that period. Thus, the accuracy of pre-announcements will differ from that of earnings forecasts.

Accounting and governance data are collected from the CSMAR and RESSET databases. To calculate firm operating performance, I require observations to contain time-series accounting and financial information for at least the previous two years. There must also be sufficient information on the corporate board to capture corporate governance characteristics. This gives 10,725 observations in my final sample. Panel A of Table 2 describes the screening process used to select the sample of management earnings forecasts used in my analysis.

[Insert Table 2]

3.2 Descriptive Evidence of an Increase in Voluntary Management Earnings Forecast Participation.

I classify all of the management earnings forecasts in the final sample into two

categories according to China's management earnings forecast regulations. If a firm experiences change in profits of more than 50%, makes a loss, or changes from loss-making to profit-making, I classify its management earnings forecasts as mandatory (*MANDATORY*). Other forecasts are classified as voluntary (*VOLUNTARY*). Panel B of Table 2 presents the time-series distribution of my sample. As shown, the number of total management earnings forecasts increases over the sample period, from 1,076 in 2007 to 2,479 in 2013 (column 2). However, the increase in the number of voluntary earnings forecasts is more dramatic, increasing from 104 to 1,320 over the sample period (column 3). Column 4 clearly shows that the percentage of voluntary management earnings forecasts increased by 43% over the seven-year period. Panel C of Table 2 reports the distribution of voluntary forecasts and the total number of forecasters. As shown, the proportion of voluntary forecasting firms increased from 12% in 2007 to 60% in 2013, indicating an increased propensity for firms to issue earnings forecasts voluntarily.

3.3. Descriptive Evidence of Improvement in Management Earnings Forecast Quality.

The main measures of management earnings forecast quality are *PRECISION*, *ERROR* and *BIAS* (see the Appendix for definitions of variables). Panel D of Table 2 reports the distribution of management earnings forecast precision. All of the forecasts are classified into four groups: point, range, open-ended and qualitative. The table shows that a large proportion of the forecasts are range forecasts (62%). Moreover, following Ajinkya et al. (2005), I assign four ordered values to all of the forecasts based on their level of precision (*PRECISION*). Because point forecasts are the most precise, *PRECISION* is set to 3. For range forecasts, open-ended

forecasts and qualitative forecasts, *PRECISION* takes the values of 2, 1 and 0, respectively. Panel A of Figure 1 illustrates the ascending trend of average forecast precision by fiscal year. It clearly shows an improvement in management earnings forecast quality when judged on the basis of precision, with the average value increasing from 1.12 to 1.79 over the sample period. Moreover, the average precision of voluntary management earnings forecasts is seen to be higher than that for mandatory earnings forecasts.

[Insert Figure 1]

To identify the trend in forecast accuracy, I follow previous papers (Ajinkya et al., 2005; Gong et al., 2011; Gong et al., 2009; Hilary et al., 2014; Rogers and Stocken, 2005) by only including point and range forecasts in the accuracy analysis. To measure forecast accuracy I use *ERROR*, which is the absolute value of the difference between forecasted and actual profit, scaled by the product of shares outstanding and price at the beginning of the fiscal year (Ajinkya et al., 2005). For range forecasts, I use the mid-point as a proxy for the expectations of managers. The smaller the value of *ERROR*, the more accurate the management earnings forecast. Panel B of Figure 1 shows the downward trend of average management earnings forecast error over the sample period, indicating an improvement in management earnings forecast accuracy, from 1.96 in 2007 to 0.05 in 2013. It also demonstrates that, on average, voluntary management earnings forecasts are more accurate.

A third measure of forecast quality is *BIAS*, defined as the difference between

forecasted and actual profit, scaled by the product of shares outstanding and price at the beginning of the fiscal year (Ajinkya et al., 2005). Panel C of Figure 1 displays the average bias. Although the average bias fluctuates over the period, there is a clear downward trend. Firms tend to downward-bias their earnings forecasts less in 2013 (0.07) than in 2007 (1.30). The figures also shows that voluntary management earnings forecasts become more conservative.

Overall, the descriptive evidence in Figure 1 reveals a significant improvement in management earnings forecast quality.

Chapter 4. Voluntary Disclosure of Management Earnings Forecasts

The previous chapter revealed increased participation in voluntary earnings forecasting. This section further examines the factors that drive the voluntary earnings forecast disclosure decisions of firms.

4.1 Variables for Testing the Effect of the Selective Mandatory Forecast Requirement on Voluntary Earnings Forecast Decisions.

I expect the selective mandatory forecast requirement to have a positive influence on the voluntary disclosure decisions of firms. That is, if a firm is required to issue management earnings forecasts this year, that firm is more likely to issue management earnings forecasts voluntarily next year. To test this, I define the issuing of mandatory management earnings forecasts as *PRE_MANDATORY*, which equals 1 if a firm has been required to issue management earnings forecasts in the previous year, and 0 otherwise.

4.2. Variables for Testing Peer Effects on Voluntary Earnings Forecast Disclosure Decisions.

To examine the relationship between a firm's voluntary forecast disclosure decision and its peers that are mandated to issue management earnings forecasts, I use *MANDATORY_PROP*, which is the proportion of peer firms in the industry that were required to release management earnings forecasts in the previous year. A larger *MANDATORY_PROP* value indicates that more firms in the industry issued mandatory earnings forecasts in the previous year. I expect a positive association between *MANDATORY_PROP* and *VOLUNTARY*.

Similarly, to test whether more voluntary earnings forecasts from peer firms are influencing disclosure I use *VOLUNTARY_PROP*, which is the proportion of peer firms that have issued management earnings forecasts voluntarily in the previous year. I also expect the coefficient for *VOLUNTARY_PROP* to be positive.

4.3. Empirical Design.

To test my hypotheses, I estimate the following regression:

$$VOLUNTARY = \alpha_0 + \alpha_1 PRE\_MANDATORY + \alpha_2 MANDATORY\_PROP + \alpha_3 VOLUNTARY\_PROP + \text{Control Variables} \quad (1)$$

The control variables are *VOLUNTARY_PRE, MANDATORY, HORIZON, NEWS, ROA, VOL, LST, SIZE, M/B, LEV, OUT, INST, DUALIT, METING, TOP, ANALYST, SOE, MINDEX* and *ACCRUAL* (see the Appendix for definitions of variables). In the regression, I use a Probit model with standard errors clustered at both the firm and the year levels. I also control for year and industry fixed effects.

The variables in model (1) are defined in the Appendix and are explained as follows. In the regression, I use firm-specific control variables[2] that may affect disclosure decisions. First, I include *VOLUNTARY_PRE* because whether a firm voluntarily discloses earnings forecasts may affect the firm's disclosure decision in the current period. Second, findings from Kasznik and Lev (1995) suggest that to prevent litigation, a firm is more likely to make a disclosure when its earnings are disappointing. I thus control for return on assets (*ROA*) and news (*NEWS*), which

[2] For detailed definitions, please refer to the Appendix.

equal 1 if the profit in the current forecasting period is larger than or equal to that of the same forecasting period in the previous year, and 0 otherwise. I include earnings volatility (*VOL*) because this affects the ability of managers to generate forecasts (Waymire, 1985). In addition, I control for the number of years that a firm has been listed because disclosure behavior is likely to vary with public familiarity with a firm (Chen et al., 2008). Compared with newly listed firms, investors know more about firms that have been listed for a long time and may thus demand less information from this type of firm. Also, Cox (1985) and Eng and Mak (2003) find that larger firms are more likely to issue management earnings forecasts, and thus I control for firm size (*SIZE*). I also include firm growth (*M/B*) because the value of a firm's growth hinges on its expected future cash flows and growing firms may have greater information asymmetry issues and agency costs (Gong et al., 2009). In this situation, growing firms are expected to disclose more information to the public. Eng and Mak (2003) find an inverse relationship between debt and disclosure; thus, I include leverage (*LEV*). Previous studies, such as those of Ajinkya et al. (2005) and Eng and Mak (2003), find that corporate governance is closely associated with voluntary disclosure. Thus, to control for corporate governance I include the proportion of outside directors (*OUT*), the proportion of shares held by institutions (*INST*), CEO duality (*DUALIT*), the number of board meetings (*MEETING*) and the percentage of shares held by the largest 10 shareholders (*TOP*). I also control for analyst coverage (*ANALYST*) because firms with more analyst coverage are under greater pressure from analysts to provide earnings forecasts. Additionally, I control for state ownership (*SOE*) because Radhakrishnan et al. (2012) find that greater political involvement leads to a lower incidence of earnings forecasts, as bureaucrats have the incentive to suppress

information disclosure to hide their expropriation of firms. Moreover, I include a comprehensive index of provincial market development (*MINDEX)* to control for the market development in the province in which the firm is located, because previous research finds an the association between the behavior of a firm and the market development in the firm's location (Firth et al., 2011). Finally, as Francis et al. (2008) find that the incidence of voluntary disclosure is positively associated with earnings quality, I include total accruals (*ACCRUAL*) as a proxy for earnings quality.

4.4. Main Analysis.

Panel A of Table 3 presents the descriptive statistics based on 28,909 observations. This includes firms that issued voluntary forecasts and those that issued neither voluntary nor mandatory forecasts. The mean value of *VOLUNTARY* is 0.13 and the mean value of *MANDATORY_PRE* is 0.30, showing that on average 13% of the firms in the sample issued voluntary forecasts in a given accounting period and 30% of the firms were mandated to release earnings forecasts in the previous year. As shown in the table, the mean values of *MANDATORY_PROP* and of *VOLUNTARY_PROP* are 0.39 and 0.18, respectively. This suggests that, on average, 39% of the firms in an industry issued mandatory forecasts in the previous year while 18% issued voluntary forecasts. The pairwise correlations between voluntary disclosure and the key explanatory variables are reported in Panel B of Table 3. Consistent with my hypotheses, I find that *MANDATORY_PRE*, *MANDATORY_PROP* and *VOLUNTARY_PROP* are positively correlated with *VOLUNTARY*. Finally, the correlations between the variables of interest and the other control variables are modest, implying that multi-collinearity may not be of

concern in generating inferences.

[Insert Table 3]

Table 4 reports univariate comparisons of the determinants of voluntary participation. Compared with firms that do not issue either mandatory or voluntary management earnings forecasts, firms that issue voluntary earnings forecasts have significantly higher mean *PRE_MANDATORY, MANDATORY_PROP* and *VOLUNTARY_PROP* values. This suggests that both selective disclosure requirement effects and peer effects are important determinants of voluntary disclosure.

[Insert Table 4]

The Probit analysis of the determinants of firms' voluntary disclosure decisions are presented in column 1 of Table 5. The coefficient for *PRE_MANDATORY* is positive and statistically significant at the 0.01 level, consistent with my expectation that if a firm was required to issue a management earnings forecast in the previous year, it is more likely to disclose management earnings forecasts voluntarily in the current period. This provides evidence that China's management earnings forecast regulation may facilitate the issuing of earnings forecasts. As shown, the coefficients for both *MANDATORY_PROP* and *VOLUNTARY_PROP* are significantly positive at the conventional level, supporting a strong and positive relationship between the proportion of peer firms that had issued management earnings forecasts mandatorily or voluntarily and a firm's voluntary disclosure decision. Moreover, the coefficient for *VOLUNTARY_PROP* is greater than that for

MANDATORY_PROP, indicating that voluntary forecasting peers have a greater influence on the voluntary disclosure of firms than mandatory forecasting peers.

Turning to the control variables, I find significantly negative coefficients for *VOL, LEV, ACCRUAL* and *SOE*. The negative coefficient for *VOL* is consistent with the view that it is more difficult for a firm that has had volatile earnings in the past to predict its earnings, and thus it is less likely that the firm will issue an earnings forecast. The negative coefficients for *LEV, ACCRUAL* and *SOE* show that a firm is less likely to issue a forecast if it has more debt or more accruals or if it is a state-owned enterprise. In addition, I find the coefficient for *VOLUNTARY_PRE* to be positive and statistically significant at the 0.01 level, suggesting that if a firm has issued earnings forecasts voluntarily in the previous year it is more likely to do so in the current period. The positive coefficient for *ROA* shows that firms with better profits are more likely to issue voluntary earnings forecasts. The corporate governance factors, including *INST*, *DUALITY* and *MEETING*, are significant in explaining the occurrence of voluntary management earnings forecasts. The coefficient for *INST* is positive and influential, consistent with the finding of Ajinkya et al. (2005) that institutional ownership is associated with a greater likelihood of earnings forecasts. Finally, the coefficients for *ANALYST* and *MINDEX* are positive, implying that a firm tends to forecast voluntarily if it has more analysts following it or if it is located in a more developed province.

[Insert Table 5]

4.5. Sub-sample Analysis.

Table 5 reports the results of analysis after partitioning the sample based on volatility and state ownership. In columns 1 and 2, the sample is partitioned into two groups with more or less volatile profits in the past eight quarters. I find that *MANDATORY_PRE* is significantly positive in both sub-samples, suggesting that the mandatory forecast requirement encourages voluntary disclosure.

In addition, I find that *MANDATORY_PROP* and *VOLUNTARY_PROP* are significantly positive for those firms with a relatively lower volatility. The results suggest that both voluntary and mandatory forecasters generate pressure on these firms to make voluntary disclosures. However, for those firms with a relatively higher volatility *MANDATORY_PROP* is statistically insignificant and *VOLUNTARY_PROP* is significantly positive. These results suggest that only voluntary forecasters are able to generate pressure on these firms. The absence of significant pressure from mandatory forecasters on firms in a more-volatile business environment may be due to the greater forecasting difficulty faced by managers. If the majority of forecasters are mandatory rather than voluntary, market participation may not punish these firms heavily and thus the cost of non-disclosure is low. However, the cost of non-disclosure for a particular firm will increase substantially if a large number of firms in the industry have issued forecasts voluntarily. The reasoning above may explain why pressure from voluntary forecasters is significant and stronger for firms in a highly volatile business environment.

[Insert Table 6]

I further partition the sample based on state ownership. I find that *MANDATORY_PRE* is economically significant for both SOEs and non-SOEs. The results suggest that the selective mandatory forecast requirement promotes voluntary disclosure for firms with different types of ownership. In contrast, peer effects are more observable in non-SOEs than in SOEs: peer effects from mandatory forecasters are significant in both sub-samples while peer effects from voluntary forecasters are only significant in non-SOEs. A plausible explanation is that SOEs in China have less need to please investors and compete with peer firms, because they are often protected in product markets and enjoy better access to finance. (Lu et al., 2012).

Chapter 5. Management Earnings Forecast Quality

In Chapter 3, I found that the management earnings forecast quality, which is judged on the basis of *PRECISION*, *ERROR* and *BIAS* (see the Appendix for definitions of variables), improves over the sample period. In this section, I investigate the forces underlying the improvement in the quality of the management earnings forecasts.

5.1. Variables for Testing Peer Effects on Disclosure Quality.

I use the industry-average management earnings forecast quality in the previous year (excluding the forecasting quality of the focal firm) as a proxy for industry peer effects. The variables are *PEER_PRECISION*, *PEER_ERROR* and *PEER_BIAS* (see the Appendix for definitions of variables). Higher values for *PEER_PRECISION* and lower values for *PEER_ERROR* and *PEER_BIAS* indicate that the forecasting quality of peer firms is higher. If pressure from peer firms promotes improved management earnings forecast quality, I should find a positive association between the industry-average earnings forecast quality in the previous year and the firm's forecast quality.

5.2. Variables for Testing the Effects of Forecasting Experience on Disclosure Quality.

To examine whether more forecasting experience leads to higher forecast quality, I use *MF_YEARS* to account for the forecasting experience accumulated by firms. *MF_YEARS* is defined as the number of years that the firm has issued management earnings forecasts. If management earnings forecast quality increases as firms gain

more experience, I should find a positive association between *MF_YEARS* and forecast quality.

5.3. Empirical Design.

To test my hypotheses, I regress industry pressure and firms' forecasting experience on various aspects of management earnings forecast quality and control variables including *MANDATORY, HORIZON, NEWS, ROA, VOL, LST, SIZE, M/B, LEV, OUT, INST, DUALIT, MEETING TOP, ANALYST, SOE, MINDEX* and *ACCRUAL* (see the Appendix for definitions of variables):

$$PRECISION = \alpha_0 + \alpha_1 PEER\_PRECISION + \alpha_2 MF\_YEARS + \text{Control Variables} \quad (2)$$

$$ERROR = \alpha_0 + \alpha_1 PEER\_ ERROR + \alpha_2 MF\_YEARS + \text{Control Variables} \quad (3)$$

$$BIAS = \alpha_0 + \alpha_1 PEER\_ BIAS + \alpha_2 MF\_YEARS + \text{Control Variables} \quad (4)$$

Because *PRECISION* is an ordinal variable, I use an ordered Probit model to estimate model (2). I estimate models (3) and (4) using Ordinary Least Squares. I use standard errors clustered at both the firm and the year levels. I also control for year and industry fixed effects in all of the models.

I add several factors that might affect management earnings forecast quality. First, I control for forecast type (*MANDATORY*) because the incentive to issue a voluntary forecast is different from the incentive to issue a mandatory forecast. Many studies (Brockman et al., 2008; Cheng et al., 2013; Gong et al., 2011; Gong et al., 2009; Rogers and Stocken, 2005) find that manager incentives affect forecasting quality. I include the length of the forecasting horizon (*HORIZON*) because studies such as

those of Bamber and Cheon (1998), Baginski et al. (2002), Ajinkya et al. (2005) and Cheng et al. (2013) suggest that the quality of management earnings forecasts is highly correlated with the length of the forecasting horizon. Following Ajinkya et al. (2005), I further include news (*NEWS*) to control for litigation. I also control for return on assets (*ROA*) because Gong et al. (2009) find a positive relationship between ROA and forecast error. In addition, because forecasting difficulty is closely associated with forecast quality (Cheng et al., 2013; Rogers and Stocken, 2005), I include profit volatility as a proxy for forecasting difficulty. Moreover, research suggests that firms are more likely to provide high-quality earnings forecasts when the market demands more information (Ajinkya et al., 2005; Cheng et al., 2013). Thus, I include the number of listing years (*LST*), firm size (*SIZE*), firm growth opportunities (*M/B*), analyst coverage (*ANALYST*), leverage ratio (*LEV*) and state ownership (*SOE)* to capture the market demand for information. To control for the effect of corporate governance on disclosure quality, I add various other factors: the proportion of outside directors (*OUT*), the proportion of shares held by institutions (*INST*), CEO duality (*DUALIT*), the number of board meetings (*MEETING*) and the percentage of shares held by the largest 10 shareholders (*TOP*) (Ajinkya et al., 2005; Bamber and Cheon, 1998; Cheng et al., 2013; Karamanou and Vafeas, 2005). Due to a firm's behavior being associated with the market development in the firm's location (Firth et al., 2011), I include *MINDEX* to control for the market development in the province in which the firm is located. Finally, I control for total accruals (*ACCRUAL*) because Gong et al. (2009) find that forecast bias is associated with accruals in the previous year.

5.4. Main Analysis.

Panel A of Table 7 outlines the descriptive statistics for my sample of 10,725 observations. The average precision (*PRECISION*) and average forecast error (*ERROR*) are 1.624 and 0.303, respectively. Similar to studies conducted in the U.S. (e.g. Gong et al. 2009), I find that the average bias (*BIAS*) (0.163) is positive, suggesting that management earnings forecasts in China are also more likely to be optimistically biased. The average experience of forecasting firms (*MF_YEARS*) is about 4.67 years; the average values of peer precision (*PEER_PRECISION*), peer error (*PEER_ERROR*) and peer bias (*PEER_BIAS*) are 1.577, 0.362 and 0.208, respectively. On average, 61.6% of the forecasts are mandatory. Of the mandatory earnings forecasts, 3,374 are good forecasts and 3,231 are bad forecasts. The mean values of error (*FIRST_ERROR*) and bias (*FIRST_BIAS*) for the first forecasts issued by firms are 0.569 and 0.366, respectively, which are higher than the mean forecast error (*ERROR*) and the mean forecast bias (*BIAS*). Similarly, the average precision (*FIRST_PRECISION*) of a firm's first forecast is 1.24, which is lower than the average forecast precision (*PRECISION*). This is not surprising, as the quality of management earnings forecasts improves over the years, as shown in Chapter 3.

[Insert Table 7]

Panel B of Table 7 contains pairwise correlations between forecast quality, forecasting experience, peer forecasting quality and other regressors. All of the correlation results are consistent with my expectations. Both *MF_YEARS* and *PEER_PRECISION* are positively correlated with PRECISION. *MF_YEARS* is

negatively correlated with *ERROR* and *BIAS*. Finally, the correlation between *PEER_ERROR* and *ERROR* and that between *PEER_BIAS* and *BIAS* are positive. Furthermore, given the magnitude of the correlation between the independent variables and *PRECISION* (*ERROR* or *BIAS*), I conclude that the tests are not subject to multi-collinearity.

Univariate comparisons are presented in Table 8. Panel A presents the means for firm forecasting experience (*MF_YEARS*), industry average forecast precision (*PEER_PRECISION*) and forecast type (*MANDATORY*) across high- and low-precision portfolios. The differences in the means for *MF_YEARS*, *PEER_PRECISION* and *MANDATORY* for high- and low-precision forecasts are statistically significant at the 0.01 level, suggesting that learning effects and peer effects are important determinants of forecast precision. This also implies that mandatory forecasts tend to be less precise than voluntary forecasts. The results of univariate analysis of the determinants of forecast accuracy are presented in Panel B of Table 8. The mean number of forecasting years (*MF_YEARS*) is significantly greater in the more accurate portfolio, while industry forecast error (*PEER_ERROR*) is significantly larger in the less accurate portfolio. However, I find no difference in accuracy between voluntary and mandatory forecasts. Panel C of Table 8 presents the univariate statistics separately for sub-samples of forecasts with different levels of bias. Managers with more earnings forecasting experience (*MF_YEARS*) tend to issue less-optimistically biased forecasts than managers with less forecasting experience (*MF_YEARS*), and the difference is statistically significant at the 1 percent level. Moreover, if peer earnings forecasts are more conservative on average in the previous year (*PEER_BIAS*), then firms have a higher likelihood of

issuing less-optimistically biased forecasts. Finally, *MANDATORY* also differs significantly between less-optimistically biased and more-optimistically biased portfolios. Overall, the evidence from the univariate analysis is consistent with my expectations.

[Insert Table 8]

Table 9 reports the results of analyzing the link between management earnings forecast quality and firms' forecasting experience and peer firm forecast quality. Column 1 shows the analysis when the dependent variable is *PRECISION*. As expected, the coefficient of *MF_YEARS* is positive and significant at the 0.01 level, suggesting that earnings forecasts tend to be more precise if the forecaster has more forecasting experience. Thus, it appears that firms with more forecasting experience are more likely to make more-specific disclosures. Although the coefficient for *PEER_PRECISION* is positive but insignificant, this still implies a positive peer effect on forecasting precision. Of the control variables, those that capture corporate governance, *DUALIT*, *MEETING* and *TOP*, are all statistically significant, suggesting that the precision of management earnings forecasts is closely associated with corporate governance.

[Insert Table 9]

Column 2 of Table 9 presents the correlation results for industry average forecast error, forecasting experience and the accuracy of management earnings forecasts. Firm forecasting experience (*MF_YEARS*) is, as expected, positively (negatively)

correlated with management earnings forecast accuracy (*ERROR*), with the coefficient being statistically significant at the 0.01 level. If the forecasts of peer firms are more accurate (contain less error), this puts pressure on other firms to issue more-accurate forecasts. The regression result reflects this phenomenon: the coefficient for *PEER_ERROR* is positively associated with the forecast error and is statistically significant at the conventional level. Of the control variables, *MANDATORY, SIZE* and *INST* are influential. The coefficient for *MANDATORY* is positive and statistically significant at the 0.01 level, suggesting that mandatory management earnings forecasts are less accurate than voluntary forecasts. Voluntary forecasters are supposed to have more incentive to disclose information to investors and thus have more motivation to provide accurate forecasts. The coefficient of *SIZE* is also positively correlated with the dependent variable and is statistically significant at the 0.01 level. This finding implies that larger firms issue less-accurate earnings forecasts because it may be more difficult for them to make forecasts in comparison with small firms. The negative coefficient on *INST* suggests that firms with more institutional investors tend to issue more-accurate earnings forecasts.

Column 3 of Table 9 presents regression results for peer effect, forecasting experience and bias in management earnings forecasts. Firm forecasting experience, proxied by *MF_YEARS*, is negatively associated with *BIAS*. Thus, it seems that firms with more forecasting experience are likely to produce more-conservative forecasts (less-optimistic bias). Consistent with my expectations, the coefficient for *PEER_BIAS* is positive and statistically significant at the conventional level, implying that firms tend to issue less-optimistically biased earnings forecasts if

their peer firms' forecasts are less-optimistically biased. Of the control variables, the coefficient for *NEWS* is influential and significantly positive at the 0.01 level, implying that firms tend to optimistically bias earnings forecasts if they have good news.

MANDATORY is also interesting in terms of explaining forecasting bias: the results show that mandatory forecasts are less accurate and more biased than voluntary forecasts, and suggest that disclosures issued under managers' own initiative are of a higher quality than disclosures issued under the mandatory requirement. More importantly, the results indicate that the management earnings forecast regulation is successful, leading to more and higher-quality voluntary disclosures.

On the whole, my evidence suggests that the forecasting performance of peer firms is the benchmark when firms are considering their own forecast quality. These results are also consistent with my expectation that forecasting experience is associated with management earnings forecast quality. Firms with more forecasting experience tend to issue more-specific, more-accurate and less-biased forecasts.

5.5. Additional Tests.

A concern with the foregoing findings is that firms with better forecasting performance are more likely to issue forecasts and thereby accumulate more forecasting experience. Another concern is that unobservable factors associated with firm characteristics might be important determinants of forecast quality. To alleviate such concerns, I include the quality of firms' first forecasts, i.e. *FIRST_PRECISION*, *FIRST_ERROR* and *FIRST_BIAS*, in columns 1-3 of Table 10.

This is because the quality of firms' first forecasts captures unobservable factors related to the quality of the current forecasts and captures firms' past forecasting performance. I do not use the quality of firms' last forecasts because this is highly correlated with current forecast quality. In these regressions, I eliminate the firms' first forecasts from the sample to avoid perfect collinearity. As shown, forecasting experience (*MF_YEARS*) continues to be statistically significant at the conventional level, suggesting that firms with a longer forecasting history tend to issue more-precise, more-accurate and less-biased forecasts. Consistent with the previous finding, there is a positive association between the forecast precision of a firm and that of its peers, but the effect is not significant. Similarly, I find that the forecast accuracy and bias of firms are significantly influenced by those of its peers. Collectively, the results corroborate my previous findings.

To pursue forecast accuracy, managers may sacrifice forecast precision. Thus, in additional tests I control for the effect of forecast precision (columns 4-5 of Table 10) on forecast error and bias, respectively. The results for *MF_YEARS*, *PEER_PRECISION* and *PEER_BIAS* confirm the previous finding that a firm's forecast quality is affected by its forecasting experience and the average forecast quality of its peer firms.

Finally, columns 6-7 of Table 10 report the results after controlling for the quality of a firm's first forecast and the forecast precision in the current period. The coefficients for *MF_YEARS* remain negative and statistically significant at the conventional level when the dependent variables are forecast error and bias. Overall, these findings suggest that the learning effect is an important determinant

of forecast error and forecast bias. Further, consistent with the previous results, *PEER_ERROR* and *PEER_BIAS* continue to be associated with forecast error and forecast bias, respectively, suggesting that managers take into account the quality of peer firms' forecasts when issuing their own forecasts. Finally, I find that *MANDATORY* is consistently effective in explaining forecast quality, suggesting that voluntary forecasts are of a higher quality than mandatory forecasts.

[Insert Table 10]

5.6. Endogeneity Tests.

A concern relating to peer effects on forecast quality is that the common variables shared among firm and peer groups may determine forecast quality. In my main test, I include an industry dummy to mitigate this concern. To further address this issue, I include two instrumental variables and use the two-stage method to re-estimate my model. Following Leary and Roberts (2014), my first instrument variable is peer firms' idiosyncratic equity return because this is unlikely to be correlated with firm characteristics (Leary and Roberts, 2014). Moreover, previous research (Cheng et al., 2013; Rogers and Stocken, 2005) shows that forecasting difficulty is associated with forecast quality and can be proxied by idiosyncratic equity return. My second instrumental variable is peer firms' forecasting experience, which is unlikely to affect individual the forecast quality of individual firms but is possibly correlated with the forecast quality of peer firms. Hence, I estimate the effect of peer firms' forecast quality on firm forecast quality by using peer firms' idiosyncratic equity return and peer firms' forecasting experience. I estimate the fitted value of peer firms' forecast quality relating to

PEER_PRECISION, *PEER_ERROR* and *PEER_BIAS* from the first-stage estimation in model (5), (6) and (7) and replace these in the second-stage regression in models (2), (3) and (4).

$$PEER\_PRECISION = \alpha_0 + \alpha_1 PEER\_EQUITY\_SHOCK + \alpha_2 \ PEER\_MF\_YEARS \quad (5)$$

$$PEER\_ERROR = \alpha_0 + \alpha_1 PEER\_EQUITY\_SHOCK + \alpha_2 \ PEER\_MF\_YEARS \quad (6)$$

$$PEER\_BIAS = \alpha_0 + \alpha_1 PEER\_EQUITY\_SHOCK + \alpha_2 \ PEER\_MF\_YEARS \quad (7)$$

where *PEER_EQUITY_SHOCK* is the industry average idiosyncratic stock return (excluding the focal firm).

I estimate the idiosyncratic stock return with the following Carhart (1997) four factor model.

$$Ri,t = \alpha_0 + \alpha_1 (Rm,t\text{-}Rf,t) + \alpha_2 SMBt + \alpha_3 HMLt + \alpha_4 UMDt \quad (8)$$

where $R_{i,t}$ refers to the excessive stock return for firm i over month t. $R_{m,t}$-$R_{f,t}$, SMB_t , HML_t and UMD_t are the excessive market return, the small minus big portfolio return, the high minus low portfolio return and the momentum portfolio return, respectively. I estimate equation (8) for each firm using a monthly rolling regression, requiring at least 20 months of historical data and using up to 24 months of data in the estimations. After obtaining the coefficients, I then use equation (8) to calculate the expected return. The idiosyncratic return is the actual return minus the expected return. Because peer firms' forecast quality relating to *PEER_PRECISION, PEER ERROR* and *PEER BIAS* is the industry-average

forecast quality in the previous year, I thus require the idiosyncratic stock return to be the average monthly idiosyncratic stock return in the previous year.

Table 11 reports the results obtained using two-stage model. The coefficients for peer firms' forecast quality relating to *PEER_PRECISION, PEER_ERROR* and *PEER_BIAS* are consistent with previous findings shown in Table 9. More importantly, as shown in columns 2 and 3 of Table 11, the coefficients for *PEER_ERROR* and *PEER_BIAS* are statistically significant, indicating that peer firms' forecast accuracy and peer firms' forecast bias affect the forecast accuracy and bias, respectively, of individual firms. This shows that my main results are unlikely to be affected by endogeneity issues.

[Insert Table 11]

Chapter 6. Conclusion

China introduced a unique regulation in 2000 that required publicly listed firms in China to make earnings forecasts under certain conditions. Since the introduction of this regulation, China has witnessed an increase in the quantity of both mandatory management earnings forecasts and voluntary earnings forecasts. Furthermore, there has been a substantial and consistent improvement in the quality of the forecasts issued by firms. In this study, I examine the factors that have driven the emergence of these voluntary forecasts and the improvement in their quality.

Regarding the determinants of the voluntary disclosure of management earnings forecasts, I find that firms are more likely to make a voluntary disclosure if they were required to make a disclosure in the preceding year. Furthermore, I find that peer pressure motivates firms to voluntarily issue forward-looking information. I find that learning and peer effects are the most important determinants of management earnings forecast quality.

Overall, this study provides evidence in support of the argument that the introduction of the selective mandatory forecast requirement in China may have had firm-level, market-wide and intertemporal effects. These effects have encouraged firms to issue forecasts voluntarily and to improve the quality of their forecasts. The findings of this study contribute to the literature on management earnings forecasts and to the literature on financial reporting regulations. They also have practical relevance for investors and policy implications for regulators in China and other countries.

Appendix:

Variable Definitions

Forecast Outcome Factors:	
VOLUNTARY	= 1 if the earnings forecast firm issues is voluntary forecast, and 0 otherwise. The forecast is classified as voluntary if it does not meet the following conditions: (a) more than 50% change in profits; (b) making loss; (c) turning from loss-making to profit making.
PRECISION	= a measure of management earnings forecast precision. It is 3 for point forecast, 2 for rang forecast, 1 for open-ended forecast and 0 for qualitative forecast.
ERROR	= absolute value [(management forecast of profit-actual profit) / (shares outstanding×price at the beginning of the fiscal year)]. It is a measure of forecast error.
BIAS	= [(management forecast of profit-actual profit) / (shares outstanding×price at the beginning of the fiscal year)]. It is a measure of forecast bias.
Measures of Selective Disclosure Requirement Effects:	
PRE_MANDATORY	= 1 if firm has been required to issue management earnings forecast in the past one year, and 0 otherwise.
Measures of Peer Effects:	
MANDATORY_PROP	= the proportion of firms in the industry which have issued mandatory management earnings forecasts in the past one year (excluding the focal firm). The industry classification is downloaded from WIND database which divides firms into 28 industries.
VOLUNTARY_PROP	= the proportion of firms in the industry which have issued voluntary management earnings forecasts in the past one year (excluding the focal firm). The industry classification is downloaded from WIND database which divides firms into 28 industries.
PEER_PRECISION	= the industry average precision of all management earnings forecasts issued in the past one year (excluding the focal firm). The industry classification is downloaded from WIND database which divides firms into 28 industries.
PEER_ERROR	= the industry average error of all management earnings forecasts issued in the past one year (excluding the focal firm). The industry classification is downloaded from WIND database which divides firms into 28 industries.

PEER_BIAS = the absolute value of the industry average bias of all management earnings forecasts issued in the past one year (excluding the focal firm). The industry classification is downloaded from WIND database which divides firms into 28 industries.

Measures of Forecasting Experience:

MF_YEARS = number of years that the firm has issued management earnings forecasts.

Other Variables:

PRE_VOLUNTARY = 1 if firm has issued management earnings forecast voluntarily in the past one year, and 0 otherwise.

NEWS = 1 if the current-forecasting-period profit is larger than or equal to the profit of the same forecasting period in the last year, and 0 otherwise.

HORIZON = number of days between the forecast date and the end of forecasting period.

MANDATORY = 1 if the earnings forecast firm issues is mandatory forecast, and 0 otherwise.

ROA = return on assets.

VOL = the natural logarithm of standard deviation of quarterly profits over past 8 quarters. It captures the forecasting difficulty.

LST = the number of the year since the firm is listed.

SIZE = firm's market capitalization at the beginning of the fiscal year.

M/B = a ratio of market value to the book value of equity measured at the beginning of the year.

LEV = a ratio of total liability to the book value of equity at the beginning of the fiscal year.

OUT = proportion of outside directors.

INST = proportion of shares held by institutions.

DUALIT = 1 if CEO and chairman positions are possessed by the same person.

MEETING = the number of board meetings held annually.

TOP = percentage of shares held by the largest 10 shareholders.

ANALYST = number of analysts following the firm.

SOE	=1 if the firm is the state-owned enterprise, and 0 otherwise.
MINDEX	= a comprehensive index of provincial market development.
ACCRUAL	= a measure of total accruals in prior year. It is (the change in non-cash current assets - the change in current liabilities excluding the current proportion of long-term debt – depreciation and amortization)/lagged total assets
FIRST_ERROR	= the error of firm's first forecast.
FIRST_BIAS	= the bias of firm's first forecast
FIRST_PRECISION	= the precision of firm's first forecast.
PEER_EQUITY_SHOCK	= the industry average idiosyncratic stock return in the past one year (excluding the focal firm). The idiosyncratic stock return in the past one year is the monthly average idiosyncratic stock return in the past one year. The industry classification is downloaded from WIND database which divides firms into 28 industries.
PEER_MF_YEARS	= the industry average forecasting experience (excluding the focal firm). The forecasting experience is measured by the number of years that the firm has issued management earnings forecasts. The industry classification is downloaded from WIND database which divides firms into 28 industries.

Table 1.The Development of Management Earnings Forecast Regulation

Year	Conditions
2000	1. Making losses;
2001	1. Making losses; 2. More than 50% changes in earnings; 3. Small earnings (before taxes) per share last year (smaller than 0.05) can be exempt.
2006	1. Making losses; 2. More than 50% changes in earnings; 3. Small earnings (before taxes) per share last year (0.05 for annual, 0.03 for interim report, 0.04 for the third quarterly reports) can be exempt. 4. Turning from loss-making to profit-making.

Table 2. Sample Selection and Description

Panel A: Sample Selection Procedure	
Initial sample of all forecasts	29,908
Less:	
Pre-announcements	(13,523)
Accounting data unavailable	(5,660)
Usable forecasts	10,725

Panel B: Distribution of Voluntary Management Earnings Forecasts

Year	Number of Voluntary Forecasts	Number of Total Forecasts	Proportion of Voluntary Forecasts
2007	104	1,076	10%
2008	165	962	17%
2009	360	1,314	27%
2010	465	1,435	32%
2011	640	1,405	46%
2012	1,069	2,057	52%
2013	1,320	2,479	53%

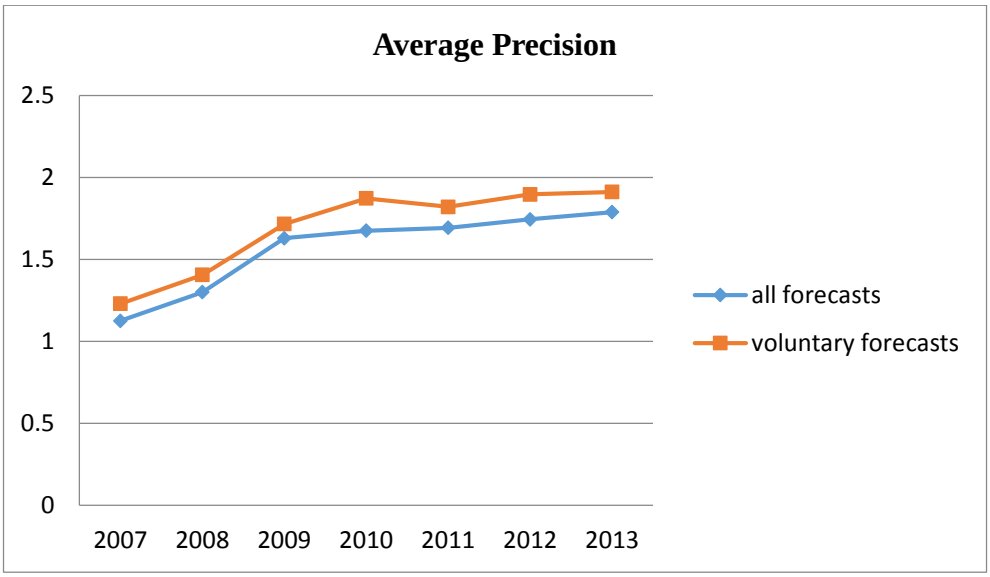
Panel C: Distribution of Voluntary Forecasters

Year	Number of Voluntary Forecasters	Number of Total Forecasters	Proportion of Voluntary Forecasters
2007	61	515	12%
2008	106	493	22%
2009	206	623	33%
2010	207	602	34%
2011	314	615	51%
2012	485	852	57%
2013	605	1,004	60%

Year	Qualitative	Open-ended	Range	Point
2007	337	382	241	116
2008	248	288	308	116
2009	270	212	563	268
2010	231	170	867	167
2011	173	168	981	83
2012	205	172	1,622	58
2013	194	167	2,084	34
TOTAL	1,658	1,559	6,666	842

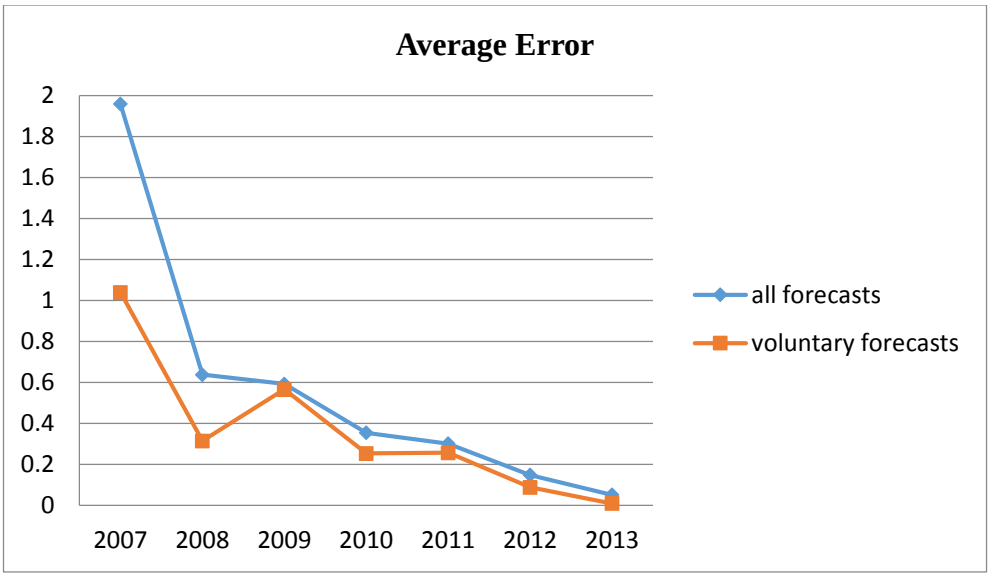
Figure 1. Trends of Management Earnings Forecast Quality

Panel A. Trends of Average Forecast Precision



This panel presents the mean management earnings forecast precision (*PRECISION*) and mean voluntary (*VOLUNTARY*) management earnings forecast precision (*PRECISION*) over the sample period. *PRECISION* and *VOLUNTARY* are defined in the Appendix.

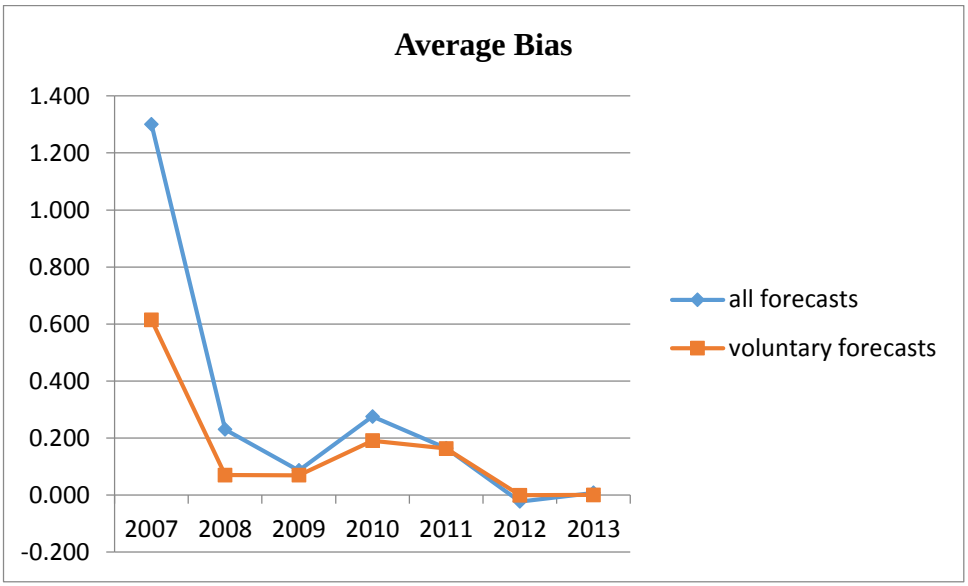
Panel B. Trends of Average Forecast Error



This panel presents the mean management earnings forecast error (*ERROR*) and mean voluntary (*VOLUNTARY*) management earnings forecast error (*ERROR*) over the sample period. *ERROR* and *VOLUNTARY* are defined in the Appendix.

Figure 1 (continued)

Panel C. Trends of Average Forecast Bias



This panel presents the mean management earnings forecast bias (*BIAS*) and mean voluntary (*VOLUNTARY*) management earnings forecast bias (*BIAS*) over the sample period. *BIAS* and *VOLUNTARY* are defined in the Appendix.

Table 3. Descriptive Statistics and Correlation Matrix of Key Variables for Testing H_1, H_{2a} and H_{2b}

Panel A: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
VOLUNTARY	0.131	0.337	0	1.000	28,909
MANDATORY_PRE	0.302	0.459	0	1.000	28,909
MANDATORY_PROP	0.394	0.108	0.209	0.588	28,909
VOLUNTARY_PROP	0.183	0.126	0	0.511	28,909
VOLUNTARY_PRE	0.198	0.399	0	1.000	28,909
NEWS	0.600	0.490	0	1.000	28,909
ROA	0.028	0.186	-0.722	28.529	28,909
VOL	16.881	1.344	11.960	24.641	28,909
LST	10.753	5.021	1.786	23.074	28,909
SIZE	22.141	0.967	18.555	28.125	28,909
M/B	3.387	3.272	0.502	23.141	28,909
LEV	1.496	1.783	0.055	12.431	28,909
OUT	0.364	0.052	0.091	0.714	28,909
INST	0.150	0.169	0	0.980	28,909
DUALIT	0.177	0.382	0	1.000	28,909
MEETING	9.365	3.797	1.000	57.000	28,909
TOP	29.441	21.465	0.303	96.139	28,909
ANALYST	10.779	11.510	0	58.000	28,909
SOE	0.554	0.497	0	1.000	28,909
MINDEX	8.884	2.106	0.380	11.800	28,909

Table 3 (continued)

ACCRUAL	-0.003	0.071	-0.539	0.741	28,909

This panel provides descriptive statistics on variables for the firms that issued voluntary forecasts and those that issued neither voluntary forecasts nor mandatory forecasts in the period 2007-2013.

See Appendix for variable definitions.

Table 3 (continued)

Panel B: Correlations among Regression Variables

	(1) *VOLUNTARY*	(2) *MANDATORY_PRE*	(3) *MANDATORY_PROP*	(4) *VOLUNTARY_PROP*
(1)	1	0.053 ***	0.025	0.28 ***
(2)	0.052 ***	1	0.127	-0.07 ***
(3)	0.02 ***	0.132 ***	1	0.021 ***
(4)	0.289 ***	-0.067 ***	0.03	1

*, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.

This panel provides correlations among the key variables for the firms that issued voluntary forecasts and those that issued neither voluntary forecasts nor mandatory forecasts in the period 2007-2013. Pearson correlations are shown above diagonal and Spearman correlations are shown below diagonal.

See Appendix for variable definitions

Table 4. Univariate Analysis of Determinants of Voluntary Participation

	Mean		
	VOLUNTARY=1	*VOLUNTARY=0*	p-value of difference
PRE_MANDATORY	0.364	0.293	<0.01
MANDATORY_PROP	0.277	0.169	<0.01
VOLUNTARY_PROP	0.364	0.293	<0.01

This table provides univariate comparisons on key variables between firms that involve in voluntary disclosure and those that neither do voluntary forecasts nor mandatory forecasts. The p-values of the difference in means are based on t-tests.

See Appendix for variable definitions.

Table 5. Determinants of Voluntary Disclosure of Management Earnings Forecasts

	Main Tests
VARIABLES	*VOLUNTARY*
MANDATORY_PRE	0.542***
	(0.041)
MANDATORY_PROP	0.990*
	(0.559)
VOLUNTARY_PROP	1.149**
	(0.578)
VOLUNTARY_PRE	1.983***
	(0.026)
NEWS	0.0184
	(0.024)
ROA	0.130*
	(0.071)
VOL	-0.145***
	(0.028)
LST	0.00135
	(0.003)
SIZE	0.00285
	(0.026)
M/B	-0.0108
	(0.009)
LEV	-0.0532***
	(0.012)
OUT	-0.349
	(0.262)
INST	0.496***
	(0.160)
DUALIT	0.0628**
	(0.027)
MEETING	-0.00841*
	(0.004)
TOP	0.00161
	(0.001)
ANALYST	0.0146***
	(0.002)
SOE	-0.340***
	(0.035)
MINDEX	0.0226***
	(0.007)
ACCRUAL	-0.329*
	(0.194)
Constant	-0.697
	(0.830)

Table 5 (continued)

Year Effect	YES
Industry Effect	YES
Pseudo R2	0.5063
Observations	28,909

Standard errors in parentheses. *, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.
This table provides regression results on the relation between voluntary disclosure decision and selective disclosure requirement effects and peer effects.
See Appendix for variable definitions.

Table 6: Sub-sample Analysis of the Selective Management Earnings Forecast Effects and Peer Effects on Voluntary Disclosure of Management Earnings Forecast

	Sum-sample Analysis			
	(1)	(2)	(3)	(4)
	Volatility		State Ownership	
	High	Low	SOE	Non-SOE
MANDATORY_PRE	0.594***	0.524***	0.601***	0.528***
	(0.060)	(0.045)	(0.051)	(0.054)
Test of difference in α_1	0.070		0.073	
MANDATORY_PROP	0.484	1.417**	0.34	1.345*
	(0.690)	(0.561)	(0.585)	(0.704)
Test of difference in α_2	-0.933		-1.005	
VOLUNTARY_PROP	1.266***	1.311*	1.301**	1.419*
	(0.481)	(0.718)	(0.514)	(0.818)
Test of difference in α_3	-0.045*		-0.118	
Control Variables	YES	YES	YES	YES
Year Effect	YES	YES	YES	YES
Industry Effect	YES	YES	YES	YES
Pseudo R2	0.515	0.4847	0.4789	0.4545

Table 6 (continued)

Observations	13,618	14,966	15,982	12,880

Standard errors in parentheses. *, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.

This table provides regression results on the voluntary disclosure analysis after partitioning the sample on volatility and state ownership

See Appendix for variable definitions.

Table 7. Descriptive Statistics and Correlation Matrix of Key Variables for Testing H_3 and H_4

Panel A: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
MF_YEARS	4.666	2.061	1	13.000	10,725
PRECISION	1.624	0.838	0	3.000	10,725
ERROR	0.303	0.761	0.000	4.778	8,100
BIAS	0.146	0.721	-2.003	4.177	8,100
PEER_PRECISION	1.557	0.316	0.667	1.963	8,100
PEER_ERROR	0.362	0.418	0.003	2.694	8,100
PEER_BIAS	0.208	0.374	0.001	2.367	10,725
MANDATORY	0.616	0.486	0	1.000	10,725
HORIZON	54.510	19.740	1.000	331.000	10,725
NEWS	0.610	0.488	0	1.000	10,725
ROA	0.033	0.228	-2.898	20.790	10,725
VOL	16.800	1.244	13.040	24.270	10,725
LST	7.412	4.866	1.580	21.700	10,725
SIZE	22.000	0.907	19.280	28.230	10,725
M/B	3.502	3.266	0.534	22.770	10,725
LEV	1.322	1.648	0.047	11.500	10,725
OUT	0.364	0.051	0.091	0.667	10,725
INST	0.165	0.181	0	0.957	10,725
DUALIT	0.254	0.435	0	1.000	10,725
MEETING	9.127	3.333	1	35.000	10,725
TOP	27.800	21.490	0.303	96.000	10,725

Table 7 (continued)

ANALYST	11.390	10.990	0	55.000	10,725
SOE	0.382	0.486	0	1.000	10,725
MINDEX	9.264	2.055	0.380	11.800	10,725
ACCRUAL	-0.001	0.095	-0.539	0.501	10,725
FIRST_PRECISION	1.235	0.883	0	3.000	10,528
FIRST_ERROR	0.569	0.928	0.000	3.360	4,081
FIRST_BIAS	0.366	0.912	-0.863	3.153	4,081

This panel provides descriptive statistics on variables for the firms which issued either mandatory forecasts or voluntary forecasts in the period 2007-2013.

See Appendix for variable definitions.

Table 7 (continued)

Panel B: Correlations among Regression Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	MF_YEARS	*PRECISION*	*ERROR*	*BIAS*	*PEER_PRECISION*	*PEER_ERROR*	*PEER_BIAS*	*FIRST_PRECISION*	*FIRST_ERROR*	*FIRST_ BIAS*
(1)	1	0.058 ***	-0.173 ***	-0.107	0.153 ***	-0.128 ***	-0.09 ***	-0.215 ***	0.054 ***	0.015
(2)	0.103 ***	1	-0.151 ***	-0.12 ***	0.233 ***	0.119 ***	0.067 ***	0.307 ***	-0.077 ***	-0.064 ***
(3)	-0.193 ***	-0.085 ***	1	0.395 ***	-0.217 ***	0.34 ***	0.328 ***	-0.112 ***	0.294 ***	0.193 ***
(4)	-0.147 ***	-0.05 ***	0.562 ***	1	-0.067 ***	0.127 ***	0.154 ***	-0.005	0.144 ***	0.229 ***
(5)	0.175 ***	0.269 ***	-0.322 ***	-0.25	1	-0.441 ***	-0.349 ***	0.271 ***	-0.119 ***	-0.066 ***
(6)	-0.167 ***	0.083 ***	0.275 ***	0.196	-0.479 ***	1	0.719 ***	-0.199 ***	0.123 ***	0.042 ***
(7)	-0.146 ***	0.043 ***	0.277 ***	0.222	-0.465 ***	0.904 ***	1	-0.147 ***	0.115 ***	0.063 ***
(8)	-0.238 ***	-0.005	-0.025 ***	0.007	-0.086 ***	-0.005	0.01	1	-0.104 ***	-0.044 ***
(9)	-0.014	-0.023 **	0.4 ***	0.258 ***	-0.145 ***	0.12 ***	0.118 ***	-0.213 ***	1	0.472 ***
(10)	-0.02	-0.019 *	0.362 ***	0.363 ***	-0.163 ***	0.105 ***	0.11 ***	-0.107 ***	0.761 **	1

*, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.

This panel provides correlations among the key variables for the firms which issued either mandatory forecasts or voluntary forecasts in the period 2007-2013. Pearson correlations are shown above diagonal and Spearman correlations are shown below diagonal.

See Appendix for variable definitions

Table 8. Univariate Analysis of Determinants of Forecast Quality

Panel A:

	Mean		
	High Precision	Low Precision	p-value of difference
MF_YEARS	4.593	5.520	<0.01
PEER_PRECISION	1.590	1.419	<0.01
MANDATORY	0.587	0.950	<0.01

This table provides univariate comparisons on key variables between firms which issue more precise forecasts (High Precision) and firms which issue less precise forecasts (Low Precision). The P-values of the difference in means are based on t-tests.
See Appendix for variable definitions.

Panel B:

	Mean		
	Low Error	High Error	p-value of difference
MF_YEARS	4.971	4.377	<0.01
PEER_ERROR	0.267	0.458	<0.01
MANDATORY	0.530	0.533	>0.1

This table provides univariate comparisons on key variables between firms which issue more accurate forecasts (Low Error) and firms which issue less accurate forecasts (High Error). The P-values of the difference in means are based on t-tests.
See Appendix for variable definitions.

Panel C:

	Mean		
	Low Bias	High Bias	p-value of difference
MF_YEARS	4.943	4.404	<0.01
PEER_BIAS	0.173	0.244	<0.01
MANDATORY	0.471	0.592	<0.01

This table provides univariate comparisons on key variables between firms which issue less biased forecasts (Low Bias) and firms which issue more biased forecasts (High Bias). The P-values of the difference in means are based on t-tests.
See Appendix for variable definitions.

Table 9. Determinants of Management Earnings Forecast Quality

	(1)	(2)	(3)
	PRECISION	*ERROR*	*BIAS*
MF_YEARS	0.0991***	-0.0322***	-0.0187**
	(0.012)	(0.008)	(0.008)
PEER_PRECISION	0.0214		
	(0.141)		
PEER_ERROR		0.144**	
		(0.061)	
PEER_BIAS			0.233***
			(0.065)
MANDATORY	-0.0576**	0.197***	0.104***
	(0.027)	(0.020)	(0.019)
HORIZON	-0.00172***	0.00111***	0.000193
	(0.001)	(0.000)	(0.000)
NEWS	0.0945***	-0.0199	0.372***
	(0.033)	(0.030)	(0.024)
ROA	0.211	1.028	0.685
	(0.142)	(0.696)	(0.483)
VOL	-0.0331*	0.0159	-0.0256**
	(0.020)	(0.013)	(0.011)
LST	-0.0423***	-0.00411	0.0022
	(0.005)	(0.004)	(0.004)
SIZE	-0.105***	0.105***	0.0865***
	(0.032)	(0.024)	(0.021)
M/B	-0.00312	-0.0363***	-0.0213***
	(0.008)	(0.004)	(0.004)
LEV	-0.0732***	0.000125	0.0181*
	(0.015)	(0.012)	(0.011)
OUT	0.113	-0.139***	-0.0767
	(0.080)	(0.051)	(0.049)
INST	0.0466	-0.0520***	-0.0320*
	(0.034)	(0.020)	(0.018)
DUALIT	0.0132**	-0.000684	0.0059
	(0.005)	(0.004)	(0.004)
MEETING	-0.00367***	0.00255***	0.00150***
	(0.001)	(0.000)	(0.000)
TOP	0.00480**	0.00151	0.000403
	(0.002)	(0.001)	(0.001)
ANALYST	-0.0576**	0.197***	0.104***
	(0.027)	(0.020)	(0.019)

Table 9 (continued)

SOE	-0.0417	-0.107***	-0.0636**
	(0.042)	(0.029)	(0.027)
MINDEX	-0.0217**	0.0150**	0.00405
	(0.008)	(0.006)	(0.006)
ACCRUAL	-0.198	-0.0624	-0.219**
	(0.178)	(0.108)	(0.103)
cut1	-3.381***		
	(0.609)		
cut2	-2.807***		
	(0.609)		
cut3	-0.768		
	(0.610)		
Constant		-1.155**	-0.671
		(0.479)	(0.415)
Year Effect	YES	YES	YES
Industry Effect	YES	YES	YES
Observations	10,725	8,100	8,100
R-squared	0.0601	0.28	0.279

Standard errors in parentheses. *, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.

This table provides regression results on the relation between management earnings forecast quality and learning effects and peer effects.

See Appendix for variable definitions.

Table 10. The additional regression results of forecast quality

	Additional Tests (First Performance Included)			Additional Tests (Precision Included)		Additional Tests (Both Included)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	PRECISION	*ERROR*	*BIAS*	*ERROR*	*BIAS*	*ERROR*	*BIAS*
MF_YEARS	0.139***	-0.0661***	-0.0224**	-0.0327***	-0.0189**	-0.0650***	-0.0219**
	(0.012)	(0.011)	(0.010)	(0.008)	(0.008)	(0.011)	(0.010)
PEER_PRECISION	0.00984						
	(0.140)						
PEER_ERROR		0.144**		0.149**		0.151**	
		(0.066)		(0.060)		(0.066)	
PEER_BIAS			0.227***		0.234***		0.228***
			(0.067)		(0.065)		(0.067)
Control Variables	YES	YES	YES	YES	YES	YES	YES
Year Effect	YES	YES	YES	YES	YES	YES	YES
Industry Effect	YES	YES	YES	YES	YES	YES	YES
Observations	10,528	4,081	4,081	8,100	8,100	4,081	4,081
R-squared	0.0846	0.352	0.367	0.288	0.281	0.358	0.368

Robust standard errors in parentheses. *, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively. This table provides additional analysis on the relation between management earnings forecast quality and learning effects and peer effects. Columns 1-3 include firm's first forecast quality in the baseline model; columns 4-5 include firm's forecast precision in the baseline model; Columns 6-7 include both firm's first forecast quality and firm's forecast precision in the baseline model. See Appendix for variable definitions.

Table 11. Endogeneity Test

	(1)	(2)	(3)
	PRECISION	*ERROR*	*BIAS*
MF_YEARS	0.0996***	-0.0333**	-0.0159**
	(0.012)	(0.015)	(0.007)
PEER_PRECISION	0.101		
	(0.184)		
PEER_ERROR		0.307**	
		(0.151)	
PEER_BIAS			0.661**
			(0.322)
cut1	-3.214***		
	(0.684)		
cut2	-2.638***		
	(0.684)		
cut3	-0.6		
	(0.685)		
Constant		-1.824**	-0.901**
		(0.789)	(0.439)
Control Variables	YES	YES	YES
First Stage			
PEER_EQUITY_SHOCK	-1.085***	4.027094***	1.031542***
	(0.154)	(0.971)	(0.160)
PEER_MF_YEARS	0.0973***	-0.0064609	-0.002035
	(0.004)	(0.006)	(0.002)
Constant	1.165***	2.440334	0.6141142
	(0.017)	(1.009)	(0.164)
Year Effect	YES	YES	YES
Industry Effect	YES	YES	YES
Observations	10,602	7,538	2,825
R-squared		0.092	0.252
Log likelihood	-12745.626		

Standard errors in parentheses. *, **, *** indicate significance level lower than 10 percent, 5 percent, and 1 percent (two-tail), respectively.

This table provides results from endogeneity tests. The endogenous variable is peer firms' forecast quality in the past one year (*PEER__PRECISION, PEER_ERROR* and *PEER_BIAS*). The instrument variable is the peer firms' average idiosyncratic returns in the prior year (*PEER_EQUITY_SHOCK*) and peer firms' average forecasting performance in the past one year (*PEER_MF_YEARS*).

See Appendix for variable definitions.

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