

Insider Trading and Analysts' Earnings Forecast Bias in China: Information Conveying or Catered Forecasting? *

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Abstract

In this paper, we investigate whether insider trading conveys useful information to analysts for their earnings forecasts and whether related analysts (affiliated to the brokers who were the underwriters of the company's IPO or SEO) use their earnings forecasts to cater to insider trading in China. We find that, on the whole, insider trading does not exert a significant effect on analysts' subsequent earnings forecast bias. However, after controlling for the effect of related analysts who may cater to insider trading, we find that when the scale of insider selling is larger, analysts' earnings forecasts are less optimistic, while the scale of insider purchasing does not significantly affect analysts' earnings forecast bias. On the other hand, when the scale of insider selling is larger, related analysts' earnings forecasts are more optimistic. The results indicate that insider selling's information-conveying effect only exists in unrelated analysts' forecasts and that insider selling does not convey information to related analysts, who instead have a tendency to cater to insider selling. Further analysis reveals that after controlling for the effect of related analysts, star analysts show a greater ability to absorb the information conveyed by insider selling into their earnings forecasts than other analysts. Meanwhile, compared to related non-star analysts, related star analysts also show a greater tendency to cater to insider selling by making more optimistic earnings forecasts. The tendency of related analysts to cater to insider selling is mainly observed in a subsample of companies from low-marketisation provinces. This study not only supplements the literature on insider trading and analysts' earnings forecasts but also helps us to gain more profound insights into the information-conveying function of insider trading and analysts' tendency to cater to insider trading in their earnings forecasts.

Keywords: Insider Trading, Securities Analysts' Earnings Forecast Bias, Information-Conveying Effect, Related Analyst

JEL classification: D82, G29

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I. Introduction

There have been many studies focusing on analysts' earnings forecast bias (McDonald, 1973; Fried and Givoly, 1982; Givoly, 1985). Some studies find that biased earnings forecasts made by analysts can mislead information users, decrease the usefulness of forecast messages (Michaely and Womack, 1999; Malmendier and Shanthikumar, 2007), and even put pressure on corporate insiders, forcing them to make investments which are harmful to their companies' value in order to meet analysts' forecasts (Fuller and Jensen, 2002). In general, analysts' earnings forecast bias can be classified into two types: (1) cognitive bias, which is prevalent and is the result of analysts' asymmetric reaction to positive and negative information due to the incompleteness of the information they have, the limitation of their ability, and personal emotional factors (DeBondt and Thaler, 1985; Easterwood and Nutt, 1999; Ding *et al.*, 2004; Baik, 2006); (2) incentive bias, which is due to analysts' economic incentives and catering to corporate insiders (Lim, 2001; Hong and Kubik, 2003; Ke and Yu, 2006; Cowen *et al.*, 2006; Beyer and Guttman, 2011). In order to make up for the insufficiency of the corporate private information they have and decrease their cognitive bias in earnings forecasts, analysts may be highly sensitive to companies' public information, especially information about accounting earnings (Merkley *et al.*, 2013). At the same time, in order to grab private benefits, such as easier access to companies' private information, analysts may also release some biased earnings forecasts to meet companies' or corporate insiders' needs.

Corporate insiders (i.e. directors, supervisors, executives) and analysts are considered as two kinds of market participants with information advantages with respect to the prospects of companies. Insiders participate in corporate daily operations or in making key decisions; thus, they certainly have information advantages with respect to the prospects of their companies. Security analysts, as valuation specialists, are more adept than outsiders in analysing companies' operating environment and performance. They collect and analyse information about companies and industries and release earnings forecasts and valuation reports, thereby influencing the fluctuations of stock prices. However, there are some differences in the information advantages possessed by insiders and analysts. Insiders have more firm-specific information than analysts, while analysts have more thorough insights into the macro-environment of companies than insiders. Meanwhile, the quantity of firm-specific information they possess is between that owned by insiders and that owned by common investors (Piotroski and Roulstone, 2005; Hutton *et al.*, 2012). So, how analysts make use of companies' public information to improve the quality of their earnings forecasts becomes a valuable and interesting question. Manne (1966) and Carlton and Fischel (1983) consider insider trading as an information-conveying mechanism which can improve the efficiency of stock markets. They think that insider trading can generate a

“derivative informed trading mechanism” and adjust the stock price to a proper level through this mechanism, thus avoiding great volatility in stock prices once the information is formally published and enhancing the efficiency of markets. Whether insider trading can convey useful information to analysts and help them make more accurate earnings forecasts has also provoked the interest of many scholars. Lustgarten and Mande (1998) find that in the United States, an increase in insider purchasing can reduce analysts' forecast errors and forecast dispersion, while insider selling exerts no significant impact on analysts' forecast errors and dispersion. Sivakumar and Vijayakumar (2001) find that insider trading is significantly associated with adjustments of analysts' earnings forecasts, indicating that it contains value-relevant information.

The Chinese stock market is an emerging market in a transition economy. The securities analyst industry does not have a long history, and the validity of analysts' earnings forecasts is usually low (Guo and Hong, 2009; Wu *et al.*, 2012). Early studies on how corporate information influences analysts' earnings forecasts mainly focus on corporate earnings information (Xue and Wang, 2011; Wang and Wang, 2012), and these studies find that analysts absorb the information implied in earnings announcements and management earnings forecasts when making their earnings forecasts. In recent years, some studies have expanded corporate information sources beyond periodic reports and tested whether analysts use information from the media, such as Weibo (the leading microblog in China which is similar to Twitter), in their forecasts (Zhou *et al.*, 2014; Tan *et al.*, 2015; Hu *et al.*, 2016). However, there is no literature studying whether insider trading influences analysts' earnings forecasts. In China, insider selling has only been permitted for about 10 years. Contrary to the significant abnormal returns with insider purchasing and no significant abnormal returns with insider selling found in developed stock markets, Chinese insiders can earn significant abnormal returns from stock selling but cannot obtain significant abnormal returns from stock purchasing (Zeng, 2008; Zhu, Yao, and Li, 2011). Therefore, we cannot help asking whether analysts use the information implied by insider trading when forecasting corporate earnings in such a special market environment as the China market. If they do, how does insider trading affect their cognitive bias in earnings forecasts? Answers to these questions can help us verify whether insider trading has an information-conveying effect.

On the other hand, when facing conflicts of interest, analysts are likely to lose their independence and objectivity (Bradley *et al.*, 2003; James and Karceski, 2006; Zhang and He, 2008). In the Chinese market, owing to the imperfect law system and lax law enforcement, analysts collude with insiders of listed companies to exploit the interests of minority shareholders.² Empirical studies also find that related analysts tend to give

² One of the most notorious stocks in 2015 in China is Amasoft (stock code: 300380). During the period between 30 April 2014 and 6 May 2014, the company's board chairman Gao Ming and board secretary

optimistic recommendations before insider selling to help insiders gain abnormal returns (Chen *et al.*, 2014; Zhu *et al.*, 2014) and that analysts who give out optimistic recommendations can gain private information after insider selling (Zhu *et al.*, 2014). However, these studies only focus on the collusion of insider selling between insiders and analysts, considering neither insider purchasing nor the information-conveying effect of insider trading on analysts' earnings forecasts.

After analysing the monthly analysts' earnings forecasts of companies whose stocks are traded on the Shanghai or Shenzhen stock exchange, we find that, on the whole, insider trading does not exert a significant effect on analysts' subsequent earnings forecast bias. However, after controlling for the impact of related analysts who may cater to the insider trading, we find that when the scale of insider selling is larger, the analysts' earnings forecasts are less optimistic, while the scale of insider purchasing does not have a significant impact on analysts' forecast bias. This indicates that insider selling conveys a signal about a company's future performance to analysts, while insider purchasing does not. This result is consistent with prior findings that insider selling produces significant abnormal returns while insider purchasing does not (Zeng, 2008; Zhu, Yao, and Li, 2011). However, to related analysts, this information-conveying effect does not exist. Instead, when the scale of insider selling is larger, their earnings forecasts are more optimistic. This indicates that insider selling has an information-conveying effect to unrelated analysts while related analysts have a tendency to cater to insider selling when making forecasts. Further analysis reveals that the information-conveying effect of insider selling is significantly influenced by the personal ability of analysts. More specifically, after controlling for the impact of related analysts, star analysts do better at absorbing the information conveyed by insider selling than other analysts to reduce the over-optimism of their earnings forecasts. Meanwhile, related star analysts are more likely to cater to insider selling than related non-star analysts by making more optimistic earnings forecasts. What is more, related analysts' catering to insider selling mainly happens in the subsample of companies from low-marketisation provinces, which indicates that the catering action of related analysts is more significant in a low-transparency environment.

The main contributions of this paper are as follows. First, it studies the information-conveying effect of insider trading on analysts' earnings forecasts in China for the first time, further supporting the positive effect of insider trading on Chinese stock markets. Second, it is a supplement to and expansion of the foreign literature about insider trading and analysts' earnings forecasts, providing results contrary to those found in mature

Cao Feng colluded with the analysts affiliated to one broker to "promote the stock". They preached the bright future of the company's internet finance business without any actual business in process, boosting its stock price from less than RMB30 at the beginning of May 2014 to RMB474 on 13 May 2015, and the company became the stock with the highest price among A-share companies. After that, its stock price fell back to about RMB40 per share, creating big losses for most minority shareholders.

markets: that is, it is insider selling that mainly conveys information to analysts' earnings forecasts in Chinese markets, while it is insider purchasing that mainly conveys information in mature markets. In addition, this study enriches the research on the impact of the ability of analysts and the external environment on the information-conveying effect. Finally, this paper finds that insider trading has opposite effects on related analysts' earnings forecasts and unrelated analysts' earnings forecasts, helping investors to better understand analysts' earnings forecasts.

II. Literature Review and Hypothesis Development

2.1 Information Content of Insider Trading and the Bias of Analysts' Earnings Forecasts

In developed securities markets, insider trading can earn both short-term significant profits and medium- to long-term abnormal returns. Besides, on the whole, the abnormal returns of insider trading mainly exist in insider purchasing, with no significant abnormal returns or much lower abnormal returns in insider selling (Gregory *et al.*, 1994; Pettit and Venkatesh, 1995; Lakonishok and Lee, 2001). There are two main points of view explaining the reason why abnormal returns of insider trading exist: the mispricing hypothesis and the information advantage hypothesis. According to the mispricing hypothesis, insiders take the chance of corporate stocks being mispriced to do reverse trading and gain profits, and insider trading is a timing action based on the price inertia of the stock market, but it does not convey information about future corporate value. Many studies have proved that insiders can recognise and take the chance when the stocks of their companies are mispriced, selling the stocks when they are overpriced and purchasing the stocks when they are underpriced, and, as a result, gaining significant abnormal returns (Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005). According to the information advantage hypothesis, insiders gain abnormal returns by making use of their information advantages, which means that they trade stocks on the basis of their private information about future corporate value, purchasing stocks when they believe that corporate value will increase and selling stocks when they believe that corporate value will decrease. For instance, Elliot *et al.* (1984) find that insiders increase (decrease) the quantity of stocks they purchase (sell) during the 12-month period before good news is published. Similarly, Ke *et al.* (2003) find that stock sales by insiders increase three to nine quarters prior to a break in a string of consecutive increases in quarterly earnings. In fact, these two hypotheses do not conflict. Finding mispricing chances for reverse trading should also be based on inferences about corporate value. Only long-term deviation from basic value can lead to mean reversion (De Bondt and Thaler, 1985). Insiders' valuation advantage is also a kind of information advantage because they have a more profound understanding of companies than outsiders. Lakonishok and Lee

(2001) find that although insiders are typical “strategic contrarians”, their ability to predict future market returns is better overall than the simple reverse transaction effect. In general, the abnormal returns of insider trading come from both insiders’ timing ability in the reverse transaction strategy and their information advantage with regard to corporate value (Piotroski and Roulstone, 2005).

The legalisation of insider selling in the open market began in 2006 in China. It has been proved that insider trading can earn abnormal returns. However, contrary to the fact that in developed markets, insider purchasing can earn abnormal returns while insider selling earns no abnormal returns or much lower abnormal returns than insider purchasing, in China, insider selling can earn significant abnormal returns, while insider purchasing earns no significant abnormal returns or much lower abnormal returns than insider selling. For example, using a sample of insider trading of companies listed on the Shanghai or Shenzhen stock exchange, Zeng (2008) finds that insiders can earn significant cumulative abnormal returns of 2.25% in the (1, 20) window after they sell stocks. However, they cannot earn significant abnormal returns in the same window after they purchase stocks. Zhu, Yao, and Li (2011) use a sample of insider trading from companies listed on the Shanghai or Shenzhen stock exchange and find that insiders can earn a significant cumulative abnormal return of 11.13% for the 6 months after they sell stocks but no significant abnormal return for the 6 months after purchasing stocks. After being classified according to trading scale, both large- and small-scale insider stock selling can earn cumulative abnormal returns of about 10%, but small-, medium-, and large-scale insider stock purchasing can earn cumulative abnormal returns of -5.56% (significant), -0.99% (insignificant), and 3.45% (significant), respectively. Zeng and Zhang (2013) also find that after controlling for the effect of reverse transactions, insider trading has significant predictive ability with respect to the medium- to long-term abnormal returns of their companies’ stocks. Zhu, Yao, and Li (2011) find preliminary evidence that insiders make full use of their information advantages when trading. In a word, these studies all show that insider trading in China, especially insider selling, has a lot of information content.

There is no Chinese literature about how insider trading affects analysts’ earnings forecasts, but some studies have proved that analysts’ earnings forecasts are more accurate than statistical models in China (Fang, 2007; Yue and Lin, 2008). Analysts’ information research activities can increase the information content of stock prices and produce more corporate fundamental information, boosting the efficiency of the capital market. Shi *et al.* (2007) find that the predictability of corporate earnings, the degree of earnings management, the fluctuation of earnings, the speed of corporate expansion, and corporate size can significantly influence the optimism and pessimism of analysts in earnings forecasting. Zhou *et al.* (2014), Tan *et al.* (2015), and Hu *et al.* (2016) find that increasing attention to companies by the media and the creation of an official Weibo account can help analysts

correct their forecast bias. These studies indicate that Chinese analysts absorb corporate information both from accounting performances and other media coverage to reduce the cognitive bias of earnings forecasts in order to improve forecast quality.

Theoretically, if insider trading conveys information about corporate value or future corporate performance, the disclosure of insider trading can reduce the information asymmetry between analysts and company insiders, thus influencing analysts' earnings forecasts and reducing the cognitive bias of earnings forecasts. Studies have found that when analysts revise their forecasts following insider trading, especially when the direction of their forecast revision is the same as that conveyed by insider trading, the market reacts more significantly (Jin *et al.*, 2013), which means that investors believe that analysts can recognise and absorb the signal conveyed by insider trading correctly to revise their earnings forecasts. The above studies have proved that Chinese insider trading, especially insider selling, has considerable information content. In this paper, the short-window abnormal returns of a sample of insider trading also prove this result.³ It is proved that analysts can recognise and absorb corporate accounting information to enhance their earnings forecast ability. Therefore, we predict that insider trading, especially insider selling, can influence analysts' forecasting, and so we propose the first hypothesis of this paper as follows:

H1: When the scale of insider purchasing (selling) is larger, analysts' earnings forecasts are more (less) optimistic and insider selling has a larger impact on analysts' earnings forecasts than insider purchasing.

However, the bias of analysts' earnings forecasts is not only influenced by their cognitive ability but also by their subjective incentive. Yuan and Huang (2007), Pan *et al.* (2011), Cao and Zhu (2011), and Zhao *et al.* (2013) have explained that the optimistic bias of analysts' earnings forecasts or stock recommendations in China is motivated by the dealer business of brokers, the investment banking business of brokers, and the preference of their management, respectively. Cai *et al.* (2015) find that companies have strong incentives to manipulate the media to gain abnormal returns when an important event happens, indicating that there is collusion between companies and the media indirectly. Chen *et al.* (2014) find that when interest-related analysts give out more optimistic stock recommendations, insiders are more likely to sell stocks and gain abnormal returns. Zhu *et*

³ We calculate the cumulative abnormal return (CAR) with the market model for the windows of (1, 5), (1, 10), and (1, 20). In order to control for the trading direction, we multiply the CAR of executive selling by -1. There is no significant difference between the CAR of insider purchasing and that of insider selling in terms of mean value test, while the median test shows that the CARs of insider selling are significantly larger than those of insider purchasing. Due to the fact that all the CAR values are not normally distributed, the result of the non-parametric test (median test) is more scientific and reliable.

al. (2014) find that analysts release optimistic stock recommendations in their reports intensively before insider selling and that the scale of insider selling is positively related to the number of analysts' optimistic recommendations; as a result, insiders obtain abnormal returns, while the analysts gain more private information in the future. Therefore, related analysts probably lose their independence when facing conflicts of interest and release "executive-preferred" but "reality-deviated" earnings forecasts to gain private information or other personal interests (Francis and Philbrick, 1993; Lim, 2001; Ke and Yu, 2006; Mayew, 2008). In recent years, insider selling has been a sensitive topic that has attracted intense attention from all parties in the stock markets. On the one hand, a small number of insiders make use of their information advantages to sell large quantities of their stocks and even to cash out maliciously, causing market panic and eventually leading to more strict market regulations.⁴ On the other hand, insiders do not want to cause market doubts when they sell stocks due to pressure from regulators. Therefore, they need a supportive environment for insider trading, especially for insider selling. For instance, they may need a certain "third party" to implicitly claim that their stock selling is not a bad signal. In summary, we think that the information-conveying effect of insider trading on analysts' earnings forecasts may not exist when analysts are "interest-related" to companies. Instead, they are more likely to release more (less) optimistic earnings forecasts after insiders sell (purchase) companies' stocks to create a more supportive environment for insider trading. Therefore, we put forward the second hypothesis as follows:

H2: When the scale of insider purchasing (selling) is larger, related analysts' earnings forecasts are less (more) optimistic.

2.2 Insider Trading, Analysts' Ability, and the Bias of Analysts' Earnings Forecasts

It has been proved that the accuracy of analysts' earnings forecasts is related to the capability of analysts. For example, Stickel (1992) finds that the star analysts elected by *Institutional Investors* forecast earnings more accurately than other analysts and that the market reaction to the forecast revisions of star analysts is stronger than the market reaction to the forecast revisions of other analysts. Brown and Chen (1991) also find that star analysts' forecasts are better than the simple average performance of the entire sample. Clement (1999) finds that the accuracy of analysts' earnings forecasts is significantly positively related to the experience of analysts (a proxy for ability and technique) and the

⁴ For example, the CSRC enacted *Several Provisions for the Stock Sales of Shareholders, Directors, Supervisors and Executives of Listed Companies* (CSRC Announcement [2017] No. 9) to replace *Several Provisions for the Stock Sales of Major Shareholders, Directors, Supervisors and Executives of Listed Companies* (CSRC Announcement [2016] No.1), which was put into effect one and half years ago, imposing stricter restrictions on insider selling.

size of the employers of analysts (a proxy for availability of relevant sources). Li (2012) comparatively studies the earnings forecasts of the “best analysts” elected by *New Fortune* and those of other analysts and finds that the former’s earnings forecasts are more accurate than those of the latter, indicating that the forecasting ability of the “best analysts” is better than that of other analysts. Their enhanced forecasting capability may be due to their greater ability to analyse and interpret the public information of companies, but it may also be due to the fact that they have more private information sources. Therefore, would different analysts have different reactions to insider trading? We suppose that if all analysts have the same information set, star analysts would interpret the information conveyed by insider trading more accurately and better incorporate it into their earnings forecasts given that they are more sensitive to and have a greater ability to analyse such information. On the other hand, since star analysts have a stronger ability to collect and handle information and are from big brokers with more available sources, they can get more non-public information. Yin and Jiang (2013) study the adjustments to analyst ratings and find that star analysts provide the market with more firm-specific information than non-star analysts. Star analysts may have obtained the information conveyed by insider trading from other channels, and so they rely less on the information conveyed by insider trading when forecasting. However, information conveyed by insider trading is more useful to non-star analysts when they infer corporate future value from it. Thus, we put forward two competitive hypotheses as follows:

H3a: After controlling for the effect of related analysts, compared to non-star analysts, star analysts’ earnings forecast bias is more significantly influenced by insider trading.

H3b: After controlling for the effect of related analysts, compared to non-star analysts, star analysts’ earnings forecast bias is less significantly influenced by insider trading.

When testing the relationship between analysts’ interest relations and the quality of their reports, Wu *et al.* (2013) find that star analysts cannot remain independent in these complicated interest relationships. In order to keep the relationships, star analysts are more inclined to release more optimistically biased stock recommendations than other analysts. So, compared to unrelated non-star analysts, are related star analysts more inclined to release earnings forecasts to cater to corporate insiders after their transactions? For corporate insiders, analysts having a higher reputation means that their evaluation of listed companies have greater influence (Stickel, 1992, 1995; Loh and Stulz, 2011; Yu *et al.*, 2008). Therefore, corporate insiders also have an incentive to keep a good relationship with their related analysts and to require related star analysts to release earnings forecasts in their interests when it is necessary. On the other hand, in China, due to the “limited attention” of

institutional investors, the relationships between analysts and listed companies, the brokers to which they are affiliated, and institutional investors such as funds play a decisive role in determining the results of star analyst elections (Wu *et al.*, 2013; Wu *et al.*, 2016). As a result, star analysts are more inclined to cater to corporate insiders with their favourite earnings forecasts in order to benefit the long-term development of their career. What is more, in the emerging Chinese market, the risk of violating regulations is still low and the cost of violation is much less than its benefit (Li *et al.*, 2008). Thus, the reputation mechanism only plays a limited role in mitigating the conflicts of interest faced by analysts (Li and Shen, 2010; Mola and Guidolin, 2009). Meng *et al.* (2015) find that star analysts participate more in market manipulation in terms of short selling. According to the evidence above, we put forward the fourth hypothesis as follows:

H4: When the scale of insider purchasing (selling) is larger, related star analysts are less (more) optimistic in their earnings forecasting than related non-star analysts.

2.3 Insider Trading, Marketisation, and the Bias of Analysts' Earnings Forecasts

Different from developed countries such as the United States and European countries, in China, the development of marketisation is extremely unbalanced. The level of marketisation varies widely among the different regions of China (Xia and Chen, 2007). Marketisation can influence corporate external environments by affecting the administration, legislation, and other regulations of the regions where companies are located and can further affect the transparency of companies' information disclosure and the value of private information. More specifically, low-marketisation regions are typically characterised by the underdevelopment of legislation and regulation, over-interference by the government, and the lax oversight of information disclosure. All of these would worsen the information asymmetry between outside investors and corporate insiders. In contrast, in higher-marketisation regions, since there is less government intervention, the degree of government protection is low and market competition is relatively fairer. Companies are more likely to disclose more information about themselves to enhance the confidence of investors or the transparency of disclosure (Li and Liu, 2016).

If the operating environment of companies is constant, the accuracy of analysts' earnings forecasts depends on the amount of information available, which means that the worse the information asymmetry is, the more difficult it is for analysts to forecast future earnings accurately. Using the Shenzhen Stock Exchange's annual assessment results of information disclosure quality as an index for information transparency, Fang (2007) and Bai (2009) both find that the more transparent a company's information disclosure is, the more accurate analysts' forecasts about its earnings are. Li and Jia (2009) find that the

earnings quality of financial reports and the macro institutional environment can both impact analysts' forecasting significantly. The higher the quality of earnings and the better the macro institutional environment, the more accurate analysts' earnings forecasts are. Liu and Peng (2012) find that after the implementation of the Fair Disclosure Regulation of the Shenzhen Stock Exchange, the accuracy of analysts' earnings forecasts, especially those about companies with a low level of information disclosure, decreases significantly, indicating that analysts in China may use private information to a certain extent. All of these studies indicate that information quality and the information disclosure environment affect the access of analysts to corporate information.

If insider trading is an effective information-conveying mechanism, then its disclosure can reduce the information asymmetry between analysts and insiders. However, the information content of insider trading can vary with the external environment in which a company is located. For one thing, in a high-marketisation environment, the information about corporate future value conveyed by insider trading may have already been made public by timely relevant disclosure, so analysts' earnings forecasting relies less on insider trading compared to the case of low marketisation. Thus, the lower the level of a region's marketisation, the more significant the information-conveying effect will be. On the other hand, the degree of marketisation can affect the subjective incentive of insider trading. Specifically, the higher the level of marketisation, the more disciplined and reasonable the insider trading will be. Insiders are more likely to trade due to a need for capital or to manage their capital rather than speculate on the basis of their private information. In contrast, a lower level of marketisation means weak legal awareness, so insiders are more motivated to trade using their private information, resulting in more information content in trading. Accordingly, we propose the fifth hypothesis as follows:

H5: After controlling for the impact of related analysts, the positive (negative) relationship between the scale of insider purchasing (selling) and the optimistic bias of analysts' earnings forecasts is more significant in low-marketisation regions than in high-marketisation regions.

Meanwhile, since information asymmetry is severer in low-marketisation regions, private information can bring more benefits to related analysts. Therefore, related analysts have a stronger motivation to cater for corporate insiders when forecasting earnings so that they can obtain private information continuously. What is more, the underdeveloped legislation and the lax regulation of information disclosure in low-marketisation regions also provide favourable conditions for collusion between related analysts and corporate insiders. Thus, we develop the sixth hypothesis as follows:

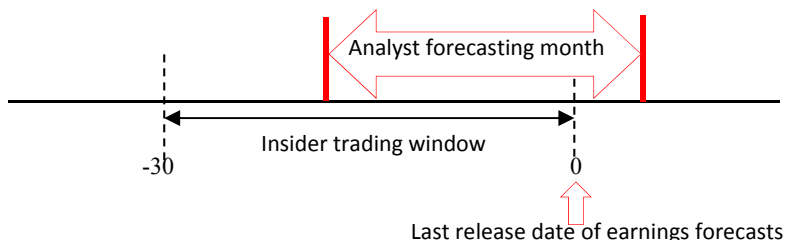
H6: The negative (positive) relationship between the scale of insider purchasing (selling) and the optimistic bias of related analysts' earnings forecasts is more significant in low-marketisation regions than in high-marketisation regions.

III. Research Design

3.1 Sample and Data

Given the fact that the China Securities Regulatory Commission (CSRC) enacted a regulation in April 2007 which requires listed companies to disclose insider trading information from May 2007, we choose monthly analysts' forecasts for the current-year earnings of Chinese A-share companies during the period from July 2007 to December 2013 as our study sample.⁵ Each month covering the event of analysts' release of earnings forecasts is an observation of the sample. Given that the disclosure of insider trading may be lagged and that analysts need time to finish their earnings forecast reports, we study how analysts' earnings forecasts are affected by insider trading within 30 days prior to the release of these forecasts.⁶ Defining the last release date of analysts' earnings forecasts every month as the base date 0, the 30-day period before it, that is, the (-30, -1) window, is defined as the testing window of insider trading (as shown below).

Figure 1 Testing Window Diagram



Using data from the China Stock Market and Accounting Research (CSMAR) database, we obtain an initial sample of 61,831 monthly analysts' earnings forecasts. Then, we delete the observations belonging to financial firms and the observations whose equity is negative and whose relevant data are missing. In order to avoid the noises from the overlapping insider trading window caused by too short intervals between the release dates of analysts' earnings forecasts in two adjacent months, we delete the observations where the interval

⁵ Given that companies are required to disclose annual reports in the first quarter of the following year and that analysts may release current-year earnings forecasts after a company's balance sheet date but before the disclosure of its annual report, our sample period is from January of the forecasted year to the month in which the annual reports of the forecasted year are disclosed in the following year.

⁶ The insider trading within the 30-day window is the insider trading disclosed in that window. In order to keep the timeliness of insider trading information, we require that the interval between the trading date and the disclosure date of the insider trading in our sample cannot be longer than 30 days.

between the last release date of analysts' earnings forecasts in the current month and that in the immediate preceding month is less than 20 days. At the same time, in order to avoid the noises from sporadic analysts' earnings forecasts, we delete the observations where the interval between the last release date of analysts' earnings forecasts in the current month and that in the latest preceding month in which there are analysts' earnings forecasts is more than 180 days.⁷ Finally, we get a valid sample containing 47,037 observations.

Insider trading refers to the stock trading through the secondary market conducted by corporate directors, supervisors, and executives. Such data are manually collected from the official websites of the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Unless specified otherwise, all other data come from the CSMAR database. In order to reduce the influence of outliers, all continuous variables are winsorised at 1% and 99%.

3.2 Empirical Model and Variable Definitions

Given that the object of this paper is the bias of analysts' monthly earnings forecasts, we construct the following empirical model, referring to the models in Wang and Wang (2012):

$$FC = \alpha + \beta_1 BUY + \beta_2 BUY_RELATED + \beta_3 SELL + \beta_4 SELL_RELATED + \beta_5 RELATED + \beta_6 TOPI + \beta_7 INSTITU + \beta_8 PB + \beta_9 MV + \beta_{10} ROECHG + \beta_{11} HORIZON + \beta_{12} SH + \beta_{13} LOSS + \sum \delta_k INDU_k + \sum \theta_i YEAR_i + \varepsilon$$

Dependent variables: *FC* is the bias of analysts' monthly earnings forecasts. This paper uses *FC_MEAN* and *FC_MEDIAN* to measure this bias. The definitions of all the variables in the model are explained in Table 1. When testing hypotheses 3a, 3b, and 4, we define the "annual best analysts" elected by *New Fortune* magazine as the analysts with better analytical ability (i.e. star analysts); other analysts are defined as non-star analysts. We examine the bias of star analysts' earnings forecasts and non-star analysts' earnings forecasts, respectively.⁸ When testing hypotheses 5 and 6, we use the marketisation index of China's provinces in the *NERI INDEX of Marketisation of China's Provinces 2011 Report* (Fan *et al.*, 2011) as the measurement of the degree of marketisation.⁹

⁷ There is no significant change in results if the two interval requirements are adjusted to 10 days and 90 days respectively.

⁸ Given that the forecasting ability of star analysts is better than that of non-star analysts (Li, 2012), in order to reduce the impact of star analysts' forecasts on those of non-star analysts, the observation is classified into the star analyst group if it contains earnings forecasts released by both star analysts and non-star analysts. Therefore, the non-star analyst group only contains the observations with the earnings forecasts released by non-star analysts.

⁹ The benchmark chosen to classify the high- and low-marketisation groups is the median of the marketisation index of observations in the same year and the same industry. If the marketisation index of the province in which an observation is found in a year is higher than its benchmark, then the observation is classified into the high-marketisation subsample; otherwise, it is classified into the low-marketisation subsample. It is noteworthy that the INDEX update was paused from 2012 and that the marketisation

Independent variables: *BUY (SELL)* is the variable measuring the scale of insider net purchasing (selling) within 30 days prior to the last release date of earnings forecasts (i.e. the “insider trading window” shown in Figure 1). *BUY_RELATED (SELL_RELATED)* is the variable measuring the scale of insider net purchasing (selling) within 30 days prior to the last release of the related analysts’ earnings forecasts. In this paper, we define related analysts as the analysts affiliated to the underwriters of the company’s IPO or SEO. According to hypotheses 1 and 2, we predict that *BUY(SELL)* and *FC* are positively (negatively) related while *BUY_RELATED (SELL_RELATED)* and *FC* are negatively (positively) related.

Control variables: *Top1* stands for the shareholding ratio of the first block shareholder. *INSTITU* stands for the shareholding ratio of institutional investors. *MB* is the market to book ratio. *MV* stands for corporate size and is the natural logarithm of the firm’s market value. *ROECHG* is the change in return on equity. *HORIZON* is the interval between the date of earnings forecast release and the balance sheet date. *SH* is a dummy variable standing for which stock exchange the stock is listed on. *LOSS* is a dummy variable standing for the situation when the company is at a loss. *INDU* is a series of dummy variables standing for the industry in which the firm is located, and *YEAR* is a series of dummy variables standing for the year when earnings forecasts are made.

Ownership structure is an important factor influencing the level of corporate governance and information transparency. In general, high ownership concentration and low institutional holdings are accompanied by a lot of corporate governance problems and a high degree of information asymmetry, thereby affecting analysts’ earnings forecasting. We control for *MB* because it represents the growth opportunities and the valuation level of companies. What is more, companies that have a greater growth opportunity are usually faced with higher operating risks and greater earnings uncertainty, so analysts are more conservative when forecasting. Large-size companies usually operate stably and are unlikely to cause over-optimism among analysts. Thus, company size may be negatively related to the dependent variable. The more distant the forecasting dates are from the balance sheet date of the year when the earnings are forecasted, the more likely analysts are to be optimistic about the company’s future, resulting in more optimistic earnings forecasts. Therefore, we control for the interval between the two dates. Owing to the different regulatory systems and different regulatory strengths, the corporate information quality of companies listed on different stock exchanges may be different, and so we control for the stock exchange where companies are listed. What is more, companies with negative earnings may be influenced by asset restructuring or earnings management. The uncertainty of their earnings is significantly larger than that of profitable companies. So, we include a dummy variable standing for loss in the model. Finally, we control for the effect of industries in which companies are engaged and years when forecasts are made.

indexes of year are available only from 1997 to 2009. Therefore, we use the 2009 index as a proxy for those years after 2009.

Table 1 Definitions of Variables

Variable	Definition
<i>FC_MEAN</i> (<i>FC_MEDIAN</i>)	Earnings forecast bias 1 (bias 2): calculated by the difference between the company's mean (median) of earnings per share (EPS) forecasted by all analysts in a month and its actual EPS of the year forecasted divided by the absolute value of the actual EPS of the year forecasted.
<i>RELATED</i>	Relation dummy variable: If any one of the analysts releasing earnings forecasts of a company in the month is affiliated to the brokers who have been the underwriters for the IPO or SEO of that company before, then the observation is defined as being related and <i>RELATED</i> is set to 1; otherwise, it is set to 0.
<i>BUY</i>	The scale of the cumulative net stock purchasing of corporate insiders prior to the release of analysts' earnings forecasts: When the insider trading shows as net stock purchasing (i.e. the cumulative stock purchase amount > the cumulative stock sales amount) during the 30 days prior to the last release date of earnings forecasts in the month, <i>BUY</i> is the natural logarithm of the amount of insiders' cumulative net stock purchasing; otherwise, <i>BUY</i> takes the value of 0.
<i>BUY_RELATED</i>	The scale of the cumulative net stock purchasing of corporate insiders prior to the last release of the related analysts' earnings forecasts in the month: When the insider trading shows as net stock purchasing during the 30 days prior to the last release date of earnings forecasts in the month and <i>RELATED</i> is 1, <i>BUY_RELATED</i> is the natural logarithm of the amount of insiders' cumulative net stock purchasing; otherwise, <i>BUY_RELATED</i> takes the value of 0.
<i>SELL</i>	The scale of the cumulative net stock selling of corporate insiders prior to the release of analysts' earnings forecasts: When the insider trading shows as net stock selling (i.e. the cumulative stock purchase amount < the cumulative stock sales amount) during the 30 days prior to the last release date of earnings forecasts in the month, <i>SELL</i> is the natural logarithm of the amount of insiders' cumulative net stock sales; otherwise, <i>SELL</i> takes the value of 0.
<i>SELL_RELATED</i>	The scale of the cumulative net stock selling of corporate insiders prior to the release of related analysts' earnings forecasts: When the insider trading shows as net stock selling during the 30 days prior to the last release date of earnings forecasts in the month and <i>RELATED</i> is 1, <i>SELL_RELATED</i> is the natural logarithm of the amount of insiders' cumulative net stock sales; otherwise, <i>SELL_RELATED</i> takes the value of 0.
<i>TOPI</i>	The shareholding ratio of the biggest shareholder at the beginning of the forecasted year
<i>INTSTITU</i>	The shareholding ratio of the institutional investors at the beginning of the forecasted year
<i>MB</i>	Market-to-book ratio: the ratio of a company's market value to its book value of equity at the beginning of the quarter when the forecasts are released
<i>MV</i>	The size of the company: the natural logarithm of the company's market value of common stock at the beginning of the month when forecasts are released
<i>ROECHG</i>	The performance change: the difference between the return on equity (ROE) of the most recent periodic report before the month with analyst forecasting and that of the same period last year. Given that the data of different quarterly reports are incomparable, we do some adjustments to the differences: multiplying the differences of the first-quarter reports by 4, the differences of the second-quarter reports by 2, and the differences of the third-quarter reports by 4/3 and leaving the differences of annual reports as they are. If there is no disclosure of periodic reports within 212 days (the maximum interval between the disclosure of two consecutive periodic reports, i.e. the interval between the disclosure of the third-quarter report and the annual report) before the last release date of earnings forecast in the month, <i>ROECHG</i> is set to 0.
<i>SH</i>	Dummy variable for place of listing: it is set to 1 if the company is listed on the Shanghai Stock Exchange and 0 otherwise.
<i>HORIZON</i>	Days in advance of forecasting: the natural logarithm of the interval of days between the last release date of earnings forecast in the month and 31 December (i.e. the Balance Sheet date) of the forecasted year. If a forecast is released after 31 December and before the annual report disclosure, then <i>HORIZON</i> is multiplied by -1.
<i>LOSS</i>	Dummy variable for loss: it is set to 1 when the net income of the company is negative and 0 otherwise.
<i>INDU</i>	Dummy variables for industry: set the corresponding number of industry dummies according to the 2001 Industry Classifications provided by CSRC, except for using 2-digit codes for the manufacturing industry and 1-digit codes for other industries.
<i>YEAR</i>	Dummy variables for year: set the corresponding number of forecasted year dummies.

IV. Empirical Tests

4.1 Descriptive Statistics

Table 2 shows the distribution of the main variables in the model. The mean (median) of *FC_MEAN* is 0.664 (0.133) and the mean (median) of *FC_MEDIAN* is 0.656 (0.129), which are both greater than 0, indicating that analysts' earnings forecasts are optimistic on the whole, or in other words, the forecasted values are greater than the actual values. This finding is consistent with the systemic optimistic bias of analysts discovered by the existing literature. *BUY* and *SELL* stand for the mean of the natural logarithm of the net stock purchase and the net stock sales of corporate insiders in the month with analyst forecasting, respectively. After analysing the original transaction data statistically, among the observations with insider trading, the mean (median) stock purchase of corporate insiders in the 30 days prior to analyst forecasting is RMB12.5 million (RMB949,000) and the mean (median) stock sales is RMB12.905 million (RMB2.612 million). The mean of the relationship dummy variable *RELATED* is 0.15, indicating that in 15% of the observations, the analysts who release earnings forecasts are interest-related to respective listed companies. The interpretation of other variables is omitted for brevity.

Table 2 Descriptive Statistics of the Main Variables (N=47,037)

	Mean	Std. Deviation	Min	Median	Max
<i>FC_MEAN</i>	0.664	1.813	-0.556	0.133	13.52
<i>FC_MEDIAN</i>	0.656	1.788	-0.564	0.129	13.27
<i>BUY</i>	0.103	1.204	0	0	21.01
<i>BUY_RELATED</i>	0.017	0.483	0	0	17.76
<i>SELL</i>	0.371	2.315	0	0	20.49
<i>SELL_RELATED</i>	0.050	0.854	0	0	19.08
<i>RELATED</i>	0.150	0.357	0	0	1
<i>TOP1</i>	0.383	0.157	0.088	0.375	0.759
<i>INSTITU</i>	0.067	0.053	0	0.057	0.235
<i>MB</i>	3.942	2.595	0.776	3.248	14.770
<i>MV</i>	22.660	1.032	20.790	22.510	26.190
<i>ROECHG</i>	-0.002	0.083	-0.304	0	0.328
<i>SH</i>	0.416	0.493	0	0	1
<i>HORIZON</i>	3.571	3.209	-4.522	4.905	5.869
<i>LOSS</i>	0.022	0.147	0	0	1

Table 3 presents the Pearson correlation coefficients among the main variables in the model. As shown in the table, the earnings forecast bias *FC_MEAN* (*FC_MEDIAN*) is negatively related to the scale of insider selling, *SELL*, at the 10% significance level,

Table 3 Pearson Correlation Coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 <i>FC_MEAN</i>	1														
2 <i>FC_MEDIAN</i>	0.997	1													

3 <i>BUY</i>	-0.009	-0.009	1												
	*	*													
4 <i>BUY_RELATED</i>	-0.004	-0.004	0.399	1											

5 <i>SELL</i>	-0.008	-0.008	-0.014	-0.006	1										
	*	*	***	***											
6 <i>SELL_RELATED</i>	0.001	0.001	-0.005	-0.002	0.361	1									
			***	***	***										
7 <i>RELATED</i>	-0.023	-0.024	0.004	0.085	-0.007	0.139	1								
	***	***	***	***	***	***									
8 <i>TOP1</i>	-0.034	-0.035	-0.012	0.007	-0.069	-0.019	0.055	1							
	***	***	***	***	***	***	***								
9 <i>INSTITU</i>	-0.022	-0.021	0.03	0	0.026	0.015	0.026	-0.211	1						
	***	***	***	***	***	***	***	***							
10 <i>PB</i>	-0.013	-0.012	-0.005	-0.013	0.074	0.027	-0.048	-0.044	0.223	1					
	***	***	***	***	***	***	***	***	***						
11 <i>MV</i>	-0.034	-0.035	0.018	0.043	-0.034	0.001	0.218	0.316	0.004	0.095	1				
	***	***	***	***	***	***	***	***	***	***					
12 <i>ROECHG</i>	-0.058	-0.058	0.002	0.008	0	0.002	-0.003	0.003	0.058	0.196	0.019	1			
	***	***	***	*					***	***	***	***			
13 <i>SH</i>	-0.012	-0.013	-0.001	0.004	-0.074	-0.031	0.086	0.164	0.062	-0.06	0.349	0.03	1		
	**	***	***	***	***	***	***	***	***	***	***	***	***		
14 <i>HORIZON</i>	0.162	0.163	-0.012	-0.002	-0.027	-0.011	0.049	-0.007	-0.018	-0.004	-0.037	0.002	0.003	1	
	***	***	**	***	***	**	***	***	***	***	***	***	***	***	
15 <i>LOSS</i>	0.038	0.036	-0.011	-0.005	-0.017	-0.004	-0.007	0.016	-0.069	-0.005	0.003	-0.009	0.039	0.001	1
	***	***	**	***	***	***	***	***	***	***	**	**	***	***	***

Note: In this table and all other tables in this paper, ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

indicating that the insider selling before analysts' earnings forecasting can reduce their optimism in earnings forecasting significantly. *FC_MEAN* (*FC_MEDIAN*) is significantly negatively related to *TOPI*, *INSTITU*, *MB*, and *MV*, indicating that a higher shareholding ratio of the biggest shareholder, a higher shareholding ratio of the institutional investors, a higher *MB* ratio, and a larger company size are accompanied by less optimism in analysts' earnings forecasts. Contrary to our expectation, *FC* is significantly negatively related to *ROECHG*, which means that a larger difference in *ROE* between the most recent reporting period before forecasting and the same period the previous year leads to less optimism in analysts' earnings forecasts. This indicates that analysts are more conservative about the future performance of companies that have experienced high earnings growth recently. Other control variables also have some correlations, but their correlation coefficients are small. There is no significant multiple-collinearity among the variables.

4.2 Regression Tests

4.2.1 Tests of Hypothesis 1 and Hypothesis 2

Table 4 presents how the scale of the stocks purchased and sold by corporate insiders affects analysts' earnings forecast bias. Columns (1) and (2) test the effect of the scale of cumulative net stock purchase (*BUY*) and cumulative net stock sales (*SELL*) by corporate insiders prior to analyst forecasting on analysts' earnings forecast bias (*FC_MEAN* and *FC_MEDIAN*), respectively. On the whole, both the scale of the stocks purchased and sold by corporate insiders exert no significant effect on analysts' earnings forecast bias. Columns (3) and (4) add the scale of the stocks purchased and sold by corporate insiders when analysts are interest-related to the companies (*BUY_RELATED* and *SELL_RELATED*) into the model, besides the variables in columns (1) and (2). The results show that the scale of insider purchasing prior to analyst forecasting (*BUY*) still has no significant relationship with the dependent variable, while the scale of insider selling prior to analyst forecasting (*SELL*) is negatively related to the dependent variable at the 10% significance level, indicating that when the influence of the interest-related relations between analysts and companies is controlled for, insider purchasing does not have significant impact on analysts' earnings forecast bias; however, when the scale of insider selling is larger, analysts' earnings forecasts are less optimistic. In other words, the results show that insider selling conveys negative information about the future performance of the companies to analysts. Thus, Hypothesis 1 is partially proved. This result is contrary to the findings in developed countries; for instance, Lustgarten and Mande (1998) find that insider purchasing can reduce analysts' earnings forecast errors while insider selling cannot. However, the result is consistent with the finding that in China, insider selling can earn abnormal returns while insider purchasing produces no significant abnormal returns (Zeng, 2008; Zhu, Yao, and Li, 2011).

Table 4 Effect of Insider Trading on Analysts' Earnings Forecast Bias

Variables	(1)	(2)	(3)	(4)
	<i>FC MEAN</i>	<i>FC MEDIAN</i>	<i>FC MEAN</i>	<i>FC MEDIAN</i>
<i>BUY</i>	-0.008 (-1.536)	-0.008 (-1.477)	-0.01 (-1.478)	-0.01 (-1.431)
<i>BUY_RELATED</i>			0.000 (0.340)	0.010 (0.370)
<i>SELL</i>	-0.004 (-1.020)	-0.004 (-1.021)	-0.007* (-1.798)	-0.007* (-1.783)
<i>SELL_RELATED</i>			0.022*** (2.660)	0.021** (2.560)
<i>RELATED</i>	-0.124*** (-4.146)	-0.127*** (-4.291)	-0.133*** (-4.374)	-0.135*** (-4.509)
<i>TOPI</i>	-0.426*** (-2.959)	-0.423*** (-2.984)	-0.426*** (-2.964)	-0.424*** (-2.988)
<i>INSTITU</i>	-0.505 (-1.193)	-0.472 (-1.133)	-0.510 (-1.194)	-0.470 (-1.133)
<i>MB</i>	0.014 (1.547)	0.014 (1.580)	0.010 (1.540)	0.010 (1.580)
<i>MV</i>	-0.040 (-1.642)	-0.040* (-1.692)	-0.040 (-1.628)	-0.040* (-1.679)
<i>ROECHG</i>	-1.248*** (-6.471)	-1.225*** (-6.411)	-1.248*** (-6.468)	-1.225*** (-6.409)
<i>SH</i>	0.092*** (27.710)	0.091*** (27.960)	0.092*** (27.720)	0.091*** (27.970)
<i>HORIZON</i>	0.047 (0.939)	0.044 (0.892)	0.050 (0.950)	0.040 (0.900)
<i>LOSS</i>	0.434*** (2.914)	0.408*** (2.848)	0.434*** (2.910)	0.408*** (2.840)
<i>INDU</i>	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES
Constant	1.737*** (3.150)	1.744*** (3.204)	1.731*** (3.140)	1.738*** (3.190)
Observations	47037	47037	47037	47037
Adjusted R-squared	0.063	0.064	0.06	0.06

Note: The values in parentheses of this table and following tables are the robust t-values adjusted for heteroscedasticity and clustered at the company level.

Columns (3) and (4) reveal that there is no significant relationship between *BUY_RELATED* and the dependent variable while *SELL_RELATED* is positively related to the dependent variable at the 1% (5%) significance level, which means that when analysts

lose their independence due to their related interests with companies, the scale of insider purchasing does not have a significant effect on their earnings forecast bias but the scale of insider selling does have a positive effect on their forecast bias. In other words, when corporate insiders sell more of their companies' stocks, the related analysts will release more optimistic-biased earnings forecasts. This is due to the fact that the related analysts are likely to lose their independence and release "insider-preferred" but not real earnings forecasts because of their need to maintain their business relationships and gain private information. More specifically, the related analysts can release more optimistic forecasts about the future earnings of the company they are related to after its insiders sell its stocks in order to cater to the insiders by creating a supportive market environment for their stock selling, so helping them avoid doubt from the market and attention from the regulators. Therefore, Hypothesis 2 is partially verified.

Table 4 also reveals that the coefficient of the relationship dummy *RELATED* is significantly negative. Because the existing literature and the descriptive statistics above both prove the systematic optimistic bias of analysts, the significantly negative relationship between *RELATED* and analysts' earnings forecast bias implies that the forecasts of related analysts are more accurate. The reason for this may be that compared to unrelated analysts, they can obtain more private information. It is due to the need for consistent private information that related analysts sacrifice some degree of accuracy in their earnings forecasts to cater to insiders after they sell their companies' stocks. Consistent with the univariate analysis above, analysts' earnings forecast bias is less optimistic when the shareholding ratio of the biggest shareholder is larger or when the year-on-year *ROE* of the most recent periodic report before forecasting increases to a larger degree. Analysts are more optimistic about the future performance of the companies making a loss.

4.2.2 Tests for Hypothesis 3 and Hypothesis 4

Table 5 tests the effect of insider trading on the earnings forecast bias of star analysts and non-star analysts. As shown by the table, when the effect of the interest relations between analysts and companies is controlled for, the scale of insider selling is negatively related to star analysts' earnings forecast bias at the 1% significance level but is not significantly related to the earnings forecast bias of non-star analysts. Therefore, in terms of insider selling, Hypothesis 3a is supported. What is more, the coefficient of *SELL_RELATED* is positive at the 5% significance level in the subsample of star analysts, but its significance declines to the 10% level in the subsample of non-star analysts. This result indicates that, to some degree, compared to related non-star analysts, related star analysts are more likely to release earnings forecasts that cater to corporate insiders after they sell their companies' stocks. Thus, Hypothesis 4 is partially supported.

Table 5 Insider Trading, Ability of Analysts, and Analysts' Earnings Forecast Bias

Variables	Star Analysts		Non-star Analysts	
	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	0.005 (0.470)	0.005 (0.469)	-0.019*** (-3.094)	-0.019*** (-3.048)
<i>BUY_RELATED</i>	-0.018 (-1.336)	-0.017 (-1.310)	0.039 (1.227)	0.039 (1.229)
<i>SELL</i>	-0.019*** (-4.404)	-0.019*** (-4.563)	-0.002 (-0.396)	-0.002 (-0.351)
<i>SELL_RELATED</i>	0.020** (2.473)	0.019** (2.342)	0.027* (1.954)	0.027* (1.932)
<i>RELATED</i>	-0.118*** (-3.161)	-0.120*** (-3.301)	-0.070 (-1.484)	-0.070 (-1.507)
<i>TOPI</i>	-0.204 (-1.262)	-0.206 (-1.299)	-0.577*** (-3.484)	-0.569*** (-3.485)
<i>INSTITU</i>	-0.368 (-0.800)	-0.318 (-0.701)	-0.348 (-0.698)	-0.316 (-0.645)
<i>MB</i>	0.010 (1.001)	0.010 (1.018)	0.017 (1.588)	0.017 (1.637)
<i>MV</i>	-0.044* (-1.650)	-0.042 (-1.608)	-0.012 (-0.447)	-0.014 (-0.528)
<i>ROECHG</i>	-1.200*** (-4.949)	-1.167*** (-4.878)	-1.242*** (-5.656)	-1.226*** (-5.632)
<i>SH</i>	0.087*** (20.31)	0.086*** (20.45)	0.102*** (25.63)	0.101*** (25.93)
<i>HORIZON</i>	-0.037 (-0.668)	-0.041 (-0.764)	0.084 (1.458)	0.082 (1.438)
<i>LOSS</i>	0.408** (1.991)	0.365* (1.912)	0.399** (2.400)	0.381** (2.358)
<i>INDU</i>	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES
Constant	1.752*** (2.708)	1.691*** (2.653)	1.138* (1.816)	1.180* (1.911)
Observations	18473	18473	27987	27987
Adjusted R-squared	0.064	0.064	0.065	0.065

Note: The mean (median) *FC_MEAN* of the star analysts and non-star analysts is 0.580 (0.122) and 0.727 (0.145), respectively. The mean (median) *FC_MEDIAN* of the star analysts and non-star analysts is 0.571 (0.117) and 0.720 (0.144), respectively.

4.2.3 Tests for Hypothesis 5 and Hypothesis 6

Table 6 tests the effect of insider trading on analysts' earnings forecast bias in the high-marketisation regions and the low-marketisation regions. The result reveals that when the effect of the interest relations between analysts and companies is controlled for, the scale

Table 6 Insider Trading, Degree of Marketisation, and Analysts' Earnings Forecast Bias

Variables	High Marketisation		Low Marketisation	
	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	-0.013 (-1.473)	-0.013 (-1.432)	-0.004 (-0.408)	-0.003 (-0.385)
<i>BUY_RELATED</i>	0.018 (1.008)	0.019 (1.048)	-0.008 (-0.526)	-0.008 (-0.557)
<i>SELL</i>	-0.007 (-1.338)	-0.006 (-1.284)	-0.006 (-1.023)	-0.006 (-1.062)
<i>SELL_RELATED</i>	0.011 (1.215)	0.010 (1.105)	0.038** (2.499)	0.037** (2.461)
<i>RELATED</i>	-0.101*** (-2.690)	-0.105*** (-2.830)	-0.156*** (-3.327)	-0.155*** (-3.367)
<i>TOP1</i>	-0.420** (-2.056)	-0.413** (-2.057)	-0.437** (-2.216)	-0.437** (-2.241)
<i>INSTITU</i>	-0.068 (-0.0982)	-0.049 (-0.0712)	-1.071** (-2.089)	-1.024** (-2.027)
<i>MB</i>	0.009 (0.726)	0.008 (0.705)	0.011 (0.839)	0.012 (0.899)
<i>MV</i>	-0.042 (-1.080)	-0.044 (-1.143)	-0.026 (-0.876)	-0.025 (-0.884)
<i>ROECHG</i>	-1.109*** (-3.642)	-1.073*** (-3.575)	-1.342*** (-5.481)	-1.332*** (-5.478)
<i>SH</i>	0.093*** (19.65)	0.092*** (19.94)	0.096*** (19.64)	0.096*** (19.75)
<i>HORIZON</i>	0.051 (0.719)	0.049 (0.711)	0.047 (0.717)	0.043 (0.662)
<i>LOSS</i>	0.441* (1.882)	0.393* (1.765)	0.391** (2.161)	0.389** (2.177)
<i>INDU</i>	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES
Constant	1.933** (2.175)	1.969** (2.244)	1.366** (1.995)	1.353** (1.999)
Observations	23901	23901	23136	23136
Adjusted R-squared	0.064	0.064	0.072	0.072

of insider purchasing and insider selling in regions with a different degree of marketisation exert no significant effect on analysts' earnings forecast bias. Therefore, Hypothesis 5 does not hold. In the subsample of low-marketisation regions, *SELL_RELATED* and the dependent variable are positively related at the 5% significance level, while they have no significant relationship in the subsample of high-marketisation regions. This indicates that in a low-marketisation environment, related analysts are more likely to release more optimistic forecasts to create a supportive environment after insider selling to cater to the insiders in order to keep their access to the private information that is more valuable but less regulated. This result is consistent with Hypothesis 6.

4.3 Further Tests

Firstly, we test the effect of stock transactions by insiders' relatives on analysts' earnings forecast bias. So far, only the Shenzhen Stock Exchange requires each listed company to disclose the stock transactions made by insiders' immediate relatives. Table 7 tests the effect of trading by insiders' relatives on analysts' earnings forecast bias using the

Table 7 Effect of Stock Trading by Insiders' Relatives on Analysts' Earnings Forecast Bias

Variables	<i>FC MEAN</i>	<i>FC MEDIAN</i>
<i>BUY</i>	-0.010* (-1.660)	-0.010* (-1.656)
<i>BUY_RELATED</i>	-0.004 (-0.417)	-0.004 (-0.411)
<i>SELL</i>	-0.004 (-0.973)	-0.004 (-0.954)
<i>SELL_RELATED</i>	0.020** (2.289)	0.020** (2.202)
<i>RELATED</i>	-0.076* (-1.651)	-0.076* (-1.666)
<i>TOPI</i>	-0.404** (-2.276)	-0.403** (-2.300)
<i>INSTITU</i>	-0.177 (-0.311)	-0.165 (-0.294)
<i>MB</i>	-0.003 (-0.316)	-0.003 (-0.318)
<i>MV</i>	-0.016 (-0.560)	-0.017 (-0.603)
<i>ROECHG</i>	-1.074*** (-4.048)	-1.059*** (-4.041)
<i>HORIZON</i>	0.102*** (24.51)	0.101*** (24.85)
<i>LOSS</i>	0.461** (1.985)	0.450** (1.970)
<i>INDU</i>	YES	YES
<i>YEAR</i>	YES	YES
Constant	1.329* (1.928)	1.337** (1.968)
Observations	27448	27448
Adjusted R-squared	0.068	0.068

observations of companies listed on the Shenzhen Stock Exchange in the full sample. Although the coefficient of *SELL* is negative but not significant, *SELL_RELATED* is still positively related to analysts' earnings forecast bias at the 5% significance level, which is consistent with the results for corporate insiders. In other words, when the scale of stocks sold by the immediate relatives of corporate insiders is larger prior to analyst forecasting, the related analysts' earnings forecasts are more optimistic.

Table 8 Regression Result after Deleting Unrelated Analysts in Observations with Related Analysts

Variables	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	-0.009 (-1.476)	-0.009 (-1.428)
<i>BUY_RELATED</i>	0.005 -0.388	0.005 -0.418
<i>SELL</i>	-0.007* (-1.817)	-0.007* (-1.801)
<i>SELL_RELATED</i>	0.020** (2.365)	0.020** (2.354)
<i>RELATED</i>	-0.133*** (-4.347)	-0.127*** (-4.197)
<i>TOP1</i>	-0.427*** (-2.961)	-0.425*** (-2.987)
<i>INSTITU</i>	-0.487 (-1.143)	-0.461 (-1.099)
<i>MB</i>	0.014 -1.536	0.014 -1.577
<i>MV</i>	-0.040* (-1.651)	-0.040* (-1.681)
<i>ROECHG</i>	-1.257*** (-6.474)	-1.241*** (-6.452)
<i>SH</i>	0.092*** -27.8	0.091*** -28.05
<i>HORIZON</i>	0.046 -0.922	0.044 -0.892
<i>LOSS</i>	0.424*** -2.884	0.413*** -2.876
<i>INDU</i>	YES	YES
<i>YEAR</i>	YES	YES
Constant	1.751*** -3.148	1.746*** -3.179
Observations	47037	47037
Adjusted R-squared	0.063	0.064

Secondly, we change the calculation method of the dependent variables (i.e. *FC_MEAN* and *FC_MEDIAN*) for observations with related analysts. If observations with related analysts contain both the related analysts and unrelated analysts, then we delete the unrelated analysts' earnings forecasts to calculate the respective *FC_MEAN* and *FC_MEDIAN*. Table 8 reveals that the coefficient of *SELL* is still significantly negative, and its t-value increases slightly compared to that in Table 4. The coefficient of *SELL_RELATED* is still positive at the 5% significance level. After changing the method of measuring the dependent variable, we obtain the same results.

Thirdly, we change the measurement of insider trading, replacing the logarithm of net stock purchase and net stock sales of corporate insiders in the above model with the dummy variables for net purchase and net sales and repeat all the tests above. There is no substantive change in the results. For brevity, we do not list the results of the robustness tests.

V. Conclusion

This paper tests the effect of insider trading on analysts' earnings forecast bias in China and proves the existence of the information-conveying effect of insider trading on specialised market participants (i.e. analysts). The study finds that, on the whole, insider trading does not exert a significant effect on analysts' subsequent earnings forecast bias. However, after controlling for the related analysts' effect which may cater to insider trading, we find that insider trading has a significant effect on analysts' earnings forecast bias: that is, when the scale of insider selling is larger, analysts' earnings forecasts are less optimistic. Insider purchasing has no significant information-conveying effect. Insider selling does not have an information-conveying effect on related analysts; however, when the scale of insider selling is larger, their earnings forecasts are more optimistic, indicating that insider selling has an information-conveying effect on unrelated analysts while related analysts have a tendency to cater to insider selling by making more optimistic earnings forecasts. When further considering other factors such as the ability of analysts and the external environment, we find that after controlling for the impact of related analysts, star analysts show a greater ability to absorb the information conveyed by insider selling in earnings forecasts than other analysts. Meanwhile, they are also more likely than other analysts to cater to insider selling by making more optimistic earnings forecasts when they have interest relations with the companies. The tendency of related analysts to cater to insider selling mainly occurs in low-marketisation regions.

The results reveal that although analysts are usually considered as the market participants with information advantages about listed companies' prospects, they still need the information conveyed by insider trading to increase the quality, especially the accuracy,

of their earnings forecasts. Contrary to what happens in mature markets, where insider purchasing has an information-conveying effect on analysts while insider selling does not, in China, insider selling has an information-conveying effect on analysts who are the specialised market participants while insider purchasing does not. Moreover, due to the lack of effective regulation and the low costs of violation for analysts in China, collusion exists between analysts and insiders to encroach on the interests of minority shareholders. The contribution of this paper is that it verifies the existence of the information-conveying effect of insider trading from the perspective of analysts as the specialised market participants and finds the difference in the information-conveying effect between insider purchasing and insider selling. It not only has implications for the earnings forecasts of analysts, especially unexperienced analysts, and the decision-making of investors but also provides supportive evidence for market regulators to enhance the supervision and regulation of insider trading and its disclosure to fully make use of insider trading's information-conveying function.

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内部人交易与分析师的盈利预测偏差：信息传递，还是预测迎合？——来自中国资本市场的经验证据*

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摘要

本文研究了我国上市公司内部人交易对证券分析师盈利预测的信息传递效应以及关联分析师的预测迎合行为。研究发现，整体而言，内部人交易对随后的分析师盈利预测偏差未产生显著影响；但在控制关联分析师可能的预测迎合影响后，内部人卖出股票越多，分析师的盈利预测乐观度越小，而内部人的股票买入量对分析师的预测偏差无显著影响；内部人卖出股票对关联分析师预测不仅没有信息传递效应，而且内部人卖出股票越多，关联分析师盈利预测偏差越乐观，这表明内部人卖出股票对非关联分析师预测具有信息传递效应，而关联分析师存在迎合内部人卖出股票的预测行为。进一步研究发现，在控制关联分析师影响后，明星分析师比其他分析师更能将内部人卖出股票信息吸收到盈余预测中，同时，关联明星分析师比关联非明星分析师更可能出现迎合内部人卖出股票的盈利预测行为；关联分析师迎合内部人卖出股票的预测行为主要发生在低市场化进程的子样本中。本文不仅丰富我国内部人交易和分析师盈利预测的文献，而且对理解我国内部人交易的信息传递功能和分析师盈利预测的迎合行为有积极意义。

关键词：内部人交易、分析师盈利预测偏差、信息传递效应、关联分析师

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一、引言

分析师盈余预测偏差的研究 (McDonald, 1973; Fried and Givoly, 1982; Givoly, 1985) 由来已久, 研究发现有偏差的分析师盈利预测很可能会误导信息使用者, 降低预测信息的使用效率 (Michaely and Womack, 1999; Malmendier and Shanthikumar, 2007), 甚至对公司管理层造成压力, 迫使其采取有损公司价值的投资行为以达到分析师预测目标 (Fuller and Jensen, 2002)。究其根源, 分析师盈利预测偏差大致可分为两类: 一是由于信息的不完备、能力的有限以及个人情感因素所导致的对好坏消息反应程度的不对称性而造成的普遍存在的认知偏差 (De Bondt and Thaler, 1985; Easterwood and Nutt, 1999; Ding *et al.*, 2004; Baik, 2006); 另一类是由于部分没有保持应有独立性的分析师出于经济激励以及迎合管理层的目的产生的动机偏差 (Lim, 2001; Hong and Kubik, 2003; Ke and Yu, 2006; Cowen *et al.*, 2006; Beyer and Guttman, 2011)。分析师既可能为了弥补自身拥有公司特质信息的相对不足, 对公司层面的相关信息特别是会计盈余信息的披露保持了高度的敏感性 (Merkley *et al.*, 2013) 以减少盈利预测的认知偏差, 也可能出于个人私利 (如为获得公司私有信息) 故意发布一些迎合公司或其管理层需要的有偏的盈利预测。

公司内部人 (即董事、监事、高级管理人员) 和分析师被认为是股票市场上对一个公司前景具有信息优势的两类参与者。内部人参与公司日常运营或重大决策, 天然地拥有公司前景信息的优势; 证券分析师作为估值专家, 具有比公司内部人更丰富的分析企业运营环境和业绩的专业知识和经验, 通过对公司及行业等相关信息的收集、加工, 发布盈利预测和估值报告, 从而影响公司股价变动。然而, 内部人与分析师之间的信息优势存在区别, 内部人拥有更多的公司特质信息, 而分析师对行业和宏观层面的信息把握能力强于内部人, 同时对公司特质信息的了解介于内部人和公众投资者之间 (Piotroski and Roulstone, 2005; Hutton *et al.*, 2012)。那么, 分析师如何吸收利用公司公开信息以提升自己的盈利预测质量, 成为一个值得关注且有趣的问题。Manne (1966) 和 Carlton and Fischel (1983) 认为内部人交易作为一种信息传递机制, 能发挥提高市场有效性的作用, 即内部人交易能产生一种“衍生知情交易机制”, 通过该机制, 内部人交易把公司股票价格逐步调整到正确水平, 避免信息一旦公布引起股价的大起大落, 从而提高市场运行效率。而内部人交易是否向分析师传递有用信息从而帮助其更好地预测公司未来盈余, 也引起了学者的兴趣。Lustgarten and Mande (1998) 发现美国公司内部人买入股票的增加可以降低分析师盈利预测误差和预测分歧, 而卖出股票则对分析师预测误差和预测分歧没有影响; Sivakumar and Vijayakumar (2001) 发现内部人交易与分析师盈利预测调整存在显著关系, 表明内部人交易包含价值相关信息。

我国股票市场是一个处于转型经济中的新兴市场, 证券分析师行业历史短, 分析师盈利预测的有效性较差 (郭杰、洪洁瑛, 2009; 伍燕然等, 2012)。有关公司信息对分析师盈利预测影响的研究主要集中在公司盈利相关信息 (薛祖云、王冲, 2011; 王玉涛、王彦超, 2012), 并发现分析师盈利预测时吸收了公司业绩公告和盈利预告中的信息。近两年的文献开始涉及分析师盈利预测时是否使用了媒体、微博等定期财

务报告以外的信息（周开国等，2014；谭松涛等，2015；胡军等，2016），尚未见有文献探讨公司内部人交易信息是否影响了分析师的盈利预测。我国内部人交易仅有八九年的历史，与成熟市场中内部人买入股票具有显著超常回报而卖出股票一般无超常回报的特征不同，我国内部人卖出股票有显著的超常回报而买入股票的超常回报不明显（曾庆生，2008；朱茶芬、姚铮、李志文，2011）。那么，在我国这种特殊的市场环境中，分析师在进行相对独立的盈利预测时是否使用了内部人交易信息；如果是，内部人交易对分析师盈利预测的认知偏差呈现怎样的特征？这些问题的探讨将有助于我们验证内部人交易可能存在的信息传递效应。

另一方面，当面临“利益冲突”时，分析师很可能丧失其研究的独立性与客观性（Bradley *et al.*, 2003; James and Karceski, 2006; 张雪兰和何德旭，2008）。由于法制不健全和执法不严，我国分析师与上市公司内部人之间合谋损害中小股东的现象仍时有发生。² 经验研究也发现利益相关分析师在内部人卖出股票前给予乐观评级，以帮助内部人获得超额减持回报（陈维等，2014；朱红军等，2014），且之前给予好评的分析师在内部人交易后获得了私有信息（朱红军等，2014）。但他们只研究了分析师与内部人卖出股票行为之间的合谋行为，未涉及内部人买入股票行为，且未探讨内部人交易可能存在的对分析师盈利预测的信息传递效应。

以沪深两市公司的月度分析师盈利预测为对象，本文发现：整体而言，内部人交易对随后的分析师盈利预测偏差未产生显著影响，但在控制了关联分析师可能存在的预测迎合效应后，内部人卖出股票越多，分析师的盈利预测乐观度越小，而内部人的股票买入量对分析师的预测偏差无显著影响。这说明我国内部人卖出股票向分析师传递了公司未来业绩的信号，而内部人买入股票未对分析师盈利预测产生显著影响。这一结果与已有研究发现内部人卖出股票具有显著超出回报而买入股票超常回报不明显的结论（曾庆生，2008；朱茶芬、姚铮、李志文，2011）相一致。然而，内部人卖出股票对关联分析师预测不仅没有信息传递效应，而且内部人卖出股票越多，关联分析师盈利预测偏差越乐观，这表明内部人卖出股票对非关联分析师预测具有信息传递效应，而关联分析师存在迎合内部人卖出股票的预测行为。进一步分析发现，内部人卖出股票对分析师的信号传递效应显著受到分析师个人能力的影响。具体而言，控制了关联分析师影响后，明星分析师比非明星分析师更能吸纳内部人卖出股票的信息来降低预测乐观度。同时，关联明星分析师比关联非明星分析师更可能出现迎合内部人卖出股票的盈利预测行为。此外，关联分析师迎合内部人卖出股票的预测行为主要发生在低市场化进程的子样本中。这说明关联分析师的迎合行为在信息不透明度更高、私有信息价值更高的环境中更加明显。本文的主要贡献如下：第一，首次研究了我国内部人交易对分析师盈利预测的信息传递效应，验证我国内部人交易对股票市场的积极

² 2015年最受市场瞩目的“妖股”安硕信息（股票代码300380），由于在2014年4月30日至5月6日间，其董事长高鸣、董事会秘书曹丰与某证券机构分析师接触达成“推票”默契，在安硕信息并没有实际业务的情况下大肆渲染安硕信息互联网金融的美好明天，导致其股价从2014年5月初的不到30元，到2015年5月13日公司股价一度攀升至474元，成为当时A股第一高价股，而此后跌回至40元左右每股，使得绝大部分中小投资者损失惨重。

意义；第二，本文是对国外内部人交易与分析师盈利预测相关研究文献的一个有益补充和拓展，这不仅表现在研究结论的反差——成熟市场中内部人交易对分析师盈利预测的信号传递效应主要表现在买入股票而我国则主要表现在卖出股票，而且表现在研究内容的拓展——增加研究了分析师能力和外部市场环境对内部人交易信息传递效应的影响；第三，本文发现内部人交易对关联分析师和非关联分析师盈利预测偏差存在相反的影响，有助于投资者更好地判断分析师盈利预测的价值。

二、文献综述与研究假说

（一）内部人交易的信息含量与分析师盈利预测的偏差

在国外，上市公司内部人交易不仅能够获得短期的丰厚利润，而且也能够赚取中长期超常回报，并且总体而言，内部人的超常回报主要发生在买入股票时，而卖出股票无超常回报或者回报显著小于买入股票（Gregory *et al.*, 1994; Pettit and Venkatesh, 1995; Lakonishok and Lee, 2001）。对于内部人交易超额回报的来源存在两种主要的观点，即错误定价假说、信息优势假说。错误定价假说认为内部人是在利用公司股票被错误定价的机会进行反转交易而获利，内部人交易是依据市场价格惯性而进行的择时行为，并非传达公司未来的价值信息。不少文献证明，内部人能够识别并利用自己公司股票被错误定价的机会，在公司股价被高估时卖出股票，在股价被低估时买入股票，获得显著超常回报（Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005）。而信息优势假说认为内部人是利用自己的信息优势获得超额交易回报，即在利用公司未来价值的信息进行交易，当认为公司未来价值增加时则买入股票，反之卖出股票。比如，Elliot *et al.*（1984）发现内部人在好消息公告前的 12 个月内增加（减少）买入量（卖出量），而 Ke *et al.*（2003）也发现内部人在季度盈余开始长期连续增长（下降）的前 3 到 9 个季度就增加了买入量（卖出量）。其实，这两种观点并非相互冲突，因为发现错误定价机会并进行反转交易获利也离不开对公司基本价值的判断——对基本价值的长期偏离才会发生均值反转现象（De Bondt and Thaler, 1985），内部人的估值优势也是一种信息优势，源于他们比外部人更加理解公司内核。Lakonishok and Lee（2001）发现虽然内部人是典型的反转交易策略者，但是内部人整体上对未来市场回报的预测能力强于简单的反转交易策略效应。通常，内部人交易的超常回报既来自其反转交易策略的择时能力，又来自对公司价值的信息优势（Piotroski and Roulstone, 2005）。

我国公开的内部人交易始于 2006 年，已有研究发现内部人交易获得了超常回报。但是，与发达市场中内部人买入股票具有超常回报而卖出股票无超常回报或者超常回报显著低于买入不同，我国内部人卖出股票超常回报明显而买入股票超常回报不明显或者弱于卖出。比如，曾庆生（2008）以 2006 年 1 月 1 日至 2007 年 7 月 15 日我国沪深交易所上市公司内部人交易为样本，研究发现卖出股票后（1, 20）窗口获得 2.245% 的显著超常回报，而买入股票后（1, 20）窗口无显著超常回报。朱茶芬、姚铮、李志文（2011）以 2008 年 1 月 1 日至 2010 年 6 月 30 日我国沪深交易所上市公司高管交易

为样本，发现高管卖出股票后 6 月内获得 11.13% 的显著超常回报，而买入股票后 6 月内未获得超常回报；按交易规模分组后表明，大小规模的卖出股票均获得 10% 左右的超常回报，而小、中、大额买入股票的超常回报分别为 -5.56%（显著）、-0.99%（不显著）、3.45%（显著）。曾庆生、张耀中（2013）也表明在控制反转交易效应后，我国内部人交易对公司股票未来中长期超常回报有显著的预测能力。而朱茶芬、姚铮、李志文（2011）的证据初步证明高管在交易中充分利用了其自身信息优势。总之，这些文献表明我国内部人交易特别是卖出股票具有较强的信息含量。

国内文献尚未涉及内部人交易信息对分析师盈利预测影响的研究，但已有文献表明我国分析师盈利预测的准确性高于统计模型（方军雄，2007；岳衡、林小驰，2008），分析师的信息搜寻活动能够提高股票价格的信息含量，使其包含更多公司基本面的信息，从而提高资本市场的运行效率（朱红军等，2007）。石桂峰等（2007）研究发现公司盈余的可预测性、盈余管理程度、盈余波动、公司扩张速度以及公司规模则会显著影响分析师对盈余的乐观或者悲观估计。周开国等（2014），谭松涛等（2015），胡军等（2016）发现媒体对上市公司关注度的提升以及公司开通微博的行为都有助于分析师纠正预测偏差。这些研究表明我国分析师在进行盈利预测时同时吸收了公司会计业绩以及其他媒介的相关信息，以此提高盈利预测质量，缩小盈利预测的认知偏差。

理论上，如果内部人交易传递了公司价值或未来业绩的信息，那么内部人交易信息的披露可以降低分析师与公司内部人之间的信息不对称性，从而影响分析师盈利预测的行为，缩小预测的认知偏差。研究发现市场对分析师跟随内部人交易修正盈利预测行为，特别是当预测修正方向与内部人交易传递的信号方向一致时，做出了更显著的反应（Jin *et al.*, 2013）。这表明，在成熟市场，投资者认为分析师能够正确辨别和吸收内部人交易的信号以修正其盈利预测。前述文献表明我国内部人交易特别是卖出股票具有较强的信息含量，本文样本期间高管交易的短期超常回报也验证这一结果；³且分析师能辨别和吸收公司披露的会计信息以提高盈利预测的能力，所以我们预测内部人交易特别是卖出股票将对分析师盈利预测行为产生影响。据此，提出本文的第一个假说：

³ 下表是对 2007 年 1 月 1 日至 2013 年 12 月 31 日期间公司高管日交易股数超过 2000 股的日交易短期累计超常回报的统计（按市场模型估计计算得到；为控制交易方向的影响，当高管卖出股票时乘以 -1；CAR 值按 1% winsorize 处理）。可见，均值检验 T 值显著无明显差异，但中位数检验显示卖出股票短期回报显著高于买入股票。由于所有 CAR 值均不服从正态分布，非参数检验（中位数检验）的结果更加科学、可靠。

变量		N	均值	中位数	T 值 (卖出-买入)	Z 值 (卖出-买入)
CAR (1, 5)	卖出	11148	0.6%	0.9%	-0.91	-3.93***
	买入	2693	0.8%	0.5%		
CAR (1, 10)	卖出	11148	0.8%	1.2%	-0.92	-2.98***
	买入	2693	1.0%	0.7%		
CAR (1, 20)	卖出	11145	1.0%	1.6%	-0.48	-2.86***
	买入	2693	1.2%	0.8%		

假说 1: 盈利预测前夕内部人买入(卖出)股票越多, 分析师的盈利预测乐观度越大(小), 且内部人卖出股票对分析师预测的影响比买入股票更显著。

但是, 分析师的预测偏差不仅受其客观认知能力的影响, 也会受到其主观动机的影响, 原红旗、黄倩茹(2007), 潘越等(2011), 曹胜、朱红军(2011), 赵良玉等(2013)分别从券商自营业务、投行业务和管理层偏好等动机角度对我国分析师盈利预测或投资评级的乐观性偏差做出了解释。才国伟等(2015)研究发现在重大事件发生时, 企业确实有强烈的动机操纵媒体以获取额外收益, 间接验证了企业与媒体合谋行为的存在。陈维等(2014)发现利益相关的分析师股票评级越乐观时, 随后内部人越可能卖出股票, 且卖出股票后获得了超常回报; 朱红军等(2014)研究发现分析师在内部人减持前会集中发布乐观评级报告, 内部人减持的金额与分析师乐观评级的数量正相关, 内部人因此获得了超额减持回报, 而分析师之后获取了更多私有信息。因此, 关联分析师很可能在利益冲突中丧失其应有的独立性, 发布管理层“喜欢的”而非真实的盈利预测以获得私有信息或其他个人利益(Francis and Philbrick, 1993; Lim, 2001; Ke and Yu, 2006; Mayew, 2008)。近年来, 上市公司内部人减持股票问题成为一个市场各方高度关注的敏感话题。一方面, 少数公司内部人利用信息优势大规模减持甚至恶意套现, 容易引起市场恐慌, 从而导致更加严格的市场监管;⁴ 另一方面, 由于监管的压力, 公司内部人减持股票时不希望引起市场质疑, 因而需要一个好的交易特别是减持氛围, 比如有第三方机构间接“表态”其股票减持并不是一个坏的信号。综上, 我们认为, 当分析师与公司存在利益关联时, 内部人交易行为对分析师的信息传递效应可能消失, 即关联分析师反而可能会在内部人卖出(买入)后公布乐观度大(小)的盈余预测, 为内部人交易去营造有利的市场氛围。据此, 提出第二个假说:

假说 2: 盈利预测前夕内部人买入(卖出)股票越多, 关联分析师的盈利预测乐观度越小(大)。

(二) 内部人交易、分析师能力与分析师盈利预测的偏差

已有文献分析师盈利预测的准确性与分析师的能力有关。比如 Stickel (1992) 的研究表明, 美国《机构投资者》评选出的明星分析师的盈利预测比其他分析师的盈利预测准确, 明星分析师预测修正的市场反应明显高于其他分析师预测修正; Brown and Chen (1991) 的研究也发现, 明星分析师的预测比全体的简单平均表现出色; Clement (1999) 发现, 分析师预测准确性与分析师的经验(代表能力和技术)、分析师的雇主规模(代表资源的可获取性)显著正相关。李丽青(2012)对比了我国《新财富》杂志评选的最佳分析师与其他分析师盈利预测的差异, 发现最佳分析师盈利预测的准确性比其他分析师高, 表明新财富最佳分析师的预测能力强于其他分析师。然而, 明星分析师更强的盈利预测能力可能来自其对公开信息更强的分析和解读能力, 也可能来

⁴ 比如, 中国证监会 2017 年 6 月出台《上市公司股东、董监高减持股份的若干规定》(证监会公告[2017] 9 号)以替代一年半前实施的《上市公司大股东、董监高减持股份的若干规定》(证监会公告[2016] 1 号), 对内部人减持提出更加苛刻的减持条件。

自其更多的信息来源。那么，当面对内部人交易信息时，不同的分析师会做出不同的反应吗？笔者认为，给定所有分析师可获得的信息相同，由于明星分析师对信息的分析处理能力更强、敏感性更高，当面对内部人交易信息时，明星分析师对该信息的解读更加准确，从而更好地吸收到其盈利预测中去。另一方面，由于明星分析师收集和处理信息能力强，同时明星分析师来自大券商，有更多的可获取资源，从而可能获得更多公司非公开信息。伊志宏、江轩宇（2013）对分析师的评级调整研究发现，明星分析师比非明星分析师向市场提供了更多的公司特质信息。明星分析师可能已经通过其他渠道获得了内部人交易传递的信息，明星分析师盈利预测时对内部人交易信息的依赖性更低，而非明星分析师则可以通过内部人交易的信息对公司未来盈利做出判断。据此，提出两个竞争性假说：

假说 3A：在控制关联分析师影响后，与非明星分析师相比，明星分析师的盈利预测偏差受内部人交易的影响更大。

假说 3B：在控制关联分析师影响后，与非明星分析师相比，明星分析师的盈利预测偏差受内部人交易的影响更小。

吴超鹏等（2013）在对分析师面临的利益关系与其所发布的报告质量之间的关系进行实证检验的过程中，发现明星分析师无法在这种利益关系中独善其身，并且为了维护关系，相对于普通分析师，他们更倾向于发布更加偏乐观的股票评级。那么，相比于关联非明星分析师而言，关联的明星分析师是否更倾向于在内部人交易完成后发布迎合公司管理层的盈利预测呢？对于公司内部的管理层来说，分析师声誉越高，其对上市公司的评价产生的市场影响也越大（Stickel, 1992, 1995; Loh and Stulz, 2011; 于静等, 2008），因此，上市公司管理层本身有动力与其关联分析师维持良好的关系，并在其需要时请关联明星分析师发布对其有利的盈利预测。另一方面，在我国，由于机构投资者的“有限关注”，分析师与上市公司、所属券商以及基金等机构投资者的关系是明星分析师评选结果的主要决定因素（吴超鹏等, 2013; 吴偲立等, 2016），因此为了自身职业生涯的长期发展，关联明星分析师也更倾向于配合上市公司的管理层发布对他们有利的盈利预测。再者，对于处于新兴市场的中国来说，违规风险仍然较低，违规成本和收益相去甚远（李心丹等, 2008），因此声誉机制在抑制分析师面临的利益冲突方面作用有限（李培功和沈艺峰, 2010; Mola and Guidolin, 2009）。孟庆斌等（2015）从融券卖空的角度也印证了明星分析师参与了更多的市场操纵。据此，提出本文的第四个假说：

假说 4：盈利预测前夕内部人买入（卖出）股票越多，关联明星分析师比关联非明星分析师的盈利预测乐观度越小（大）。

（三）内部人交易、市场化程度与分析师盈利预测偏差

与美国、欧洲等发达资本主义市场不同的是，中国是一个市场化极为不均衡的国家。由于环境差异，中国各地区市场化进程明显不同（夏立军和陈信元, 2007）。市场

化进程会通过影响公司所在地区行政、法律等制度来影响公司所处的外部环境，进而影响到公司的信息透明度及其私有信息价值的高低。具体来说，在市场化进程较低的地区，法制法规建设不健全，政府干预过多，信息披露监管不到位，这会加剧外部投资者与企业之间的信息不对称性，而在市场化进程较高的地区，由于政府干预的减少，企业受到政府保护的程度随之降低，市场竞争较为公平，公司就越倾向于通过披露较多的公司信息来提高投资者信心或提高公司透明度（李慧云和刘镛，2016）。

在公司经营环境不变的情况下，分析师对一个公司的盈利预测的准确与否取决于其获得公司信息的多寡，即信息不对称程度越高，分析师就难以准确预测公司的未来盈利。以深交所的信息披露年度考核结果作为信息透明度指标，方军雄（2007）和白晓宇（2009）均发现上市公司信息披露透明度越高，分析师预测准确性越高。李丹、贾宁（2009）发现公司财务报告中的盈余信息质量和宏观制度环境均对分析师预测表现具有显著的影响，即公司盈余质量越高，公司所处地区的制度环境越好，分析师盈余预测的准确度越高。而刘少波、彭绣梅（2012）发现，深交所公平信息披露规则的实施后，分析师盈利预测特别是对信息披露水平低的公司的预测的准确性显著下降，表明我国分析师可能在一定程度上使用了私有信息。这些研究表明公司信息质量或信息环境影响了分析师对公司信息的可得性。

如果内部人交易是一种有效的信息传递机制，那么内部人交易信息的披露可以降低分析师与内部人之间的信息不对称。但是，内部人交易的信息含量可能随公司所处的外部市场环境发生变化。一方面，在市场化程度更高的环境中，内部人交易包含的公司未来业绩信息可能已经通过公司相关公告及时传递给市场，从而分析师盈利预测时对内部人交易信息的依赖程度低于处于低市场化程度环境中的公司，因此，公司所处地区的市场化程度越低，内部人交易的信息传递效应会越明显。另一方面，市场化程度的高低会影响内部人进行交易的主观动机。具体来说，市场化程度越高，内部人交易越为规范合理，内部人进行交易的动机更可能是出于正常的资金需求或者资金管理，利用内幕消息获得私利的可能性更小。而市场化程度越低，法制环境较差，内部人的法律意识更差，利用内幕信息进行交易动机更强，其交易所蕴含的信息含量更大。据此，提出第五个假说：

假说 5：在控制关联分析师的影响后，与处于高市场化地区的企业相比，处于低市场化地区的企业内部人买入（卖出）股票越多，分析师盈利预测的乐观度越大（小）。

同时，正是由于在市场化程度较低的地区中，信息不对称问题更加严重，使得公司的私有信息可以为关联分析师带来更大的利益，因而关联分析师会有更强的动机发布配合管理层行为的盈利预测，以获得持续不断的私有信息。另一方面，低市场化程度地区不健全的法制法规以及不到位的信息披露监管，也为关联分析师与公司内部人的合谋行为创造了更有利的条件。因此，提出第六个假说：

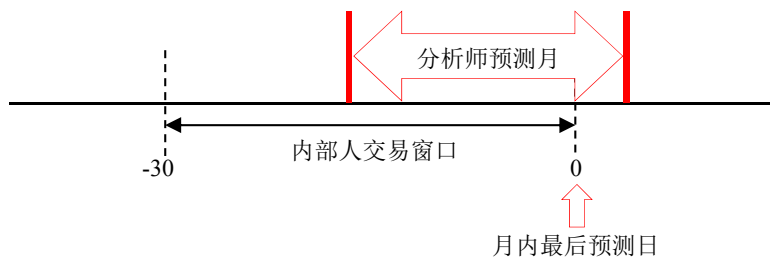
假说 6：与处于高市场化地区的企业相比，处于低市场化地区的企业内部人于盈利预测前夕买入（卖出）股票越多，关联分析师的盈利预测乐观度越小（大）。

三、 研究设计

（一） 样本选择和数据来源

鉴于我国证监会 2007 年 4 月颁布制度要求上市公司自 2007 年 5 月份起规范披露内部人交易信息，本文以 2007 年 7 月至 2013 年 12 月之间各月所有分析师对中国 A 股公司当年度的盈利预测为研究对象，⁵ 每个有分析师盈利预测公布的月度构成一个样本。鉴于部分内部人交易信息披露可能存在一定的滞后以及分析师盈利预测报告的完成需要一定时间，本文考察分析师盈利预测发布前 30 天的内部人交易行为对分析师盈利预测的影响。⁶ 以当月最后一个分析师盈利预测公告日为基准日 0，取该日之前 30 天即 (-30, -1) 为内部人交易的考察窗口（如图 1 所示）。

图 1 考察窗口示意图



根据深圳国泰安信息技术有限公司的 CSMAR 数据库，得到公司月度的分析师盈利预测初始样本量 61,831 个；剔除金融企业样本、净资产为负和相关数据缺失公司样本；为避免前后相邻月份的盈利预测发布间隔过短导致内部人交易信息重叠的噪音影响，剔除当月最后一份盈利预测发布日与上月最后一份盈利预测发布日间隔不足 20 天的样本，同时为了避免偶发性盈利预测的噪音影响，剔除当月最后一份盈利预测发布日与之前最近一个有盈利预测月度的最后一份预测发布日之间间隔超过 180 天的样本，⁷ 最后得到有效样本 47,037 个。

内部人交易是指公司董事、监事、高级管理人员通过二级市场买卖本公司股票的行为，该数据由笔者从深圳证券交易所和上海证券交易所网站手工收集，其他数据若未说明均来自 CSMAR 数据库。为减少极端值影响，文中连续变量均按 1% 进行 winsorize 处理。

（二） 研究模型与变量定义

鉴于本文研究对象为公司月度分析师预测误差，并参考王玉涛、王彦超（2012）

⁵ 考虑到年报是在次年一季度披露，且分析师在年报资产负债表日后至年报披露前仍有分析师发布对该年度的盈利预测，因此，样本涵盖了公司被预测年度的 1 月至次年被预测年度年报披露月。

⁶ 这里指的是在该窗口内披露的内部人交易，为了保证内部人交易信息的及时性，要求交易日至交易披露日之间间隔不得大于 30 天。

⁷ 将对应的两个间隔天数分别调整为 10 天和 90 天，研究结论无显著变化。

等文的模型控制变量，构建如下实证模型：

$$FC = \alpha + \beta_1 BUY + \beta_2 BUY_RELATED + \beta_3 SELL + \beta_4 SELL_RELATED + \beta_5 RELATED + \beta_6 TOPI + \beta_7 INSTITU + \beta_8 PB + \beta_9 MV + \beta_{10} ROECHG + \beta_{11} HORIZON + \beta_{12} SH + \beta_{13} LOSS + \sum \delta_k INDU_k + \sum \theta_t YEAR_t + \varepsilon$$

被解释变量： FC 为月度分析师盈利预测偏差，本文以 FC_MEAN 和 FC_MEDIAN 进行衡量。模型所有变量定义见表1。在检验假说3A、3B以及假说4时，将我国《新财富》杂志评选的年度最佳分析师定义为分析能力强的分析师即明星分析师，最佳分析师以外的分析师定义为非明星分析师，分别统计明星分析师和非明星分析师的盈利预测偏差。⁸在检验假说5及假说6时，本文选用樊纲、王小鲁《中国市场化指数——各地区市场化相对进程报告》中“中国各地区市场化指数”作为衡量公司所处地区市场化程度高低的参考指标。⁹

考察变量： BUY ($SELL$)为内部人在分析师盈利预测发布前30天（即图1中“内部人交易窗口”）内的净买入（净卖出）股票规模指标； $BUY_RELATED$ ($SELL_RELATED$)为内部人在关联分析师盈利预测发布前30天内内部人净买入股票（净卖出）股票规模变量，本文将从属于公司IPO或再融资（SEO）承销商的分析师界定为关联分析师。根据研究假说1和2，预测 BUY 与 FC 正相关，而 $BUY_RELATED$ 与 FC 负相关； $SELL$ 与 FC 负相关，而 $SELL_RELATED$ 与 FC 正相关。

控制变量包括：第一大股东持股比例 $TOPI$ 、机构投资者持股比例 $INSTITU$ 、市净率 PB 、公司规模 MV 、净资产收益率变化 $ROECHG$ 、预测时长 $HORIZON$ 、上市地点 SH 、亏损公司 $LOSS$ 、公司行业 $INDU$ 、预测所在年度 $YEAR$ 。股权结构是影响一个公司治理水平和信息透明度的重要因素，通常股权集中度越高、机构投资者持股越少，公司治理问题越多、信息不对称越大，可能影响到分析师盈利预测的行为，故予以控制。控制市净率是因为其代表公司的成长性和估值水平，一方面成长性高的公司经营风险大，盈利的不确定性高，从而分析师盈利预测更加谨慎。控制公司规模是因为规模越小的公司通常被认为是成长性高而容易引致分析师过度乐观，大规模公司通常经营比较稳定而不易过度乐观，故预测规模可能与因变量负相关。预测时点距离被预测年度截止日越远，分析师可能越对公司未来充满憧憬，盈利预测越乐观，故予以控制。由于深交所和上交所的监管制度和力度可能存在差异，公司的信息质量可能存在差异，故控制上市地点。此外，亏损公司可能受重大资产重组或盈余管理的影响，盈利不稳定性显著高于盈利公司，故纳入亏损哑变量。最后控制公司所属行业和预测年度的影响。

⁸ 考虑到明星分析师的预测能力强于非明星分析师（李丽青，2012），为减少明星分析师预测对非明星分析师预测的影响，若公司所在月份同时有明星分析师和非明星分析师发布盈利预测，则纳入明星分析师组，故非明星分析师预测组均为当月没有明星分析师预测的样本。

⁹ 对于高低市场化程度的分组标准，采用的 benchmark 是同年度同行业的市场化指数的中位数，若该观测当年所在省份的市场化指数高于 benchmark，则归为“高市场化程度”的子样本，否则，则为“低市场化程度”的子样本。

表 1 变量定义

变量	定义
<i>FC_MEAN</i>	预测偏差 1：等于公司当月所有分析师预测的每股收益（EPS）均值与被预测年度 EPS 实际值之差除以被预测年度 EPS 实际值的绝对值。
<i>FC_MEDIAN</i>	预测偏差 2：等于公司当月所有分析师预测的每股收益（EPS）中位数与被预测年度 EPS 实际值之差除以被预测年度 EPS 实际值的绝对值。
<i>RELATED</i>	关联哑变量：若当月发布盈利预测的分析师中有至少一个从属于此前为此家上市公司进行过 IPO 或再融资（SEO）的券商，则该观测定义为关联组，赋值为 1；否则为 0。
<i>BUY</i>	分析师盈利预测发布 30 天内的内部人累计净买入股票规模：当预测前 30 天内的内部人交易为净买入（即累计买入股票金额 > 累计卖出股票金额）时，取内部人净买入股票金额的自然对数，否则为 0。
<i>BUY_RELATED</i>	关联分析师盈利预测发布前 30 天内的内部人累计净买入股票规模：当预测发布前 30 天内的内部人交易为净买入股票，且 <i>RELATED</i> 取为 1 时，取内部人净买入股票金额的自然对数，否则为 0。
<i>SELL</i>	分析师盈利预测发布 30 天内的内部人累计净卖出股票规模：当预测前 30 天内的内部人交易为净卖出（即累计买入股票金额 < 累计卖出股票金额）时，取内部人净卖出股票金额的自然对数，否则为 0。
<i>SELL_RELATED</i>	关联分析师盈利预测发布前 30 天内的内部人累计净卖出股票规模：当预测发布前 30 天内的内部人交易为净买入股票，且 <i>RELATED</i> 取为 1 时，取内部人净卖出股票金额的自然对数，否则为 0。
<i>TOP1</i>	预测年度期初第一大股东持股比例
<i>INTSTITU</i>	预测年度期初机构投资者持股比例
<i>PB</i>	市净率：预测所在季度初的股票市值与账面净资产的比值
<i>MV</i>	公司规模：取预测月月初公司总股本市值的自然对数
<i>ROECHG</i>	业绩变化：预测月之前的最近一期定期报告的净资产收益率与上年同期净资产收益率的差值，考虑到各个季度数据不可比，对该差值进行调整：一季报时乘以 4，中报乘以 2，三季报乘以 4/3，年报取原值。若当月最后一份预测发布日前 212 天（按规定，相邻两份定期报告（即三季报与年报）披露间隔的最大天数）内没有定期报告披露，则取 0。
<i>SH</i>	上市地点：公司在上海证券交易所挂牌上市时取 1，否则取 0
<i>HORIZON</i>	预测时长：取预测月最后一份预测公告日至被预测年度 12 月 31 日之间间隔天数的自然对数，若盈利预测于被预测年度的 12 月 31 日后、年报披露前之间披露，则乘以 -1。
<i>LOSS</i>	公司亏损哑变量，当公司净利润为负时取 1，否则取 0。
<i>INDU</i>	公司行业哑变量，按照证监会 2001 年行业分类标准，除制造业取两位数行业代码外，其他行业取一位数代码。
<i>YEAR</i>	预测年度哑变量。

四、实证检验

(一) 描述性统计

表 2 给出了模型主要变量的分布情况。*FC_MEAN* 和 *FC_MEDIAN* 的均值（中位数）分别为 0.664（0.133）和 0.656（0.129），均大于 0，说明分析师的盈利预测总体是偏乐观的，即预测值大于实际值，与目前国内外现有文献所发现的分析师系统性乐观偏差是一致的；*BUY*、*SELL* 分别是预测当月的内部人买入和卖出股份的自然对数均值，对原始交易数据统计发现，在有交易的样本中，预测当月内部人买入股票金额均值（中位数）为 1250.0 万元（94.9 万元），卖出股票金额的均值（中位数）为 1290.5 万元（261.2 万元）。数据显示，各个窗口卖出股票规模均大于买入股票规模。关联哑变量 *RELATED* 的均值为 0.15，说明总样本中有 15% 的观测，发布盈利预测的分析师与相应的上市公司之间存在利益关联。其他变量不再赘述。

表 2 主要变量的描述性统计（N=47037）

	Mean	Std	Min	Median	Max
<i>FC_MEAN</i>	0.664	1.813	-0.556	0.133	13.52
<i>FC_MEDIAN</i>	0.656	1.788	-0.564	0.129	13.27
<i>BUY</i>	0.103	1.204	0	0	21.01
<i>BUY_RELATED</i>	0.017	0.483	0	0	17.76
<i>SELL</i>	0.371	2.315	0	0	20.49
<i>SELL_RELATED</i>	0.050	0.854	0	0	19.08
<i>RELATED</i>	0.150	0.357	0	0	1
<i>TOPI</i>	0.383	0.157	0.088	0.375	0.759
<i>INSTITU</i>	0.067	0.053	0	0.057	0.235
<i>PB</i>	3.942	2.595	0.776	3.248	14.770
<i>MV</i>	22.660	1.032	20.790	22.510	26.190
<i>ROECHG</i>	-0.002	0.083	-0.304	0	0.328
<i>SH</i>	0.416	0.493	0	0	1
<i>HORIZON</i>	3.571	3.209	-4.522	4.905	5.869
<i>LOSS</i>	0.022	0.147	0	0	1

表 3 列示了模型主要变量之间 Pearson 相关系。可见，盈利预测偏差 *FC_MEAN* (*FC_MEDIAN*) 与预测当月的内部人卖出规模 *SELL* 在 10% 水平上显著负相关，这表明分析师盈利预测前夕内部人卖出股票会显著降低分析师盈利预测的乐观度。*FC_MEAN* (*FC_MEDIAN*) 与 *TOPI*、*INSTITU*、*PB*、*MV* 显著负相关，说明第一大股东持股比例越高、机构投资者持股比例越大、市净率越高、公司规模越大，分析师盈利预测乐观度越小；与预期不符，*FC* 与 *ROECHG* 显著负相关，即预测前最近一期的净资产收益率同比变动值越大时，分析师盈利预测乐观度越小，这可能说明分析师对前期盈利增长快的公司未来盈利持更谨慎态度。其他控制变量之间存在一定相关关系，但相关系数均较小，变量之间没有明显的共线性。

表3 主要变量的Pearson相关性

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 FC_MEAN	1														
2 FC_MEDIAN	0.997	1													

3 BUY	-0.009	* 1													
	*														
4 BUY_RELATED	-0.004	-0.004	0.399	1											

5 SELL	-0.008	-0.008	-0.014	-0.006	1										
	*	*	***												
6 SELL_RELATED	0.001	0.001	-0.005	-0.002	0.361	1									
			***		***										
7 RELATED	-0.023	-0.024	0.004	0.085	-0.007	0.139	1								
	***	***		***		***									
8 TOP1	-0.034	-0.035	-0.012	0.007	-0.069	-0.019	0.055	1							
	***	***	***		***	***	***								
9 INSTTU	-0.022	-0.021	0.03	0	0.026	0.015	0.026	-0.211	1						
	***	***	***		***	***	***	***							
10 PB	-0.013	-0.012	-0.005	-0.013	0.074	0.027	-0.048	-0.044	0.223	1					
	***	***	***	***	***	***	***	***	***						
11 MV	-0.034	-0.035	0.018	0.043	-0.034	0.001	0.218	0.316	0.004	0.095	1				
	***	***	***	***	***	***	***	***	***	***					
12 ROECHG	-0.058	-0.058	0.002	0.008	0	0.002	-0.003	0.003	0.058	0.196	0.019	1			
	***	***	***	*					***	***	***	***			
13 SH	-0.012	-0.013	-0.001	0.004	-0.074	-0.031	0.086	0.164	0.062	-0.06	0.349	0.03	1		
	**	***			***	***	***	***	***	***	***	***	***		
14 HORIZON	0.162	0.163	-0.012	-0.002	-0.027	-0.011	0.049	-0.007	-0.018	-0.004	-0.037	0.002	0.003	1	
	***	***	**		***	**	***	***	***	***	***	***	***	***	
15 LOSS	0.038	0.036	-0.011	-0.005	-0.017	-0.004	-0.007	0.016	-0.069	-0.005	0.003	-0.009	0.039	0.001	1
	***	***	**		***	***	***	***	***	***	***	**	***	***	***

注：本表及其他表中的***、**、*均分别表示1%、5%和10%的显著性水平。

(二) 回归检验

1. 假说 1 和假说 2 的检验

表 4 列示了内部人买入规模和卖出规模对分析师预测偏差的影响。回归(1)、(2)分别检验了盈利预测当月内的累计内部人买入 (*BUY*) 和卖出 (*SELL*) 股票规模对分析师预测偏差 *FC_MEAN* 和 *FC_MEDIAN* 的影响, 可见, 整体而言, 内部人当月的买入和卖出股票规模对分析师预测偏差都没有显著的影响。回归(3)和(4)分别在回归(1)和(2)的基础上加入了分析师与公司之间存在利益关联时的内部人买入 (*BUY_RELATED*) 和卖出 (*SELL_RELATED*) 股票规模变量, 结果显示, 盈利预测当

表 4 内部人交易对分析师盈利预测偏差的影响

VARIABLES	(1)	(2)	(3)	(4)
	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	-0.008 (-1.536)	-0.008 (-1.477)	-0.01 (-1.478)	-0.01 (-1.431)
<i>BUY_RELATED</i>			0.000 (0.340)	0.010 (0.370)
<i>SELL</i>	-0.004 (-1.020)	-0.004 (-1.021)	-0.007* (-1.798)	-0.007* (-1.783)
<i>SELL_RELATED</i>			0.022*** (2.660)	0.021** (2.560)
<i>RELATED</i>	-0.124*** (-4.146)	-0.127*** (-4.291)	-0.133*** (-4.374)	-0.135*** (-4.509)
<i>TOPI</i>	-0.426*** (-2.959)	-0.423*** (-2.984)	-0.426*** (-2.964)	-0.424*** (-2.988)
<i>INSTITU</i>	-0.505 (-1.193)	-0.472 (-1.133)	-0.510 (-1.194)	-0.470 (-1.133)
<i>PB</i>	0.014 (1.547)	0.014 (1.580)	0.010 (1.540)	0.010 (1.580)
<i>MV</i>	-0.040 (-1.642)	-0.040* (-1.692)	-0.040 (-1.628)	-0.040* (-1.679)
<i>ROECHG</i>	-1.248*** (-6.471)	-1.225*** (-6.411)	-1.248*** (-6.468)	-1.225*** (-6.409)
<i>SH</i>	0.092*** (27.710)	0.091*** (27.960)	0.092*** (27.720)	0.091*** (27.970)
<i>HORIZON</i>	0.047 (0.939)	0.044 (0.892)	0.050 (0.950)	0.040 (0.900)
<i>LOSS</i>	0.434*** (2.914)	0.408*** (2.848)	0.434*** (2.910)	0.408*** (2.840)
控制年度	是	是	是	是
控制行业	是	是	是	是
Constant	1.737*** (3.150)	1.744*** (3.204)	1.731*** (3.140)	1.738*** (3.190)
Observations	47037	47037	47037	47037
Adjusted R-squared	0.063	0.064	0.06	0.06

注: 本表和下文表格中括号内为进行了异方差调整 (robust) 以及公司层面群聚调整 (cluster) 处理后的 T 值

月内的内部人买入股票规模 (*BUY*) 仍与因变量无显著关系，而内部人在盈利预测当月卖出股票规模 (*SELL*) 与因变量在 10% 水平上显著负相关。这说明在控制了分析师与公司之间存在利益关联的影响后，盈利预测当月的内部人买入股票规模对分析师盈利预测偏差未产生显著影响，而盈利预测当月的内部人卖出股票越多，分析师盈利预测的乐观程度越小，即分析师认为内部人卖出股票行为传递了公司未来盈利的负面信息，假说 1 得到部分验证。这一结果与国外的结论相反，如 Lustgarten and Mande (1998) 发现内部人买入股票能降低分析师预测误差而卖出股票则无影响，但与我国内部人卖出股票获得了超常回报而买入股票无明显超常回报的结论一致 (曾庆生, 2008; 朱茶芬、姚铮、李志文, 2011)。

回归 (3)、(4) 显示，*BUY_RELATED* 与因变量关系不显著，而 *SELL_RELATED* 与因变量在 1% (5%) 水平上显著正相关，即当分析师与公司存在利益关联而丧失其应有的独立性时，内部人买入股票规模未对而后的分析师盈利预测偏差产生显著影响，但是盈利预测当月的内部人卖出股票越多，而后分析师给出的盈余预测反而会出现更乐观的偏差。这是因为，出于维持业务以及获取私有信息的需要，关联分析师很可能丧失其应有的独立性，发布管理层“喜欢的”而非真实的盈利预测，即关联分析师会为迎合内部人的需要，在其卖出股票后对公司未来盈利做出更加乐观的预测，为其股票减持营造积极的市场氛围，从而躲避市场的猜疑和市场监管部门的关注。因此，假说 2 部分得到验证。

表 4 结果还显示，关联哑变量 *RELATED* 显著为负，由于现有研究和本文描述性统计部分均证实了分析师的系统性乐观偏差，因此 *RELATED* 与分析师预测偏差显著负相关说明，关联分析师的盈利预测更加准确，这很可能是由于相比于非关联分析师，他们可以获取更多的私有信息所致，也正是由于为了不断获取私有信息的需要，关联分析师在内部人卖出股票后，需要牺牲一定的预测准确度来配合他们。与单变量分析一致，公司第一大股东的持股比例越大、分析师预测前的最近一期定期报告中盈利能力同期增长越大，分析师盈利预测偏差乐观度越小；分析师对亏损公司的预测乐观程度更大。

2. 假说 3 和假说 4 的检验

表 5 分组检验了内部人交易对明星分析师和非明星分析师盈利预测偏差的影响。结果显示，在控制分析师与公司存在利益关联的影响下，内部人卖出股票规模与明星分析师盈利预测偏差在 1% 水平上显著负相关，而非明星分析师盈利预测偏差关系不显著，因此，就内部人卖出股票而言，支持假说 3A。此外，*SELL_RELATED* 的系数在明星分析师的子样本中，均在 5% 的水平上显著为正，而在非明星分析师的子样本中显著性下降至 10%，这在一定程度上说明，相比于关联非明星分析师而言，关联明星分析师更可能在内部人卖出股票后发布迎合公司管理层的盈利预测，假说 4 得到部分验证。

表 5 内部人交易、分析师能力与分析师盈利预测偏差

VARIABLES	明星分析师		非明星分析师	
	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	0.005 (0.470)	0.005 (0.469)	-0.019*** (-3.094)	-0.019*** (-3.048)
<i>BUY_RELATED</i>	-0.018 (-1.336)	-0.017 (-1.310)	0.039 (1.227)	0.039 (1.229)
<i>SELL</i>	-0.019*** (-4.404)	-0.019*** (-4.563)	-0.002 (-0.396)	-0.002 (-0.351)
<i>SELL_RELATED</i>	0.020** (2.473)	0.019** (2.342)	0.027* (1.954)	0.027* (1.932)
<i>RELATED</i>	-0.118*** (-3.161)	-0.120*** (-3.301)	-0.070 (-1.484)	-0.070 (-1.507)
<i>TOP1</i>	-0.204 (-1.262)	-0.206 (-1.299)	-0.577*** (-3.484)	-0.569*** (-3.485)
<i>INSTITU</i>	-0.368 (-0.800)	-0.318 (-0.701)	-0.348 (-0.698)	-0.316 (-0.645)
<i>PB</i>	0.010 (1.001)	0.010 (1.018)	0.017 (1.588)	0.017 (1.637)
<i>MV</i>	-0.044* (-1.650)	-0.042 (-1.608)	-0.012 (-0.447)	-0.014 (-0.528)
<i>ROECHG</i>	-1.200*** (-4.949)	-1.167*** (-4.878)	-1.242*** (-5.656)	-1.226*** (-5.632)
<i>SH</i>	0.087*** (20.31)	0.086*** (20.45)	0.102*** (25.63)	0.101*** (25.93)
<i>HORIZON</i>	-0.037 (-0.668)	-0.041 (-0.764)	0.084 (1.458)	0.082 (1.438)
<i>LOSS</i>	0.408** (1.991)	0.365* (1.912)	0.399** (2.400)	0.381** (2.358)
控制年度	是	是	是	是
控制行业	是	是	是	是
Constant	1.752*** (2.708)	1.691*** (2.653)	1.138* (1.816)	1.180* (1.911)
Observations	18473	18473	27987	27987
Adjusted R-squared	0.064	0.064	0.065	0.065

注：明星分析师、非明星分析师的 *FC_MEAN* 的均值（中位数）分别为 0.580（0.122）、0.727（0.145）。明星分析师、非明星分析师的 *FC_MEDIAN* 的均值（中位数）分别为 0.571（0.117）、0.720（0.144）。

3. 假说 5 和假说 6 的检验

表 6 分组检验了在高市场化程度和低市场化程度的地区中，内部人交易对分析师盈利预测偏差的影响。结果显示，在控制分析师与公司存在利益关联的影响下，处于不同市场化进程环境中的内部人买入股票规模和卖出股票规模，对分析师盈利预测偏差都没有显著影响且组间也没有显著差异，因而假说 5 没有得到验证。而与高市场化

程度地区相比，当公司处于低市场化程度的地区时，*SELL_RELATED* 与被解释变量在 5% 的水平上显著（而高市场化程度子样本不显著），说明当市场化程度较低时，由于私有信息更具有价值且缺乏完善严格的监管，关联分析师更可能为了维持私有信息的获取而在内部人卖出股票后为其站台，迎合管理层的需要，因此，就内部人卖出股票而言，假说 6 得到验证。

表 6 内部人交易、市场化程度与分析师盈利预测偏差

VARIABLES	高市场化程度		低市场化程度	
	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	-0.013 (-1.473)	-0.013 (-1.432)	-0.004 (-0.408)	-0.003 (-0.385)
<i>BUY_RELATED</i>	0.018 (1.008)	0.019 (1.048)	-0.008 (-0.526)	-0.008 (-0.557)
<i>SELL</i>	-0.007 (-1.338)	-0.006 (-1.284)	-0.006 (-1.023)	-0.006 (-1.062)
<i>SELL_RELATED</i>	0.011 (1.215)	0.010 (1.105)	0.038** (2.499)	0.037** (2.461)
<i>RELATED</i>	-0.101*** (-2.690)	-0.105*** (-2.830)	-0.156*** (-3.327)	-0.155*** (-3.367)
<i>TOP1</i>	-0.420** (-2.056)	-0.413** (-2.057)	-0.437** (-2.216)	-0.437** (-2.241)
<i>INSTITU</i>	-0.068 (-0.0982)	-0.049 (-0.0712)	-1.071** (-2.089)	-1.024** (-2.027)
<i>PB</i>	0.009 (0.726)	0.008 (0.705)	0.011 (0.839)	0.012 (0.899)
<i>MV</i>	-0.042 (-1.080)	-0.044 (-1.143)	-0.026 (-0.876)	-0.025 (-0.884)
<i>ROECHG</i>	-1.109*** (-3.642)	-1.073*** (-3.575)	-1.342*** (-5.481)	-1.332*** (-5.478)
<i>SH</i>	0.093*** (19.65)	0.092*** (19.94)	0.096*** (19.64)	0.096*** (19.75)
<i>HORIZON</i>	0.051 (0.719)	0.049 (0.711)	0.047 (0.717)	0.043 (0.662)
<i>LOSS</i>	0.441* (1.882)	0.393* (1.765)	0.391** (2.161)	0.389** (2.177)
控制年度	是	是	是	是
控制行业	是	是	是	是
Constant	1.933** (2.175)	1.969** (2.244)	1.366** (1.995)	1.353** (1.999)
Observations	23901	23901	23136	23136
Adjusted R-squared	0.064	0.064	0.072	0.072

(三) 进一步检验

第一，检验内部人亲属交易对分析师盈利预测偏差的影响。目前仅深圳证券交易所要求上市公司披露内部人直系亲属买卖本公司股票，表 7 以总样本中的深交所上市公司为样本检验了亲属交易对分析师预测偏差的影响，*SELL* 的系数虽仍然为负，但是不再显著，*SELL_RELATED* 仍与分析师盈利预测偏差在 5% 的水平上显著为负，与内部人交易的结果基本一致。即预测当月的亲属卖出规模越大，关联分析师盈利预测乐观程度越大。

表 7 内部人亲属交易对分析师盈利预测偏差的影响

VARIABLES	<i>FC_MEAN</i>	<i>FC_MEDIAN</i>
<i>BUY</i>	-0.010* (-1.660)	-0.010* (-1.656)
<i>BUY_RELATED</i>	-0.004 (-0.417)	-0.004 (-0.411)
<i>SELL</i>	-0.004 (-0.973)	-0.004 (-0.954)
<i>SELL_RELATED</i>	0.020** (2.289)	0.020** (2.202)
<i>RELATED</i>	-0.076* (-1.651)	-0.076* (-1.666)
<i>TOP1</i>	-0.404** (-2.276)	-0.403** (-2.300)
<i>INSTITU</i>	-0.177 (-0.311)	-0.165 (-0.294)
<i>PB</i>	-0.003 (-0.316)	-0.003 (-0.318)
<i>MV</i>	-0.016 (-0.560)	-0.017 (-0.603)
<i>ROECHG</i>	-1.074*** (-4.048)	-1.059*** (-4.041)
<i>HORIZON</i>	0.102*** (24.51)	0.101*** (24.85)
<i>LOSS</i>	0.461** (1.985)	0.450** (1.970)
控制年度	是	是
控制行业	是	是
Constant	1.329* (1.928)	1.337** (1.968)
Observations	27448	27448
Adjusted R-squared	0.068	0.068

第二，改变关联组样本的被解释变量 FC_MEAN 和 FC_MEDIAN 的计算方法：若关联组中同时存在关联和非关联分析师，剔除非关联分析师后，再计算相应的 FC_MEAN 和 FC_MEDIAN 。表 8 中的结果显示，内部人卖出规模 $SELL$ 的系数仍显著为负，且 T 值较表 4 略有上升， $SELL_RELATED$ 的系数也仍然在 5% 的水平上显著为正，即在改变了度量方法后，本文的结果不变。

表 8 剔除关联组样本中非关联分析师个体后的回归结果

VARIABLES	FC_MEAN	FC_MEDIAN
<i>BUY</i>	-0.009 (-1.476)	-0.009 (-1.428)
<i>BUY_RELATED</i>	0.005 -0.388	0.005 -0.418
<i>SELL</i>	-0.007* (-1.817)	-0.007* (-1.801)
<i>SELL_RELATED</i>	0.020** (2.365)	0.020** (2.354)
<i>RELATED</i>	-0.133*** (-4.347)	-0.127*** (-4.197)
<i>TOP1</i>	-0.427*** (-2.961)	-0.425*** (-2.987)
<i>INSTITU</i>	-0.487 (-1.143)	-0.461 (-1.099)
<i>PB</i>	0.014 -1.536	0.014 -1.577
<i>MV</i>	-0.040* (-1.651)	-0.040* (-1.681)
<i>ROECHG</i>	-1.257*** (-6.474)	-1.241*** (-6.452)
<i>SH</i>	0.092*** -27.8	0.091*** -28.05
<i>HORIZON</i>	0.046 -0.922	0.044 -0.892
<i>LOSS</i>	0.424*** -2.884	0.413*** -2.876
控制年度	是	是
控制行业	是	是
Constant	1.751*** -3.148	1.746*** -3.179
Observations	47037	47037
Adjusted R-squared	0.063	0.064

第三，改变内部人交易的计量方法，分别以净买入哑变量和净卖出哑变量，替代以上模型中的内部人净买入和净卖出规模的变量重复所有检验，结论无实质性变化。限于篇幅，未列示稳健性检验结果。

五、研究结论

本文通过检验我国内部人交易对分析师盈利预测偏差的影响，验证了内部人交易对专业的市场参与者——分析师的信号传递效应。研究发现，整体而言，内部人交易对随后的分析师盈利预测偏差未产生显著影响；但在控制关联分析师可能的预测迎合影响后，我国内部人卖出股票对分析师盈利预测的偏差产生了积极影响，即内部人卖出股票越多，分析师预测的乐观偏差越小；内部人买入股票无显著的信号传递效应。然而，内部人卖出股票对关联分析师的预测不仅没有信息传递效应，而且内部人卖出股票越多，关联分析师盈利预测偏差越乐观这表明内部人卖出股票对非关联分析师预测具有信息传递效应，而关联分析师则存在迎合内部人卖出股票的预测行为。进一步当考察分析师个人能力（个人声誉）和公司外部市场环境等因素时，研究发现，在控制关联分析师影响后，明星分析师比其他分析师更能将内部人卖出股票信息吸收到盈余预测中，同时，关联明星分析师比关联非明星分析师更可能出现迎合内部人卖出股票的盈利预测行为；关联分析师迎合内部人卖出股票的预测行为主要发生在低市场化进程的子样本中。

研究结果表明，尽管分析师通常被认为是拥有上市公司前景信息优势的市场参与者，但分析师仍需借助公司内部人交易信息改进盈利预测质量特别是预测准确性；我国内部人卖出股票行为对专业的市场参与者——分析师起到了信息传递作用，而内部人买入股票的信息传递效应不明显。这一结果与成熟市场不同，后者的内部人买入股票对分析师预测起到信号传递作用而卖出股票无信号作用。此外，由于缺乏有效的监督且分析师违规的成本较低，我国存在分析师与内部人合谋损害中小股东利益的现象。本文的研究意义在于从一个专业的信息使用者角度验证了我国内部人信息传递作用，且发现买入股票与卖出股票之间的信息传递功能差异，不仅对分析师特别是经验少的分析师的盈利预测和投资者的投资决策具有借鉴意义，而且为市场监管部门加强内部人交易及其信息披露的规范和监督，以充分发挥内部人交易的信息传递功能提供了证据支持。

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