Journal of Accounting,
Auditing & Finance
2018, Vol. 33(3) 435–460

DOI: 10.1177/0148558X16658372
journals.sagepub.com/home/JAF
SAGE

Mutual-Fund-Affiliated Analysts and Stock Price Synchronicity: Evidence From China

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Abstract

We contend that mutual-fund-affiliated analysts have conflicts of interest in their role of information production. Similar to the investment-bank-affiliated analysts (Malmendier & Shanthikumar, 2014), mutual-fund-affiliated analysts are very likely to speak in two tongues, issuing optimism-biased recommendations to please their mutual fund clients due to the clients' holdings of the stocks but less optimistic forecasts for their covered firms to provide firm-specific information for mutual funds. The net effect of these mutual-fund-affiliated analysts' conflicting actions is not clear. We use a unique Chinese dataset that discloses the business affiliations between mutual funds and brokerage firms through commission allocations to examine whether mutual-fund-affiliated analysts produce more (or less) firm-specific information in their research compared with non-affiliated analysts. Our results indicate that mutual-fund-affiliated analysts produce more firm-specific information, manifested by lower stock price synchronicity for the firms they cover. We further find that the mutual-fund-affiliated analyst effects are more pronounced for stocks that represent significant exposure to an affiliated mutual fund's investment, where mutual funds presumably need more firm-specific information to make investment decisions. Finally, we document that mutual-fund-affiliated analysts conduct more site visits on the stocks held by their mutual fund clients, which explains the greater information dissemination by mutual-fund-affiliated analysts.

Keywords

affiliated analyst, stock price synchronicity, mutual fund, analyst coverage

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Introduction

Sell-side analysts play an important role in capital markets by conducting research and disseminating their findings to clients for making various investment decisions. While channeling information from companies to investors, sell-side analysts face potential conflicts of interest. On one hand, sell-side analysts face pressure to generate revenue for their employers, which makes their research prone to optimism bias to please their constituents. For instance, studies find that, compared with non-affiliated analysts, mutual-fund-affiliated analysts (who cover stocks held by the mutual fund clients of the analysts' employers) issue more favorable recommendations due to pressure from mutual funds (Firth, Lin, Liu, & Xuan, 2013; Gu, Li, & Yang, 2013).[1] Investment-bank-affiliated analysts (who cover stocks belong to the firms that previously hired the analysts' employers as underwriters) are slower (faster) to downgrade (upgrade) recommendations relative to other analysts (O'Brien, McNichols, & Lin, 2005). While the literature studies different types of analyst affiliations, the themes regarding potential conflicts of interest in the affiliated analysts' information production activities are similar.

In contrast, a different strand of the literature shows that sell-side analysts are motivated to provide high-quality research. Hong and Kubik (2003) document that analysts who make accurate earnings forecasts are rewarded. Specifically, extremely accurate analysts are 52% more likely than other analysts to move to a better job in another investment bank. Interestingly, Hong and Kubik also find that, controlling for accuracy, analysts who issue relatively optimistic forecasts advance more in their careers, presumably due to their ability to create more revenue for their investment banks. Irvine, Nathan, and Simko (2004) and Jordan, Liu, and Wu (2012) document that investment banking firms' own mutual funds closely follow their in-house analysts' recommendations, as these analysts are motivated to gather firm-specific information and provide higher quality earnings forecasts. The results of analyst optimism bias studies, however, do not necessarily invalidate the findings in the affiliated analyst incentive literature.

Hong and Kubik (2003) show that analysts are rewarded for both providing quality firm-specific information and being optimistic in forecasts in terms of career advancement. Malmendier and Shanthikumar (2014) report that investment-bank-affiliated analysts issue optimism-biased recommendations, and at the same time, they provide less optimistic forecasts. These authors suggest that, due to investment banking business concerns, analysts speak in two tongues.

Based on the studies on investment-bank-affiliated analysts, we contend that the optimism-biased recommendations of mutual-fund-affiliated analysts can help brokerages' mutual fund clients in two regards: First, in the short term, the brokerage's mutual fund clients benefit from the optimism-biased recommendations by not incurring immediate major losses. Second, in a similar spirit to that of Kothari, Shu, and Wysocki (2009), optimism-biased recommendations can help temporarily cover up a firm's relatively weak fundamentals in the hope that it can turn around later. Mutual-fund-affiliated analysts, similar to all analysts, understand the personal gains of providing quality information to their mutual fund clients. Thus, all things considered, the net effect of mutual-fund-affiliated analysts on the price informativeness of a market is unclear.

Using stock price synchronicity at the firm level to measure a mix of firm-specific, industry-wide, and market-wide information,[2] we examine the role mutual-fund-affiliated analysts play in the stock price informativeness of the Chinese capital market. A key step is to identify mutual-fund-affiliated analysts. To this end, we follow Firth et al. (2013) and

Gu et al. (2013) and use a unique Chinese dataset that identifies analysts' brokerage relations with their mutual fund clients and defines an analyst as affiliated if the analyst covers a company that is among the top 10 holdings of any mutual fund that allocates commission fees to the analyst's brokerage.

Using Chinese data, our study offers several additional advantages. First, by conducting a one-country study, we can control the impact of country-level opaqueness on the relation between mutual-fund-affiliated analyst coverage and synchronicity. Second, as an emerging market, China exhibits the typical characteristics of a weak legal system and a young brokerage industry. According to 2013 Chinese brokerage industry statistics, commission revenue constituted approximately RMB 75.9 billion (or about 48%) of a total of RMB 159.2 billion of annual revenue for the 115 brokerage firms in the industry.[3] Thus, commission revenue to brokerage firms is significant, and the industry environment makes the client–analyst relation susceptible to client pressure. Third, China's capital market is relatively immature, and therefore analysts play an important role in influencing stock prices. In addition, China has the highest stock price synchronicity in the world (Jin & Myers, 2006; Morck, Yeung, & Yu, 2000), suggesting that little firm-specific information is available to the market. The emerging market elements in China provide an excellent setting for examining institutional investors pressuring analysts to meet demands regarding research quality and optimism-biased research opinions. Finally, the Shenzhen Stock Exchange has mandated its listed firms to maintain analyst site visit records since 2009. These site visit data are seldom available in other markets. Hence, we can use the site visit information to relate analyst effort and synchronicity.

According to Hutton, Marcus, and Tehranian (2009), opaque firms will show high stock price synchronicity. Optimism-biased recommendations will increase firm opacity by misleading investors. In contrast, accurate forecasts will reduce opacity. Consequently, the net effect of these two opposing actions on stock price synchronicity is unclear. We argue that, despite their optimism-biased recommendations, mutual-fund-affiliated analysts expend more effort on their covered stocks and are able to provide more firm-specific information to the market due to the demands of major institutional clients, such as mutual funds. The net effect of mutual-fund-affiliated analyst coverage and optimism-biased recommendations is likely to produce a negative relation between mutual-fund-affiliated analyst coverage and stock price synchronicity. In addition, optimism-biased recommendations are only one of several research findings on mutual-fund-affiliated analysts. Other research findings could be in the form of earnings forecasts, sales forecasts, management effectiveness, new product development, and labor harmony, among others. We contend that, besides optimism-biased recommendations, other quality research findings from mutual-fund-affiliated analysts are useful to mutual fund clients. Durney, Morck, Yeung, and Zarowin (2003) suggest that corporate earnings are the most important value-relevant, firm-specific information and that more accurate earnings forecasts can help incorporate firm-specific information into stock prices and thus reduce synchronicity.

Our findings indicate that firms with greater mutual-fund-affiliated analyst coverage exhibit lower synchronicity, suggesting that these affiliated analysts are able to produce more firm-specific information. The results are robust to change models, different definitions of mutual-fund-affiliated analysts, and controlling for possible endogeneity concerns regarding mutual-fund-affiliated analyst coverage using an instrumental variable approach, analyst coverage initiation and drop analysis, and utilizing brokerage closure as an exogenous event. Our findings are more pronounced for stocks that constitute significant exposure in a mutual fund client's portfolio, indicating that mutual-fund-affiliated analysts are able

to produce more information when a mutual fund has a strong need for information in making investment decisions. Furthermore, we document that the synchronicity is negatively correlated with mutual-fund-affiliated analysts' frequency of site visits, suggesting that mutual-fund-affiliated analysts commit more effort with the mutual fund clients' firms. Hence, while mutual-fund-affiliated analysts provide optimism-biased recommendations, they expend more effort on their covered stocks and are able to provide more firm-specific information to the market.

We contribute to the literature in several ways. First, we add to the literature on the relation between analyst coverage and stock price synchronicity (Chan & Hameed, 2006; Crawford, Roulstone, & So, 2012; Xu, Chan, Jiang, & Yi, 2013) by identifying that business affiliation with mutual funds pressures analysts to provide more firm-specific information. Second, we complement the analyst incentive literature (e.g., Irvine et al., 2004; Jordan et al., 2012) by documenting that analysts are motivated to expend more effort to provide firm-specific information in emerging markets. That is, we show that mutual fund clients' demand for high-quality information incentivizes mutual-fund-affiliated analysts to uncover and disseminate more firm-specific information through more frequent site visits to the firms they cover. In other words, we provide a mechanism how mutual-fund-affiliated analysts provide better firm-specific information. Third, this article is related to the analyst affiliation literature. The literature generally finds that investment-bank-affiliated analysts are able to generate/retain the investment banking business of their employers (Barber, Lehavy, & Trueman, 2007; O'Brien et al., 2005). Similarly, several studies document that mutual-fund-affiliated analysts are more likely to provide optimism-biased recommendations to curry favor to their mutual fund clients (Firth et al., 2013; Gu et al., 2013). In contrast, Irvine et al. (2004) find that a full-service brokerage firm's sell-side research analysts are motivated to provide high-quality earnings forecasts. We add to the literature by documenting that mutual-fund-affiliated analysts can provide more firm-specific information to the capital market, despite their possibly optimism-biased recommendations. Our findings echo the findings of Malmendier and Shanthikumar (2014) that investment-bank-affiliated analysts speak in two tongues.

The rest of the article is organized as follows. Section ''Literature Review, Background, and Research Question'' reviews the relevant literature and discusses our research question. Section ''Research Design'' discusses our research design, sample, and variable definitions. Section ''Empirical Results and Discussions'' presents the results of our main tests, and ''Additional Analyses'' section provides the results of additional tests. Section ''Conclusion'' concludes the article.

Literature Review, Background, and Research Question

Literature Review

Our study is related to three strands of the literature, which are reviewed below.

Analyst coverage and stock price synchronicity. The first strand of literature is the influence of analyst coverage on stock price synchronicity. Morck et al. (2000) document that stock prices move together more in emerging markets than in developed markets. Chan and Hameed (2006) contend that the high stock price synchronicity in emerging markets is due to analysts in these markets providing more market-wide content than firm-specific information. Using U.S. data, Crawford et al. (2012) find that the first analyst to initiate coverage provides low-cost market and industry information, while subsequent analysts provide firm-specific

information to distinguish themselves. Gul, Kim, and Qiu (2010) and Xu et al. (2013) document that the stock price synchronicity of Chinese listed firms is associated with ownership structure, foreign shareholdings, audit quality, and analysts' star status in China.

Optimism bias and affiliated analysts. The second strand of literature studies the optimism-biased recommendations and forecasts of investment-bank- or mutual-fund-affiliated analysts. O'Brien et al. (2005) document that investment-bank-affiliated analysts respond to good news quickly but delay issuing bad news about client-invested stocks when making recommendations. Barber et al. (2007) report that analysts provide biased (favorable) recommendations to please their employers' investment banking clients. The performance of these biased recommendations, however, is inferior to the performance of the stock recommendations of analysts in independent research firms.

Two studies report opposing views of analyst optimism bias due to the investment banking relationship. Cowen, Groysberg, and Healy (2006) report that analysts employed by firms that funded research through underwriting and trading activities made fewer optimistic forecasts and recommendations than those at brokerage houses, suggesting that analyst optimism is partially driven by trading incentives, not necessarily just by the investment banking business. Guan, Lu, and Wong (2012) examine the impact of a security industry reform after a global settlement between the U.S. Securities and Exchange Commission and the 10 largest U.S. investment banks in April 2003 on the optimism biases in analysts' recommendations and forecasts. The authors report that analysts among the 10 sanctioned investment banks show a significant reduction in optimism in stock recommendations but no change in the forecasts in the post-reform period (2004-2007) relative to the pre-reform period (1998-2001). Hence, investment-banking-business-induced bias is significantly lower after the reform. Taking the investment bank literature together, we find mixed results regarding whether the research of investment-bank-affiliated analysts is more optimism-biased relative to that of other analysts.

Mola and Guidolin (2009), using U.S. data, find that analysts make frequent and favorable recommendations after their employers' mutual funds invest in the stocks in question. In the context of Chinese analysts, Firth et al. (2013) and Gu et al. (2013) show that business relations between mutual funds and brokerage firms influence analyst recommendations. Specifically, a mutual-fund-affiliated analyst's stock recommendation is significantly more favorable relative to the consensus if the stock is in the mutual fund's portfolio.

Although the definition of affiliated analysts of O'Brien et al. (2005) and Barber et al. (2007) differs from that of Mola and Guidolin (2009), Firth et al. (2013), and Gu et al. (2013), the theme is the same; that is, affiliated analysts are potentially biased in favor of their clients. We note that the affiliated analyst literature focuses more on the documentation of the optimism-biased recommendations of these analysts. Other aspects of affiliated analysts are seldom explored.

Our definition of affiliated analyst is the same as that of Firth et al. (2013) and Gu et al. (2013) but different from some of the prior literature, which defines affiliated analysts as either those whose employers (investment banks) issue equity (O'Brien et al., 2005), those analysts who belong to the same full-service brokerage as their mutual funds (asset management units; Barber et al., 2007; Irvine et al., 2004; Mola & Guidolin, 2009), or those analysts who have access to the covered firms' inside information through their employers' lending relationship with these firms (Chen & Martin, 2011). Using mutual-fund-affiliated analysts, we circumvent the mixed findings of whether investment-bank-affiliated analysts exhibit optimism bias in their recommendations.

Analyst incentives. The third strand of literature discusses investment-bank- and mutual-fund-affiliated analysts' incentives to provide high-quality research. Frankel, Kothari, and Weber (2006) indicate that institutional ownership in a stock increases the demand for informative analyst research. Hong, Kubik, and Solomon (2000) and Ljungqvist, Marston, Starks, Wei, and Yan (2007) suggest that institutional investors prefer high-quality research from sell-side analysts, and these analysts, due to career concerns, build their reputation by providing accurate forecasts. Irvine et al. (2004) document that when a brokerage firm has its own mutual funds, its analysts are motivated to gather information for the stocks in these mutual funds. The earnings forecast of the related stocks of mutual-fund-affiliated analysts is therefore more accurate than those of a control group of unaffiliated analysts. Jordan et al. (2012) report that the asset management divisions of investment banks increase their relative holdings of a stock after their affiliated analysts make positive recommendations on the same stock and vice versa. Overall, this strand of literature shows that analysts respond to incentives and are motivated to do a good job in their research. The general conclusions of the last two strands of literature oppose each other.

Research Question

We contend that analysts who work for brokerages and have major business ties to institutional investors, such as mutual funds (i.e., mutual-fund-affiliated analysts), face conflicts of interest that differentiate them from other typical (non-affiliated) analysts. On one hand, as suggested by Frankel et al. (2006), institutional ownership in a stock increases the demand for informative analyst research. Trading commission allocations and analysts' performance ratings by institutional investors tend to be partially based on which sell-side analysts provide more value-added research (Ljungqvist et al., 2007). Given the importance of mutual funds to their brokerages, mutual-fund-affiliated analysts work hard to provide them with valuable research reports. That is, mutual-fund-affiliated analysts expend more effort on the firms they cover that are held by mutual fund clients, especially when the firms' stocks are held in large positions, relative to non-affiliated analysts who follow the same firms. We expect that mutual fund clients formally and informally demand good research from mutual-fund-affiliated analysts. Thus, it is natural for mutual-fund-affiliated analysts to respond positively to please these mutual fund clients. If mutual-fund-affiliated analysts expend a good amount of effort into their research, they are expected to be able to uncover more firm-specific information than non-affiliated analysts are. Therefore, all else being the same, more firm-specific information will be impounded into the stock prices of firms covered by mutual-fund-affiliated analysts. Accordingly, the synchronicity of firms covered by mutual-fund-affiliated analysts is lower than that of those covered by non-affiliated analysts.

On the other hand, as suggested by Firth et al. (2013) and Gu et al. (2013), mutual-fund-affiliated analysts are pressured by their brokerages to maintain good business relations with mutual fund clients to generate more commissions. Mutual fund clients have usually large positions in the stocks covered by mutual-fund-affiliated analysts. Under pressure, mutual-fund-affiliated analysts will respond promptly to good news but prefer not to issue bad news about client firms, resulting in overly optimistic recommendations. Our logic here is similar to that reported for investment-bank-affiliated analysts (O'Brien et al., 2005); that is, mutual-fund-affiliated analysts could delay reporting their negative research findings to avoid upsetting their institutional clients and to protect brokerage commissions. Hence, mutual-fund-affiliated analysts, despite their good effort in uncovering firm-specific

information, may not contribute to or even impede firm-specific information dissemination. Accordingly, synchronicity could be higher for firms covered by mutual-fund-affiliated analysts relative to those covered by non-affiliated analysts.

However, the literature on the optimism-biased recommendations of mutual-fund-affiliated analysts, such as the studies of Firth et al. (2013) and Gu et al. (2013), does not necessarily invalidate the potential finding that they could engage in more firm-specific information production. As suggested by Malmendier and Shanthikumar (2014), investment-bank-affiliated analysts strategically speak in two tongues. These investment-bank-affiliated analysts have a strong incentive to issue optimism-biased recommendations as well as less optimistic forecasts. We argue that, on one hand, incentives to outperform peer analysts will encourage mutual-fund-affiliated analysts to expend more effort to acquire firm-specific information, which facilitates the impoundment of firm-specific information into stock prices. That is, mutual-fund-affiliated analysts issue accurate (less optimistic) earnings forecasts. On the other hand, optimism-biased recommendations by mutual-fund-affiliated analysts will impede firm-specific information incorporated into stock prices because mutual-fund-affiliated analysts need to curry favor to clients by not issuing pessimistic recommendations. Therefore, the net effect of mutual-fund-affiliated analyst coverage on firm-specific information production is unclear, and it is an empirical question. The objective of this research is to fill the void in the literature by answering this research question.

Research Design

The Sample

We follow Firth et al. (2013) to obtain analyst recommendations and earnings forecasts data from the China Stock Market and Accounting Research (CSMAR) database and the Wind Financial Database (WIND). The WIND also contains mutual funds' allocation of trading commissions to brokerages and the stock holdings of each mutual fund on a semi-annual basis. For the top 10 stock holdings, the disclosure is on a quarterly basis. To maximize observations, we follow Firth et al. (2013) and Gu et al. (2013), and conduct our analysis on a quarterly basis by focusing on the top 10 stocks and by assuming that mutual funds' commissions to brokerages in the second (fourth) quarter were also paid in the first (third) quarter.

We combine three pieces of information (mutual fund commission fees, mutual fund shareholdings, and analyst recommendations) with their stock codes, brokerage names, and mutual fund names. The WIND began collecting analyst data in 2004; hence, our sample period is from the first quarter of 2004 to the last quarter of 2011. After obtaining all firm-quarter observations of Chinese firms that issued A-shares from 2004 to 2011, we then exclude (a) firms without analyst coverage, (b) financial services firms, (c) firms with fewer than 50 days of stock return data within a quarter (Crawford et al., 2012), and (d) firm-quarter observations with insufficient financial data to obtain control variables. The final sample consists of 22,345 firm-quarter observations. To avoid extreme values, we winsorize all variables at the 1% level in both tails.

Variable Definitions

Measuring stock return synchronicity. Following Piotroski and Roulstone (2004), we measure stock return synchronicity as follows. For each quarter, we estimate the linear regression:

$$RET_{i,t} = \alpha + \beta_1 RET_{m,t} + \beta_2 RET_{m,t-1} + \beta_3 RET_{I,t} + \beta_4 RET_{I,t-1} + \varepsilon_{i,t}, \quad (1)$$

where $RET_{i,t}$ denotes the daily return of stock i, $RET_{m,t}$ is the value-weighted A-share market return on day t, and $RET_{I,t}$ denotes the value-weighted industry return. We measure industry returns using all firms within the same industry, omitting the daily return for firm i.[4] To circumvent the bounded nature of R^2 within [0, 1], we use a logistic transformation of R_i^2:

$$SYNCH_{i,q} = \log\left(\frac{R_{i,q}^2}{1 - R_{i,q}^2}\right), \quad (2)$$

where $SYNCH_{i,q}$ is our empirical measure of quarterly synchronicity for firm i and $R_{i,q}^2$ is the coefficient of determination from the estimation of Equation 1 for firm i in quarter q.

Measuring the impact of mutual-fund-affiliated analysts. Our definition of a mutual-fund-affiliated analyst is similar to that of Firth et al. (2013) and Gu et al. (2013). First, for a given quarter q, we consider a mutual fund to be a client of a brokerage if the mutual fund paid commissions to the brokerage in quarter $q - 1$. Second, if analyst j covers a firm i that is among the top 10 holdings[5] of any mutual fund client of the analyst's brokerage at the end of quarter $q - 1$, we consider analyst j to be a mutual-fund-affiliated analyst in quarter q. Based on the above identification of mutual-fund-affiliated analysts, we measure the firm-level coverage of mutual-fund-affiliated analysts $Affiliated\ Analyst_{i,q}$ as the number of mutual-fund-affiliated analysts covering firm i during quarter q. Similarly, we define $Non\text{-}Affiliated\ Analyst_{i,q}$ as the number of analysts who are not affiliated with any mutual funds for firm i in quarter q.

Control variables. Following Crawford et al. (2012), our empirical model includes a set of control variables: $MVE_{i,q}$ is the natural log of the market value of equity in quarter q, $TURN_{i,q}$ equals the average of three monthly turnover rates in quarter q, $RET_{i,q}$ is the average monthly market-adjusted return of firm i in quarter q, $STDROA_{i,q}$ is the standard deviation of return on assets measure over the current and previous four quarters, $Q_{i,q}$ is the natural log of Tobin's Q of firm i in quarter q, and $ISSUE_{i,q}$ is an indicator variable equal to 1 if firm i issues securities (including equity or bonds) over the current and previous four quarters.

Following previous paper (Barth, Kasznik, & McNichols, 2001; Gul, Kim, & Qiu, 2010; Xu et al., 2013), we also control for the impact of underwriter-related analyst coverage using the percentage of underwriter analysts (*Underwriter Percent*), analyst efforts (*CFIRMS*), shareholding of institutional investors (*INS*), percentage of star analysts (*Star Percent*), whether a firm issues H shares (*H_Shares*), whether a firm issues B shares (*B_Shares*), shareholding of largest shareholder (*FIRST*), state- or private-owned enterprise (*SOE*), audit quality (*Big4*), absolute value of discretionary accruals (*DAC*), frequency of management earnings forecast (*MFFREQP*); and media coverage (*MEDIA*). The appendix presents detailed variable definitions.

Empirical Models

Mutual-fund-affiliated analyst coverage and stock return synchronicity. To investigate the effect of mutual-fund-affiliated analyst coverage on synchronicity, we first estimate the following regression:

$$SYNCH_{i,q} = \alpha + \beta_1 Affiliated\ Analyst_{i,q} + \beta_2 Non\text{-}Affiliated\ Analyst_{i,q} + \gamma \times Control\ Variables_{i,q} + \varepsilon_{i,q}. \quad (3)$$

Due to the conflicting incentives faced by mutual-fund-affiliated analysts, the expected sign of β_1 is uncertain. A negative β_1 indicates more firm-specific information being disseminated to the market by mutual-fund-affiliated analysts, which implies that the high-quality firm-specific research dominates optimism-biased recommendations provided by mutual-fund-affiliated analysts and vice versa. We expect β_2 to be positive, given the arguments in the literature that typical (non-affiliated) analyst coverage in emerging markets generally provides more market-wide information, and hence synchronicity is positively correlated with analyst coverage (Chan & Hameed, 2006).

Empirical Results and Discussions

Descriptive Statistics

We present the descriptive statistics of the variables in Panel A of Table 1. The mean synchronicity for the sample is 0.055 from Equation 2, with an interquartile range of 0.094 (=0.567− [−0.427]). For the 22,345 firm quarters, on average, 5.137 analysts cover each firm in each quarter, and 1.550 of them are from brokerages with business ties to mutual fund clients. With respect to brokerage and mutual fund relations, 31.4% of stocks are covered by at least one mutual-fund-affiliated analyst. Among all the analysts, 17.3% of them are considered mutual-fund-affiliated analysts.

Panel B of Table 1 displays the results for two-sample *t* tests on the means of selected variables between firms covered by at least one mutual-fund-affiliated analyst and those covered by no mutual-fund-affiliated analysts. Generally, all variables show statistically significant differences between the two groups at the 1% level. The mean synchronicity (*SYNCH*) for firms with affiliated analyst coverage is 0.019, while that of firms with only non-affiliated analyst coverage is 0.072. The preliminary evidence suggests that firms covered by mutual-fund-affiliated analysts exhibit lower synchronicity than those covered by non-affiliated analysts.

Mutual-Fund-Affiliated Analyst Coverage and Synchronicity

Mutual-fund-affiliated analyst and forecast accuracy. Several studies show that lower synchronicity may be due to an increase in firm-specific noise (Kelly, 2007; Teoh, Yang, & Zhang, 2006). To show that mutual-fund-affiliated analysts indeed collect firm-specific information instead of generating noise, we use a method similar to that of Xu et al. (2013) and compare the earnings forecasting accuracy between mutual-fund-affiliated and non-affiliated analysts. Our model is as follows:

$$Accuracy_{i,j,q} = \alpha + \beta_1 Affiliate_{i,j,q} + \gamma \times Control\ Variables_{i,j,q} + \varepsilon_{i,j,q}, \quad (4)$$

where $Accuracy_{i,j,q}$ represents analyst *j*'s forecast accuracy for firm *i* in quarter *q*, and we control for other characteristics that can affect analyst forecast accuracy. We adopt three analyst forecast accuracy measures in our analysis: *Relative Accuracy (Accuracy1)*, Clement and Tse's (2005) accuracy measure (*Accuracy2*), and the measure of Hong et al. (2000; *Accuracy3*) to make the results robust.

Table 1. Descriptive Statistics.

Panel A: Descriptive Statistics of Key Variables.

Variables	*M*	*SD*	Q1	Median	Q3
Synchronicity variables					
R^2	.514	.170	.395	.519	.638
SYNCH	0.055	0.779	−0.427	0.078	0.567
Analyst coverage variables					
Analyst	5.137	5.134	1	3	7
Affiliated Analyst	1.550	3.474	0	0	1
Non-Affiliated Analyst	3.587	3.311	1	2	5
Affiliation variables					
Affiliate Dummy	0.314	0.464	0	0	1
Affiliate Percent	0.173	0.295	0	0	0.308
Fund holding	0.010	0.016	0	0	0.023
Fund NUM	0.481	0.869	0	0	0.693
Control variables					
Underwriter Percent	0.023	0.098	0	0	0
Star Percent	0.099	0.193	0	0	0.143
CFIRMS	11.746	15.209	5.375	8.000	12.500
INS	0.119	0.139	0.012	0.068	0.178
FIRST	0.390	0.159	0.261	0.382	0.505
SOE	0.626	0.484	0	1	1
MVE	21.710	1.183	20.881	21.652	22.454
TURN	0.526	0.395	0.238	0.420	0.708
RET	0.008	0.064	−0.033	0.002	0.042
STDROA	0.016	0.293	0.004	0.008	0.013
Q	0.500	0.434	0.171	0.399	0.721
ISSUE	0.245	0.430	0	0	0
B_Shares	0.049	0.217	0	0	0
H_Shares	0.045	0.208	0	0	0
Big4	0.101	0.301	0	0	0
DAC	0.106	0.145	0.032	0.072	0.134
MFFREQP	1.616	1.433	0	1	3
MEDIA	2.622	0.969	2.565	2.890	3.135

(*continued*)

The findings are presented in Table 2. In terms of all three accuracy measures, mutual-fund-affiliated analysts (*Affiliate*) show positive and significant coefficients at the conventional levels, suggesting that mutual-fund-affiliated analysts provide more accurate earnings forecasts than non-affiliated analysts, suggesting that synchronicity is related to firm-specific information rather than noise.[6] The results in Table 2 also corroborate our arguments that mutual-fund-affiliated analysts provide accurate (less optimistic) earnings forecast. Given that all analysts give optimism-biased recommendations, we validate that mutual-fund-affiliated analysts speak with two tongues in the Chinese environment.

Mutual-fund-affiliated analyst coverage and synchronicity: Main results. After confirming that mutual-fund-affiliated analysts can produce more firm-specific information as manifested by more accurate forecasts than non-affiliated analysts in Table 2, we examine how

Table 1. (continued)

Panel B: Two-Sample *t* Tests Between Firms Covered by At Least One Mutual-Fund-Affiliated Analysts and Non-Affiliated Analysts.

Variables	At least one mutual-fund-affiliated analyst	All non-affiliated analysts	*t* statistics for difference
R^2	.505	.518	−5.113***
SYNCH	0.019	0.072	−4.780***
Analyst	9.041	3.346	89.793***
Underwriter Percent	0.026	0.021	3.599***
Star Percent	0.119	0.090	10.310***
CFIRMS	10.412	12.357	−8.892***
INS	0.223	0.071	88.787***
FIRST	0.401	0.385	7.228***
SOE	0.679	0.601	11.232***
MVE	22.549	21.326	81.761***
TURN	0.395	0.586	−34.406***
RET	0.005	0.009	−4.416***
STDROA	0.027	0.011	3.781***
Q	0.619	0.446	28.122***
ISSUE	0.320	0.211	17.734***
B_Shares	0.056	0.046	3.212***
H_Shares	0.071	0.033	12.663***
Big4	0.163	0.072	21.178***
DAC	0.111	0.104	3.464***
MFFREQP	1.529	1.656	−6.163***
MEDIA	2.738	2.568	12.182***
No. of observations	7,024	15,321	

Note. This table presents descriptive statistics of the sample. Panel A presents the descriptive statistics for the sample of 22,345 firm quarters. The sample period is from the first quarter of 2004 to the last quarter of 2011, and Q1 and Q3 are the first and third quartile values. Panel B reports two-sample *t* tests between samples with at least one mutual-fund-affiliated analyst and samples with only non-affiliated analysts. All variables are as defined in the appendix.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

mutual-fund-affiliated versus non-affiliated analyst coverage relates to synchronicity. Table 3 presents the main results of mutual-fund-affiliated analyst coverage and stock price synchronicity. Columns 1 and 2 show the findings from ordinary least squares models when we use $Affiliated\ Analyst_{i,q}$ and $Ln(1 + Affiliated\ Analyst_{i,q})$ as proxies for mutual-fund-affiliated analyst coverage. The coefficients associated with *Affiliated Analyst* and *Ln(1 + Affiliated Analyst)* variables are both negative and significant at the 1% level, suggesting that stock price synchronicity is lower for firms covered by more mutual-fund-affiliated analysts. In contrast, the coefficients associated with *Non-Affiliated Analyst* and *Ln(1 + Non-Affiliated Analyst)*, as expected, are positive and significant at the 1% level. Other control variables exhibit the expected signs and are consistently significant across the results in columns 1 and 2.

Endogeneity. One major concern in our main analyses is that analyst coverage is endogenous. To address this concern, below we use two approaches to identify the impact of

Table 2. The Earnings Forecast Accuracy of Mutual-Fund-Affiliated Analysts.

	Accuracy1 (1)	*Accuracy2* (2)	*Accuracy3* (3)
$Affiliate_{i,j,q-1}$	0.011* (.080)	0.014*** (<.001)	1.328*** (<.001)
$Banking\ Business\ in\ Past\ Five\ Years_{i,j,q}$	−0.056** (.020)	−0.021** (.045)	−3.050*** (.001)
$Star_{i,j,q}$	0.020 (.157)	0.009* (.093)	1.403*** (.008)
$ForHorizon_{i,j,q}$	−0.075*** (<.001)	−0.068*** (<.001)	−0.080*** (<.001)
$Brokerage\ Size_{i,j,q}$	−0.007 (.275)	−0.011** (.027)	−0.011*** (.033)
$Experience_{i,j,q}$	0.0005 (.912)	−0.0005 (.929)	0.0003 (.951)
$Companies_{i,j,q}$	0.011** (.040)	−0.008 (.229)	0.014*** (.020)
$Industries_{i,j,q}$	−0.008 (.259)	−0.005 (.328)	−0.004 (.509)
Constant	0.436*** (.001)	0.542** (.038)	52.238*** (<.001)
Quarter fixed effects	Yes	Yes	Yes
No. of observations	82,491	77,689	83,840
Adjusted R^2	.0009	.0086	.0066

Note. This table examines the earnings forecast accuracy of mutual-fund-affiliated analysts. We use three accuracy measures: *Relative Accuracy* (*Accuracy1*), Clement and Tse's (2005) accuracy measure (*Accuracy2*), and the measure of Hong, Kubik, and Solomon (2000; *Accuracy3*). The construction of the three accuracy measures is detailed in the appendix. Quarter fixed effects are included in all regressions. The *p* values reported in parentheses are based on standard errors clustered by analyst and firm.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

mutual-fund-affiliated analyst on stock price synchronicity: (a) instrumental approach and (b) utilizing exogenous analyst coverage drop due to brokerage closure.

Instrumental approach. Mutual-fund-affiliated analyst coverage and synchronicity may be endogenously determined, however. For example, mutual fund clients could invest more in stocks when analysts provide more firm-specific information. To address the potential endogeneity problem, we follow Yu (2008) to implement an instrumental variable approach. Specifically, we use $EXPCOV\_AFFI_{i,q}$ (the expected mutual-fund-affiliated analyst coverage of firm i in quarter q) and $EXPCOV\_NAFFI_{i,q}$ (the expected non-affiliated analyst coverage of firm i in quarter q) as instrumental variables for *Affiliated Analyst* and *Non-Affiliated Analyst*, respectively. The rationale is that when a brokerage reduces (increases) its size, it employs fewer (more) analysts and tends to drop (add) some of its existing coverage to reduce (expand) its total workload and expenses. Therefore, we calculate $EXPCOV\_AFFI_{i,q}$ and $EXPCOV\_NAFFI_{i,q}$ based on changes in brokerage size as defined in the appendix and treat them as exogenous variables because they are unlikely to be affected by covered firms' characteristics.

The results of the instrumental approach are presented in columns 3 to 5 in Table 3. We obtain the predicted values of *Affiliated Analyst* and *Non-Affiliated Analyst* in columns 3 and 4 in the first stage of the regression. The predicted values of both variables are used to replace the original variables. The results in column 5 show that the predicted value of *Affiliated Analyst* is negative and significant at the 10% level, whereas the predicted value of *Non-Affiliated Analyst* is positive and significant at the 1% level. Hence, the results in column 5 are consistent with those in columns 1 and 2. Overall, the conclusions in Panel A of Table 3 provide support to the notion that mutual-fund-affiliated analyst coverage is able to incorporate more firm-specific information into stock returns, so that the synchronicity of their covered stock is, on average, lower than that of stocks covered by non-affiliated

Table 3. The Impact of Mutual-Fund-Affiliated Analyst Coverage on Synchronicity.

	OLS		2SLS		
			First stage		*Second stage*
	Dependent variable = *SYNCH*		Dependent variable = *Affiliated Analyst*$_{i,q}$	Dependent variable = *Non-Affiliated Analyst*$_{i,q}$	Dependent variable = *SYNCH*
	(1)	(2)	(3)	(4)	(5)
Affiliated Analyst$_{i,q}$	−0.016*** (.006)				
Non-Affiliated Analyst$_{i,q}$	0.006*** (.002)				
Ln(1 + Affiliated Analyst$_{i,q}$*)*		−0.042*** (.008)			
Ln(1 + Non-Affiliated Analyst$_{i,q}$*)*		0.046*** (<.001)			
Affiliated_Analyst_P					−0.005* (.075)
Non-Affiliated_Analyst_P					0.006*** (<.001)
Underwriter Percent$_{i,q}$	0.013 (.785)	0.014 (.762)	−0.043 (.657)	0.141 (.200)	−0.001 (.986)
Star Percent$_{i,q}$	−0.012 (.638)	−0.010 (.689)	0.108** (.031)	−0.102* (.073)	−0.014 (.442)
CFIRMS$_{i,q}$	0.000 (.375)	0.000 (.255)	−0.002** (.035)	−0.000 (.554)	0.000 (.501)
INS$_{i,q}$	−0.882*** (<.001)	−0.882*** (<.001)	3.060*** (<.001)	−2.003*** (<.001)	−0.766*** (<.001)
FIRST$_{i,q}$	−0.131** (.029)	−0.132** (.029)	−0.176*** (.007)	0.254*** (.001)	−0.110*** (<.001)
SOE$_{i,q}$	0.030 (.166)	0.031 (.154)	0.086*** (<.001)	−0.107*** (<.001)	0.028*** (.001)
MVE$_{i,q}$	0.144*** (<.001)	0.144*** (<.001)	0.360*** (<.001)	−0.207*** (<.001)	0.107*** (<.001)
TURN$_{i,q}$	−0.205*** (<.001)	−0.204*** (<.001)	0.090*** (.008)	−0.031 (.417)	−0.165*** (<.001)
RET$_{i,q}$	−2.454*** (<.001)	−2.472*** (<.001)	−2.407*** (<.001)	2.281*** (<.001)	−2.009*** (<.001)
STDROA$_{i,q}$	0.029*** (<.001)	0.029*** (<.001)	0.185*** (<.001)	−0.296*** (<.001)	0.028** (.018)
Q$_{i,q}$	−0.401*** (<.001)	−0.398*** (<.001)	0.484*** (<.001)	−0.608*** (<.001)	−0.322*** (<.001)
ISSUE$_{i,q}$	−0.045*** (.009)	−0.046*** (.008)	0.062*** (.009)	−0.026 (.322)	−0.039*** (<.001)
B_Shares$_{i,q}$	−0.093** (.023)	−0.093** (.022)	−0.047 (.319)	0.060 (.264)	−0.075*** (<.001)
H_Shares$_{i,q}$	−0.084* (.089)	−0.085* (.086)	−0.359*** (<.001)	0.599*** (<.001)	−0.083*** (<.001)
Big4$_{i,q}$	−0.024 (.389)	−0.024 (.391)	0.026 (.512)	−0.150*** (.001)	−0.022 (.130)
DAC	0.081*** (.001)	0.080*** (.001)	−0.056 (.235)	0.090* (.089)	0.070*** (<.001)
MFFREQP	−0.017*** (.001)	−0.017*** (.001)	0.025*** (.001)	0.010 (.215)	−0.014*** (<.001)
MEDIA	−0.101*** (<.001)	−0.098*** (<.001)	−0.022 (.189)	−0.165*** (<.001)	−0.081*** (<.001)
Constant	−2.812*** (<.001)	−2.848*** (<.001)	−8.300*** (<.001)	5.045*** (<.001)	−2.149*** (<.001)
EXPCOV_AFFI			0.685*** (<.001)	0.044*** (<.001)	
EXPCOV_NAFFI			0.148*** (<.001)	0.938*** (<.001)	
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
No. of observations	22,345	22,345	22,345	22,345	22,345
Adjusted R^2	.4043	.4049	.7239	.7687	.3542
Cragg–Donald Wald *F*			4,848.082***		

Note. This table presents the results of the impact of mutual-fund-affiliated analyst coverage on synchronicity. All variables are as defined in the appendix. The *p* values reported in parentheses are based on standard errors clustered by both firm and quarter. OLS = ordinary least squares estimation; 2SLS = two-stage instrumental estimation.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

analysts. The potential impact of optimism-biased recommendations from mutual-fund-affiliated analysts, if any, is not strong enough to drive a positive correlation between mutual-fund-affiliated analyst coverage and synchronicity. The Cragg–Donald Wald *F*-statistics are significant at the 1% level in both Panels A and B of Table 3, suggesting that the selected instruments perform well.[7]

The impact of changes in mutual-fund-affiliated analyst coverage. An alternative way to address the endogeneity issue is to consider the impact of an exogenous shock. In our case, it is analyst coverage drop due to the closure of brokerage houses. We follow the literature (e.g., Chen, Harford, & Lin, 2015; Hong & Kacperczyk, 2010; Kelly & Ljungqvist, 2012) to use two quasi-natural experiments that create exogenous variation in mutual-fund-affiliated analyst coverage with the first one being the brokerage closures and the second one being the broker mergers.

To identify broker closures and merges, we first use our analyst data from CSMAR and WIND database to construct a list of brokers who no longer issue earnings forecasts or recommendations during our research period, 2004 to 2011. We find that there are 22 brokers disappearance during this period. Then, we search the information releases in China Securities Regulatory Commission (CSRC) and Securities Association of China (SAC) to confirm that the disappearance is due to broker closure or merges and also to identify dates of closure or merges. Among these disappearances, there are 16 brokers closure, two brokers merges, four brokers renamed themselves. To identify the exogenous decrease of mutual-fund-affiliated analyst coverage, we construct a subsample of firms that are covered by the closed or merged brokers one quarter before the events. For brokerage closures event, we focus on the firms that are covered by at least one mutual-fund-affiliated analyst from the closed brokers one quarter ahead of the event. We require the firms to be covered by at least one analyst one quarter after the event. After this procedure, we get a 32 firm-quarter sample. For brokerage mergers, we restrict firms covered by mutual-fund-affiliated analysts from both the target and acquirer brokerage houses one quarter before the event and continue to be followed by the remaining broker after the merger. However, there are no firms meet the requirements. Thus, our subsample consists of 32 pre- and 32 post-closure firm-quarter observations for 31 unique firms.

The results are presented in Panels A to C of Table 4. In Panel A, we find that, after broker closure, the number of mutual-fund-affiliated analysts covering these firms significantly decreases in the post-closure period, but there is no significant change of non-affiliated analysts covering these firms. The R^2 and *SYNCH* significantly increase in the post-closure of broker (the exogenous decrease of mutual-fund-affiliated analyst coverage). The results are consistent with our general findings in Section ''Mutual-fund-affiliated analyst coverage and synchronicity: Main results.''

In addition, we conduct a difference-in-difference analysis based on a propensity score matching approach in Panels B and C. For the 32 quarter-samples from the closure, we take them as the treatment group. Then, we use a propensity score matching approach to select 32 control quarter-samples. Specifically, we construct a control sample by nearest-neighbor logit propensity score one-to-one matching strategy with a set of firm characteristics, including *Analyst, Underwriter Percent, Star Percent, CFIRMS, INS, FIRST, SOE, MVE, TURN, RET, STDROA, Q, ISSUE, B_Shares, H_Shares, Big4, DAC, MFFREQP*, and *MEDIA* one quarter ahead the event of broker closure. The control pool is the remainder of the firms (excluding the treatment firms) without missing the relevant variables through one quarter before to one quarter after the event. Panel B reports the covariate balance of

Table 4. The Impact of Mutual-Fund-Affiliated Analyst Coverage Due to Broker Closure on Synchronicity.

Panel A: Mean Value Synchronicity Comparison in Pre- and Post-Broker Closure.

Variable	Pre-closure	Post-closure	*t* statistics for difference (post-closure minus pre-closure)
R^2	.369	.480	2.780***
SYNCH	−0.595	−0.101	2.731***
Affiliated Analyst	2.906	1.906	1.933*
Non-Affiliated Analyst	3.344	4.031	1.069
No. of observations	32	32	

Panel B: Covariate Balance Between Treatment and Control Sample One Quarter Before the Broker Closure.

Variable	Treatment	Control	*t* statistics for difference (control minus treatment)
Analyst	6.250	6.094	−0.150
Underwriter Percent	0.027	0.028	0.032
Star Percent	0.133	0.102	−0.758
CFIRMS	5.344	5.605	0.336
INS	0.311	0.318	0.171
FIRST	0.478	0.489	0.282
SOE	0.906	0.969	1.025
MVE	21.430	21.389	−0.205
TURN	0.310	0.333	0.318
RET	0.003	0.010	0.559
STDROA	0.007	0.008	0.608
Q	0.212	0.272	0.995
ISSUE	0.094	0.031	−1.025
B_Shares	0.063	0	−1.438
H_Shares	0.031	0.063	0.584
Big4	0.188	0.156	−0.326
DAC	0.058	0.049	−0.802
MFFREQP	0.500	0.656	0.600
MEDIA	1.260	1.098	−0.549
No. of observations	32	32	

(*continued*)

those variables used in determining propensity score. From Panel B, we find that there is no significant difference between treatment and control samples for all the covariates one quarter before the broker closure, suggesting that our matching approach works well.

Panel C of Table 4 reports the results of our difference-in-difference tests for both R^2 and *SYNCH*. Column 1 of Panel C indicates that both R^2 and *SYNCH* significantly increased after mutual-fund-affiliated analyst coverage drop due to brokerage closure, which implies that firm-specific information impounded in stock prices significantly decreased after mutual-fund-affiliated analyst coverage drop. In contrast, there is no significant change of R^2 and *SYNCH* for the propensity-score-matched control sample as illustrated in column 2. Column 3 reports the results for the difference of the two differences

Table 4. The Impact of Mutual-Fund-Affiliated Analyst Coverage Due to Broker Closure on Synchronicity.

Panel C: DIDs Results.

	Mean treatment difference (post-closure minus pre-closure) (1)	Mean control difference (post-closure minus pre-closure) (2)	Mean DIDs (mean control difference − mean treatment difference) (3)
R^2 (*t* statistics)	.110*** (3.398)	.008 (0.816)	−.102** (−2.165)
SYNCH (*t* statistics)	0.494*** (3.309)	0.004 (0.980)	−0.490** (−2.200)

Note. Panel A presents the results of analyst coverage drops due to the closure brokerage houses. For brokerage closures, we focus on the firms that are covered by at least one mutual-fund-affiliated analyst from the closed brokers one quarter ahead the event. We require the firms be covered by at least one analyst one quarter after the event. After this procedure, we get a 32-firm-quarter sample. Panels B and C present a DID analysis based on a propensity score matching approach. For the 32 quarter samples from the closure, we use a propensity score matching approach to select 32 control quarter samples. The control sample is selected by nearest-neighbor logit propensity score one-to-one matching strategy with a set of firm characteristics, including *Analyst, Underwriter Percent, Star Percent, CFIRMS, INS, FIRST, SOE, MVE, TURN, RET, STDROA, Q, ISSUE, B_Shares, H_Shares, Big4, DAC, MFFREQP,* and *MEDIA* one quarter ahead the event of broker closure. DID = difference-in-difference.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

in columns 1 and 2 for both R^2 and *SYNCH*. As shown in column 3, the average increase of R^2 (*SYNCH*) for treatment sample is significantly higher than that for the control sample at the 5% level. Overall, the results in Table 4 again support our general findings in section ''Mutual-fund-affiliated analyst coverage and synchronicity: Main results'' after addressing possible endogeneity issues.

The Effect of the Importance of Covered Firms to Mutual Fund Clients

If a mutual fund has a major position in a covered stock or the stock is widely held by a large number of mutual fund clients, the covered stock becomes important to mutual funds. There are two aspects of the impact. First, mutual fund clients expect mutual-fund-affiliated analysts to give more optimism-biased recommendations. Second, mutual fund clients demand more firm-specific information. While the net effect conceptually is not certain, we expect that there will be more firm-specific information provided by mutual-fund-affiliated analysts. All else being the same, we expect mutual-fund-affiliated analysts' effort with these important stocks to be greater than other (less important) stocks. Therefore, the synchronicity of these important stocks is lower than that of less important stocks for mutual funds. To test this notion, we incorporate the influence of mutual funds in terms of depth ($Fund\ holding_{i,q-1}$) and breadth ($Fund\ NUM_{i,q-1}$) into our analysis while focusing only on firms with mutual-fund-affiliated analyst coverage. The exact calculations of *Fund holding* and *Fund NUM* are defined in the appendix. A high value of $Fund\ holding_{i,q-1}$ suggests that the market value change of firm i will have a greater impact on a brokerage's mutual fund clients, and a high value of $Fund\ NUM_{i,q-1}$ suggests that the market value change of stock i will influence a large number of a brokerage's mutual fund clients. The findings are presented in Table 5.

Table 5. The Effect of the Importance to Mutual Fund Clients of the Firms Covered on Synchronicity.

	(1)	(2)
Fund holding$_{i,q-1}$	−1.712** (.026)	
Fund NUM$_{i,q-1}$		−0.081*** (<.001)
Control variables	Yes	Yes
Constant	−3.043*** (<.001)	−4.005*** (<.001)
Quarter fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
No. of observations	7,024	7,024
Adjusted R^2	.4249	.4272

Note. This table reports the results of the impact of the importance to mutual fund clients of the firms covered on the relation between mutual-fund-affiliated analyst coverage and synchronicity. In particular, we use *Fund holding* and *Fund NUM* to measure the importance of the firms covered to mutual fund clients in terms of depth and breadth. The sample is limited to those firms with mutual-fund-affiliated analyst coverage. For brevity, we do not report the coefficients of control variables (*Analyst, Underwriter Percent, Star Percent, CFIRMS, INS, FIRST, SOE, MVE, TURN, RET, STDROA, Q, ISSUE, B_Shares, H_Shares, Big4, DAC, MFFREQP,* and *MEDIA*). All variables are as defined in the appendix. The *p* values reported in parentheses are based on standard errors clustered by both firm and quarter.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The results show negative and significant coefficients (at the 1% level) associated with the *Fund holding* and *Fund NUM* variables, suggesting that if a stock is more important to mutual clients, mutual-fund-affiliated analyst coverage further reduces the synchronicity level.

How Do Mutual-Fund-Affiliated Analysts Collect More Firm-Specific Information?

The above analyses show that mutual-fund-affiliated analysts do help disseminate firm-specific information. However, it is still not clear how they achieve this goal. The Chinese unique environment offers analyst site visit information to examine this issue. These visits help analysts gain more insights about their covered firms. The more frequent the site visit by an analyst, the more likely she can get more updated information about the firm (Cheng, Du, Wang, & Wang, 2014). Shenzhen Stock Exchange has mandated firms to disclose site visits information since 2009. Hence, we confine our sample for this analysis to Shenzhen Stock Exchange listed firms in the period 2009 to 2011. To compare and contrast the impact of mutual-fund-affiliated and non-affiliated analyst effort, we confine our sample to firms with coverage from both groups of analysts.

We present in Panels A and B of Table 6 the mean and median site visits of mutual-fund-affiliated and non-affiliated analysts (for firms with both mutual-fund-affiliated and non-affiliated analyst coverage) at the firm and analyst levels. For instance, in Panel A, the mean values of $SV\_Affiliate_{i,q}$ and $SV\_NAffiliate_{i,q}$ are 0.313 and 0.222, and the corresponding *t* test for the mean difference is significant at the 1% level. The difference in median values of site visits between mutual-fund-affiliated and non-affiliated analysts is also significant at the 1% level. We find qualitatively the same results in Panel B. The preliminary evidence suggests that mutual-fund-affiliated analysts, on average, expend more effort than those of non-affiliated analysts in terms of site visits. Panel C of Table 6 presents the

Table 6. The Impact of the Research Effort of Mutual-Fund-Affiliated Analysts on Synchronicity: Site Visits Frequency by Mutual-Fund-Affiliated Analysts.

Panel A: Firm-Level Comparison (Only Firms With Both Mutual-Fund-Affiliated and Non-Affiliated Analyst Coverage).

	$SV\_Affiliate_{i,q}$	$SV\_NAffiliate_{i,q}$	*t*/*Z* value
M	0.313	0.222	4.67***
Median	(0.200)	(0.167)	4.53***
n	556	556	

Panel B: Analyst-Level Comparison (Only Firms With Both Mutual-Fund-Affiliated and Non-Affiliated Analyst Coverage).

	$SV\_Affiliate_{i,j,q}$	$SV\_NAffiliate_{i,j,q}$	*t*/*Z* value
M	0.256	0.206	4.40***
Median	(0)	(0)	4.28***
n	3,586	3,064	

Panel C: Multivariate Analysis Results.

	(1)	(2)	(3)
$SV\_Affiliate_{i,q}$	−0.162*** (.009)		−0.159** (.046)
$SV\_NAffiliate_{i,q}$		−0.055* (.055)	−0.110 (.318)
Control variables	Yes	Yes	Yes
Constant	−3.719*** (<.001)	−2.228** (.035)	−3.701*** (<.001)
Quarter fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
No. of observations	578	1,343	556
Adjusted R^2	.3239	.2708	.3186

Note. This table reports the results of the site visits done by mutual-fund-affiliated analysts on synchronicity. Panel A presents a univariate comparison of site visits by mutual-fund-affiliated and non-affiliated analysts at covered firm-year level. We define $SV\_Affiliate_{i,q}$ as the average number of site visits made by mutual-fund-affiliated analysts' brokerage to the firm *i* in a particular quarter *q* divided by the number of mutual-fund-affiliated analysts covering the firm in that quarter. We define site visits made by non-affiliated analysts' brokerage ($SV\_NAffiliate_{i,q}$) in a similar way. Panel B shows the results of univariate comparison of site visits by mutual-fund-affiliated and non-affiliated analysts at analyst level. Panel C reports the results of a multivariate analysis. For brevity, we do not report the coefficients of control variables (*Analyst, Underwriter Percent, Star Percent, CFIRMS, INS, FIRST, SOE, MVE, TURN, RET, STDROA, Q, ISSUE, B_Shares, H_Shares, Big4, DAC, MFFREQP,* and *MEDIA*). All variables are as defined in the appendix. The *p* values reported in parentheses are based on standard errors clustered by both firm and quarter.
*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

multivariate results. For brevity, we report only the key coefficients. The coefficients of $SV\_Affiliate_{i,q}$ variables in columns 1 and 3 are negative and significant at the 1% or 5% levels, suggesting that mutual-fund-affiliated analyst effort is negatively correlated with synchronicity, and their site visits help them collect firm-specific information. In column 2 of Panel C in Table 6, the coefficient of *SV_NAffiliate* is −0.055 and significant at the 10% level, suggesting that site visit made by non-affiliated analysts can also help them collect firm-specific information. The same coefficient of *SV_NAffiliate* is not significant in column 3. The results in column 2 suggest that the site visits made by non-affiliated

analysts have some marginal effect on synchronicity, but the magnitude is much smaller (the coefficient is −0.055 compared with −0.162 for the coefficient of *SV_Affiliate* in column 1). The results in columns 1 to 3 are consistent with the arguments in Cheng et al. (2014). Cheng et al. (2014) suggest that not all site visits are useful, especially those visits for only the establishment of relationships with a firm, organization of a buy-side's site visit tours, or only meeting board secretaries getting standard information. We contend that, due to their weak motivation, many of the non-affiliated analysts' site visits fall into these general site visit categories.

Additional Analyses

We examine the impact on synchronicity by a change of analyst coverage in addition to broker closure. If mutual-fund-affiliated analysts affect firm-specific information dissemination in the stock market, we expect to see changes in synchronicity in response to an initiation or a drop in mutual-fund-affiliated analyst coverage. Our unreported results suggest that after mutual-fund-affiliated analysts initiate (stop) their coverage, the synchronicity of the firms they cover significantly decreases (increases). We further conduct a multiple regression analysis on the effect of an initiation or drop of mutual-fund-affiliated analyst coverage on synchronicity, and the findings support the prediction. In addition, we examine (a) full-service security firms, (b) brokerage firms, and (c) pure research firms; and how the analyst coverage from these firms relates to synchronicity. We find that only the coefficients associated with mutual-fund-affiliated analyst coverage from full-service security firms are negative and significant, whereas those of non-affiliated analyst coverage are positive and significant.[8]

Conclusion

We use a unique Chinese dataset that discloses the mutual fund allocations of commission fees to brokerage firms, as well as their shareholdings, to examine the production of firm-specific information by mutual-fund-affiliated analysts. On one hand, mutual-fund-affiliated analysts are confronted by conflicts of interest to deliver optimism-biased recommendations. On the other hand, they also have incentives to provide high-quality analyst forecast. As a consequence, the net effect of these two opposite actions on firm environment is not clear. Our results indicate that, they provide more firm-specific information to the market, manifested by lower stock price synchronicity for the firms they cover. The results are robust after controlling for possible endogeneity concerns. We further find that mutual-fund-affiliated analyst effects are more pronounced for stocks that represent a significant exposure to mutual funds, where mutual funds presumably need more firm-specific information to make investment decisions. Mutual-fund-affiliated analysts do more frequent site visits on those firms whose stocks are held by their mutual fund clients, which explains how mutual-fund-affiliated analysts could achieve the goal of disseminating more firm-specific information.

Overall, the results indicate that the business relations between brokerage firms and institutional investors can incentivize mutual-fund-affiliated analysts to outperform non-affiliated analysts in uncovering and disseminating firm-specific information. In this regard, mutual fund affiliations can encourage analysts to function as important financial intermediaries as desired by the capital market.

Appendix. Variable Definitions.

Dependent variables	
$SYNCH_{i,q}$	*SYNCH* is stock return synchronicity for firm *i* during quarter *q*, *SYNCH* = log (R^2 / (1 − R^2)), where R^2 is the coefficient of determination from the firm-quarter estimation of Equation 1 using daily return of the Shanghai and Shenzhen Exchange stocks with a minimum of 50 daily observations.
$Accuracy1_{i,j,q}$	$Accuracy\ 1_{i,j,q} = -\frac{\left(Error_{i,j,q} - Mean\ Error_{i,q}\right)}{Std\left(Error_{i,j,q}\right)}$, where $Error_{i,j,q}$ is the absolute earnings forecast error for analyst *j* following firm *i* in quarter *q*. Multiplying this relative forecast error by −1 yields a measure that increases with greater forecast accuracy: $Error_{i,j,q} = \left\lvert FEPS_{i,j,q} - AEPS_{i,q} \right\rvert$.
$Accuracy2_{i,j,q}$	Following Clement and Tse (2005), for each firm and quarter, $Accuracy\ 2_{i,j,q} = \frac{Max\ Error_{i,q} - Error_{i,j,q}}{Max\ Error_{i,q} - Min\ Error_{i,q}}$, where $MinError_{i,q}$ and $MaxError_{i,q}$ are the minimum and maximum absolute forecast errors, respectively, for analysts following firm *i* in quarter *q*. So we scale the forecast accuracy measure to be 0 for the least accurate forecast and 1 for the most accurate forecast.
$Accuracy3_{i,j,q}$	Following Hong, Kubik, and Solomon (2000), for each firm and quarter, we sort $Error_{i,j,q}$ in ascending order, which means that the most accurate analyst (lowest absolute forecast error) receives the first rank ($Rank\_Accuracy_{i,j,q}$ = 1): $Accuracy\ 3_{i,j,q} = 100 - \frac{\left(Rank\_Accuracy_{i,j,q} - 1\right) \times 100}{Number\ of\ analysts\ produce\ earning\ forecasts - 1}$. The most accurate analyst receives an *Accuracy3* value of 100, and the least accurate analyst receives an *Accuracy3* value of 0.
Independent variables	
$Analyst_{i,q}$	The number of analysts following firm *i* during quarter *q*.
$Affiliated\ Analyst_{i,q}$	The numbers of mutual-fund-affiliated analysts covering firm *i* during quarter *q*. If analyst *j*'s brokerage receives commission fees in quarter *q* − 1 from mutual fund *m*, then the mutual fund is regarded as a client for analyst *j* in quarter *t*. For a given quarter *t*, if analyst *j* covers firm *i* that has been held as one of any client's top 10 holdings at the end of quarter *q* − 1, then analyst *j* is considered a mutual-fund-affiliated analyst.
$Non\text{-}Affiliated\ Analyst_{i,q}$	The difference between the number of analysts and the number of mutual-fund-affiliated analysts for firm *i* during quarter *q*.
$Fund\ holding_{i,q-1}$	Stock *i*'s weight in the aggregate portfolio of all affiliated mutual funds that hold stock *i* in quarter *q* − 1. A mutual fund *m* is regarded as an affiliated mutual fund if it holds stock *i* in quarter *q* − 1 and at least one analyst's brokerage received commission fees in quarter *q* − 1 from mutual fund *m* covering the firm in quarter *q*. The variable *Fund holding* is calculated as the aggregate market value of stock *i* held by all affiliated mutual funds divided by their total net asset value.
$Fund\ NUM_{i,q-1}$	$Fund\ NUM_{i,q-1}$ = *Ln*(1 + the number of all affiliated mutual funds that hold firm *i* stock in quarter *q* − 1).
$INS_{i,q}$	The number of shares of firm *i* held by all mutual funds in quarter *q* divided by the total number of shares outstanding.

(continued)

Appendix. (continued)

$MVE_{i,q}$	The natural log of the market value of firm *i* in quarter *q* calculated as the closing price at the end of quarter *q* times the number of shares outstanding.
$TURN_{i,q}$	The average monthly turnover rate during quarter *q*. Each month, we calculate the turnover rate as the number of shares traded in the month divided by total shares outstanding; then, $TURN_{i,q}$ equals the average of three monthly turnover rates of firm *i* stock in quarter *q*.
$RET_{i,q}$	The average monthly market-adjusted return of firm *i* in quarter *q*.
$STDROA_{i,q}$	The standard deviation of the return on assets measured over the current and previous four quarters for firm *i*.
$Q_{i,q}$	The natural log of Tobin's *Q* of firm *i* in quarter *q*, that is, the natural log of the sum of the market value of equity and the book value of debt, divided by the book value of assets.
$ISSUE_{i,q}$	An indicator variable equals 1 if firm *i* issues securities (including equity or bonds) over the current and previous four quarters.
$EXPCOV\_AFFI_{i,q}$	The expected mutual-fund-affiliated analyst coverage of firm *i* in quarter *q*. We use the following equations to construct $EXPCOV\_AFFI_{i,q}$: $EXPCOV\_AFFI_{i,k,q} = \left(\frac{Brokersize_{k,t}}{Brokersize_{k,initial}}\right) \times Affiliated\ Analyst_{i,k,initial}$ $EXPCOV\_AFFI_{i,q} = \sum_{k=1}^{n} \left(EXPCOV\_AFFI_{i,k,q}\right)$, where $EXPCOV\_AFFI_{i,k,q}$ is the expected mutual-fund-affiliated analyst coverage of firm *i* for broker *k* in quarter *q*, $Brokersize_{k,t}$ is the number of analysts employed by broker *k* in year *t* in which quarter *q* belongs, $Brokersize_{k,initial}$ is the number of analysts employed by broker *k* in the initial year, and $Affiliated\ Analyst_{i,k,initial}$ is the extent of the mutual-fund-affiliated analyst coverage of firm *i* when broker *k* initializes its coverage for firm *i* in a certain quarter.
$EXPCOV\_NAFFI_{i,q}$	The expected non-affiliated analyst coverage of firm *i* in quarter *q*. We use the following equations to construct $EXPCOV\_NAFFI_{i,q}$: $EXPCOV\_NAFFI_{i,k,q} = \left(\frac{Brokersize_{k,t}}{Brokersize_{k,initial}}\right) \times Non\text{-}Affiliated\ Analyst_{i,k,initial}$ $EXPCOV\_NAFFI_{i,q} = \sum_{k=1}^{n} \left(EXPCOV\_NAFFI_{i,k,q}\right)$ where $EXPCOV\_NAFFI_{i,k,t}$ is the expected non-affiliated analyst coverage of firm *i* for broker *k* in quarter *q*, $Brokersize_{k,t}$ is the number of analysts employed by broker *k* in year *t* in which quarter *q* belongs, $Brokersize_{k,initial}$ is the number of analysts employed by broker *k* in the initial year, and $Non\text{-}Affiliated\ Analyst_{i,k,initial}$ is the extent of non-affiliated analyst coverage of firm *i* when broker *k* initializes its coverage for firm *i* in a certain quarter.
$Star\ Percent_{i,q}$	The percentage of star analysts for firm *i* in quarter *q*. We regard an analyst as a star if the analyst is ranked by *New Fortune* magazine as a star analyst in the year in which quarter *q* falls.
$Affiliate_{i,j,q}$	An indicator variable that equals 1 if analyst *j* covers firm *i* in quarter *q* and analyst *j*'s brokerage receives commission fees in

(continued)

Appendix. (continued)

	quarter $q - 1$ from any mutual fund that has firm i stock in its top 10 holdings at the end of quarter $q - 1$ and 0 otherwise.
Banking Business in Past Five Years$_{i,j,q}$	An indicator variable equals 1 if the brokerage has an analyst j follows the firm i and served as an underwriter of a security issuance for firm i (including stocks and bonds) in the past 5 years from the current quarter q and 0 otherwise.
Star$_{i,j,q}$	An indicator that equals 1 if an analyst j is ranked by *New Fortune* magazine as a star analyst in the year in which he follows firm i in quarter q and 0 otherwise.
Brokerage Size$_{i,j,q}$	The natural logarithm of the number of analysts employed by a brokerage in the year in which quarter q falls when an analyst j follows firm i. Note that (a) when the dependent variable is *Accuracy1*, we use *Brokerage Size*; (b) when the dependent variable is *Accuracy2*, we scale *Brokerage Size* similarly, from 0 (smallest brokerage house) to 1 (largest brokerage house); and (c) when the dependent variable is *Accuracy3*, we scale *Brokerage Size* similarly, from 0 (smallest brokerage house) to 100 (largest brokerage house).
Experience$_{i,j,q}$	The natural logarithm of the number of quarters of experience of analyst j following firm i in quarter q. Note that (a) when the dependent variable is *Accuracy1*, we use *Experience*; (b) when the dependent variable is *Accuracy2*, we scale *Experience* similarly, from 0 (least experience) to 1 (most experience); and (c) when the dependent variable is *Accuracy3*, we scale *Experience* similarly, from 0 (least experience) to 100 (most experience).
Companies$_{i,j,q}$	The natural logarithm of the number of the companies analyst j follows in quarter q. Note that (a) when the dependent variable is *Accuracy1*, we use *Companies*; (b) when the dependent variable is *Accuracy2*, we scale the *Companies* similarly, from 0 (fewest companies) to 1 (most companies); and (c) when the dependent variable is *Accuracy3*, we scale *Companies* similarly, from 0 (fewest companies) to 100 (most companies).
Industries$_{i,j,q}$	The natural logarithm of the number of industries analyst j follows firm i in quarter q. Note that (a) when the dependent variable is *Accuracy1*, we use *Industries*; (b) when the dependent variable is *Accuracy2*, we scale the *Industries* similarly, from 0 (fewest industries) to 1 (most industries); and (c) when the dependent variable is *Accuracy3*, we scale *Industries* similarly, from 0 (fewest industries) to 100 (most industries).
ForHorizon$_{i,j,q}$	The natural logarithm of the number of days from the forecast date to the fiscal year-end for analyst j follows firm i in quarter q. Note that (a) when the dependent variable is *Accuracy1*, we use *ForHorizon*; (b) when the dependent variable is *Accuracy2*, we scale *ForHorizon* similarly, from 0 (latest) to 1 (earliest); and (c) when the dependent variable is *Accuracy3*, we scale *ForHorizon* similarly, from 0 (latest) to 100 (earliest).
Underwriter Percent$_{i,q}$	The percentage of underwriter analysts covering a firm i in quarter q, an analyst is defined as underwriter analyst if his brokerage served as an underwriter of a security issuance (including stocks and bonds) in the past 5 years.

(continued)

Appendix. (continued)

$CFIRMS_{i,q}$	The percentage of star analysts covering a firm *i* in quarter *q*.
$H\_Shares_{i,q}$	A dummy variable equals 1 if a firm *i* in quarter *q* issues H shares.
$B\_Shares_{i,q}$	A dummy variable equals 1 if a firm *i* in quarter *q* issues B shares.
$FIRST_{i,q}$	The percentage of shares held by the largest shareholder for firm *i* in the year in which quarter *q* falls.
$SOE_{i,q}$	A dummy variable equals 1 if a firm *i* in quarter *q* is controlled by state-owned enterprises, and 0 otherwise.
$Big4_{i,q}$	A dummy variable equals 1 if a firm *i* in quarter *q* is audited by one of the joint ventures of international Big 4 audit firms and domestic audit firms, and 0 otherwise.
$DAC_{i,q}$	The absolute value of discretionary accruals for firm *i* in the year where quarter *q* falls. We estimate it using the modified Jones model (Dechow, Sloan, & Sweeney, 1995).
$MFFREQP_{i,q}$	The frequency of management earnings forecast for firm *i* in the year where quarter *q* falls.
$MEDIA_{i,q}$	The natural logarithm of 1 plus the number of news about the firm *i* in quarter *q*. The data are obtained from the CSMAR.

Note. CSMAR = China Stock Market and Accounting Research.

Acknowledgment

The authors acknowledge the helpful comments from an anonymous reviewer, Wenfeng Wu, Wayne Yu (the discussant), Bo Zhang, and the participants at the American Accounting Association Annual Meetings in Atlanta, 2014, and the 2015 *China Accounting and Finance Review (CAFR)/Journal of Accounting, Auditing & Finance (JAAF)* conference in Chengdu, China.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project is supported by the Fundamental Research Funds for the Central Universities and the Research Funds of Renmin University of China (14XNJ019). The usual caveats apply.

Notes

1. A specific example is the case of Kweichow Moutai, a major liquor producer in China. On November 28, 2008, *21st Century Business Herald*, a major business newspaper in China, reported that an analyst from a Shanghai brokerage firm had reported apparently weak sales of Kweichow Moutai in early October 2008. Kweichow Moutai's stock price decreased greatly several days afterward. A number of the brokerage's mutual fund clients held major positions in the stock and complained to the brokerage, briefly ceasing trading with it. Facing pressure from these mutual funds, in late October 2008, the same analyst changed the outlook of Kweichow Moutai's sales to uncertain and claimed the company's new initiatives to open new specialized stores and to fight counterfeiting could restore sales. The analyst also gave a buy rating for Kweichow Moutai in his second report. The Kweichow Moutai case illustrates that affiliated

analysts are under pressure to make optimistic recommendations (see http://finance.sina.com.cn/money/fund/20081128/04465563860.shtml, original in Chinese, accessed August 27, 2015).

2. Many studies consider that a stock or a market with low synchronicity means high price informativeness (or more firm-specific information impounded in stock returns) or vice versa (Chan & Hameed, 2006; Crawford, Roulstone, & So, 2012; Gul, Kim, & Qiu, 2010; Jin & Myers, 2006; Morck, Yeung, & Yu, 2000). Thus, following this literature, we use stock price synchronicity as a measure of the amount of firm-specific information provided by analysts.
3. The statistics are from http://www.sac.net.cn/ljxh/xhgzdt/201401/t20140116_80226.html (accessed March 10, 2014).
4. We adopt the 13-industry classification (A-M) system of the China Securities Regulatory Commission and their two-digit industry code (C1-C9) for the manufacturing industry, for a total of 21 industries.
5. Besides maximizing observations, the focus on top 10 stocks is likely to give analysts a strong incentive to research on the stock.
6. One may argue that it is more direct to use stock price reaction to forecasts/revisions if one wants to examine the forecast/revision informativeness. We contend that synchronicity offers two advantages relative to stock price reaction to forecasts/revisions. First, synchronicity provides guidance if analyst coverage relates to more market-wide or more firm-specific information (Chan & Hameed, 2006). The typical stock price reactions to forecasts/revisions only confine to analysts' performance in their forecasts/revisions, and these reactions cannot tell us about market-wide versus firm-specific informativeness (see Piotroski & Roulstone, 2004). In other words, studies using stock price reactions lean on short-term analysis, but synchronicity allows analysis beyond short term. Second, studies on stock price reactions to forecasts/revisions lean on using event studies, which restrict the examination on the determinants of specific information flow. Using synchronicity allows researchers to examine the determinants of firm-specific and market-wide information flow.
7. In addition to *Affiliated Analyst*, we use a dummy variable, *Affiliate Dummy* (equal to 1 if firm i is covered by at least one mutual-fund-affiliated analyst in quarter q and 0 otherwise), and the percentage of mutual-fund-affiliated analyst coverage, *Affiliate Percent* (the ratio of the number of mutual-fund-affiliated analysts divided by the number of all analysts that covers firm i in quarter q), as alternative mutual-fund-affiliated analyst measures to examine the robustness of our main findings. The findings are qualitatively the same as those in Table 3. The detailed results can be found at *Journal of Accounting, Auditing & Finance (JAAF)* website in the online appendix file JAAF-15-0082-supplementary details.
8. The detailed results can be found at the *JAAF* website in the online appendix file JAAF-15-0082-supplementary details.

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