

Do Analyst Pre-Announcement Recommendations Influence M&A announcement Returns? Evidence from China

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Abstract: This paper investigates the effects of analyst recommendations issued before the M&A announcement on M&A announcement returns. We find M&A announcement returns decrease with the number of analyst favorable recommendations in the pre-announcement period (AFRPA). Results from a rich set of robustness tests support the causality. We discuss the possible mechanism and find that AFRPA increasing the acquirer's valuation in the pre-announcement period is the possible channel that allows AFRPA to reduce M&A announcement returns. Further investigation reveals the negative relation is more pronounced in acquirers with high information uncertainty, low financial/social media coverage, and high investor attention. Additional analysis suggests that analysts are more likely to favorably recommend acquirers who initiate low-quality M&As, and analysts affiliated with acquirer advisors issue more AFRPA for the acquirer. Our research enriches the impact of analyst recommendations on M&As outcomes and provides new empirical evidence on analyst optimism bias.

Keywords: analyst, Chinese M&As, misvaluation, announcement returns

JEL codes: G14, G34

1. Introduction

Analysts are one potentially important information source in the markets and market participants use their opinions to make decisions. Specifically, analyst recommendations rather than financial forecasts provide direct, actionable information to investors (Engelberg et al., 2020). A large body of literature generally suggests that analyst recommendations are optimistically biased (e.g., Agrawal and Chen, 2008; Bradley et al., 2022; Gu et al., 2013). The literature also reveals that investors are indeed misled by the analyst optimism bias (e.g., Sun et al., 2020; Xu et al., 2013). There exists a series of studies supporting the claim that analyst recommendations cannot positively predict future long-term stock returns (e.g., Altinkılıç et al., 2016; Barber et al., 2001; Bradshaw, 2004). To make matters worse, recent studies by (Balakrishnan et al., 2020; Engelberg et al., 2020; Guo et al., 2020) even suggest that analysts contribute to mispricing because of their systematically biased recommendations.

In China stock market, several factors may exacerbate the effect of analyst recommendations on mispricing. First, China stock market is associated with poor transparency and low-quality information (Piotroski and Wong, 2012), which increases the portion of individual investors who have to rely on analyst recommendations to make investment decisions. China stock market is also associated with severe short-selling constrain (Hou et al., 2021) which reduces the incentives of analysts' information production. Moreover, individual investors are the major participants in China stock market (Titman et al., 2022) and may naïvely follow analyst recommendations without accounting for analyst conflicts for interest (Malmendier and Shanthikumar, 2007). Second, analysts generally tend to bias stock recommendations upward in China due to their incentives to generate trading commission fees (Gu et al., 2013), maintain business relations with mutual funds (Firth et al., 2013), please clients (Xu et al., 2013), and short-selling constrain (Hou et al., 2021), for example. Additionally, a series of news reports state that analyst optimism bias in China (e.g., Li, 2008;

Liu and Zhang, 2008; Wang, 2009).¹ Moreover, Chinese culture values social conformity and the maintenance of relationships (Piotroski et al., 2015) which may suppress analysts negatively covering firms unless unavoidable.

In mergers and acquisitions (hereafter M&As), mispricing is a key M&As driven factor and has important impact on M&As performance in both developed markets and China stock market. However, there are three main differences of M&As in these two markets: 1) whether the overvalued firms initiate M&As or the undervalued firms initiate M&As; 2) how acquirer's mispricing changes after M&A announcement ; 3) whether acquirer's M&A announcement returns are positive or negative. First, prior research reveals that overvalued acquirers are more willing to initiate M&As by using their stock as payment to purchase less overvalued targets in developed markets (Rhodes–Kropf et al., 2005). However, (Li et al., 2020) find that Chinese firms are more willing to initiate M&As when their stocks are undervalued and use M&As as a signal that their stocks are undervalued. Second, (Fu et al., 2013) find that overvalued acquirers significantly overpay for their targets in developed markets. The extent of acquirer's overvaluation decreases after M&A announcement . However, (Li et al., 2020) find that the Chinese acquirer's valuation significantly increases after M&A announcement . Chinese acquirers go from being undervalued before M&As to being overvalued after M&As. Third, M&A announcement returns for acquires are generally negative in developed markets (Renneboog and Vansteenkiste, 2019). However, a large body of literature shows that Chinese M&As generally have positive M&A announcement returns for acquirers (e.g., Bhabra and Huang, 2013; Chi et al., 2011; Tao et al., 2017). Overall, (Li et al., 2020) conclude that the

¹ J. Li, "Whose order to follow: mutual funds' pressure on stock analysts", 21st Century Business Herald (2008), November 27; H. Liu, X. Zhang, "Fading vows: an investigation of the unspoken rules in the sell-side analyst industry", 21st Century Business Herald (2008), November 28; D. Wang, "The unspoken rule for stock analyst ranking: protecting stocks held by mutual fund clients", Beijing Business Daily (2009), July 15.

greater the extent to which Chinese acquirers are undervalued, the larger the potential for acquirer's valuation increasing, the more M&A announcement returns.

Given that analyst recommendations may contribute to higher valuation and acquirers with higher valuation have lower M&A announcement returns, the natural question is whether analyst recommendations in the pre-announcement period have impacts on M&A announcement returns for acquirers.² However, the literature on the question is scant. Prior related research on the area of analysts and M&As mainly focuses on whether and how analysts play an informational or monitoring role in M&As in developed markets (e.g., Becher et al., 2015; Cortes and Marcet, 2022; Haushalter and Lowry, 2011; Li et al., 2017; Tehranian et al., 2014). We extend the literature by showing that whether and how analysts optimism bias affects M&A announcement returns in China stock market.

We begin by exploring the relation between the acquirer's analyst favorable recommendations in the pre-announcement period (AFRPA) and M&A announcement returns. We define an acquirer's analyst recommendation in the pre-announcement period as favorable if it has "strong buy" rating or "buy" rating (analyst recommendations are recorded in real-time sequence with standardized five-digit ratings: 1=strong buy, 2=buy, 3= hold, 4=sell, and 5=strong). We measure AFRPA as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one year before M&A announcement day to five trading days before M&A announcement day (Guo et al., 2019). We measure the acquirer's valuation as the acquirer's misvaluation value following (Rhodes-Kropf et al., 2005). (Rhodes-Kropf et al., 2005) suggest that the acquirer's market-to-book equity ratio can be decomposed into two components: misvaluation and long-run investment opportunities, $Ln(M/B) = Ln(M/V) + Ln(V/B)$. They define $Ln(M/V)$ as the acquirer's misvaluation

² Because most of the targets are unlisted firms in China stock market (Borochin and Cu, 2018), there are no M&A announcement returns for targets. So we only focus on M&A announcement returns for acquirers.

value. The acquirer is overvalued (undervalued) if the acquirer's misvaluation value is positive (negative). We suggest that AFRPA may contain optimism bias, mislead investors, and increase the acquirer's valuation in the pre-announcement period. Because the acquirer's valuation generally increases after an M&A announcement and acquirer's M&A announcement returns are positive in China stock market (Li et al., 2020), the higher acquirer's valuation in the pre-announcement period, the lower extent of acquirer's valuation increasing in the event window (i.e., lower M&A announcement returns).

Our baseline result shows that AFRPA negatively predicts M&A announcement returns, including a rich set of robustness tests (the instrumental variable method, falsification test, and net effect method). Next, we explore three alternative explanations for the relations we observe, which we term "analyst information role", "analyst pressure" and "informed trading" explanations, and our findings are still robust. Third, we explore the channel from which AFRPA impacts M&A announcement returns and find that increasing the acquirer's valuation in the pre-announcement period is the possible mechanism. The moderating effect investigation reveals that the negative relation is more pronounced in acquirers with high information uncertainty, low financial/social media cover, and high investor attention. The additional analysis shows that AFRPA also negatively predicts buy-and-holding abnormal returns. When we use M&A operating performance as a measurement of M&A quality, we find that analysts are more likely to favorably recommend acquirers who initiate low-quality M&As. The additional analysis also reveals that analysts affiliated with acquirer advisors issue more AFRPA for the acquirer.

Our paper contributes to the existing literature in several ways. First, prior research on the role of analysts in M&As through information and monitor channels primarily focuses on developed markets with an effective market system and strong governance mechanisms. (e.g., Becher et al., 2015; Cortes and Marcet, 2022; Haushalter and Lowry, 2011; Li et al., 2017;

Tehrani et al., 2014). However, we study the role of analysts in M&As in a developing market with strong analyst optimism bias, severe short-selling constrain, a large number of individual investors, and widespread conflicts of interest. We find that AFRPA affects M&A announcement returns in the case of China, which follows a story of systematically biased recommendations (e.g., Sun et al., 2020; Xu et al., 2013). Second, prior research shows that analyst optimistically biased recommendations contribute to mispricing (e.g., Balakrishnan et al., 2020; Engelberg et al., 2020; Guo et al., 2020). We contribute to the literature by providing evidence that AFRPA can still increase the firm's valuation in the pre-announcement period even if the firm is overvalued. Third, prior research reveals that the conflicts of interest arising from M&As influence analysts' recommendations. (Kolasinski and Kothari, 2008) find that analysts affiliated with acquirer advisors improve analyst recommendations around M&As in developed markets. We contribute to the literature by finding that analysts affiliated with acquirer advisors will issue more AFRPA for the acquirer in the case of China.

The rest of the paper is as follows. Section 2 provides institutional background. Section 3 provides literature review and hypotheses. Section 4 presents data and research design. Section 5 contains the empirical results. Section 6 explores alternative explanations and channel test. Section 7 examines the moderating effect. Section 8 shows the additional analysis. We conclude the paper in section 9.

2. Institutional Background

In developed markets, (Shleifer and Vishny, 2003)'s stock overvaluation theory has two important assumptions: 1) firms can initiate stock-financed M&As without transaction cost, and 2) M&A announcement returns only includes investors' estimation of M&As synergies.³

³ (Shleifer and Vishny, 2003)'s stock overvaluation theory claims that overvalued firms use their stock rather than cash to purchase less overvalued firms, which can increase shareholder wealth.

However, these two assumptions are not accurate in China stock market. First, in China stock market, the stocks that are paid to targets come from acquirers issuing new shares. China Securities Regulatory Commission (CSRC) regards the issuing of new shares in stock-financed M&As as seasoned equity offerings (SEO). There are strict regulatory requirements for SEO in China stock market (Lee et al., 2019), which means that firms can not initiate stock-financed M&As with low transaction costs. Second, in China stock market, M&As are considered as a speculative/hyping activity (Yao et al., 2023) and regarded as an effective way to maintain prices in the short term (Tang et al., 2023). In such an immature market, on the one hand, optimistic and biased news related to M&As will generate an upward noise demand for the stock of acquirers (Ma et al., 2018). On the other hand, the speculative/hyping nature of M&As can attract high investor attention to exacerbate the effect of optimistic and biased news on the acquirer's stock price (Adra and Barbopoulos, 2018). It means that, in China stock market, M&A announcement returns not only include investors' estimation of M&A synergies. Overall, (Shleifer and Vishny, 2003)'s stock overvaluation theory may not apply to the China stock market. To explain the features of Chinese M&As, (Li et al., 2020) propose a new mechanism based on the signal theory that Chinese firms signal that their stocks are undervalued by initiating M&As, thereby increasing their valuation.

3. Literature Review and Hypotheses Development

The literature generally concludes that analyst recommendations are optimistically biased due to conflict of interest arising from investment banking or brokerage affiliations (e.g., Agrawal and Chen, 2008; Bradley et al., 2022), short-selling constrain (Hou et al., 2021) or behavioral biases (e.g., Hilary and Menzly, 2006; La Porta, 1996). (Agrawal and Chen, 2008) find that analyst recommendation levels are positively related to the optimistic bias stemming from investment banking conflicts. (Gu et al., 2013) suggest that analysts issue optimistic

opinions because of institutional investors' pressure through trading commission fees. (Firth et al., 2013) find that the business relation between mutual funds and brokerages increases the optimism in sell-side analyst recommendations. (Bradley et al., 2022) reveal that analysts who sponsor non-deal roadshows (NDRs), which are private meetings between management and institutional investors, issue significantly more optimistic recommendations. (Hou et al., 2021) suggest that analysts who follow the firm with high short-selling constrain have more analyst optimism bias. (Hilary and Menzly, 2006) find that a short-lived success experience leads to analysts becoming overconfident.

The literature also confirms that investors are indeed misled by the analyst optimism bias and such a bias contributes to overvaluation and subsequent falling. (Hutton et al., 2009) claim that if analysts tend to make optimistic recommendations, the firms' negative news cannot be timely revealed to investors, bursting the bubble. When the accumulated negative news is suddenly released, resulting in a stock price crash. (Xu et al., 2013) find that firms with high analyst optimism bias have high crash risk. This positive relation is more pronounced when analysts with more conflicts of interest. (Sun et al., 2020) find that investors are misled by analyst optimism bias and believe that the SEO firm value is high. The SEO investor bid prices are positively correlated with analyst optimism bias. (Balakrishnan et al., 2020) find a strong positive relation between analyst recommendations and periods of bubbles. (Guo et al., 2020) find that analysts give more favorable recommendations to overvalued stocks and these stocks subsequently have particularly negative abnormal returns.

Therefore, we suggest that AFRPA may contain optimism bias, mislead investors, and increase acquirer's valuation in the pre-announcement period. Because the acquirer's valuation generally increases after an M&A announcement and the acquirer's M&A announcement returns are positive in China stock market (Li et al., 2020), the higher acquirer's valuation in the pre-announcement period, the lower the extent of the increase of acquirer's valuation in the

event window (i.e., lower M&A announcement returns). Overall, AFRPA increases the acquirer's valuation in the pre-announcement period, decreases the extent of the increase of the acquirer's valuation in the event window, and reduces M&A announcement returns.

H1: AFRPA negatively predicts the acquirer's M&A announcement returns.

4. Sample, Data, and Research Design

4.1. Sample Selection

The China stock market is still immature and characterized by (a) volatility and limited ability to short stocks (Hou et al., 2021), (b) individual investors as the major participants (Titman et al., 2022), and (c) poor transparency and low-quality information (Piotroski and Wong, 2012), which prevent price discovery and facilitate mispricing (Qian, 2014). With a limited regulatory ability, CSRC categorizes M&As into material asset reorganizations (MARs) and other M&As.⁴ CSRC only takes strict approval and requests mandatory disclosures for MARs to stabilize the market. Overall, MARs have a much higher magnitude and MARs are similar to large M&As in developed markets. However, other M&As are not similar to small M&As in developed markets. In the United States, M&As require filing a variety of disclosures (e.g., Current Report on Form 8-K, Rule 425 and Rule 14a-12 Filings, Merger Proxy Statement) with the Securities and Exchange Commission (SEC) to promote transparency and give investors access to important business information. Because CSRC does not request mandatory disclosures for other M&As, Chinese firms have a choice of whether and how to disclose

⁴ According to the regulations of MARs of listed firms issued by CSRC, an M&A is identified as a MAR if it meets one of the following three criteria. First, the total assets purchased by the acquirer account for over 50% of its year-end total assets of the audited consolidated financial statement in the latest fiscal year. Second, the revenue from the assets purchased by the acquirer in the latest fiscal year accounts for over 50% of its revenue of the audited consolidated financial statement in the same period. Last, the net assets purchased by the acquirer account for over 50% of its year-end net assets of the audited consolidated financial statement in the latest fiscal year, and the value of purchased net assets is more than 50 million RMB.

details of other M&As. Without mandatory disclosures for other M&As, Chinese firms have strong incentives for hyping. Specifically, Chinese firms usually initiate other M&As with high premium and hot topics, and announce the transactions as “good news” (Tang et al., 2023). Investors have to speculate on other M&As and suffer the loss because they have no access to the basic information of transactions. Since other M&As are not comparable to small M&As in developed markets, we only use samples of MARs and refer to them as M&As in our paper.

We extract all announced MARs made by Chinese A-share listed firms from WIND database between June 2008 and December 2021. Our sample period starts in June 2008, when the first MAR was announced after the Detailed Rules for M&As of Listed firms (Order of CSRC No. 53) came into force in May 2008. The last MAR of our sample was announced in December 2021. We screen the data consistent with prior research (Alperovych et al., 2021; Huang et al., 2010; Liu et al., 2019; Tao et al., 2019). We obtain analyst information from Chinese Research Data Services (CNRDS) and obtain financial data from China Stock Market & Accounting Research Database (CSMAR). Our final sample for the baseline regressions consists of 915 M&As between 2009 and 2021. The screening criteria and process are listed in Table 1. The number of M&As by year presented in Panel B of Table 1 demonstrates an overall increase and then a declining pattern from 2009 to 2021. M&As are rare in the first few years (2009-2012) of our sample period. The number of M&As increased from 51 in 2013 to 195 in 2015, when most M&As were observed in a single year. The number of M&As declines afterward to merely 28 in 2021. This trend may be caused by Chinese fiscal policy and monetary policy (Li et al. 2022; Wang et al. 2018) and the 2014-2015 China stock market bubble.⁵ Moreover, M&As follow a relatively uniform timing across calendar months within

⁵ According to Wang et al. (2018, page 22), “After the 2008 global financial crisis, the Chinese government announced a two-year 4 trillion Yuan stimulus package to boost the domestic economy because the export demand shrank dramatically in the global recession. Commercial banks were the main channels for the 4 trillion Yuan investment, and their credit ceilings were abolished to provide more credit to priority projects, the ‘three rural issues: agriculture, rural areas, and farmers,’ middle and small-sized enterprises, technical innovation and industrial rationalization through mergers and acquisitions.” According to Li

the year with relative clusters in June, September, and December.

Insert Table 1 here

4.2. Model Specification and Variable Measurement

We develop the baseline model to assess how AFRPA affects M&A announcement returns:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (1)$$

where the $CARs_i$ is acquirer's cumulative abnormal returns calculated following the standard event study methodology. We take M&A announcement day as the 0th day, select [-1,+1], [-2,+2], and [-5,+5] event window, and use the period of 250 trading days before the event window as the estimation window. We estimate the abnormal returns using the Fama-French Three-factor Eq. (Fama and French, 1993). We obtain analyst recommendations from Chinese Research Data Services (CNRDS) from 2008 to 2021. CNRDS records analyst recommendations in real-time sequence with standardized five-digit ratings (1=strong buy, 2=buy, 3=hold, 4=sell, and 5=strong). Our main analysis focuses on pre-announcement analyst recommendations, which are all recommendations issued on an acquirer from one year before M&A announcement day to five trading days before M&A announcement day. Since we are interested in how AFRPA impacts M&A announcement returns, we use “strong buy” rating and “buy” rating as “favorable” recommendations.⁶ We measure AFRPA as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one-year before M&A announcement day to five trading days before M&A announcement day (Guo et al., 2019).

Following M&As literature (Borochin and Cu, 2018; Hossain and Javakhadze, 2020;

et al. (2022, page 7), “A series of financial liberalization reforms were launched together with major policy efforts to mobilize resources from the financial system to achieve the state's various policy goals, such as the initiatives to ‘mobilize the financial system to support small and micro-enterprises’ and ‘promote enterprise mergers, acquisitions, and restructuring,’ as well as major policy campaigns in 2014–2015 under the slogan of ‘Mass-innovation, Mass-entrepreneurship’ which mobilized the entire state bureaucracy to generate policy innovations to stimulate entrepreneurship.”

⁶ We obtain qualitatively similar results if we only use “strong buy” rating as “favorable” recommendations. Please see the results of the robustness tests.

Moeller et al., 2004; Nguyen and Phan, 2017; Yang et al., 2019; You et al., 2018), we control a rich set of acquirer and deal characteristics likely to affect M&A announcement returns. Our control variables include: acquirer's size (*Size*), acquirer's ROA (*ROA*), acquirer's market-to-book ratio (*MB*), acquirer's liquidity (*Liq*), acquirer's leverage ratio (*Lev*), acquirer's cash flow (*CF*), acquirer's shareholding ratio of the largest shareholder (*Top1*), acquirer's top executives shareholding (*CEOHold*), acquirer's board size (*BrdSize*), acquirer's state-owned status (*SOE*), acquirer's past 6-month cumulative return (*RunUp*), the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations in [-5,+5] event window (*AFRIA*), dummy variables for deals financed with equity (*Equity*), the ratio of deal value to acquirer's market value as relative size (*RelVal*) and diversify (*Diversify*). As most of the targets are unlisted firms in China stock market, there is no public data for targets and we fail to control the target's characteristics. We add dummy variables for time (*Year*) and industry (*Industry*) to control the time and industry fixed effects and use robust standard error in all regressions.

We use the mediating effects model to test the mechanism. We apply the following models to examine whether AFRPA increases the acquirer's misvaluation value in the pre-announcement period and therefore decreases M&A announcement returns:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (2)$$

$$Mis_{-5}_i = \gamma_0 + \gamma_1 AFRPA_i + \gamma_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (3)$$

$$CARs_i = \alpha_0 + \alpha_1 AFRPA_i + \alpha_2 Mis_{-5}_i + \alpha_3 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (4)$$

where the Mis_{-5} is the acquirer's misvaluation value at five trading days before M&A announcement day and described in Appendix 1. (Rhodes–Kropf et al., 2005) suggest that the acquirer's market-to-book equity ratio can be decomposed into two components: misvaluation and long-run investment opportunities, $Ln(M/B) = Ln(M/V) + Ln(V/B)$. They define $Ln(M/V)$ as the acquirer's misvaluation value. The acquirer is overvalued (undervalued) if

the acquirer's misvaluation value is positive (negative). Following (Li, 2020), our control variables in the regression of Mis_{-5} on $AFRPA$ include acquirer's size ($Size$), acquirer's ROA (ROA), acquirer's capital expenditure ($CapEx$), acquirer's age (Age), acquirer's PPE (PPE), acquirer's dividend ($Dividend$), acquirer's leverage ratio (Lev), acquirer's asset growth ($ATgrow$), acquirer's Altman's Z ($Altman'Z$) and acquirer's institutional ownership (IO). Our control variables in the regression of $CARs$ on $AFRPA$ are the same as the control variables in Eq. (1). Our control variables in the regression of $CARs$ on $AFRPA$ and Mis_{-5} include all control variables in Eq. (2) and Eq.(3). We add dummy variables for time ($Year$) and industry ($Industry$) to control the time and industry fixed effects and use robust standard error in all regressions.

We winsorize the value of variables at the tails of 0.5% and 99.5% to reduce the influence of outliers. Please refer to Table 2 for definitions and calculations of all variables used in our empirical analyses. Please refer to Appendix 2 for the correlation matrix.

Insert Table 2 here

4.3. Summary Statistics

Table 3 presents summary statistics for variables used in our paper. The average CARs in [-1,+1], [-2,+2], and [-5,+5] event window are 6.3%, 8.15%, and 9.51% implying that Chinese acquirers generally have positive M&A announcement returns, which is quite different from the M&As in developed markets where CARs for acquirers are generally negative. Moreover, the acquirer's misvaluation value on five trading days before M&A announcement day is significantly negative implying that Chinese acquirers are generally undervalued before M&A announcement, which is also quite different from the M&As in developed markets where acquirers are generally overvalued before the M&A announcement. The average acquirers' AFRPA is 1.71 with a standard deviation of 1.453 implying there is substantial variation in analyst favorable recommendations across acquirers in the pre-announcement period. Deal

characteristics indicate that 73% M&As use stock as payment and the relative size (deal size/acquirer's market value) is 37%. Bidder characteristics indicate that 17% of our sample firms are state-owned. The shareholding ratio of the largest shareholder is 34%. The average acquirer's top executives' shareholding indicates that 71% of our sample firms' top executives (including the CEO) are holding shares in their own company, and the mean number of the board of directors is 8.12. The average of the ROA, leverage, market-to-book ratio, liquidity, and capital expenditure before the M&A announcement are 5%, 37%, 5.4, 0.19, and 5% respectively.

Insert Table 3 here

Panel A of Table 4 reports the acquirer's misvaluation value at four points: one year before M&A announcement day (Mis_{-250}), five trading days before M&A announcement day (Mis_{-5}), five trading days after M&A announcement day (Mis_{+5}), and one year after M&A announcement day (Mis_{+250}).⁷ Mis_{-250} , Mis_{-5} and Mis_{+5} are significantly negative implying that acquirers are generally undervalued in the pre-announcement period or the event window. Mis_{+250} is significantly positive implying that acquirers are generally overvalued one year after M&A announcement day. Both stock acquirers and cash acquirers are generally undervalued in the pre-announcement period or in the event window and overvalued in the post-announcement period. The misvaluation value of both stock acquirers and cash acquirers quickly increases before and after the M&A announcement. The summary statistics of Chinese acquirer's misvaluation value is quite different from that of M&As in developed markets. (Fu et al., 2013) show that both stock acquirers and cash acquirers are significantly overvalued before the M&A announcement in developed markets. The stock (cash) acquirer's misvaluation value decreases (remains) as M&As toward completion.

⁷ Because most of the targets are unlisted firms in China stock market (Borochin and Cu, 2018), there is no public financial data and asset prices for targets. So, we can only calculate the acquirer's misvaluation value.

Panel B of Table 4 reports the comparison subsamples between High and Low AFRPA. Acquirers in the bottom quintile of the AFRPA are classified as Low and acquirers in the top quintile of the AFRPA are classified as High. One year before the M&A announcement day, there is no significant difference between the acquirers' misvaluation value of High and the acquirers' misvaluation value of Low (-0.522 versus -0.443). On five trading days before M&A announcement day, acquirers of High have significantly higher misvaluation value than acquirers of Low (-0.033 versus -0.222). At five trading days after M&A announcement day, acquirers of High still have significantly higher misvaluation value than acquirers of Low (0.067 versus -0.105), but the difference (acquirers' misvaluation value of High minus acquirers' misvaluation value of Low) diminishes (-0.189 five trading days before M&A announcement day versus -0.172 five trading days after M&A announcement day). One year after M&A announcement day, there is no significant difference between the acquirers' misvaluation value of High and the acquirers' misvaluation value of Low (0.168 versus 0.035). Overall, our results imply that AFRPA may be positively related to the variation of acquirers' misvaluation value in the pre-announcement period, suggesting that the more AFRPA, the higher acquirers' misvaluation value.

In [-1,+1], [-2,+2], and [-5,+5] event window, the acquirers of High have significantly lower CARs than the acquirers of Low (3.178 versus 7.651, 4.279 versus 9.450, 4.334 versus 11.660), which imply that AFRPA may be negatively related to CARs, suggesting that the more AFRPA, the lower CARs. Moreover, our results are still robust if we use samples whose AFRPA is larger than 0.

Insert Table 4 here

5. Empirical Results

5.1. AFRPA and M&A announcement Returns

In Table 5, we examine the relationship between AFRPA and CARs using the ordinary

least squares (OLS). Columns (1) - (3) show that the coefficients of *AFRPA* are significantly negative, which suggests that *AFRPA* negatively predicts CARs. The coefficients of *AFRPA* are statistically and economically significant. For example, in Column (3), *AFRPA* has a coefficient of -2.778 (significant at the 1% level with a t-statistic of -3.42), which suggests that an increase in *AFRPA* of one standard deviation (1.453) leads to an average abnormal return of -4.04% during the [-5,+5] window.

All control variables' coefficients have the expected sign presented in prior studies. The coefficients of the acquirer's size are significantly negative, because the incentives of managers in small firms are better aligned with those of shareholders than is the case in large firms (Moeller et al., 2004). The coefficients of the acquirer's market-to-book ratio are significantly negative because glamour firms' managers may be overconfident due to the presence of a hubris perspective (Roll, 1986). The coefficients of the acquirer's liquidity are significantly negative supporting the agency costs of free cash flow explanation for acquisitions by cash-rich firms (Harford, 1999). The coefficients of the acquirer's stock return run-up are significantly positive, which is consistent with (Nguyen and Phan, 2017) because of information leakage. The coefficients of analyst favorable recommendations in the event window are significantly positive, which suggests that analyst optimism bias on M&As may mislead investors, promote the acquirer's valuation, and increase M&A announcement returns. Because *AFRIA* is positively related to *AFRPA* which is shown in the correlation matrix, we test the variance inflation factor of regressions. The value of VIF (8.58) is less than 10 and the multicollinearity problem is not serious. The coefficients of the relative size are significantly negative which is consistent with (Moeller et al., 2004). The coefficients of the diversification are significantly negative, which may be attributed to overinvestment and cross-subsidization (Berger and Ofek, 1995).

Insert Table 5 here

5.2. Robustness Tests of Endogeneity

In the baseline regression, we find that AFRPA negatively predicts M&A announcement returns. However, the potential endogeneity problems can lead to a bias in the OLS estimates. Therefore, to address omitted variables and reverse causality problems, we conduct an instrumental variables approach, falsification test, and net effect approach.

Analyst favorable recommendations represent analysts' conscious choices, so analyst recommendations are not exogenous and can have a mixed influence on our findings. Our identification strategy is to construct an instrument for AFRPA and use the 2SLS approach to ease the endogeneity. The ideal instrument should help capture the variation in AFRPA that is exogenous to CARs. We use two instruments suggested by (Becher et al., 2015). The first instrument, AA, is the percentage of favorable recommendations of all analysts covering the acquirer for all other firms they cover, excluding the acquirer. (Becher et al., 2015) argue that if an analyst exhibits systematic optimism or pessimism in their recommendations, then an analyst's recommendation regarding one firm will be correlated with his or her others. The second instrument, BA, is the average recommendation favorability of the brokerages of all analysts issuing pre-announcement recommendations on a firm for all firms outside the acquirer's industries. (Becher et al., 2015) argue that if brokerages exhibit systematic optimism or pessimism, then an analyst's recommendation should be related to other analysts' recommendations issued by the brokerage.

Panel A of Table 6 reports the IV 2SLS regressions of CARs on AFRPA and other control variables. The Column (1) of Panel A details results from the first-stage regressions. the coefficients of all two instruments are significantly positive at the 1% level, indicating that the instrument is highly correlated with AFRPA. The Cragg-Donald Wald F statistic (25.291) is greater than the Stock-Yogo weak ID test critical value (19.93), we reject the null hypothesis that the instrument is weak. Columns (2) - (4) of Panel A show the second-stage regression

results estimating the model with fitted AFRPA from the first-stage regression. The coefficients of the fitted AFRPA are significantly negative, which is consistent with the baseline regressions.

In addition, the falsification test can be used to verify the exogenous conditions of instrumental variables (Nunn and Wantchekon, 2011). Specifically, some acquirers in our sample own very low AFRPA, implying that these acquirers are favorably recommended by few analysts. Suppose analyst recommendations affect M&A announcement returns only through the instrumental variables. In that case, these samples which we concerned are uninterested to investors, and thus instruments should not be significantly relevant to the dependent variables. We keep samples with AFRPA fewer than the third quantile (0.693), then estimate IV 2SLS regressions. Panel B of Table 6 reports the results and all the coefficients of the expected AFRPA are not significant, indicating that the AFRPA does not affect M&A announcement returns in acquirers with low AFRPA.

Prior research has shown that analyst recommendation can be affected by the acquirer's characteristics such as firm size, profitability, market-to-book ratio, state ownership, and mutual fund holdings (Firth et al., 2013). These characteristics may also affect M&A announcement returns. We construct the following model to obtain the residual AFRPA:

$$AFRPA_i = \beta_0 + \beta_1 Size_i + \beta_2 ROA_i + \beta_3 MB_i + \beta_4 SOE_i + \beta_5 IO_i + Year_i + Industry_i + \varepsilon_i \quad (5)$$

where ε_i is the residual AFRPA, represented as *NetAFRPA*. The residual is obtained by excluding firm size, profitability, market-to-book ratio, state ownership, and mutual fund holdings from AFRPA. Then we estimate our baseline regression with the main variable of interest replaced by the residual AFRPA. Panel C of Table 6 reports the results and all the coefficients of the residual AFRPA are negative and significant, reinforcing our baseline findings.

Insert Table 6 here

5.3. Other Robustness Tests

We conduct robustness tests for our baseline results. First, we use an alternative measurement for AFRPA. Alternative AFRPA is defined as the natural logarithm of one plus the number of an acquirer’s analyst favorable recommendations (only use “strong buy” rating as “favorable” recommendations here) from one year before M&A announcement day to five trading days before M&A announcement day. Panel A of Table 7 reports the results and all the coefficients of the AFRPA are significantly negative, which suggests that AFRPA negatively predicts M&A announcement returns. Second, we restrict the sample period in 2013–2021 to exclude the impact of the few early samples and our baseline results are robust, as seen in Panel B of Table 7. Third, we restrict AFRPA to be larger than zero to exclude the no analyst favorable recommendation samples and our baseline is robust, as seen in Panel C of Table 7. Furthermore, we only keep domestic M&As to exclude the impact of the cross-border M&As and our baseline is robust, as seen in Panel D of Table 7.

Insert Table 7 here

6. Alternative Explanations and Channel Test

6.1. Analyst Information Role

First, analysts can play an information role of only reducing undervaluation rather than reducing overvaluation which is suggested by the baseline results of (Li, 2020). Therefore, one possible explanation for our prior findings is that our results are driven by the undervalued samples under the mechanism of analyst reducing information asymmetry. In that case, the more AFRPA, the less undervaluation, the less extent of acquirer’s valuation increasing, and the lower CARs, which should be only shown in undervalued samples. To verify this possible explanation, we test Eq. (2) and Eq. (3) if acquirers are undervalued ($Mis_{-5} < 0$) or overvalued ($Mis_{-5} > 0$). Under the alternative explanation, the coefficients of *AFRPA* should only be significantly positive in Eq. (3) and significantly negative in Eq. (2) when acquirers are

undervalued ($Mis_{-5} < 0$). The results are presented in Panel A1 and Panel A2 of Table 8, suggesting that our results are not driven by undervalued samples. The coefficients of *AFRPA* are significantly positive for both undervalued acquirers and overvalued acquirers. Moreover, the negative prediction of AFRPA on CARs is more significant in overvalued acquirers than that in undervalued acquirers.

6.2. Analyst Pressure

A second potential explanation for our results is that analyst favorable recommendations exert pressure on acquirer's managers and force acquirer's managers to take poor M&As. Prior research points out that analysts have a low tolerance for short-term performance decreases and force managers to meet analysts' forecasts, such as cutting R&D expenses and using real earnings management (He and Tian, 2013; Irani and Oesch, 2016). Therefore, managers may use low-quality M&As to enhance short-term performance in response to analyst favorable recommendations, which results in low market reactions. To verify this possible explanation, we check whether acquirers are affected by analyst pressure following (He and Tian, 2013; Irani and Oesch, 2016). (Irani and Oesch, 2016) propose that managers use real earnings management rather than accrual-based earnings management to enhance short-term performance in response to analyst pressure. Specifically, we test the relation between AFRPA and real (accrual-based) earnings management, we develop the following regression model:

$$EM_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (6)$$

The dependent variables are an accrual-based measure of earnings management (*AM*) (Dechow et al., 1995) and a measure of real activities manipulation (*RM*) (Dechow et al., 1998). The control variables following (Irani and Oesch, 2016) include size, profitability, market-to-book ratio, company's sales growth computed as the yearly growth in sales (*SalesGR*), and the number of unique analysts covering the acquirer (*AnalystNum*).

(He and Tian, 2013) suggest that analysts exert too much pressure on managers to enhance short-term performance, reducing firms' investment in long-term innovation activities. Specifically, we test the relation between AFRPA and innovation input/outcome, we develop the following regression model:

$$Innovation_i = \alpha_0 + \alpha_1 AFRPA_i + \alpha_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (7)$$

The dependent variables are the natural logarithm of one plus the number of granted patents (*LnPatent*) (Aghion et al., 2013) and R&D expenses to total sales (*R&D/Sales*) (Abdellaoui et al., 2011). The control variables following (He and Tian, 2013) include size, age, profitability, R&D expenditures (*R&DEx*), PPE (*PPE*), leverage (*Lev*), capital expenditure (*CapEx*), market-to-book ratio, Financial constrain proxied by the KZ index (*FC*), Herfindahl-Hirschman Index (*HHI*). The results are presented in Panel B of Table 8, suggesting that our findings are not explained by analyst pressure. AFRPA is not related to innovation input/outcome or real (accrual-based) earnings management.

6.3. Informed Trading

Prior research has shown evidence of informed trading before the M&A announcement: 1) estimated probabilities of informed trading increases, 2) the probabilities of informed trading are negatively related to the magnitude of the price reaction to M&A announcement, which implies that M&A information is impounded in stock prices before the M&A announcement by pre-event informed trading (Brennan et al., 2018). The analysts may share the M&A information with other market participants since Chinese M&As generally have positive and large CARs for acquirers. Therefore, AFRPA may reflect the private M&A information of analysts. A third possible reason is that acquirers with higher AFRPA will have lower CARs because of information leakage and informed trading. We develop the following regression model:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 PIN_i + \beta_3 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (8)$$

where PIN is the probability of informed trading calculated from two month before M&A announcement day to five trading days before M&A announcement day (Easley et al., 2002). Other controls are the same as Eq. (1). The results are presented in Panel C of Table 8, suggesting that our results are not driven by informed trading. The coefficients of PIN are generally negative. Our untabulated statistics find the coefficients of PIN are significantly and positively related to the acquirer's misvaluation value at 1% level when acquirers are undervalued. However, the coefficients of PIN are not related to the acquirer's misvaluation value when acquirers are overvalued. The results show that informed trading mainly occurs in undervalued acquirers.

Insert Table 8 here

6.4. Channel Test

So far, we have found that AFRPA has a significantly negative effect on M&A announcement returns. Next, we attempt to identify whether AFRPA decreases M&A announcement returns by increasing the acquirer's valuation in the pre-announcement period. We apply the mediating effects model to examine this possible channel. The results are shown in Table 9. The first stage is the baseline regression results shown in Table 5, which has documented that AFRPA significantly decreases M&A announcement returns. Column (1) of Table 9 reports the second-stage regression results, which show that AFRPA is significantly positively correlated with the acquirer's misvaluation value (Mis_{-5}), indicating AFRPA can increase the acquirer's valuation in the pre-announcement period. Columns (2) – (4) of Table 9 reports the third-stage regression results. In the third stage, AFRPA and the acquirer's misvaluation value are added to the regression. Both the coefficients of the acquirer's misvaluation value and the coefficients of AFRPA are significantly negative. Through Sobel-Goodman Mediation Tests and the bootstrap test, it is confirmed that AFRPA decreases M&A announcement returns by increasing the acquirer's valuation in the pre-announcement period.

Insert Table 9 here

7. The Moderating Effect

7.1. Moderating effect of Information Uncertainty

(Zhang, 2006) explains information uncertainty as the ambiguity with respect to the implications of new information for a firm's value. The information uncertainty potentially stems from the volatility of a firm's underlying fundamentals and poor information. Prior research finds that the investors beliefs about cash flows and risk that are not fully justified by fundamentals should exhibit its strongest effects on stock prices when stock's information uncertainty is higher (Birru and Young, 2022). Therefore, we suggest that AFRPA containing analyst optimism bias may shape more biased investors beliefs, induce higher acquirer's valuation in the pre-announcement period, and result in lower M&A announcement returns when the acquirer's information uncertainty is higher. Our information uncertainty proxy, stock volatility (*SIGMA*) and firm age (*Age*), is developed by (Zhang, 2006). Stock volatility is measured by the standard deviation of weekly market excess returns from one year before M&A announcement day to five trading days before M&A announcement day. The higher the stock volatility, the higher the information uncertainty. Firms have more information available when they have a long history. Moreover, firm age also captures the underlying volatility at the industry level because older firms are more likely to be in more mature industries. The larger firm age, the lower the information uncertainty. Then we add interaction term into the baseline regression model:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 IU_i + \beta_3 AFRPA \times IU_i + \beta_4 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (9)$$

where *IU* is information uncertainty proxied by stock volatility (*SIGMA*) and firm age (*Age*). The results are shown in Panel A of Table 10. The coefficients of the interaction term are significantly negative for stock volatility. The coefficients of the interaction term are

significantly positive for firm age. Our findings indicate that AFRPA more intensely decreases M&A announcement returns when the acquirer's information uncertainty is higher.

7.2. Moderating effect of Media

Besides analysts, the financial media traditionally plays a key role as an information intermediary between information sources and information users (Ahern and Peress, 2022). Prior research finds that financial media in China stock market can function as an alternative channel for corporate governance (Borochin and Cu, 2018; You et al., 2018). There is a possibility that the useful information disseminated by financial media may reduce the effect of optimistically biased information of analysts on investors. Therefore, we suggest that AFRPA has less negative influence on M&A announcement returns when financial media has more criticism of an acquirer. Recently, social media has been increasingly used by firms for disclosing information and engaging stakeholders (Kim and Youm, 2017). (He et al., 2023) provide empirical evidence on the role of social media in mitigating corporate bad news hoarding by using Guba posts (Guba is a special social media and the most famous stock forum dedicated to stock market investors in China). The useful information in Guba posts may reduce the effect of optimistic biased information of analysts on investors. Therefore, we suggest that AFRPA has less negative influence on M&A announcement returns when an acquirer has more Guba posts. To examine our propositions, we construct the acquirer's financial media sentiment (*FMS*) and Guba posts (*Posts*). The financial media sentiment data is obtained from CNRDS (Chen et al., 2021). CNRDS records news sentiment as 1 (optimism)/-1 (pessimism). We measure the acquirer's financial media sentiment as the number of acquirer's optimism news minus the number of acquirer's pessimism news, scaled by the number of acquirer's optimistic news plus the number of acquirer's pessimism news from one year before M&A announcement day to five trading days before M&A announcement day. *Posts* is the natural logarithm of one plus the number of acquirer's Guba posts from one-year before M&A announcement day

to five trading days before M&A announcement day (He et al., 2023). We develop the following regression model:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 Media_i + \beta_3 AFRPA \times Media_i + \beta_4 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (10)$$

where *Media* is media variable proxied by financial media sentiment (*FMS*) and Guba posts (*Posts*). Other controls are the same as Eq. (1). The results are shown in Panel B of Table 10. The coefficients of interaction term are significantly negative for financial media sentiment. The coefficients of interaction term are significantly positive for Guba posts. Our findings indicate that AFRPA has less negative influence on M&A announcement returns when more acquirer's useful information is released from financial/social media.

7.3. Moderating effect of Investor Attention

(Lin et al., 2014) show that investor attention is crucial to information diffusion from analysts by using trading turnover as a proxy for investor attention. Their main idea is that, even if the information of analysts is publicly available, it does not affect prices until it attracts the attention of potential investors. Therefore, we suggest that AFRPA has a more negative impact on M&A announcement returns when investors pay more attention to an acquirer. To measure investor attention, we use trading turnover (*TO*) which is the average monthly turnover (shares traded divided by shares outstanding) from one year before M&A announcement day to five trading days before M&A announcement day. Moreover, following (Lin et al., 2014), we control for the effect of institutional ownership, analyst dispersion, and liquidity on trading turnover and get the residual trading turnover (*RTO*) from a regression of turnover on institutional ownership, analyst dispersion, and Amihud's (2002) liquidity measure. We develop the following regression model:

$$CARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 IA_i + \beta_3 AFRPA \times IA_i + \beta_4 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (11)$$

where *IA* is investor attention proxied by trading turnover (*TO*) and residual trading turnover

(*RTO*). Other controls are the same as Eq. (1). The results are shown in Panel C of Table 10. The coefficients of interaction term are significantly negative for trading turnover. The coefficients of interaction term are significantly negative for residual trading turnover. Our findings indicate that AFRPA has a more negative impact on M&A announcement returns when investors pay more attention to the acquirer.

Insert Table 10 here

8. Additional Analysis

8.1. AFRPA and Long Term M&As Performance

Panel A of Table 4 shows that the acquirer's misvaluation value persistently increases in the post-announcement period. Therefore, there may exist a negative relation between AFRPA and long-term M&A performance. The more AFRPA, the larger acquirer's misvaluation value in the pre-announcement period, the less extent of the acquirer's valuation increasing in the post-announcement period, and the less buy-and-hold abnormal returns (*BHARs*). *BHARs* is acquirer's buy-and-hold abnormal returns calculated as follows: $BHARs_{i,T} = \prod_{t=0}^T(1 + R_{i,t}) - \prod_{t=0}^T(1 + R_{benchmark,t})$, where we use three benchmarks for expected returns: the returns of the 25 value-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio (*VBHARs*), the returns of the 25 equally-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio (*EBHARs*), the HS300 index (*IBHARs*). We calculate *BHARs* in one-year, two-year, and three-year window. We develop the following regression model:

$$BHARs_i = \beta_0 + \beta_1 AFRPA_i + \beta_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (12)$$

following (Nguyen and Phan, 2017), the control variables include size, market-to-book ratio, past 6-month cumulative return, sales growth, leverage, age, relative size, deals financed with equity, and diversify. The results are shown in Panel A of Table 11. The coefficients of AFRPA

are significantly negative, indicating that AFRPA also has a significant and negative impact on long-term M&A performance.

8.2. Good M&As, Bad M&As and AFRPA

In this section, we provide further empirical evidence on analyst optimism bias by comparing the difference of analyst favorable recommendations between Good M&As and Bad M&As. Following (Cai and Sevilir, 2012), we construct M&A operating performance (%) (ΔROA) as the change in industry-adjusted ROA from one/two/three years prior to M&A announcement to one/two/three years after M&A completion. Acquirers in the bottom quantile of ΔROA are classified as Bad M&As and acquirers in the top quantile of ΔROA are classified as Good M&As. The results are shown in Panel C of Table 11. In the pre-announcement period, acquirers of Bad M&As have persistently and significantly higher AFRPA than acquirers of Good M&As in one/two/three-year window (1.944 versus 1.578, 1.893 versus 1.492, 1.941 versus 1.496). In the event window, acquirers of Bad M&As have generally significantly higher AFRPA than acquirers of Good M&As in one/two/three-year window (0.849 versus 0.653, 0.790 versus 0.645, 0.821 versus 0.685). In the post-announcement period, acquirers of Bad M&As still have higher analyst favorable recommendations in the post-announcement period (AFRPOA) than acquirers of Good M&As in one/two/three-year window (2.351 versus 2.162, 2.291 versus 2.088, 2.393 versus 2.124). Overall, analysts are more likely to recommend acquirers who initiate low-quality M&As.

8.3. Analysts Affiliated with Acquirer Advisors and AFRPA

In this section, we try to explore whether analysts affiliated with acquirer advisors can affect AFRPA because of analyst conflicts of interest. Prior research shows that analysts affiliated with acquirer advisors improve analyst recommendations around M&As in developed markets (Kolasinski and Kothari, 2008). In China stock market, acquirers always employ one or several brokerages as M&A advisors in M&A process (deal-making, due diligence,

negotiation, filings, integration, etc.). Therefore, we suggest that analysts affiliated with acquirer advisors may issue more analyst favorable recommendations for the acquirer because of catering to the acquirer’s interests. To verify this explanation, we construct the analysts affiliated with acquirer advisors (*Advisor*), which equals to one if one or several of the brokerages of all analysts issuing AFRPA on an acquirer are M&A advisors, and zero otherwise. We develop the following regression model based on Eq. (5):

$$AFRPA/Pec_AFRPA_i = \beta_0 + \beta_1 Advisor_i + \beta_2 Controls_i + Year_i + Industry_i + \varepsilon_i \quad (13)$$

where *Pec_AFRPA* is AFRPA issued by analysts affiliated with acquirer advisors divided by AFRPA, which excludes the effect of size of brokerages/analysts. The control variables include AA, BA, size, profitability, market-to-book ratio, state ownership, and mutual fund holdings. The results are shown in Panel D of Table 11. The coefficients of *Advisor* are significantly positive, indicating that analysts affiliated with acquirer advisors issue more AFRPA for the acquirer.

Insert Table 11 here

9. Conclusions

Our paper investigates the effects of AFRPA on M&A announcement returns. We find M&A announcement returns decreases with AFRPA. Results from a rich set of robustness tests (the instrumental variable method, falsification test, and net effect method) support the causality. We next explore three alternative explanations for the relations we observe, which we term “analyst information role”, “analyst pressure” and “informed trading” explanations, and our findings are still robust. We also discuss the possible mechanism and find that AFRPA increasing the acquirer’s valuation in the pre-announcement period is the possible channel that allows AFRPA to reduce M&A announcement returns. Further investigation reveals the negative relation is more pronounced in acquirers with high information uncertainty, low financial/social media cover, and high investor attention. Additional analysis

suggests that AFRPA has a negative impact on long-term M&A performance, analysts are more likely to favorably recommend acquirers who initiate low-quality M&As, and analysts affiliated with acquirer advisors issue more AFRPA for the acquirer. Overall, our research enriches the impact of analyst recommendations on M&A outcomes and provides new empirical evidence on analyst optimism bias.

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Table 1: Sample Formation

This table reports the sample formation on M&As of all A-share listed companies in the WIND database announced between June 2008 and December 2021.

Panel A: Sample formation			
Matching process			Observations
All announced M&As			2,110
Excluding back-door listing deals ¹ , holistic listing deals ² , or privatization deals			285
Excluding deals with multiple targets ³			469
Excluding the acquirer with a special treatment (ST) designation ⁴			61
Excluding deals with incomplete status			66
Excluding deals with missing payment and merger size			68
Excluding deals with missing value of control variables			243
Excluding deals which is the only one sample in a certain industry/year			3
Final sample of M&As			915

Panel B: The distribution of M&As by year/month			
Year	N	Month	N
2009	3	January	69
2010	7	February	41
2011	6	March	61
2012	17	April	86
2013	51	May	79
2014	116	June	90
2015	195	July	65
2016	159	August	73
2017	126	September	107
2018	90	October	60
2019	70	November	69
2020	47	December	115
2021	28		

¹ Back-door listing deals are also called as reverse merger. Liu et al. (2019, page 49) introduce reverse merger as follows: “In China, however, the stock of a small, listed firm is typically priced to reflect a substantial component of value related not to the firm’s underlying business but instead to the Chinese initial public offering (IPO) process. In China, the IPO market is strictly regulated, and a growing demand for public listing confronts the low processing capacity of the regulatory bureau to approve IPOs. As a consequence, private firms seek an alternative approach, a reverse merger, to become public in a timely manner. In a reverse merger, a private firm targets a publicly traded company, a so-called shell, and gains control rights by acquiring its shares. The shell then buys the private firm’s assets in exchange for newly issued shares. While reverse mergers occur elsewhere, IPO constraints are sufficiently tight in China such that the smallest firms on the major exchanges become attractive shell targets, unlike in the US, for example.” Back-door listing deals are not similar to M&As transactions in the developed market. Therefore, we exclude back-door listing deals.

² Holistic listing deals are referred to the listing that controlling shareholder injects group assets into a listed company through merger and realizes the whole group to come into the market (Huang et al. 2010). Holistic listing deals are not similar to M&As transactions in the developed market. Therefore, we exclude holistic listing deals.

³ Alperovych et al. (2021) examine completed or abandoned M&A transactions involving unlisted targets to determine the effect of transaction rumors from media on deal-closing propensity and transaction values. In their study, multi-target deals are excluded.

⁴ In China, the special treatment (ST) designation is a delisting warning for firms typically in financial distress. Stocks denoted ST are subject to different trading rules Tao et al. (2019). Therefore, we exclude deals whose acquirers are with a ST designation.

Table 2: Definitions and Calculations of All Variables

Variables	Definition	Calculation
Dependent variables		
<i>Mis</i>	Acquirer's misvaluation	The misvaluation measure is proposed by Rhodes-Kropf et al. (2005) and described in Appendix 1. The book value of equity is measured as of the end of the fiscal year immediately preceding M&As announcement. The market-to-book equity ratio is decomposed into two components: misvaluation and long-run investment opportunities, $Ln(M/B) = Ln(M/V) + Ln(V/B)$. We define $Ln(M/V)$ as acquirer's misvaluation. Misvaluation is measured at four points: five trading days before M&A announcement day (Mis_{-250}), five trading days before M&A announcement day (Mis_{-5}), five trading days after M&A announcement day (Mis_{+5}), and one year after M&A announcement day (Mis_{+250}).
<i>CARs</i>	Cumulative abnormal return (%)	The sum of the abnormal returns estimated as the difference between real and predicted returns using the Fama–French three-factor model during the [-1, 1], [-2, 2], and [-5, 5] window.
Independent variables		
<i>AFRPA</i>	Acquirer's analyst favorable recommendations in the pre-announcement period	We obtain analyst recommendations from Chinese Research Data Services (CNRDS) from 2008 to 2021. CNRDS records analyst recommendations in real-time sequence with standardized five-digit ratings (1=strong buy, 2=buy, 3= hold, 4=sell, and 5=strong). Our main analysis focuses on pre-announcement analyst recommendations, which are all recommendations issued on an acquirer from one year before announcement day to five trading days before announcement day. We use “strong buy” rating and “buy” rating as “favorable” recommendations. We measure AFRPA as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one year before M&A announcement day to five trading days before M&A announcement day (Guo et al. 2019).
Control variables		
<i>Size</i>	Acquirer's size	The logarithm value of total assets at the end of the year before M&A announcement day.
<i>ROA</i>	Acquirer's ROA	The EBIT scaled by total assets at the end of the year before M&A announcement day.
<i>Lev</i>	Acquirer's leverage	The book value of debt over the sum of book value of debt and market value of equity at the end of the year before M&A announcement day.
<i>MB</i>	Acquirer's market-to-book ratio	The market value of equity divided by book value at the end of the year before M&A announcement day.
<i>Liq</i>	Acquirer's liquidity	The cash and equivalents scaled by total assets at the end of the year before M&A announcement day.
<i>CF</i>	Acquirer's cash flow	The ratio of the sum of net profit and depreciation to total assets at the end of the year before M&A announcement day.
<i>Top1</i>	Acquirer's top1 shareholding	The shareholding ratio of the largest shareholder at the end of the year before M&A announcement day.
<i>CEOHold</i>	Acquirer's top executives shareholding	Dummy variable equal to one if the firm's top executives (including the CEO) are holding shares in their own company, and zero otherwise at the end of the year before M&A announcement day.
<i>BrdSize</i>	Acquirer's board size	Logarithm of one plus the number of members in board at the end of the year before M&A announcement

<i>SOE</i>	Acquirer's state-owned status	day. Dummy variable equal to one if the acquirer is state owned in a given year, and zero otherwise at the end of the year before M&A announcement day.
<i>RunUp</i>	Acquirer's past 6-month cumulative return	Acquirer's prior 6-month cumulative returns prior to five trading days before M&A announcement day.
<i>Equity</i>	Payment method	Dummy variable, if deals financed with equity, value 1, otherwise, value 0.
<i>RelVal</i>	Relative size	The ratio of deal value to acquirers' market value as relative size.
<i>Diversify</i>	Diversify	Dummy variable equal to one if the acquirer is not in the same industry as the target (measured using the acquirer's and the target's CSRC industry code), and zero otherwise.
<i>AFRIA</i>	Acquirer's analyst favorable recommendations in the event window	The natural logarithm of one plus the number of an acquirer's analyst favorable recommendations in [-5, 5] window.
<i>AFRPOA</i>	Acquirer's analyst favorable recommendations in the post-announcement period	The natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from five trading days after M&A announcement day to one year after M&A announcement day.
<i>CapEx</i>	Acquirer's capital expenditure	The capital expenditure scaled by total asset at the end of the year before M&A announcement day.
<i>Age</i>	Acquirer's age	The number of years since the first year when acquirer has non-missing stock price.
<i>PPE</i>	Acquirer's PPE	The property, plant and equipment relative to the book value of total assets at the end of the year before M&A announcement day.
<i>Dividend</i>	Acquirer's dividend	The total cash dividend over total asset and missing value is set to zero at the end of the year before M&A announcement day.
<i>ATgrow</i>	Acquirer's asset growth	Percentage of asset increase at the end of the year before M&A announcement day.
<i>Altman'Z</i>	Acquirer's Altman's Z	The Altman (1968) Z-score measure to control for financial health at the end of the year before M&A announcement day.
<i>IO</i>	Acquirer's institutional ownership	The percentage of common share held by institutional investors at the end of the year before M&A announcement day.
<i>AM</i>	Acquirer's accrual-based measure of earnings management	We obtain accrual-based measure of earnings management (Dechow et al. 1995) from CSMAR at the end of the year before M&A announcement day.
<i>RM</i>	Acquirer's real activities manipulation	We obtain real activities manipulation (Dechow et al. 1998) from CSMAR at the end of the year before M&A announcement day.
<i>SalesGR</i>	Acquirer's sales growth	The company's sales growth computed as the yearly growth in sales at the end of the year before M&A announcement day.
<i>AnalystNum</i>	Analyst number	The number of unique analysts covering an acquirer between the beginning and the end of the year before

		M&A announcement day.
<i>LnPatent</i>	Acquirer's granted patent number	The natural logarithm of one plus the number of granted patents between the beginning and the end of the year before M&A announcement day.
<i>R&D/Sales</i>	Acquirer's R&D expenses to total sales	R&D expenses to total sales at the end of the year before M&A announcement day.
<i>R&DEx</i>	Acquirer's R&D expenditures	R&D expenditures at the end of the year before M&A announcement day.
<i>FC</i>	Acquirer's financial constrain	Financial constrain is proxied by the KZ index at the end of the year before M&A announcement day.
<i>HHI</i>	Acquirer's Herfindahl-Hirschman Index	Herfindahl index of CSRC industry <i>j</i> where acquirer <i>i</i> belongs, measured at the end of the year before M&A announcement day.
<i>PIN</i>	Acquirer's probability of informed trading	The probability of informed trading is calculated from two month before M&A announcement day to five trading days before M&A announcement day (Easley et al. 2002). The (Fu et al. 2013) suggests that information leakage of merger often occurs in the two months prior to M&As announcement. Financial media sentiment data is obtained from CNRDS (Chen et al. 2021). CNRDS records news sentiment as 1 (optimism)/-1 (pessimism). We measure the financial media sentiment as the number of optimism news minus the number of pessimism news, scaled by the number of optimism news plus the number of pessimism news from one-year before announcement day to five trading days before announcement day.
<i>FMS</i>	Acquirer's financial media sentiment	
<i>SIGMA</i>	Acquirer's stock volatility	The standard deviation of weekly market excess returns from one year before M&A announcement day to five trading days before M&A announcement day (Zhang 2006).
<i>Posts</i>	Acquirer's Guba posts	The logarithm of one plus the number of Guba posts (Guba is a special social media and the most famous stock forum dedicated to stock market investors in China) from one year before M&A announcement day to five trading days before M&A announcement day (He et al. 2023).
<i>TO</i>	Acquirer's trading turnover	The average monthly trading turnover (shares traded divided by shares outstanding) from one year before M&A announcement day to five trading days before M&A announcement day (Lin et al. 2014).
<i>RTO</i>	Acquirer's residual trading turnover	The residual trading turnover from a regression of turnover on institutional ownership, analyst dispersion, and Amihud's (2002) liquidity measure (Lin et al. 2014). The calculation window of institutional ownership, analyst dispersion, and Amihud's (2002) liquidity measure is same as <i>TO</i> .
<i>BHARs</i>	Buy-and-hold abnormal return (%)	Buy-and-hold abnormal returns which are calculated for each acquirer as follows: $BHARs_{i,T} = \prod_{t=0}^T (1 + R_{i,t}) - \prod_{t=0}^T (1 + R_{benchmark,t})$, where $R_{i,t}$ is the stock return of stock <i>i</i> in month <i>t</i> , benchmark is the returns of the 25 value-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio (<i>VBHARs</i>), the returns of the 25 equally-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio (<i>EBHARs</i>) or the HS300 index (<i>IBHARs</i>).
<i>Advisor</i>	Analysts affiliated with acquirer advisors	The dummy variable equals to one if one or several of the brokerages of all analysts issuing AFRPA on an acquirer are M&A advisors, and zero otherwise.

ΔROA

M&A operating performance
(%)

The change in industry-adjusted ROA from one/two/three years before the M&A announcement to one/two/three years after M&A completion (Cai and Sevilir 2012).

Table 3: Summary Statistics

All variables are as defined in Table 2.

Variables	Obs	Mean	SD	Min	Median	Max
<i>CARS</i> _[-1,+1]	915	6.30	14.344	-29.51	8.50	31.09
<i>CARS</i> _[-2,+2]	915	8.15	19.034	-41.17	8.91	44.99
<i>CARS</i> _[-5,+5]	915	9.51	27.551	-58.67	6.32	69.31
<i>Mis</i> ₅	776	-0.18	0.733	-1.90	-0.16	1.69
<i>AFRPA</i>	915	1.71	1.453	0.00	1.61	4.72
<i>Size</i>	915	21.40	1.132	19.50	21.17	25.25
<i>ROA</i>	915	0.05	0.061	-0.22	0.05	0.23
<i>MB</i>	915	5.40	4.361	0.84	4.22	26.85
<i>Liq</i>	915	0.19	0.142	0.01	0.15	0.65
<i>Lev</i>	915	0.37	0.202	0.03	0.34	0.88
<i>CF</i>	915	0.04	0.071	-0.25	0.03	0.27
<i>Top1</i>	915	0.34	0.134	0.11	0.32	0.66
<i>CEOHold</i>	915	0.71	0.454	0.00	1.00	1.00
<i>BrdSize</i>	915	2.21	0.162	1.79	2.30	2.56
<i>SOE</i>	915	0.17	0.380	0.00	0.00	1.00
<i>RunUp</i>	915	1.32	0.812	0.52	1.12	5.80
<i>AFRIA</i>	915	0.73	0.926	0.00	0.00	3.18
<i>Equity</i>	915	0.75	0.434	0.00	1.00	1.00
<i>RelVal</i>	915	0.37	0.454	0.01	0.23	3.15
<i>Diversify</i>	915	0.59	0.492	0.00	1.00	1.00

Table 4: Descriptive Statistics

The misvaluation measure is proposed by Rhodes-Kropf et al. (2005) and described in Appendix 1. The book value of equity is measured as of the end of the fiscal year immediately preceding M&As announcement. The market-to-book equity ratio is decomposed into two components: misvaluation and long-run investment opportunities, $Ln(M/B) = Ln(M/V) + Ln(V/B)$. We define $Ln(M/V)$ as acquirer's misvaluation value (Mis). Acquirer's misvaluation value is measured at four points: one year before M&A announcement day (Mis_{-250}), five trading days before M&A announcement day (Mis_{-5}), five trading days after M&A announcement day (Mis_{+5}), and one year after M&A announcement day (Mis_{+250}). Analyst recommendations are recorded as five-digit ratings (1=strong buy, 2=buy, 3=hold, 4=sell, and 5=strong) and we use "strong buy" rating and "buy" rating as "favorable" recommendations. We construct the analyst favorable recommendations in the pre-announcement period ($AFRPA$) as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one year before M&A announcement day to five trading days before M&A announcement day. Panel A reports summary statistics of acquirers' misvaluation value. Panel B reports the comparison subsamples between High and Low AFRPA. Acquirers in the bottom quintile of AFRPA are classified as Low and acquirers in the top quintile of AFRPA are classified as High. All variables are defined in Table 2. Significance is examined with t-tests at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

Panel A: Acquirers' misvaluation						
	All M&As		Stock M&As		Cash M&As	
	Obs.	Mean	Obs.	Mean	Obs.	Mean
Mis_{-250}	669	-0.517***	493	-0.538***	176	-0.457***
Mis_{-5}	776	-0.181***	572	-0.173***	204	-0.200***
Mis_{+5}	770	-0.055***	569	-0.029	201	-0.125**
Mis_{+250}	718	0.082**	529	0.114***	189	-0.001
$Mis_{+5} - Mis_{-5}$	765	0.121***	565	0.131***	200	0.091***
$Mis_{+250} - Mis_{-5}$	713	0.261***	525	0.283***	188	0.200***

Panel B: Comparison subsamples between High and Low AFRPA						
	Low AFRPA		High AFRPA		T-Test	
	Obs.	Mean	Obs.	Mean	P-Value	
Mis_{-250}	214	-0.443	140	-0.522	0.0790	
Mis_{-5}	239	-0.222	157	-0.033	-0.189***	
Mis_{+5}	238	-0.105	157	0.067	-0.172**	
Mis_{+250}	227	0.035	143	0.168	-0.133	
$CARS_{[-1,+1]}$	272	7.651	176	3.178	4.473***	
$CARS_{[-2,+2]}$	272	9.450	176	4.279	5.171***	
$CARS_{[-5,+5]}$	272	11.660	176	4.334	7.332***	

Panel C: Comparison subsamples between High and Low AFRPA if AFRPA is larger than 0

	Low AFRPA		High AFRPA		T-Test
	Obs.	Mean	Obs.	Mean	P-Value
<i>Mis</i> ₋₂₅₀	103	-0.548	96	-0.457	-0.091
<i>Mis</i> ₋₅	130	-0.222	108	-0.009	-0.212**
<i>Mis</i> ₊₅	129	-0.039	108	0.090	-0.129
<i>Mis</i> ₊₂₅₀	120	0.183	97	0.197	-0.014
<i>CARS</i> _[-1,+1]	162	7.651	123	2.404	5.051***
<i>CARS</i> _[-2,+2]	162	9.191	123	2.982	6.209***
<i>CARS</i> _[-5,+5]	162	9.223	123	3.097	6.126*

Table 5: AFRPA and M&A announcement Returns

This table reports the multivariate regression of M&A announcement returns on AFRPA and control variables. The dependent variable is acquirer's cumulative abnormal returns (*CARs*). We calculate *CARs* as the sum of daily abnormal returns over the [-1, +1], [-2, +2] and [-5, +5] window. Analyst recommendations are recorded as five-digit ratings (1=strong buy, 2=buy, 3=hold, 4=sell, and 5=strong) and we use "strong buy" rating and "buy" rating as "favorable" recommendations. We construct the analyst favorable recommendations in the pre-announcement period (*AFRPA*) as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one year before M&A announcement day to five trading days before M&A announcement day. All variables are defined in Table 2. The sample period is from 2009 to 2021. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

	(1)	(2)	(3)
	<i>CARs</i> _[-1,+1]	<i>CARs</i> _[-2,+2]	<i>CARs</i> _[-5,+5]
<i>AFRPA</i>	-1.682*** (-3.56)	-2.304*** (-3.92)	-2.778*** (-3.42)
<i>Size</i>	-1.575*** (-2.59)	-2.128*** (-2.69)	-3.135*** (-2.84)
<i>ROA</i>	9.921 (1.20)	12.572 (1.16)	6.696 (0.42)
<i>MB</i>	-0.357*** (-2.58)	-0.492*** (-2.62)	-0.714*** (-2.82)
<i>Liq</i>	10.564*** (2.85)	17.415*** (3.62)	20.573*** (2.98)
<i>Lev</i>	5.980** (2.13)	8.660** (2.36)	6.018 (1.18)
<i>CF</i>	1.166 (0.18)	0.643 (0.07)	2.950 (0.23)
<i>Top1</i>	7.955** (2.41)	7.981* (1.86)	2.072 (0.34)
<i>CEOHold</i>	0.554 (0.55)	0.521 (0.39)	-0.917 (-0.50)
<i>BrdSize</i>	0.299 (0.11)	0.036 (0.01)	3.429 (0.67)
<i>SOE</i>	0.443 (0.33)	0.143 (0.08)	-2.601 (-1.06)
<i>RunUp</i>	-4.342*** (-6.26)	-6.856*** (-8.50)	-11.222*** (-10.81)
<i>AFRIA</i>	1.937*** (2.88)	3.049*** (3.58)	4.338*** (3.73)
<i>Equity</i>	0.744 (0.71)	1.559 (1.16)	1.681 (0.91)
<i>RelVal</i>	3.670*** (3.12)	4.611*** (3.14)	9.380*** (4.08)
<i>Diversify</i>	-1.809** (-2.02)	-2.266* (-1.94)	-3.790** (-2.22)
<i>Cons</i>	48.228*** (3.50)	72.050*** (3.97)	95.070*** (3.67)
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	915	915	915
<i>Adjusted R²</i>	0.27	0.30	0.33

Table 6: Robustness Tests for Endogeneity

This table reports the results of robustness tests for endogeneity. Panel A reports IV 2SLS regressions of M&A announcement returns on AFRPA and control variables, with two instrumental variables (Becher et al. 2015). The first instrument, *AA*, is the percentage of favorable recommendations of all analysts covering the acquirer for all other firms they cover, excluding the acquirer. The second instrument, *BA*, is the average recommendation favorability of the brokerages of all analysts issuing pre-announcement recommendations on a firm for all firms outside the acquirer's industries. Panel B reports the regressions results of the falsification test. Panel C reports regressions results of the residual effect of AFRPA on CARs. *NetAFRPA* is the residual AFRPA that excludes size, profitability, market-to-book ratio, state ownership and mutual fund holdings. All variables are defined in Table 2. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

Panel A: Instrumental variables approach				
	First stage		Second stage	
	(1)	(2)	(3)	(4)
	<i>AFRPA</i>	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]
<i>AA</i>	1316*** (5.25)			
<i>BA</i>	0.232*** (5.28)			
<i>AFRPA(IV)</i>		-7.674*** (-3.84)	-9.401*** (-3.73)	-13.540*** (-3.67)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	915	915	915	915
<i>Adjusted R²</i>	0.63	0.13	0.19	0.21
<i>Underidentification test</i>	30.347 [0.0000]			
<i>Overidentification test</i>		0.0003 [0.9867]	0.0717 [0.7888]	0.5990 [0.4389]
<i>Weak identification test</i>	25.291 <19.93>			
<i>Wu-Hausman F</i>		10.4613 [0.0013]	9.40446 [0.0022]	10.7525 [0.0011]

Panel B: Falsification test			
	(1)	(2)	(3)
	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]
<i>AFRPA(IV)</i>	-0.320 (-0.07)	-3.682 (-0.63)	-5.683 (-0.71)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	332	332	332
<i>Adjusted R²</i>	0.33	0.38	0.42

Panel C: The residual effect of AFRPA on M&A announcement returns			
	(1)	(2)	(3)

	$CARs_{[-1,+1]}$	$CARs_{[-2,+2]}$	$CARs_{[-5,+5]}$
<i>NetAFRPA</i>	-1.672*** (-3.53)	-2.081*** (-3.45)	-2.521*** (-3.04)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	915	915	915
<i>Adjusted R²</i>	0.27	0.30	0.33

Table 7: Other Robustness Tests

Panel A reports regression results of M&A announcement returns on alternative AFRPA and control variables. Alternative AFRPA are defined as the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations (only use "strong buy" rating as "favorable" recommendations here) from one year before M&A announcement day to five trading days before M&A announcement day. Panel B reports regression results of M&A announcement returns on AFRPA from 2013 to 2021. Panel C reports regression results of M&A announcement returns on AFRPA when AFRPA is larger than zero. Panel D reports regression results of M&A announcement returns on AFRPA if M&As are domestic.

Panel A: Alternative measurement			
	(1)	(2)	(3)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-1.670*** (-3.52)	-2.086*** (-3.46)	-2.541*** (-3.08)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	915	915	915
<i>Adjusted R²</i>	0.27	0.30	0.33

Panel B: Subsample of sample period in 2013–2021			
	(1)	(2)	(3)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-1.633*** (-3.42)	-2.212*** (-3.74)	-2.683*** (-3.29)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	882	882	882
<i>Adjusted R²</i>	0.27	0.30	0.33

Panel C: Subsample of <i>AFRPA</i> is larger than zero			
	(1)	(2)	(3)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-2.474*** (-3.80)	-3.354*** (-4.05)	-3.364*** (-2.97)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	643	643	643
<i>Adjusted R²</i>	0.31	0.33	0.35

Panel D: Subsample of domestic M&As			
	(1)	(2)	(3)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-1.778*** (-3.54)	-2.460*** (-3.97)	-3.045*** (-3.51)
<i>Controls</i>	Yes	Yes	Yes

<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	851	851	851
<i>Adjusted R²</i>	0.28	0.32	0.34

Table 8: Alternative Interpretations

Panel A1 and Panel A2 reports regression results for an alternative interpretation that analysts play an information role of reducing undervaluation. Samples in Panel A1 are undervalued acquirers. Samples in Panel A2 are overvalued acquirers. Panel B reports regression results for an alternative interpretation of analyst pressure. To measure earnings management, we use two proxies (Irani and Oesch 2016). *AM* is an accrual-based measure of earnings management (Dechow et al., 1995) and *RM* is a measure of real activities manipulation (Dechow et al. 1998). To measure innovation, we use two proxies (Zhang and Wang 2023). *RDRatio* is R&D expenditure to sales ratio (Abdellaoui et al. 2011). *Grant* is the natural logarithm of one plus the acquirer's total number of patents granted (Aghion et al. 2013). Panel C reports regression results for an alternative interpretation of informed trading. *PIN* is the probability of informed trading calculated from two month before M&A announcement day to five trading days before M&A announcement day (Easley et al. 2002). All variables are defined in Table 2. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

Panel A1: Alternative interpretation of analysts information role.				
	<i>Mis</i> ₋₅ < 0			
	(1)	(2)	(3)	(4)
	<i>Mis</i> ₋₅	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]
<i>AFRPA</i>	0.064***	-0.846	-1.471**	-1.556
	(4.50)	(-1.40)	(-1.99)	(-1.53)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	469	469	469	469
<i>Adjusted R</i> ²	0.39	0.32	0.34	0.35

Panel A2: Alternative interpretation of analysts reducing undervaluation.				
	<i>Mis</i> ₋₅ > 0			
	(1)	(2)	(3)	(4)
	<i>Mis</i> ₋₅	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]
<i>AFRPA</i>	0.050**	-2.365***	-2.792***	-3.114**
	(2.40)	(-3.09)	(-2.89)	(-2.34)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	307	307	307	307
<i>Adjusted R</i> ²	0.39	0.29	0.33	0.36

Panel B: Alternative interpretation of analyst pressure				
	(1)	(2)	(3)	(4)
	<i>AM</i>	<i>RM</i>	<i>RDRatio</i>	<i>Grant</i>
<i>AFRPA</i>	0.005	-0.006	0.163	-0.004
	(1.32)	(-0.62)	(1.46)	(-0.17)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	826	727	757	733
<i>Adjusted R</i> ²	0.26	0.19	0.47	0.05

Panel C: Alternative interpretation of informed trading

	(1)	(2)	(3)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-1.631*** (-3.46)	-2.201*** (-3.76)	-2.637*** (-3.29)
<i>PIN</i>	-31.700 (-1.22)	-66.500* (-1.93)	-93.540* (-1.85)
<i>Controls</i>	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes
<i>N</i>	914	914	914
<i>Adjusted R²</i>	0.27	0.30	0.33

Table 9: Channel Test

This table reports the regression results for the mediating effects model for testing the mechanism. Mediator variable is acquirer's misvaluation value. *CARS* is acquirer's cumulative abnormal returns calculated as the sum of daily abnormal returns over the [-1, +1], [-2, +2], and [-5, +5] window. *AFRPA* is the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from one-year before M&A announcement day to five trading days before M&A announcement day. *Mis₋₅* is acquirer's misvaluation value on five trading days before M&A announcement day. All variables are defined in Table 2. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

	(1) <i>Mis₋₅</i>	(2) <i>CARS</i> _[-1,+1]	(3) <i>CARS</i> _[-2,+2]	(4) <i>CARS</i> _[-5,+5]
<i>Mis₋₅</i>		-2.414** (-2.24)	-3.893*** (-2.84)	-6.805*** (-3.45)
<i>AFRPA</i>	0.076*** (4.30)	-1.388*** (-2.70)	-1.931*** (-3.06)	-2.093** (-2.44)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>N</i>	776	776	776	776
<i>Adjusted R²</i>	0.67	0.28	0.31	0.32
<i>Sobel</i>		-0.184** (-1.987)	-0.300** (-2.380)	-0.525*** (-2.706)
<i>Aroian</i>		-0.184* (-1.946)	-0.300** (-2.337)	-0.525*** (-2.663)
<i>Goodman</i>		-0.184** (-2.030)	-0.300** (-2.426)	-0.525*** (-2.751)
<i>Indirect effect</i>		-0.184	-0.300	-0.525
<i>[95% conf. interval](P)</i>		[-0.361 -0.008]	[-0.540 -0.061]	[-0.899 -0.152]
<i>Direct effect</i>		-1.388	-1.838	-1.889
<i>[95% conf. interval](P)</i>		[-2.454 -0.321]	[-3.065 -0.611]	[-3.590 -0.189]
<i>Total effect</i>		-1.572	-2.138	-2.414
<i>[95% conf. interval](P)</i>		[-2.646 -0.498]	[-3.379 -0.898]	[-4.140 -0.688]

Table 10: The Moderating Effect

Panel A presents the moderating effect of information uncertainty. *SIGMA* is stock volatility measured by the standard deviation of weekly market excess returns (Zhang 2006). *Age* is the number of years since the first year when acquirer has non-missing stock price (Zhang 2006). Panel B presents the moderating effect of media. *FMS* is the acquirer's financial media sentiment in the pre-announcement period (Chen et al. 2021). *Posts* is the number of Guba posts (Guba is a special social media and the most famous stock forum dedicated to stock market investors in China) in the pre-announcement period (He et al. 2023). Panel C presents the moderating effect of investor attention. *TO* is trading turnover (i.e., trading volume divided by the shares outstanding) (Lin et al. 2014), *RTO* is the residual trading turnover from a regression of trading turnover on institutional ownership, analyst dispersion, and Amihud's (2002) liquidity measure (Lin et al. 2014). All other variables are defined in Table 2. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

Panel A: Moderating effect of information uncertainty						
	(1)	(2)	(3)	(4)	(5)	(6)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	0.915 (0.78)	0.650 (0.43)	0.319 (0.16)	-3.957*** (-4.40)	-5.443*** (-4.79)	-6.720*** (-4.12)
<i>SIGMA</i>	13.352** (2.39)	17.195** (2.37)	11.689 (1.19)			
<i>AFRPA</i> × <i>SIGMA</i>	-5.192** (-2.49)	-5.934** (-2.23)	-6.135* (-1.77)			
<i>Age</i>				-4.188*** (-4.20)	-5.217*** (-4.14)	-4.926*** (-2.63)
<i>AFRPA</i> × <i>Age</i>				1.153*** (2.79)	1.597*** (3.01)	2.024*** (2.74)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	915	915	915	915	915	915
<i>Adjusted R</i> ²	0.28	0.31	0.33	0.29	0.32	0.34
Panel B: Moderating effect of media						
	(1)	(2)	(3)	(4)	(5)	(6)
	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$	$CARS_{[-1,+1]}$	$CARS_{[-2,+2]}$	$CARS_{[-5,+5]}$
<i>AFRPA</i>	-1.176**	-1.564**	-2.457**	-2.347***	-3.169***	-3.773***

	(-2.04)	(-2.18)	(-2.53)	(-4.41)	(-4.74)	(-4.00)
<i>FMS</i>	7.032**	9.634**	11.845**			
	(2.38)	(2.45)	(2.19)			
<i>AFRPA</i> × <i>FMS</i>	-3.466**	-4.839**	-3.537			
	(-2.37)	(-2.56)	(-1.37)			
<i>Posts</i>				0.440	0.580	0.596
				(0.80)	(0.83)	(0.59)
<i>AFRPA</i> × <i>Posts</i>				0.309***	0.402***	0.463***
				(3.14)	(3.39)	(2.98)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	912	912	912	915	915	915
<i>Adjusted R</i> ²	0.28	0.31	0.33	0.28	0.31	0.33

Panel C: Moderating effect of investor attention

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]
<i>AFRPA</i>	-0.537	-0.556	-0.840	-1.640***	-2.318***	-2.947***
	(-0.88)	(-0.73)	(-0.80)	(-3.43)	(-3.91)	(-3.59)
<i>TO</i>	0.688***	0.893***	0.578			
	(3.72)	(3.87)	(1.61)			
<i>AFRPA</i> × <i>TO</i>	-0.257**	-0.409***	-0.496***			
	(-2.55)	(-3.22)	(-2.72)			
<i>RTO</i>				0.596***	0.780***	0.417
				(3.03)	(3.19)	(1.11)
<i>AFRPA</i> × <i>RTO</i>				-0.161	-0.307**	-0.393**
				(-1.45)	(-2.25)	(-2.04)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	915	915	915	915	915	915

Adjusted R²

0.28

0.32

0.34

0.28

0.31

0.33

Table 11: Additional Analysis

Panel A reports regression results of acquirer's buy and holding abnormal returns on AFRPA and control variables. $BHARS$ is acquirer's buy and holding abnormal returns calculated as follows: $BHARS_{i,T} = \prod_{t=0}^T(1 + R_{i,t}) - \prod_{t=0}^T(1 + R_{benchmark,t})$, where we use three benchmarks for expected returns: the returns of the 25 value-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio ($VBHARS$), the returns of the 25 equally-weighted, non-rebalanced portfolios grouped by both firm size and book-to-market ratio ($EBHARS$), the HS300 index ($IBHARS$). We calculate in one-year, two-years and three-years window. Panel B reports comparison subsamples between Good and Bad M&As. We use the change in industry-adjusted ROA (%) from one/two/three years prior to M&A announcement to one/two/three years after M&As completion as the M&As operating performance (ΔROA) (Cai and Sevilir 2012). Acquirers in the bottom quantile of M&As operating performance are classified as Bad and acquirers in the top quantile of M&As operating performance are classified as Good. $AFRIA$ is the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations between five trading days before M&A announcement day and five trading days after M&A announcement day. $AFRPOA$ is the natural logarithm of one plus the number of an acquirer's analyst favorable recommendations from five trading days after M&A announcement day to one year after M&A announcement day. Panel C reports regression results of AFRPA on the analysts affiliated with acquirer advisors and control variables. $Advisor$ equals to one if one or several of the brokerages of all analysts issuing AFRPA on an acquirer are M&As advisors, and zero otherwise. All variables are defined in Table 2. t -statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *.

Panel A: AFRPA and buy and holding abnormal returns									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	$VBHARS_1$	$EBHARS_1$	$IBHARS_1$	$VBHARS_2$	$EBHARS_2$	$IBHARS_2$	$VBHARS_3$	$EBHARS_3$	$IBHARS_3$
<i>AFRPA</i>	-5.995*	-6.231**	-8.636***	-9.069**	-9.962***	-10.458***	-9.046*	-8.491**	-10.010**
	(-1.77)	(-2.10)	(-2.77)	(-2.05)	(-2.70)	(-2.59)	(-1.85)	(-2.31)	(-2.38)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	621	621	621	621	621	604	621	621	572
<i>Adjusted R²</i>	0.13	0.20	0.42	0.13	0.12	0.40	0.22	0.13	0.36

Panel B: Comparison subsamples between Good and Bad M&As															
	ΔROA_1					ΔROA_2					ΔROA_3				
	Bad M&As		Good M&As		T-Test	Bad M&As		Good M&As		T-Test	Bad M&As		Good M&As		T-Test
	Obs.	Mean	Obs.	Mean	P-Value	Obs.	Mean	Obs.	Mean	P-Value	Obs.	Mean	Obs.	Mean	P-Value
<i>AFRPA</i>	229	1.944	229	1.578	0.366***	224	1.893	224	1.492	0.401***	213	1.941	212	1.496	0.445***
<i>AFRIA</i>	229	0.849	229	0.653	0.196**	224	0.790	224	0.645	0.145*	213	0.821	212	0.685	0.136

<i>AFRPOA</i>	229	2.351	229	2.162	0.189	224	2.291	224	2.088	0.204	213	2.393	212	2.124	0.269*
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Panel C: The analysts affiliated with acquirer advisors and AFRPA

	(1)	(2)
	<i>AFRPA</i>	<i>Per_AFRPA</i>
<i>Advisor</i>	0.907***	0.497***
	(6.85)	(19.89)
<i>Controls</i>	Yes	Yes
<i>Cons</i>	Yes	Yes
<i>Industry FE</i>	Yes	Yes
<i>Year FE</i>	Yes	Yes
<i>N</i>	915	662
<i>Adjusted R²</i>	0.41	0.84

Appendix 1: The Calculation of Misvaluation

A firm's log market-to-book equity ratio ($\ln(M/B)$) can be decomposed into two items, $\ln(M/B) = \ln(M/V) + \ln(V/B)$, where M is the observed market value of equity and B is the book value of equity. V stands for the intrinsic value of equity, which is unobservable.

Rhodes-Kropf et al. (2005) assume that a firm's intrinsic value is a linear function of its book value of equity, net income and leverage:

$$\ln(M_{it}) = \alpha_{0jt} + \alpha_{1jt}\ln(B_{it}) + \alpha_{2jt}\ln(|NI_{it}|) + \alpha_{3jt}I^-\ln(|NI_{it}|) + \alpha_{4jt}(D/V)_{it} + \varepsilon_{it}$$

where $|NI_{it}|$ stands for the absolute value of net income of firm i at time t . I^- is an indicator variable that equals one for firm-years with negative net income and zero otherwise. D/V is the market leverage ratio. The subscript j stands for industry. ε_{it} captures the deviation of intrinsic value from the observed market value of equity and, therefore, is a natural proxy for misvaluation.

We run cross-sectional regressions of above linear function for each industry and each year to estimate the parameters α_{jt} . We use the industry classification scheme developed by China Securities Regulatory Commission in 2012 to classify firms into 19 industries. Following Rhodes-Kropf et al. (2005), we take the time series average of $\hat{\alpha}_{jt}$, the estimated α_{jt} from above linear function, to compute the long-run parameters $\bar{\alpha}_j = 1/T \sum_t \hat{\alpha}_{jt}$. The final measure of RRV mispricing is:

$$\ln(M/V)_{it} = \ln(M_{it}) - [\bar{\alpha}_{0j} + \bar{\alpha}_{1j}\ln(B_{it}) + \bar{\alpha}_{2j}\ln(|NI_{it}|) + \bar{\alpha}_{3j}I^-\ln(|NI_{it}|) + \bar{\alpha}_{4j}(D/V)_{it}]$$

Appendix 2: The Correlation Matrix

	<i>CARS</i> _[-1,+1]	<i>CARS</i> _[-2,+2]	<i>CARS</i> _[-5,+5]	<i>AFRPA</i>	<i>Size</i>	<i>ROA</i>	<i>MB</i>	<i>Liq</i>
<i>CARS</i> _[-1,+1]	1							
<i>CARS</i> _[-2,+2]	0.942***	1						
<i>CARS</i> _[-5,+5]	0.805***	0.896***	1					
<i>AFRPA</i>	-0.112***	-0.095***	-0.082**	1				
<i>Size</i>	-0.103***	-0.108***	-0.110***	0.299***	1			
<i>ROA</i>	-0.0380	-0.0410	-0.063*	0.336***	0.0390	1		
<i>MB</i>	-0.158***	-0.148***	-0.151***	0.0430	-0.383***	0.080**	1	
<i>Liq</i>	0.094***	0.112***	0.096***	0.114***	-0.277***	0.169***	0.074**	1
<i>Lev</i>	-0.0190	-0.0240	-0.0430	-0.00300	0.502***	-0.172***	0.0330	-0.453***
<i>CF</i>	-0.0300	-0.0320	-0.0340	0.202***	0.154***	0.293***	-0.084**	0.081**
<i>Top1</i>	0.121***	0.102***	0.0520	-0.0260	0.100***	0.125***	-0.123***	0.081**
<i>CEOHold</i>	-0.0410	-0.0370	-0.0500	0.203***	-0.099***	0.0500	0.0340	0.0440
<i>BrdSize</i>	0	-0.00400	0.0100	0.0460	0.230***	0.00700	-0.077**	-0.0440
<i>SOE</i>	0.062*	0.0530	0.0230	-0.106***	0.336***	-0.0470	-0.200***	-0.138***
<i>RunUp</i>	-0.144***	-0.172***	-0.204***	-0.0510	-0.138***	0.135***	0.057*	0.061*
<i>AFRIA</i>	-0.0210	0.00700	0.0130	0.708***	0.179***	0.282***	0.082**	0.109***
<i>Equity</i>	0.101***	0.113***	0.111***	-0.061*	-0.188***	-0.0290	-0.00600	0.00900
<i>RelVal</i>	0.179***	0.172***	0.199***	-0.173***	0.113***	-0.122***	-0.228***	-0.099***
<i>Diversify</i>	-0.084**	-0.071**	-0.079**	0.134***	-0.0310	0.145***	0.056*	0.136***
<i>Mis</i> ₋₂₅₀	-0.131***	-0.124***	-0.110***	-0.0290	-0.310***	-0.0350	0.492***	-0.0360
<i>Mis</i> ₋₅	-0.163***	-0.159***	-0.146***	0.086**	-0.355***	0.0120	0.506***	0.0110
<i>Mis</i> ₊₅	0.116***	0.155***	0.206***	0.078**	-0.406***	0.0250	0.471***	0.076**
<i>Mis</i> ₊₂₅₀	0.160***	0.182***	0.210***	0.0450	-0.495***	0.069*	0.334***	0.206***

	<i>Lev</i>	<i>CF</i>	<i>Top1</i>	<i>CEOHold</i>	<i>BrdSize</i>	<i>SOE</i>	<i>RunUp</i>	<i>AFRIA</i>
<i>Lev</i>	1							
<i>CF</i>	-0.111***	1						
<i>Top1</i>	-0.0120	0.082**	1					
<i>CEOHold</i>	-0.180***	0.0430	-0.154***	1				
<i>BrdSize</i>	0.182***	0.0140	-0.0500	-0.0330	1			
<i>SOE</i>	0.272***	0.0500	0.126***	-0.309***	0.228***	1		
<i>RunUp</i>	-0.059*	-0.0270	0.0260	-0.00600	-0.0440	-0.100***		
<i>AFRIA</i>	-0.0290	0.153***	-0.055*	0.151***	0.0270	-0.060*	1	
<i>Equity</i>	-0.067**	-0.0470	-0.059*	0.074**	-0.0220	0.0210	0.0210	1
<i>RelVal</i>	0.143***	-0.0430	0.063*	-0.181***	0.00300	0.202***	0.083**	0.0110
<i>Diversify</i>	-0.109***	0.078**	0.0150	0.102***	0.0110	-0.0530	0.00100	-0.108***
<i>Mis</i> ₋₂₅₀	-0.219***	-0.00800	-0.221***	-0.0600	-0.092**	-0.0600	0.057*	0.111***
<i>Mis</i> ₋₅	-0.301***	0.00200	-0.205***	0.0110	-0.158***	-0.144***	-0.125***	0.0180
<i>Mis</i> ₊₅	-0.330***	-0.00300	-0.167***	-0.00100	-0.143***	-0.154***	0.199***	0.122***
<i>Mis</i> ₊₂₅₀	-0.428***	-0.0180	-0.076**	0.0490	-0.145***	-0.206***	0.146***	0.141***

	<i>Equity</i>	<i>RelVal</i>	<i>Diversify</i>	<i>Mis</i> ₋₂₅₀	<i>Mis</i> ₋₅	<i>Mis</i> ₊₅	<i>Mis</i> ₊₂₅₀
<i>Equity</i>	1						
<i>RelVal</i>	0.194***	1					
<i>Diversify</i>	0.00100	-0.152***	1				
<i>Mis</i> ₋₂₅₀	-0.0480	-0.151***	-0.0160	1			
<i>Mis</i> ₋₅	0.0170	-0.181***	0.0230	0.738***	1		
<i>Mis</i> ₊₅	0.0580	-0.115***	0.0130	0.681***	0.919***	1	
<i>Mis</i> ₊₂₅₀	0.064*	-0.098***	0.0480	0.420***	0.665***	0.747***	1

