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# Information in excess analyst coverage: Evidence from China's stock market

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## Abstract

This paper investigates whether excess analyst coverage can transmit information about future stock return and firm performance. We find that excess analyst coverage is positively correlated with future stock return, return on total assets and unexpected earnings of firms. Meanwhile, the abnormal return of the arbitrage strategy based on excess analyst coverage comes from its predictive power on future firm performance. Moreover, if excess analyst coverage is caused by good news, then higher excess coverage indicates that the firm will perform much better than the market's expectation, and the stock return is also much higher. Our findings offer further evidence on the information delivery role of analysts and help investors construct more effective investment portfolios.

**JEL classification numbers:** G11, G12, G14
**Keywords:** Excess analyst coverage, stock return, firm performance, information delivery

## 1. Introduction

Recently, there has been much debate on whether securities analysts can transmit information effectively in China's stock market. Theoretically, analysts are the information intermediary in the capital market, and they should disclose firm information to investors timely and correctly. However, China's securities analysts often attract investor attention by eye catching titles of reports, false research and negative news. In September, 2018, Securities Association of China issued Notice on Strengthening the Management of Securities Analysts Evaluation Activities

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which requires security brokers to strengthen the management of their securities analysts' behavior, protect analysts' reputation, improve research capacity and provide better service for investors. The academia does not gain consistent conclusions on the role of securities analysts either. Lin and McNichols (1998) and Michaely and Womack (1999) argue that securities analysts may cover firms and give them high ratings in exchange for future commercial cooperation between security brokers and firms. You et al. (2017) contend that there is beauty contest effect when analysts make earnings forecasts, that is analysts adjust earnings forecasts by referring to other analysts' forecasts rather than firm fundamental. On the other hand, Francis and Soffer (1997), Ivkovi and Jegadeesh (2004) and Jegadeesh et al. (2005) find that earnings forecast and ratings made by analysts contain much information. Zhang et al. (2017) find that earnings forecast revisions and rating revisions provide information on future firm performance, and investment portfolios based on them earn high abnormal return.

Most research on securities analysts focuses on predictive accuracy of earnings forecasts which is not only determined by analysts' research ability but also related to the quality of firm financial reports and macro environments (Michael and Womack, 1999; Dong et al., 2017; Chen and Li, 2017). Actually, analyst coverage itself may already contain valuable information. Demiroglu and Ryngaert (2010) find that the stock return caused by first analyst coverage is higher than that by rating issues, suggesting that there may be more information in analyst coverage compared with investment ratings and earnings forecasts. Lee and So (2017) find that unexpected stock return is associated with analyst coverage.

In China's stock market, analyst coverage may contain information about future firm performance and stock return. Reasons are as follows. First, similar to limited investor attention, analyst attention is a scarce resource. When an analyst spends effort on a firm, it indicates that the firm deserves to be focused on and analyzed at least from the analyst's view. Second, analysts mainly provide their research reports to institutional investors, therefore analyst coverage can reveal these investors' preference for stocks[2]. Since institutional investors are usually viewed as value investors, firms with much analyst coverage are more likely to perform well in the future and hence earn high stock return. Third, unlike earnings forecasts and investment ratings, analyst coverage mainly reflects analysts' motivation which is less affected by research ability, thus analyst coverage itself may be used as a cleaner signal for firm performance and stock return.

This paper explores the information contained in excess analyst coverage. We find that excess analyst coverage is positively correlated with future stock return, and results still hold after controlling for Fama and French three factors. A portfolio of stocks with highest excess analyst coverage outperforms a portfolio of stocks with

[2]During the selection of the New Fortune Best Analyst, institutional investors vote for securities analysts. Once securities analysts become the New Fortune Best Analysts, their salary will be extremely higher than others. Thus, institutional investors determine analysts' salary indirectly, and securities analysts have to cater to their preference for stocks.

lowest excess analyst coverage by 1.2% per month. Meanwhile, firms with high excess coverage have higher return on total assets and larger unexpected earnings. Besides, we find that excess analyst coverage cannot reveal more information in firms followed by star analysts, which may be caused by wider information dissemination in previous period. Finally, excess analyst coverage can be caused by good news or bad news. We find that excess coverage caused by good news illustrates that the firm will perform much better than the market's expectation, and corresponding stock return is abnormally higher.

We contribute to the existing literature in several ways. First, previous studies are mainly about information contained in analyst forecasts and ratings, but we focus on information contained in analyst coverage itself. To the best of our knowledge, this is the first paper investigating this topic in the setting of developing markets. Second, we relax the hypothesis in Lee and So (2017) that analysts prefer following firms with good performance. Specifically, we differentiate analysts' motivation to cover firms and find that excess coverage caused by different news predicts differently in future firm performance and stock return. Third, we explore whether excess analyst coverage contains more information in firms with star analysts, which helps to provide more complete evidence on the role of analysts.

The rest of the paper is organized as follows: Section 2 reviews literature and develops hypotheses. Section 3 describes data and research design. Section 4 presents empirical results. Section 5 concludes the paper.

## 2. Literature review and hypothesis development

Much literature finds that analysts are the information intermediary in the capital market. Analysts reduce information asymmetry and thus play an important role in the stock market. Brennan and Subrahmanyam (1996) and Derrien and Kecskés (2013) suggest that analysts increase information transparency between outside investors and firms. Conversely, firms' information quality influences analyst coverage. A large number of studies find that analysts are prone to follow firms with high information transparency (Lang and Lundholm, 1996; Healy et al., 1999; Li, 2007). For the two reasons above, Chang and Hilary (2006) use analyst coverage as the proxy for information asymmetry between managers and outside investors. Besides, some research find that analyst are outside monitors for firms, who help to mitigate the principal agent problems. Yu (2008) illustrates that there is less earnings management in firms with higher analyst coverage, and the effect is more pronounced in star analysts and experienced analysts. However, Li et al. (2016) find that analysts only reduce accrual earnings management, but the real earnings management increases by using Chinese data. Analysts' monitoring towards accrual earnings management induces managers to manipulate more real earnings which are hard to be supervised, and hence results in the seesaw effect in Li et al. (2016).

Recent research examines the relation between analysts and stock return mainly from analyst stock recommendation, earnings forecasts and investment ratings.

Irvine (2003) finds that stock return of first analyst coverage is higher than that of analyst recommendation because analyst coverage increases stock liquidity. Demiroglu and Ryngaert (2010) find that stock return for firms that are firstly covered by analysts is 4.84% during the analyst coverage announcement period. Literature based on Chinese data find that analysts' earnings forecasts and investment ratings can predict stock return (Wu and Xue, 2005; Wang et al., 2006; Hong, 2012). Huang (2013) find that earnings forecasts and stock ratings only work on stock price during the announcement period, and earnings forecast revisions and rating revisions do not have a significant impact on stock return. However, Zhang et al. (2017) contend that earnings forecast revisions and rating revisions can predict future stock return.

Analyst stock recommendations and the accuracy of earnings forecasts and stock ratings are affected by many factors, which may lead to inaccuracy of stock return prediction. However, analyst coverage, which mainly reflects analysts' motivation of following firms, may contain less noisy information and transmit more effective information about future stock return and firm performance. Lee and So (2017) find a positive association between stock return and excess analyst coverage using American data. They argue that stocks with high excess analyst coverage earn high future return because analysts pay more attention to stocks undervalued in previous period. In the setting of China, there is much noisy information in the stock market, and analysts only spend efforts to stocks they are interested in, thus excess analyst coverage may reflect good expectation of future firm performance. Besides, analysts cater to institutional investors' preference for stocks for career concerns. Since institutional investors are usually value investors, firms that they focus on are more likely to perform well in the future. Our first hypothesis is the following.

H1: Firms with higher excess analyst coverage perform better in the future, and the stock return is also higher.

Existing studies find that there is more useful information in research reports issued by star analysts, because they are more capable and care more about reputation, leading to less noisy information in their reports (Fang and Yasuda, 2014). Leone and Wu (2007) find that buying stocks recommended by star analysts produces abnormally higher return. Zhang et al. (2017) illustrate that earnings forecast revisions and stock rating revisions made by star analysts have stronger predictive power for future stock return. Nevertheless, some researchers cast doubt on the role of star analysts. Bradley et al. (2008) find that firms followed by star analysts do not outperform others.

Theoretically, star analysts are more skilled and they have stronger motivation to protect reputation, and hence they may choose firms with better future performance, which can be revealed by star analyst coverage. However, the institutional environment of China is not properly functioning, which may affect star analyst coverage. Therefore, excess analyst coverage in firms with star analyst may not reveal more information. Besides, Zhang et al. (2017) argue that there are two prerequisites to earn abnormal stock return from analysts' signal. First, analysts should transmit information. Second, stock prices do not reflect the information

timely. Investors may pay much attention to star analysts, and the information contained in their research can be absorbed into stock prices effectively, which also suppresses higher future stock return of firms with star analysts. Our second hypothesis is the following.

H2: Firms with star analyst coverage may outperform others, but excess analyst coverage in these firms cannot transmit more information about future performance and stock return.

Excess analyst coverage is not necessarily caused by glamour growth, and firms with extremely bad news may also have high excess analyst coverage. Thus, we should differentiate the motivation of analysts following a firm. When excess analyst coverage is caused by good news, it may not only confirm the good news but also indicate that the firm will perform much better than expected. However, when it is caused by bad news, much analyst coverage may aim to warn the risk of firms and remind investor that firms will perform much worse than the news itself. Our third hypothesis is the following.

H3: Excess analyst coverage caused by better (worse) news shows that firms perform much better (worse) than expected, and stock return is also much higher (lower).

# 3. Main Results

## 3.1 Sample selection

We choose Shanghai and Shenzhen A-share listed firms from 2007 to 2017 as original sample. Financial firms, firms listed less than 12 months and firms with missing variables are deleted, and we finally gain 146983 firm-month observations. We choose 2007 as the beginning of the sample period because data for analyst coverage has become available since this year. Data for analyst coverage, stock trading and firm financial information is obtained from China Stock Market and Accounting Research Database (CSMAR) maintained by GTA Information Technology. Data for Fama and French three factors is from RESSET database, and institutional ownership comes from Wind database. All continuing variables are winsorized at 1 and 99 percent.

## 3.2 Variable definition

We calculate excess analyst coverage in China based on the method of Lee and So (2017). Existing literature argues that previous stock return, firm size and trading activity affect analyst coverage. We find that cumulative stock return, market value of firms, turnover rate, return on total assets and revenue growth rate are main determinants for analyst coverage in China's stock market. Analyst coverage excluding the observable factors mentioned above is the excess analyst coverage, and the specific regression model is the following:

$$\log(1 + Anf_{i,t}) = \alpha_{0,t} + \alpha_{1,t}Return_{i,t} + \alpha_{2,t}Value_{i,t} + \alpha_{3,t}Dturn_{i,t} + \alpha_{4,t}Roa_{i,t} + \alpha_{5,t}Growth_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $Anf_{i,t}$ is the sum of analyst reports for firm i from month t-2 to month t, $Return_{i,t}$ is the market-adjusted cumulative stock return of firm i from month t-2 to month t, $Value_{i,t}$ is the average of the log of market value of firm i from month t-2 to month t, $Dturn_{i,t}$ is the average turnover rate of firm i from month t-2 to month t, $Roa_{i,t}$ is the nearest return on total assets of firm i before month t, $Growth_{i,t}$ is the nearest revenue growth rate of firm i before month t[3]. We estimate model (1) for the full sample in every month, and $\varepsilon_{i,t}$ is the residual of the regression. Higher residual indicates that higher excess analyst coverage, which may signal better future firm performance.

We use market-adjusted stock return for past three months as the proxy for the content of information that causes excess analyst coverage. Stock price rises when firms have good news and drops otherwise. Thus, higher stock return implies better news, and market-adjusted stock return can be used to measure the content of the information.

[3]Note that variable definitions and calculations for excess analyst coverage are different from Lee and So (2017) due to the different institutional background in China's stock market.

**Table 1 Main variable definitions**

| Variable | Definition |
|---|---|
| Anf | Analyst coverage, measured as the sum of reports for a firm each month. |
| Aot | Excess analyst coverage, measured as the residual of the regression of the log of analyst coverage on market-adjusted cumulative stock return, turnover rate, market value of the firm, return on total assets and revenue growth rate, and details are displayed in model (1). |
| Roa | Return on total assets, calculated as net profits/total assets. |
| Sue | Unexpected earnings. Following Wu and Wu (2005), we define the difference of earnings per share in this period and that of last period as unexpected surplus. Unexpected earnings is calculated as unexpected surplus divided by the standard deviation of unexpected surplus of past four periods. |
| Return | Market-adjusted cumulative stock return, measured as the difference between cumulative stock return of the firm for past 3 months and that of the market. |
| Mretwd | Monthly stock return. |
| Value | Log of the market value of the firm. |
| Dturn | Turnover rate of the firm. |
| Star | The dummy variable for star analysts, which is equal to one if the firm is followed by New Fortune Best analysts and zero otherwise. |
| Size | Log of the total assets of firms. |
| Growth | Revenue growth rate of the firm, measured as (operating revenue of this period-operating revenue of last period)/absolute value of operating revenue of last period. |
| Mome | Momentum effect, measured as cumulative stock return of the firm for past 12 months minus that of the market. |
| Reversal | Reversal effect, equal to stock return of the firm of last month. |
| Std | Standard deviation of stock return, calculated as the standard deviation of monthly stock return for past 12 months. |
| Bm | Book to market ratio, measured as the book value of the firm divided by the market value of the firm. |
| Leverage | Leverage of the firm |
| Acc | Earnings management, calculated from the modified Jones model (Jones, 1991). |
| Inshare | Institutional ownership, measured by the shareholdings of institutional investors of the firm. |

### 3.3 Empirical design

To examine the value of the strategy based on excess analyst coverage, we construct arbitrage portfolios with overlapping holding periods following Jegadeesh and Titman (1993). Specifically, in the end of each month t-1, stocks are ranked in ascending order on the basis of their excess analyst coverage, and five portfolios are formed by these rankings. In the beginning of each month t, the strategy buys the portfolio with highest excess analyst coverage and sells the portfolio with lowest excess analyst coverage, holding this position for K months. In other words, in month t, we buy portfolios with highest excess analyst coverage in past K-1, K-2, …, 1 month, and sell portfolios with lowest excess analyst coverage in corresponding periods. Besides, we explore whether the strategy can obtain abnormal return after controlling for Fama and French three factors. Furthermore, we use Fama-MacBeth method to analyze the relation between excess analyst coverage and monthly stock return after controlling for firm size, financial indicators and other determinants by the following regression:

$$Mretwd_{i,t} = \beta_{0,t} + \beta_{1,t}Aot_{i,t-1} + \delta_t X_{i,t-1} + \epsilon_{i,t} \quad (2)$$

where $Mretwd_{i,t}$ is the stock return of firm i in month t, $Aot_{i,t-1}$ is the excess analyst coverage of firm i in month t-1 calculated from model (1), $X_{i,t-1}$ represents other determinants, such as turnover rate, firm size, volatility of stock return, momentum effect and reversal effect.

We use Fama-MacBeth method to clarify the association excess analyst coverage and future firm performance, where firm performance is measured as return on total assets and unexpected earnings. Following is the regression:

$$Y_{i,t} = \gamma_{0,t} + \gamma_{1,t}Aot_{i,t-1} + \pi_t X_{i,t-1} + \mu_{i,t} \quad (3)$$

where $Y_{i,t}$ is return on total assets or unexpected earnings in the nearest future of firm i in month t, $Aot_{i,t-1}$ is excess analyst coverage calculated from model (1), $X_{i,t-1}$ stands for control variables including firm size, leverage, revenue growth rate, book to market ratio and market-adjusted stock return.

To explore the interaction effect of information content and star analyst with excess analyst coverage, we augment regression (2) and (3) with an interaction variable of excess analyst coverage and corresponding variables by following regressions:

$$Mretwd_{i,t} = \beta_{0,t} + \beta_{1,t}Aot_{i,t-1} + \beta_{2,t}Star_{i,t-1} + \beta_{3,t}Star_{i,t-1} \times Aot_{i,t-1} + \delta_t X_{i,t-1} + \epsilon_{i,t} \quad (4)$$

$$Mretwd_{i,t} = \beta_{0,t} + \beta_{1,t}Aot_{i,t-1} + \beta_{2,t}Return_{i,t-1} + \beta_{3,t}Return_{i,t-1} \times Aot_{i,t-1} + \delta_t X_{i,t-1} + \epsilon_{i,t} \quad (5)$$

$$Y_{i,t} = \gamma_{0,t} + \gamma_{1,t}Aot_{i,t-1} + \gamma_{2,t}Star_{i,t-1} + \gamma_{3,t}Star_{i,t-1} \times Aot_{i,t-1} + \pi_t X_{i,t-1} + \mu_{i,t} \quad (6)$$

$$Y_{i,t} = \gamma_{0,t} + \gamma_{1,t} Aot_{i,t-1} + \gamma_{2,t} Return_{i,t-1} + \gamma_{3,t} Return_{i,t-1} \times Aot_{i,t-1} + \pi_t X_{i,t-1} + \mu_{i,t} \quad (7)$$

where model (4) and (6) examine the effect of star analyst, and model (5) and (7) are for the information which causes excess analyst coverage. $Star_{i,t-1}$ is a dummy variable equal to 1 if firm i is followed by star analysts in last month and zero otherwise. $Return_{i,t-1}$ is the market-adjusted cumulative stock return from month t-3 to month t-1, and higher value of it implies that the news that causes analyst coverage is better.

# 4. Empirical results

## 4.1 Summary statistics

Table 2 shows summary statistics. The mean and median of analyst coverage is 1.34 and 1.39 respectively, average excess analyst coverage is 0 and its median is -0.14, suggesting that at least one half of firms have been followed by analysts, but most firms are not covered by a large number of analysts. To mitigate the concern that our results are caused by firms without analyst coverage, we delete them in robustness tests. Besides, the mean of star analyst is 0.11, indicating that eleven percent of firms have been followed by star analysts.

**Table 2 Summary statistics**

| Variable | N | mean | Median | sd | min | max |
|---|---|---|---|---|---|---|
| Anf | 146983 | 1.340 | 1.390 | 1.410 | 0 | 5.630 |
| Aot | 146983 | 0 | -0.140 | 1.110 | -2.320 | 2.510 |
| Roa | 146983 | 0.0200 | 0.0200 | 0.0400 | -0.110 | 0.150 |
| Sue | 146983 | -0.0500 | 0 | 1.650 | -4.800 | 4.240 |
| Return | 146983 | 0.0300 | -0.0100 | 0.200 | -0.400 | 0.830 |
| Mretwd | 146983 | 0.0200 | 0.0100 | 0.140 | -0.340 | 0.470 |
| Value | 146983 | 15.52 | 15.42 | 1.010 | 12.35 | 21.59 |
| Dturn | 146983 | 0.520 | 0.400 | 0.410 | 0.0400 | 1.980 |
| Star | 146983 | 0.110 | 0 | 0.310 | 0 | 1 |
| Size | 146983 | 22 | 21.86 | 1.350 | 19.01 | 25.94 |
| Growth | 146983 | 0.260 | 0.100 | 0.890 | -0.740 | 6.840 |
| Mome | 146983 | 0.0900 | 0 | 0.420 | -0.660 | 1.850 |
| Reversal | 146983 | 0.0200 | 0.0100 | 0.150 | -0.340 | 0.480 |
| Std | 146983 | 0.150 | 0.140 | 0.0700 | 0.0500 | 0.400 |
| Bm | 146983 | 0.520 | 0.500 | 0.250 | 0.0700 | 1.110 |
| Leverage | 146983 | 0.490 | 0.490 | 0.230 | 0.0500 | 1.130 |
| Acc | 146983 | 0.0900 | 0.0600 | 0.100 | 0 | 0.660 |
| Inshare | 146983 | 0.360 | 0.360 | 0.230 | 0 | 0.870 |

### 4.2 Excess analyst coverage

We calculate excess analyst coverage by model (1) in this section. To display the predictive power of firm characteristics that we choose, table 3 shows changes of parameters when different variables are added into the regression. Lee and So (2017) use stock return, market value of firms and turnover rate as observable variables to calculate the expected analyst coverage, and column (1) in table 3 shows the result of using above variables. The result indicates that analysts pay more attention to firms with high stock return, large market capitalization and low turnover rate. Return on total assets are incorporated in column (2), and the coefficient of it suggests that analysts follow firms with good performance. Besides, $R^2$ rises 11.47%, which illustrates that incorporation of the new variable greatly increases the predictive power. We add revenue growth rate in column (3), and find that analysts spend less efforts to firms with higher growth capacity. Furthermore, column (4) and (5) augment book to market ratio and leverage respectively, but the coefficients are insignificant and $R^2$ only rises 1.62% in column (5) relative to that in column (3), thus the corporation of these two variables cannot significantly increase predictive power of the model. Overall, we add return on total assets and revenue growth rate on the basis of Lee and So (2017), and measure excess analyst coverage by the residual of the model.

**Table 3 Determinants of analyst coverage**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | $\log(1+Anf_t)$ | $\log(1+Anf_t)$ | $\log(1+Anf_t)$ | $\log(1+Anf_t)$ | $\log(1+Anf_t)$ |
| $Return_t$ | 0.601*** | 0.529*** | 0.531*** | 0.553*** | 0.556*** |
| | (6.36) | (6.48) | (6.51) | (6.56) | (6.75) |
| $Value_t$ | 0.775*** | 0.678*** | 0.676*** | 0.681*** | 0.685*** |
| | (20.24) | (21.02) | (20.93) | (21.94) | (21.17) |
| $Dturn_t$ | -0.224*** | -0.231*** | -0.228*** | -0.250*** | -0.254*** |
| | (-2.62) | (-3.29) | (-3.22) | (-3.68) | (-4.02) |
| $Roa_t$ | | 9.822*** | 10.09*** | 9.825*** | 9.667*** |
| | | (10.17) | (10.33) | (11.26) | (14.08) |
| $Growth_t$ | | | -0.0131* | -0.0167** | -0.0179** |
| | | | (-1.80) | (-2.40) | (-2.50) |
| $Bm_t$ | | | | -0.0716 | -0.0732 |
| | | | | (-0.72) | (-0.82) |
| $Leverage_t$ | | | | | 0.0378 |
| | | | | | (0.37) |
| _cons | -10.53*** | -9.206*** | -9.186*** | -9.198*** | -9.289*** |
| | (-18.53) | (-19.27) | (-19.20) | (-20.05) | (-19.87) |
| Avg. $R^2$ | 0.3426 | 0.3819 | 0.3826 | 0.3863 | 0.3888 |
| N | 146983 | 146983 | 146983 | 146983 | 146983 |

This table investigates factors that determine analyst coverage of firms. Our sample

contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variable is the natural log of the sum of one plus analyst reports, which is the proxy for analyst coverage. We use the Fama-MacBeth method in regressions. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.3 Return of the strategy based on excess analyst coverage

Table 4 presents the return of portfolios ranked by excess analyst coverage. The portfolio constructed by stocks with highest excess analyst coverage produces significantly positive return. However, return of the portfolio with lowest excess analyst coverage is nearly zero. Besides, the monthly return of the arbitrage strategy is 1.23%, 1.12% and 1.08% respectively when the holding period ranges from one to three months, which suggests that excess analyst coverage may help to predict future stock return, lending support to our first hypothesis.

**Table 4 Return of portfolios based on excess analyst coverage**

| J=1 | SELL | 2 | 3 | 4 | BUY | BUY-SELL |
|---|---|---|---|---|---|---|
| equal-weighted | 0.0089 | 0.0176* | 0.0197** | 0.0166* | 0.0205** | 0.0116*** |
| | (0.95) | (1.75) | (2.03) | (1.72) | (2.21) | (4.85) |
| value-weighted | 0.0039 | 0.0115 | 0.0110 | 0.0100 | 0.0162** | 0.0123*** |
| | (0.47) | (1.26) | (1.21) | (1.14) | (1.90) | (3.32) |
| J=2 | SELL | 2 | 3 | 4 | BUY | BUY-SELL |
| equal-weighted | 0.0100 | 0.0177* | 0.0195** | 0.0160* | 0.0201** | 0.0100*** |
| | (1.07) | (1.77) | (2.00) | (1.65) | (2.18) | (4.35) |
| value-weighted | 0.0050 | 0.0105 | 0.0112 | 0.0106 | 0.0162* | 0.0112*** |
| | (0.59) | (1.15) | (1.25) | (1.19) | (1.91) | (3.18) |
| J=3 | SELL | 2 | 3 | 4 | BUY | BUY-SELL |
| equal-weighted | 0.0109 | 0.0176* | 0.0191** | 0.0161* | 0.0199** | 0.0090*** |
| | (1.16) | (1.77) | (1.97) | (1.67) | (2.15) | (3.96) |
| value-weighted | 0.0055 | 0.0104 | 0.0102 | 0.0114 | 0.0163** | 0.0108*** |
| | (0.66) | (1.15) | (1.14) | (1.28) | (1.92) | (3.07) |

Table 4 examines the abnormal return of portfolios based on excess analyst coverage. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. We construct portfolios with overlapping holding periods following Jegadeesh and Titman (1993). J is the length of holding period. Excess analyst coverage becomes higher gradually from SELL to BUY. BUY (SELL) refers the portfolio built by stocks with highest (lowest) excess analyst coverage, and BUY-SELL is the arbitrage strategy of longing the BUY portfolio and shorting the SELL portfolio. The *t*-statistics are calculated using the monthly time-series distribution. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels,

respectively.

To highlight the importance of using excess analyst coverage, we group stocks by total analyst coverage and examine the return of the arbitrage strategy in table 5. Only stocks with highest total analyst coverage earn significantly positive return when stocks are equally weighted. The insignificant return of the arbitrage strategy suggests that raw analyst coverage provides little information about future stock return. Analysts are easily attracted by large firm or previous high stock return, and the observable information contained in raw analyst coverage cannot produce high return. Nevertheless, excess analyst coverage excludes the widely-used observable information and may contain much hidden useful information, which helps to predict future stock return.

**Table 5 Return of portfolios based on total analyst coverage**

| J=1 | Sell | 2 | 3 | 4 | BUY | BUY-SELL |
|---|---|---|---|---|---|---|
| equal-weighted | -0.0122 | 0.0166* | 0.0139 | 0.0142 | 0.0151* | 0.0273 |
| | (-0.70) | (1.78) | (1.45) | (1.53) | (1.77) | (0.48) |
| value-weighted | -0.0182 | 0.0110 | 0.0075 | 0.0070 | 0.0100 | 0.0282 |
| | (-1.13) | (1.22) | (0.82) | (0.82) | (1.27) | (0.64) |
| J=2 | Sell | 2 | 3 | 4 | BUY | BUY-SELL |
| equal-weighted | -0.0126 | 0.0150 | 0.0133 | 0.0141 | 0.0150* | 0.0276 |
| | (-0.89) | (1.57) | (1.33) | (1.53) | (1.76) | (0.81) |
| value-weighted | -0.0170 | 0.0097 | 0.0072 | 0.0070 | 0.0103 | 0.0273 |
| | (-1.29) | (1.06) | (0.76) | (0.83) | (1.32) | (1.21) |
| J=3 | Sell | 2 | 3 | 4 | BUY | BUY-SELL |
| equal-weighted | -0.0045 | 0.0158 | 0.0166 | 0.0140 | 0.0150* | 0.0195 |
| | (-0.34) | (1.65) | (1.67) | (1.52) | (1.75) | (0.69) |
| value-weighted | -0.0092 | 0.0104 | 0.0104 | 0.0072 | 0.0106 | 0.0198 |
| | (-0.73) | (1.14) | (1.10) | (0.84) | (1.35) | (1.00) |

This table examines the abnormal return of portfolios based on total analyst coverage. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. We construct portfolios with overlapping holding periods following Jegadeesh and Titman (1993). J is the length of holding period. Total analyst coverage becomes higher gradually from SELL to BUY. BUY (SELL) refers the portfolio built by stocks with highest (lowest) total analyst coverage, and BUY-SELL is the arbitrage strategy of longing the BUY portfolio and shorting the SELL portfolio. The *t*-statistics are calculated using the monthly time-series distribution. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Further, we regress portfolios on Fama and French three factors to investigate the abnormal return, and results are shown in table 6. The abnormal monthly return of the arbitrage strategy is 0.8% after controlling for the risk factors, indicating the robustness of the return prediction of excess analyst coverage.

**Table 6 Regressions of portfolios on Fama and French three factors**

| | Alpha | Mktrf | Smb | Hml |
|---|---|---|---|---|
| 5 (High ATOT) | 0.003 | 0.943*** | 0.515*** | -0.306** |
| | (1.02) | (26.54) | (5.83) | (-2.35) |
| 4 | -0.002 | 1.041*** | 0.443*** | 0.0557 |
| | (-0.85) | (30.54) | (5.92) | (0.47) |
| 3 | -0.001 | 1.088*** | 0.433*** | 0.315*** |
| | (-0.58) | (32.67) | (6.50) | (3.12) |
| 2 | -0.002 | 1.046*** | 0.544*** | 0.249** |
| | (-0.87) | (32.00) | (8.14) | (2.41) |
| 1 (Low ATOT) | -0.005** | 1.034*** | 0.304*** | 0.258** |
| | (-2.22) | (32.40) | (4.10) | (2.27) |
| High-Low | 0.008*** | -0.091*** | 0.211*** | -0.564*** |
| (t-statistic) | (5.05) | (3.71) | (3.45) | (10.93) |

This table investigates whether the arbitrage strategy produces positive return after controlling for Fama and French three factors. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. Portfolios are constructed by the method mentioned above, stocks are value-weighted within each portfolio, and the holding period is one month. Excess analyst coverage increases gradually from 1 to 5. Alpha is the intercept from the regression of raw return of portfolios minus risk-free rate on excess market return (Mktrf) and two Fama and French factors (Smb and Hml). The *t*-statistics are calculated using the monthly time-series distribution. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.4 Excess analyst coverage and future stock return

Table 7 shows the result of Fama-MacBeth method when regressing stock return of next month on excess analyst coverage. To clarify the economic meaning of coefficients, the explanatory variables are standardized each month, and stock return is measured in percentage. Column (1) only incorporates excess analyst coverage, and control variables are augmented from column (2) to (4). We add earnings management, which is the proxy for information transparency, and institutional ownership to alleviate the concern that analysts pay much attention to firms with good information environments and high institutional ownership. Coefficients of excess analyst coverage are significantly positive from column (1) to (4), illustrating that there is higher return for stocks with higher excess analyst coverage after controlling for other variables, and a one standard deviation increases in excess analyst coverage implies an increase in monthly stock return equal to

0.26%.

**Table 7 Fama-MacBeth regressions of stock return on excess analyst coverage**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ |
| $Aot_t$ | 0.243*** | 0.260*** | 0.254*** | 0.259*** |
| | (3.30) | (4.23) | (4.10) | (4.28) |
| $Dturn_t$ | | -0.586*** | -0.560*** | -0.567*** |
| | | (-6.26) | (-5.58) | (-5.58) |
| $Size_t$ | | -1.083*** | -1.124*** | -1.118*** |
| | | (-5.44) | (-4.88) | (-4.89) |
| $Roa_t$ | | 0.236*** | 0.272*** | 0.273*** |
| | | (3.26) | (3.52) | (3.55) |
| $Bm_t$ | | 0.845*** | 0.912*** | 0.904*** |
| | | (5.99) | (5.99) | (5.82) |
| $Growth_t$ | | 0.111** | 0.127** | 0.115** |
| | | (2.50) | (2.60) | (2.51) |
| $Std_t$ | | 0.146* | 0.132* | 0.130* |
| | | (1.85) | (1.69) | (1.72) |
| $Mome_t$ | | | 0.0212 | 0.0107 |
| | | | (0.70) | (0.34) |
| $Reversal_t$ | | | -0.798*** | -0.792*** |
| | | | (-5.39) | (-5.33) |
| $Inshare_t$ | | | | 0.0384 |
| | | | | (1.43) |
| $Acc_t$ | | | | 0.0422 |
| | | | | (0.85) |
| _cons | 1.653* | 1.659* | 1.650* | 1.641* |
| | (1.69) | (1.70) | (1.69) | (1.68) |
| Avg. $R^2$ | 0.0079 | 0.0958 | 0.1129 | 0.1161 |
| N | 146983 | 146983 | 146983 | 146983 |

This table explores the relation between excess analyst coverage and future stock return. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are monthly stock return, which is measured in percentage. All explanatory variables are standardized each month. We use the Fama-MacBeth method in regressions. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.5 Excess analyst coverage and future firm performance

Analysts may pay much more attention to firms with potentially good performance, which helps to explain the predictive power of excess analyst coverage towards future stock return. Table 8 and 9 investigate the association between excess analyst coverage and future firm performance, where we use return on total on assets and unexpected earnings as proxies for firm performance. Similarly, we standardize all explanatory variables each month, and return on total assets is measured in percentage. Table 8 illustrates that firms with higher excess analyst coverage perform better in the future, and a one standard deviation increases in excess analyst coverage implies an increase in return on total assets equal to 0.366%, 0.401% and 0.433% respectively for next three months, which has significant economic meaning compared with the mean and median of return on total assets.

**Table 8 Excess analyst coverage and return on total assets of firms**

| | (1) | (2) | (3) |
|---|---|---|---|
| | $Roa_{t+1}$ | $Roa_{t+2}$ | $Roa_{t+3}$ |
| $Aot_t$ | 0.366*** | 0.401*** | 0.433*** |
| | (7.23) | (8.35) | (10.39) |
| $Size_t$ | 1.526*** | 1.488*** | 1.448*** |
| | (23.93) | (25.34) | (23.05) |
| $Growth_t$ | 0.357*** | 0.303*** | 0.253*** |
| | (7.49) | (7.20) | (6.79) |
| $Bm_t$ | -1.324*** | -1.315*** | -1.313*** |
| | (-38.22) | (-38.79) | (-35.84) |
| $Leverage_t$ | -1.189*** | -1.135*** | -1.082*** |
| | (-26.04) | (-24.04) | (-21.97) |
| $Mome_t$ | -0.00967 | 0.0000957 | 0.00221 |
| | (-1.55) | (0.01) | (0.21) |
| $Std_t$ | -0.284*** | -0.290*** | -0.284*** |
| | (-8.09) | (-7.35) | (-5.84) |
| $Acc_t$ | 0.0254 | 0.0122 | 0.0255 |
| | (1.29) | (0.77) | (1.55) |
| $Inshare_t$ | -0.0205*** | -0.0278*** | -0.0242*** |
| | (-2.90) | (-3.45) | (-3.21) |
| _cons | 2.121*** | 2.122*** | 2.106*** |
| | (25.47) | (24.89) | (22.10) |
| Avg. $R^2$ | 0.2822 | 0.2645 | 0.2400 |
| N | 146983 | 146983 | 146983 |

This table uses the Fama-MacBeth method to explore whether excess analyst coverage signals better future performance. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are return on total assets in next three months, which is measured in percentage. All explanatory variables are standardized each month. We use the Fama-MacBeth

method in regressions. The t-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9 examines the relation between excess analyst coverage and unexpected earnings. Results indicate that a one standard deviation increases in excess analyst coverage implies an increase in unexpected earnings equal to 0.0657, 0.0696 and 0.0597 respectively for next three months, which has significant economic meaning compared with the mean and median of unexpected earnings. Overall, results from table 4 to 9 illustrate that higher excess analyst coverage predicts better future firm performance and higher stock return, support hypothesis one.

**Table 9 Excess analyst coverage and unexpected earnings of firms**

| | (1) | (2) | (3) |
|---|---|---|---|
| | $Sue_{t+1}$ | $Sue_{t+2}$ | $Sue_{t+3}$ |
| $Aot_t$ | 0.0657*** | 0.0696*** | 0.0597*** |
| | (4.41) | (4.49) | (4.16) |
| $Dturn_t$ | -0.0404** | -0.0455** | -0.0544*** |
| | (-2.31) | (-2.21) | (-3.15) |
| $Size_t$ | 0.114*** | 0.0716*** | 0.0278 |
| | (4.33) | (2.81) | (1.25) |
| $Growth_t$ | 0.204*** | 0.144*** | 0.0687*** |
| | (11.44) | (14.05) | (7.51) |
| $Bm_t$ | -0.177*** | -0.132*** | -0.0794*** |
| | (-7.67) | (-5.45) | (-3.58) |
| $Leverage_t$ | 0.0828*** | 0.0929*** | 0.0999*** |
| | (4.44) | (4.99) | (5.53) |
| $Mome_t$ | -0.00897*** | -0.00689 | -0.00398 |
| | (-2.96) | (-1.38) | (-1.12) |
| $Std_t$ | -0.0239 | -0.00955 | -0.000568 |
| | (-1.59) | (-0.73) | (-0.04) |
| $Acc_t$ | -0.0726*** | -0.0676*** | -0.0565*** |
| | (-6.23) | (-5.91) | (-5.39) |
| $Inshare_t$ | -0.00693** | -0.00822*** | -0.00669** |
| | (-2.39) | (-3.19) | (-2.55) |
| _cons | -0.0177 | -0.00642 | 0.00625 |
| | (-0.22) | (-0.08) | (0.08) |
| Avg. $R^2$ | 0.0468 | 0.0363 | 0.0269 |
| N | 146983 | 146983 | 146983 |

This table uses the Fama-MacBeth method to examine the relation between excess analyst coverage and unexpected earnings. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are unexpected earnings in next three months. All explanatory variables are standardized each month. We use the Fama-MacBeth method in regressions. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.6 Why excess analyst coverage can predict future stock return?

Firms with high excess analyst coverage have high stock return and good performance in the future. A natural question is that whether its predictive power of stock return comes from its great prediction of firm performance. Following Jegadeesh et al. (2005) and Zhang et al. (2017), we augment proxies for firm performance in model (2) and analyze the changes of excess analyst coverage coefficients. Table 10 shows the results. After the incorporation of return on total assets in column (2) and unexpected earnings in column (3), coefficients of excess analyst coverage drop 35.14% and 16.99% respectively, indicating that excess analyst coverage predicts stock return because it transmits the information of future performance.

**Table 10 Explanations for the predictive power of excess analyst coverage on return**

| | (1) | (2) | (3) |
|---|---|---|---|
| | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ |
| $Aot_t$ | 0.259*** | 0.168*** | 0.215*** |
| | (4.28) | (3.10) | (3.31) |
| $Roa_{t+1}$ | | 18.67*** | |
| | | (3.51) | |
| $Roa_{t+2}$ | | 7.405** | |
| | | (2.60) | |
| $Roa_{t+3}$ | | 14.57*** | |
| | | (7.03) | |
| $Sue_{t+1}$ | | | 0.238*** |
| | | | (5.40) |
| $Sue_{t+2}$ | | | 0.152*** |
| | | | (2.92) |
| $Sue_{t+3}$ | | | 0.272*** |
| | | | (6.37) |
| $Size_t$ | -1.118*** | -1.241*** | -1.212*** |
| | (-4.89) | (-5.54) | (-4.88) |
| $Roa_t$ | 0.273*** | -0.669*** | 0.166** |
| | (3.55) | (-6.96) | (2.29) |
| $Bm_t$ | 0.904*** | 1.085*** | 0.895*** |
| | (5.82) | (7.13) | (5.39) |
| $Growth_t$ | 0.115** | 0.112** | 0.0682* |
| | (2.51) | (2.33) | (1.67) |
| $Std_t$ | 0.130* | 0.159** | 0.136* |
| | (1.72) | (2.14) | (1.68) |
| $Mome_t$ | 0.0107 | 0.00809 | -0.00610 |
| | (0.34) | (0.26) | (-0.20) |
| $Reversal_t$ | -0.792*** | -0.835*** | -0.831*** |
| | (-5.33) | (-5.72) | (-5.19) |
| $Acc_t$ | 0.0422 | 0.0450 | 0.0525 |
| | (0.85) | (0.94) | (1.04) |
| $Inshare_t$ | 0.0384 | 0.0386 | 0.0315 |
| | (1.43) | (1.33) | (1.25) |
| _cons | 1.641* | 0.784 | 1.434 |
| | (1.68) | (0.78) | (1.51) |
| Avg. $R^2$ | 0.1161 | 0.1279 | 0.1270 |
| N | 146983 | 146983 | 146983 |

This table investigates why excess analyst coverage can predict future stock return. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to

2017. The dependent variables are stock return in next month, which is measured in percentage. All explanatory variables are standardized each month. We use the Fama-MacBeth method in regressions. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.7 The interaction effect of star analysts, information content and excess analyst coverage

We examine two questions in this section. First, whether there is more information contained in excess analyst coverage in firms followed by star analysts? Second, if excess analyst coverage is caused by better information, which is represented by higher previous market-adjusted stock return, then is it implies better firm performance and higher stock return? Answers are shown from table 11 to table 13. In column (1) of table 11, the cross term of star analyst dummy and excess analyst coverage is insignificant, illustrating that excess analyst coverage cannot signal much higher stock return in firms followed by star analysts. The possible reason is that star analysts attract much investor attention, and the information contained in analyst coverage has already been absorbed into stock prices, which cannot produce higher abnormal return in the future. Besides, the significant and positive coefficient of the interaction in column (2) of table 11 indicates that excess analyst coverage predicts substantially higher return if the news that causes analyst coverage is better.

**Table 11 Effects of star analysts and different information on stock return**

| | (1) | (2) |
|---|---|---|
| | $Mretwd_{t+1}$ | $Mretwd_{t+1}$ |
| $Aot_t$ | 0.267*** | 0.233*** |
| | (4.32) | (3.86) |
| $Star_t \times Aot_t$ | -0.0923 | |
| | (-0.85) | |
| $Star_t$ | 0.0785 | |
| | (0.44) | |
| $Return_t \times Aot_t$ | | 0.177*** |
| | | (3.07) |
| $Return_t$ | | -0.180 |
| | | (-1.46) |
| $Dturn_t$ | -0.567*** | -0.554*** |
| | (-5.56) | (-5.27) |
| $Size_t$ | -1.123*** | -1.093*** |
| | (-5.12) | (-4.65) |
| $Roa_t$ | 0.273*** | 0.300*** |
| | (3.58) | (3.87) |
| $Bm_t$ | 0.908*** | 0.881*** |
| | (5.92) | (5.70) |
| $Growth_t$ | 0.114** | 0.118** |
| | (2.49) | (2.59) |
| $Std_t$ | 0.130* | 0.0798 |
| | (1.69) | (1.08) |
| $Mome_t$ | 0.0127 | 0.0143 |
| | (0.40) | (0.45) |
| $Reversal_t$ | -0.793*** | -0.738*** |
| | (-5.34) | (-6.01) |
| $Inshare_t$ | 0.0392 | 0.0408 |
| | (1.51) | (1.53) |
| $Acc_t$ | 0.0396 | 0.0436 |
| | (0.80) | (0.88) |
| _cons | 1.646* | 1.640* |
| | (1.67) | (1.68) |
| Avg. $R^2$ | 0.1185 | 0.1281 |
| N | 146983 | 146983 |

This table investigates the interaction effect of star analysts, different information content and excess analyst coverage on stock return by the Fama-MacBeth method, where previous market-adjusted stock return is used as the proxy for the information that causes analyst coverage. Our sample contains Shanghai and Shenzhen A-share

listed firms from 2007 to 2017. The dependent variables are stock return in next month, which is measured in percentage. All explanatory variables are standardized each month except for dummy variables. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

First three columns in table 12 explore the relation between excess analyst coverage and return on total assets in firms followed by star analysts. The star analyst dummy is significantly positive in column (1) and (2), suggesting that firms with star analysts performs better, consistent with intuition. However, the interaction is insignificant from column (1) to (3), which illustrates that excess analyst coverage cannot transmit more information in these firms. Besides, the significant and positive cross terms in last three columns indicates that if analyst is caused by better (worse) news, then higher excess analyst coverage implies better (worse) future performance. Ceteris paribus, a one standard increase in previous stock return implies an increase in return on total assets equal to 22.70%, 29.79% and 24.38% for next three months respectively.

**Table 12 Effects of star analysts and different information on ROA**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | $Roa_{t+1}$ | $Roa_{t+2}$ | $Roa_{t+3}$ | $Roa_{t+1}$ | $Roa_{t+2}$ | $Roa_{t+3}$ |
| $Aot_t$ | 0.310*** | 0.357*** | 0.400*** | 0.330*** | 0.376*** | 0.406*** |
| | (6.66) | (8.19) | (10.05) | (6.42) | (8.26) | (9.82) |
| $Star_t \times Aot_t$ | 0.0527 | 0.0275 | 0.0694 | | | |
| | (0.61) | (0.38) | (0.97) | | | |
| $Star_t$ | 0.372*** | 0.330*** | 0.175 | | | |
| | (3.06) | (2.90) | (1.63) | | | |
| $Return_t \times Aot_t$ | | | | 0.0749*** | 0.112*** | 0.0990*** |
| | | | | (3.24) | (5.40) | (7.74) |
| $Return_t$ | | | | 0.283*** | 0.315*** | 0.334*** |
| | | | | (7.96) | (7.29) | (8.28) |
| $Size_t$ | 1.473*** | 1.440*** | 1.417*** | 1.516*** | 1.474*** | 1.438*** |
| | (24.94) | (25.09) | (22.31) | (22.68) | (23.82) | (23.08) |
| $Growth_t$ | 0.354*** | 0.301*** | 0.252*** | 0.343*** | 0.289*** | 0.239*** |
| | (7.57) | (7.28) | (6.84) | (7.29) | (7.01) | (6.40) |
| $Bm_t$ | -1.291*** | -1.286*** | -1.293*** | -1.310*** | -1.292*** | -1.300*** |
| | (-43.81) | (-42.87) | (-37.45) | (-36.79) | (-39.92) | (-36.92) |
| $Leverage_t$ | -1.184*** | -1.130*** | -1.079*** | -1.179*** | -1.125*** | -1.071*** |
| | (-25.58) | (-23.53) | (-21.69) | (-26.92) | (-24.84) | (-22.73) |
| $Mome_t$ | -0.00960 | -0.000527 | 0.00163 | -0.0105 | -0.000613 | 0.00239 |
| | (-1.57) | (-0.06) | (0.16) | (-1.62) | (-0.07) | (0.22) |
| $Std_t$ | -0.284*** | -0.290*** | -0.284*** | -0.284*** | -0.292*** | -0.297*** |
| | (-8.16) | (-7.41) | (-5.84) | (-8.18) | (-7.44) | (-5.90) |
| $Acc_t$ | 0.0270 | 0.0139 | 0.0269 | 0.0307 | 0.0171 | 0.0313* |
| | (1.36) | (0.87) | (1.62) | (1.55) | (1.04) | (1.93) |
| $Inshare_t$ | -0.0207*** | -0.0279*** | -0.0245*** | -0.0183*** | -0.0259*** | -0.0217*** |
| | (-2.79) | (-3.30) | (-3.19) | (-2.68) | (-3.15) | (-2.79) |
| _cons | 2.066*** | 2.076*** | 2.075*** | 2.121*** | 2.122*** | 2.106*** |
| | (26.10) | (24.13) | (21.33) | (25.39) | (24.85) | (22.14) |
| Avg. $R^2$ | 0.2857 | 0.2672 | 0.2424 | 0.2953 | 0.2779 | 0.2536 |
| N | 146983 | 146983 | 146983 | 146983 | 146983 | 146983 |

This table examines the interaction effect of star analysts, different information and excess analyst coverage on return on total assets in the future by the Fama-MacBeth method, where we use previous market-adjusted stock return as the proxy for the information content that causes analyst coverage. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are return on total assets, which is measured in percentage. All explanatory variables

are standardized each month except for dummy variables. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Furthermore, table 13 investigates the interaction effect on unexpected earnings. Main results are similar to those in table 12. Ceteris paribus, a one standard increase in previous market-adjust stock return implies an increase in unexpected earnings equal to 79.27%, 79.58% and 97.78% for next three months respectively, which is much larger than that of return on total assets. Overall, results from table 11 to table 13 support hypothesis two and three.

**Table 13 Effects of star analysts and different information on unexpected earnings**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | $Sue_{t+1}$ | $Sue_{t+2}$ | $Sue_{t+3}$ | $Sue_{t+1}$ | $Sue_{t+2}$ | $Sue_{t+3}$ |
| $Aot_t$ | 0.0490*** | 0.0593*** | 0.0588*** | 0.0579*** | 0.0666*** | 0.0585*** |
| | (3.34) | (4.02) | (3.76) | (3.85) | (4.90) | (4.09) |
| $Star_t \times Aot_t$ | 0.0410 | 0.0334 | 0.0379 | | | |
| | (1.05) | (0.88) | (1.11) | | | |
| $Star_t$ | 0.0817 | 0.0488 | -0.0314 | | | |
| | (1.60) | (0.96) | (-0.69) | | | |
| $Return_t \times Aot_t$ | | | | 0.0459*** | 0.0530*** | 0.0572*** |
| | | | | (5.34) | (3.90) | (4.31) |
| $Return_t$ | | | | 0.196*** | 0.208*** | 0.192*** |
| | | | | (9.48) | (9.85) | (9.99) |
| $Dturn_t$ | -0.0396** | -0.0446** | -0.0549*** | -0.0865*** | -0.0949*** | -0.0993*** |
| | (-2.23) | (-2.16) | (-3.23) | (-5.06) | (-5.10) | (-6.04) |
| $Size_t$ | 0.101*** | 0.0640** | 0.0292 | 0.105*** | 0.0625** | 0.0194 |
| | (3.61) | (2.29) | (1.16) | (4.16) | (2.57) | (0.94) |
| $Growth_t$ | 0.204*** | 0.143*** | 0.0688*** | 0.198*** | 0.138*** | 0.0631*** |
| | (11.55) | (14.07) | (7.47) | (11.54) | (13.62) | (6.34) |
| $Bm_t$ | -0.168*** | -0.128*** | -0.0796*** | -0.165*** | -0.119*** | -0.0716*** |
| | (-7.72) | (-5.37) | (-3.57) | (-7.69) | (-5.58) | (-3.37) |
| $Leverage_t$ | 0.0840*** | 0.0931*** | 0.0996*** | 0.0831*** | 0.0930*** | 0.0996*** |
| | (4.56) | (5.04) | (5.55) | (4.53) | (5.02) | (5.65) |
| $Mome_t$ | -0.00913*** | -0.00723 | -0.00429 | -0.00887** | -0.00715 | -0.00395 |
| | (-3.20) | (-1.50) | (-1.21) | (-2.59) | (-1.39) | (-1.13) |
| $Std_t$ | -0.0241 | -0.0101 | -0.000796 | -0.0142 | 0.00166 | 0.00613 |
| | (-1.61) | (-0.77) | (-0.05) | (-1.00) | (0.13) | (0.43) |
| $Acc_t$ | -0.0723*** | -0.0673*** | -0.0564*** | -0.0668*** | -0.0631*** | -0.0530*** |
| | (-6.13) | (-5.86) | (-5.41) | (-6.45) | (-5.97) | (-5.50) |
| $Inshare_t$ | -0.00698** | -0.00832*** | -0.00679*** | -0.00649** | -0.00802*** | -0.00666*** |
| | (-2.40) | (-3.28) | (-2.66) | (-2.14) | (-2.99) | (-2.64) |
| _cons | -0.0331 | -0.0155 | 0.00695 | -0.0173 | -0.00575 | 0.00716 |
| | (-0.41) | (-0.20) | (0.09) | (-0.22) | (-0.07) | (0.09) |
| Avg. $R^2$ | 0.0494 | 0.0384 | 0.0290 | 0.0662 | 0.0560 | 0.0436 |
| N | 146983 | 146983 | 146983 | 146983 | 146983 | 146983 |

This table examines the interaction effect of star analysts, different information and excess analyst coverage on unexpected earnings by the Fama-MacBeth method, where we use previous market-adjusted stock return as the proxy for the information content that causes analyst coverage. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are unexpected

earnings. All explanatory variables are standardized each month except for dummy variables. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.8 Robustness tests

#### 4.8.1 Information contained in excess analyst coverage

We explore information contained in excess analyst coverage by future firm performance in main regressions, which is proxied by return on total assets and unexpected earnings. Following Qu and Bi (2016), we use the abnormal stock return from two days before the earnings announcement to three days after it as the proxy for information of firms. Higher abnormal return during the announcement period implies that the information of firms is better than expected. Results in table 14 illustrate that a one standard deviation increase in excess analyst coverage implies an increase in the abnormal return during earnings announcement equal to 0.134%, 0.0913% and 0.0998% for next three fiscal periods respectively. Thus, our conclusions do not change when we use other measurements for firm information.

**Table 14 Excess analyst coverage and CAR during earnings announcement period**

| | (1) | (2) | (3) |
|---|---|---|---|
| | $CAR_{t+1}$ | $CAR_{t+2}$ | $CAR_{t+3}$ |
| $Aot_t$ | 0.134*** | 0.0913*** | 0.0998*** |
| | (3.55) | (2.67) | (3.63) |
| $Dturn_t$ | -0.210*** | -0.0533 | -0.000462 |
| | (-8.07) | (-1.56) | (-0.02) |
| $Size_t$ | -0.0980* | 0.0368 | 0.0670* |
| | (-1.93) | (1.01) | (1.89) |
| $Roa_t$ | -0.0848 | -0.0550 | 0.00249 |
| | (-1.43) | (-1.04) | (0.06) |
| $Bm_t$ | 0.0699 | -0.0203 | -0.0167 |
| | (1.24) | (-0.37) | (-0.34) |
| $Leverage_t$ | -0.0696 | -0.106** | -0.0898** |
| | (-1.40) | (-2.13) | (-2.44) |
| $Growth_t$ | -0.0459** | -0.0849*** | -0.0241 |
| | (-2.00) | (-3.09) | (-0.57) |
| $Return_t$ | -0.514*** | -0.0417 | -0.00322 |
| | (-12.74) | (-1.35) | (-0.08) |
| $Reversal_t$ | -0.0702** | -0.130*** | 0.0104 |
| | (-2.44) | (-7.14) | (0.45) |
| $Std_t$ | -0.0896 | -0.0338 | -0.0482 |
| | (-1.58) | (-0.72) | (-0.92) |
| $Acc_t$ | -0.0487 | -0.0685** | -0.0565 |
| | (-1.48) | (-2.07) | (-1.61) |
| $Inshare_t$ | -0.00370 | 0.0110 | -0.0181 |
| | (-0.28) | (0.77) | (-1.16) |
| _cons | -0.166** | -0.148* | -0.154*** |
| | (-2.22) | (-1.96) | (-2.77) |
| Avg. $R^2$ | 0.0403 | 0.0257 | 0.0220 |
| N | 146983 | 146983 | 146983 |

This table examines the information contained in excess analyst coverage by the Fama-MacBeth method, where we use cumulative abnormal return from two days before the earnings announcement to three days after it as the proxy for information. Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are cumulative abnormal return, which is measured in percentage. All explanatory variables are standardized each month. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 15 investigates the interaction effect of star analyst, information that causes analyst coverage and excess analyst coverage on future firm performance by using CAR as the new proxy. First three columns indicate that excess analyst coverage cannot signal more information in firms with star analysts. And last three columns suggest that excess analyst coverage can transmit much better information of firms if it is caused by better information, lending support to our main conclusions.

**Table 15 Effects of star analysts, information and excess analyst coverage on CAR**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | $Car_{t+1}$ | $Car_{t+2}$ | $Car_{t+3}$ | $Car_{t+1}$ | $Car_{t+2}$ | $Car_{t+3}$ |
| $Aot_t$ | 0.135*** | 0.0918** | 0.0957*** | 0.124*** | 0.0820** | 0.0947*** |
| | (3.06) | (2.47) | (3.57) | (3.56) | (2.54) | (3.65) |
| $Star_t \times Aot_t$ | 0.00350 | -0.143** | -0.123* | | | |
| | (0.05) | (-2.15) | (-1.67) | | | |
| $Star_t$ | 0.0536 | 0.279** | 0.208** | | | |
| | (0.49) | (2.29) | (2.18) | | | |
| $Return_t \times Aot_t$ | | | | 0.0501* | 0.0594* | 0.00696 |
| | | | | (1.73) | (1.80) | (0.27) |
| $Return_t$ | -0.514*** | -0.0462 | -0.00632 | -0.514*** | -0.0480 | -0.00604 |
| | (-13.06) | (-1.47) | (-0.15) | (-12.69) | (-1.53) | (-0.15) |
| $Dturn_t$ | -0.207*** | -0.0490 | 0.00311 | -0.206*** | -0.0491 | -0.00112 |
| | (-8.06) | (-1.38) | (0.12) | (-8.28) | (-1.44) | (-0.04) |
| $Size_t$ | -0.0992* | 0.00386 | 0.0386 | -0.100** | 0.0363 | 0.0640* |
| | (-1.89) | (0.10) | (1.17) | (-1.98) | (1.00) | (1.80) |
| $Roa_t$ | -0.0862 | -0.0581 | -0.000226 | -0.0839 | -0.0549 | 0.00142 |
| | (-1.44) | (-1.08) | (-0.01) | (-1.41) | (-1.04) | (0.04) |
| $Bm_t$ | 0.0723 | -0.00387 | -0.00282 | 0.0740 | -0.0196 | -0.0152 |
| | (1.27) | (-0.07) | (-0.06) | (1.31) | (-0.35) | (-0.30) |
| $Leverage_t$ | -0.0704 | -0.102** | -0.0887** | -0.0684 | -0.104** | -0.0902** |
| | (-1.43) | (-2.08) | (-2.43) | (-1.38) | (-2.09) | (-2.41) |
| $Growth_t$ | -0.0455* | -0.0845*** | -0.0233 | -0.0480** | -0.0853*** | -0.0242 |
| | (-1.94) | (-3.07) | (-0.56) | (-2.05) | (-3.13) | (-0.58) |
| $Reversal_t$ | -0.0700** | -0.131*** | 0.00969 | -0.0706** | -0.129*** | 0.0127 |
| | (-2.48) | (-7.45) | (0.40) | (-2.50) | (-7.02) | (0.57) |
| $Std_t$ | -0.0901 | -0.0353 | -0.0491 | -0.0888 | -0.0330 | -0.0478 |
| | (-1.59) | (-0.75) | (-0.94) | (-1.55) | (-0.70) | (-0.92) |
| $Acc_t$ | -0.0473 | -0.0678** | -0.0542 | -0.0495 | -0.0693** | -0.0570 |
| | (-1.45) | (-2.05) | (-1.55) | (-1.49) | (-2.09) | (-1.62) |
| $Inshare_t$ | -0.00278 | 0.0109 | -0.0183 | -0.00259 | 0.0108 | -0.0187 |
| | (-0.20) | (0.76) | (-1.19) | (-0.19) | (0.75) | (-1.20) |
| _cons | -0.166** | -0.163** | -0.171*** | -0.167** | -0.149* | -0.154*** |
| | (-2.38) | (-1.99) | (-2.83) | (-2.23) | (-1.97) | (-2.75) |
| Avg. $R^2$ | 0.0426 | 0.0281 | 0.0241 | 0.0417 | 0.0269 | 0.0233 |
| N | 146983 | 146983 | 146983 | 146983 | 146983 | 146983 |

This table explores the interaction effect of star analysts, information that causes analyst coverage and excess analyst coverage on future firm information by the Fama-MacBeth method, where we use cumulative abnormal return from two days before the earnings announcement to three days after it as the proxy for information.

Our sample contains Shanghai and Shenzhen A-share listed firms from 2007 to 2017. The dependent variables are cumulative abnormal return, which is measured in percentage. We augment the cross term of star analyst dummy and excess analyst coverage in first three columns, and the interaction of previous market-adjusted stock return and excess analyst coverage in last three columns. The explanatory variables are standardized each month except for dummy variables. The *t*-statistics reported in parentheses are from the Fama-MacBeth regressions after Newey-West adjustments for autocorrelation up to 12 lags. Variable definitions and calculation details can be found in table 1. ∗∗∗, ∗∗, and ∗ represent statistical significance at the 1%, 5%, and 10% levels, respectively.

### 4.8.2 Drop firms with no analyst coverage

Our original sample contain firms that are not followed by analysts. To mitigate the concern that results are caused by these firms, we delete those without analyst coverage and re-estimate the abnormal return for portfolios and Fama-MacBeth regressions. The main results do not change, which are not reported here for simplicity, indicating that the robustness of our results.

## 5. Conclusion

This paper investigates the information contained in excess analyst coverage. We find that higher excess analyst coverage predicts higher return on total assets and higher unexpected earnings, leading to higher future stock return. Besides, the information content of excess analyst coverage in firms followed by star analysts is similar to that in firms without star analysts. Furthermore, analysts may be attracted by extremely good or bad news, and we differentiate the news that causes analyst coverage. If analyst coverage is caused by better (worse) news, then excess analyst coverage signals better (worse) future firm performance and higher (lower) stock return.

Existing literature contends that earnings forecasts and stock ratings of analysts may predict future firm performance and stock return, and our research further illustrates that analyst coverage itself can signal such information. We not only clarify the information delivery role of analysts in China's stock market, but also help investors to find firm with potentially good performance and invest more effectively.

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