



Selective optimism of analysts affiliated with mutual funds

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ABSTRACT

This study examines whether conflicts of interest induced by group affiliation between asset management companies (AMCs) and brokerage firms compromise the independence of the affiliated analysts' forecasts. That is, we investigate whether affiliated analysts treat stocks held by mutual funds in the same chaebol group differently from other stocks. Our main results indicate that analyst forecasts are selectively optimistic about the stocks that are of the greatest interest to affiliated AMCs. Specifically, analysts produce more accurate forecasts for stocks held by affiliated AMCs in general, while their recommendations and forecasts become more optimistic and less accurate as the amount of funding invested in such stocks increases within a fund held by affiliated fund managers. Selective optimism is also found when the asset management fees are high and when those stocks are newly added to the funds held by affiliated fund managers.

1. Introduction

Affiliated analysts' recommendations can be biased due to their investment banking relationships (e.g., Dugar and Nathan, 1995; Lin and McNichols, 1998; Lu et al., 2018; Michaely and Womack, 1999; O'Brien et al., 2005), access to exclusive information (e.g., Das et al., 1998; Francis and Philbrick, 1993; Lim, 2001), and trading commissions (e.g., Beyer and Guttman, 2011; Choi et al., 2015; Cowen et al., 2006). Firth et al. (2013) and Gu et al. (2013) specifically show that analysts hold a bias in favor of buy-side institutional investors who trade via their brokerage and find that client pressure influences analyst reports. Moreover, Mola and Guidolin (2009) consider mutual fund affiliation when examining recommendations issued by analysts on stocks held by in-house mutual funds within the same firm.

While Firth et al. (2013), Gu et al. (2013), and Mola and Guidolin (2009) investigate investment banks and brokerage firms in the United States (US), analyst optimism has also been reported for firms belonging to family-controlled industrial conglomerates in Korea (chaebols).¹ In particular, Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024) have found that a systematic bias emerges in recommendations and earnings forecasts when analysts working for a chaebol brokerage firm release recommendations on member

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¹ The Korea Fair Trade Commission (KFTC) classifies any business group with assets of more than 5 trillion Korean won (3.6 billion USD) as a chaebol group. As of 2024, there were 48 chaebol groups that held 3,318 subsidiaries and had a total asset size of 2.8 quadrillion Korean won (2 trillion USD). Once classified as a chaebol, the firms within the group are limited in terms of circular shareholding and guarantee of debt, and their voting rights for shares held in financial subsidiaries are capped at 5%.

firms within the same chaebol family. In this study, we focus on cases in which both brokerage firms and asset management companies (AMCs) belong to the same chaebol family and investigate how their affiliation affects the integrity of sell-side analysts.

In the US, a series of regulations, caused by trading scandals involving mutual fund managers and sell-side analysts, have been introduced to increase regulatory scrutiny on the business operations of the mutual fund and brokerage industries. These include Regulation Fair Disclosure and the Global Settlement (Bhojraj et al., 2012). Similar regulations, such as Fair Disclosure and the Financial Investment Services and Capital Market Act, have been enacted in Korea to enhance the fairness, integrity, and efficiency of capital markets. In addition, chaebol firms tend to face a higher level of regulatory restrictions on their operations than non-chaebol firms. These regulations intend to curb the expansion of chaebols by overseeing holding companies, controlling equity acquisitions, and preventing unfair transactions between chaebol member firms (Hong, 2023).² Despite the various regulations introduced to govern the transactions and trading activities of investment banks and chaebols, prior studies have found that affiliated analysts' recommendations tend to be optimistic in these contexts.

In our research setting, we focus on the intersection of characteristics of mutual fund affiliation and chaebol group affiliation by examining cases in which both brokerage firms and AMCs belong to the same chaebol group. Mutual fund managers trade positions via brokerage services and purchase analysts' reports from brokerage firms. In turn, brokerage firms provide marketing and sales channels for funds produced by AMCs. This bilateral relationship between brokerage firms and AMCs may motivate both parties to cooperate strategically to achieve the best outcome for all. However, the close collaboration between these two entities may attract unwanted regulatory scrutiny given the strict regulatory control over the mutual fund and brokerage industries. That is, regulators may impose stricter measures if these firms belong to the same chaebol family. Thus, these affiliated brokerage firms and AMCs might need to find a strategic way to collaborate and maximize their collective benefits. Accordingly, we test whether analysts' forecasts on stocks held by affiliated AMCs belonging to the same chaebol groups (hereafter, affiliated stocks) differ from those of other stocks. Furthermore, we examine whether and how mutual fund holdings by AMCs affect the reporting behavior of analysts on their affiliated stocks.³

The Korean mutual fund management firms, like those in the United Kingdom (UK) and other European countries, rely heavily on other financial institutions, such as large banks, insurance companies, and brokerage firms, for their fund sales.⁴ Thus, brokerage firms provide the most important marketing channels for mutual fund managers. Ideally, fund managers should use brokerage firms that provide accurate research reports and have competitive brokerage fees. In turn, brokerage firms should recommend the optimal mutual fund product to investors based on their risk profiles and the fund's past performance. However, this best practice is difficult to achieve because of significant co-ownership within a business group and the influences of its controlling party. Chaebol groups in Korea are allowed to retain substantial ownership in both brokerage firms and AMCs, bringing these legally separate entities under the influence of the same controlling parties.⁵ This impedes affiliated brokerage firms and AMCs from finding optimal business partners for brokerage services and fund distribution. Instead, brokerage firms strongly promote the funds managed by their fellow AMCs to ensure long-term partnerships and internal cooperation. In return, AMCs provide a steady stream of commission fees to brokerage firms.

In this case, we can expect two possible forecasting behaviors of analysts toward their affiliated stocks: full optimism and selective optimism. For the former, the close business relationship between an analyst's employer and the affiliated AMC would pressure analysts to assist in boosting the financial performance of affiliated stocks. Therefore, analysts may be consistently optimistic when recommending affiliated stocks. However, due to the repetitive nature of analyst reporting, being continuously optimistic has several adverse effects. First, the market might perceive affiliated analysts' optimistic recommendations as lacking credibility. Previous studies have shown that the market reaction is weaker to optimistic recommendations made by affiliated analysts (see, for example, Barber et al., 2007) than those made by independent ones. As a result, continuously optimistic reporting may damage the recommending analysts' reputation. Thus, the marginal effect of issuing optimistic reports for affiliated stock performance will decline if an analyst is identified as being consistently optimistic and less credible over multiple periods. Finally, as noted earlier, the mutual fund and brokerage industries are highly regulated. Suspicious collaboration between affiliated analysts and mutual fund managers might attract regulatory scrutiny, which can even lead to penalties or regulatory enforcement actions. To avoid these negative consequences, analysts may prioritize their affiliated stocks when making optimistic forecasts and recommendations while ensuring fair reporting of other stocks. Hence, the best strategy for affiliated analysts would be to publish favorable reports for stocks highly valuable to their affiliated AMCs to be selectively optimistic while simultaneously maintaining a good reputation and credibility via accurate forecasts for other affiliated stocks. Analysts belonging to a chaebol group have the benefit of information advantages for their affiliated stocks due to internal information and research pools. Multiple financial institutions within the same business group facilitate the collection of market-wide information that can be easily distributed through diverse internal communication channels (Lim and Jung, 2012; Song

² The KFTC has a task team reviewing the transactions among subsidiaries within chaebol groups and has successfully prosecuted various chaebol groups, including Samsung, Hyundai, LG, and SK, for illegal internal transactions worth 17.9 trillion Korean won (12.8 billion USD), which resulted in fines of 170 billion Korean won (121 million USD).

³ Affiliated stocks are defined as stocks followed by an analyst and included in the mutual funds managed by an AMC that belongs to the same chaebol group as the analyst's brokerage firm. Thus, affiliated analysts may cover both affiliated and unaffiliated stocks. Affiliated stocks can be any listed stocks; that is, they are not limited to stocks within the same chaebol group.

⁴ Whereas in countries such as the US, mutual fund families have multiple distribution channels for their funds, such as direct sales and fund supermarkets.

⁵ Most of the brokerage firms and AMCs in Korea are independent entities by law. In particular, the financial regulations in Korea prior to 2009 prohibited financial institutions from providing both brokerage and asset management services through the same firm. Even after 2009, when this restriction was lifted, no chaebol group has merged their brokerage firms and AMCs.

et al., 2012). Therefore, affiliated analysts can utilize this information shared within the same chaebol and produce more accurate forecasts for affiliated stocks should they choose.

It is not difficult to find business groups worldwide that hold both an AMC and a brokerage firm (e.g., *keiretsu* in Japan) or cases in which one of the firms owns the other. A recent example is Deutsche Bank in Europe, which was the 15th largest bank in the world by total assets in 2018. Deutsche Bank previously owned both a brokerage division and a fund management service within the firm. In 2018, the asset management division was spun off into an independently listed company, DWS. However, Deutsche Bank still holds the majority of its shares.⁶ Despite similar examples prevailing globally, the existing literature has not fully explored the potential conflict of interest in such situations, especially in circumstances where business groups are segregated into chaebol and non-chaebol groups and regulated separately. A highly regulated environment may decrease opportunistic behavior that could raise unwanted attention and auditing for the whole chaebol group. Thus, by using Korean data, we can investigate how this unique setting for chaebol groups affects analysts' reports on stocks held by affiliated AMCs.

Further, there is the large number of mutual funds offered by AMCs in Korea. The Korean mutual fund market is among the top three in the world based on the number of funds offered; however, it ranks lower in terms of assets under management (AUM).⁷ Given the limited market size but extensive range of products available, the competition in the fund sales market is intense. Thus, successful mutual fund management firms must have a secure marketing channel, leading to an even stronger tie between brokerage firms and affiliated AMCs within the same chaebol group.

By using data from analyst forecasts and mutual fund holdings from 2000 to 2016, we compare the analysts' forecasts and recommendations issued for affiliated and non-affiliated stocks. Our results reveal that, in general, analysts provide more accurate earnings forecasts for affiliated stocks than for other stocks. This could be mainly because of the information pool and research capacity shared within a chaebol group. At the same time, affiliated analysts may be selectively optimistic to maximize the benefit for their affiliated AMC and the entire chaebol group. We report the following three situations in which analysts issue more optimistic forecasts for stocks held by their affiliated AMC: when the amount of funding invested in affiliated stocks increases, when the asset management fees charged on the funds are high, and when the stocks are newly added to the funds held by affiliated fund managers. In addition, we test how favoritism toward non-financial chaebol member firms reported in prior studies (Lim and Jung, 2012; Song et al., 2012) affects our main findings. The combined effect on analyst recommendations indicates a dominant effect of optimistic bias in analyst recommendations when following a fellow chaebol firm in which the affiliated AMC invests. However, the overall accuracy level is higher for such stocks. These results are consistent with Ertimur et al.'s (2007) finding that higher accuracy is related to more optimistic recommendations when analysts' conflicts of interest increase. When the amount of funding invested in affiliated stocks is also considered, analyst recommendations become more optimistic, and forecasts become less accurate as the amount increases. Additionally, we split chaebol groups into non-financial and financial, where the former type has both financial and non-financial firms as subsidiaries, while the latter has only financial firms. We find that affiliated analysts from non-financial chaebol groups provide more accurate reports than those from financial chaebol groups, indicating that they are able to utilize industry-specific information collected within the group.

Our study makes several contributions to the literature on this topic. First, we investigate the potential agency conflicts faced by analysts due to chaebol group affiliation between brokerage firms and AMCs. Mutual fund managers have been shown to trade by closely following sell-side and buy-side analyst forecast revisions (Franck and Kerl, 2013; Frey and Herbst, 2014). Firth et al. (2013) and Gu et al. (2013) have investigated analyst optimism motivated by the commission income generated from brokerage firm clients and found that more favorable recommendations are given for stocks held by client fund managers. Meanwhile, Mola and Guidolin (2009) consider mutual fund affiliation by focusing on analysts' recommendations on stocks held by affiliated mutual funds within the same investment banks. Our research can be differentiated from these studies in that we focus on the intersection of mutual fund affiliation and chaebol affiliation by examining cases in which both brokerage firms and AMCs, separate legal entities, belong to the same chaebol group. To our knowledge, this is the first study to report that the independence of the affiliated analysts' forecasts can be compromised by group affiliation between brokerage firms and AMCs.

Prior studies, such as Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024), have found consistent analyst optimistic bias when an analyst working for a chaebol brokerage firm covers a fellow chaebol firm from the same group. Given the mutual fund and brokerage industries' higher monitoring and ethical standards, consistently optimistic analyst reports might lead to regulatory intervention or even penalties. In such a case, our research shows that analysts' tendency to produce optimistically biased reports for stocks with large investments from AMCs while avoiding such biases for small investments is possibly due to pressure from the controlling owner of the business group to maximize the group's overall profit. Avoiding biases for smaller investments allows the group to evade regulatory attention and legal action. Thus, direct monetary compensation between brokerage firms and mutual fund managers will be less effective in impeding the close cooperation between affiliated analysts and fund managers who work for the same chaebol group.

Moreover, our findings contribute to the stream of literature investigating the investment strategies of mutual fund families. Mutual fund managers in the US face an agency conflict between their clients and their mutual fund family (e.g., Bhattacharya et al., 2013; Chevalier and Ellison, 1997; Gaspar et al., 2006). Fund families may organize investment strategies across member mutual funds to

⁶ Another example is Guosen Securities Co., Ltd., which is the second-largest broker in China and ranks 18th globally. Guosen also owns 50% of an independent AMC, Penghua Fund Management Co., Ltd.

⁷ As of 2020, Korea had approximately 14,342 regulated open-end funds offered to the market, making it the third largest player in the world and similar to Luxembourg (14,590), which is ranked second.

maximize the overall group profits (Elton et al., 2007; Gaspar et al., 2006). Our study presents a case in which mutual fund managers strategically cooperate with affiliated analysts to maximize the overall profits of their managed funds. Mutual fund managers can also use tactical collaboration methods like window dressing (Agarwal et al., 2014) to support analyst recommendations that are biased in favor of stocks that are highly valuable to affiliated AMCs. The information sharing within the chaebol group is demonstrated by the higher accuracy of non-financial chaebol analysts compared to financial chaebol analysts. Non-financial chaebol groups hold various subsidiaries operating in non-financial industries and have industry-specific information accumulated within the group that can be shared with the group's analysts.

The remainder of this paper is structured as follows. Section 2 presents the study's hypotheses, and Section 3 describes the data and descriptive statistics. Section 4 presents the results, and Section 5 discusses additional testing. Finally, Section 6 concludes the paper.

2. Hypothesis development

2.1. Institutional background

At the end of 2020, the total AUM invested in global mutual funds was approximately \$63.1 trillion. The US mutual fund market has the largest amount of AUM, accounting for 46.43 % of worldwide investments in 2020. Meanwhile, the total AUM invested in the Korean fund market in 2020 was \$615.08 billion, which ranked fourteenth globally and third in Asia, following China and Japan. The Korean market is one of the fastest growing and most highly regarded in the world. From 2000 to 2020, it grew a staggering 556 % (8.95 % per annum on average) in terms of local currency, whereas the US market grew 421 % (7.45 % per annum on average). Growth in the Korean market has been stable because the Korean government's regulatory initiatives have helped nurture an investor-friendly market with a high level of quality disclosure but relatively low-level fees and taxation. In Morningstar's (2015) Global Fund Investor Experience report, which discusses the best practices for mutual funds from the perspective of fund investors, Korea was one of the only two A-rated countries in the world (with the other being the US). The other competing Asian countries, which have larger AUM values than Korea, were rated C− (Japan) and D+ (China). The largest mutual fund management firm in Korea is Samsung Asset Management Co. Ltd., a subsidiary of the Samsung chaebol group.

Brokerage firms and AMCs in Korean chaebol groups have close business relationships. For instance, an affiliated AMC typically gives a large share of the daily trades to its associated chaebol brokerage firm. The evidence shows that from 2007 to 2012, 54.4 % of all shares, on average, traded by the top five AMCs belonging to chaebol groups were commissioned exclusively to affiliated brokerage firms (KCMI 2012). In this way, the AMC can prevent its investment strategies from being leaked to competitors. Furthermore, affiliated brokerage firms provide secure marketing channels for the funds managed by their fellow member firms. Indeed, from 2007 to 2012, 55 % of the funds, on average, managed by the top ten mutual fund firms were sold via their affiliated firms (KCMI 2012). Chaebol brokerage firm employees are also encouraged to sell affiliated funds (i.e., the funds in which their associated AMCs invest). Some firms even set affiliated fund sales targets for their employees, which are reflected in their performance evaluations.⁸ To compensate brokerage firms for such aggressive marketing practices, AMCs set higher sales fees but lower fund management fees for the funds sold via affiliated brokerage firms than those sold via unaffiliated ones. For example, in 2012, Korea Investment & Securities Co. paid sales fees of 1.057 % and 0.939 %, on average, for funds sold via its affiliated and non-affiliated brokerage firms, respectively.⁹

2.2. Hypotheses

When a chaebol group owns both an AMC and a brokerage firm, the controlling owner may compel the affiliated analysts to provide favorable opinions on affiliated stocks to maximize group profits. Previous studies have reported that fund families may coordinate investment strategies across the mutual funds to maximize the group's profits at the expense of individual funds' profits. Gaspar et al. (2006) find evidence of "performance transfer" from less valuable group funds (i.e., low-fee, low-performing, or old funds) to more valuable funds (i.e., high-fee, high-performing, or young funds). They argued that the fund families engage in "cross-fund subsidization" to produce a spillover effect for all group funds by creating a high-performing "star" fund (Nanda et al., 2004). Creating a brand name for the family is also essential, as investors tend to select a fund family first rather than focusing on individual funds (Massa, 2003). Moreover, Gaspar et al. (2006) identify the potential subsidization channels, including allocating underpriced initial public offering stocks to high-value funds and taking opposite trades among the affiliated mutual funds in favor of high-value funds.

In addition, the affiliated fund managers are important clients for fellow brokerage firms, as they generate trades for brokerage firms and provide marketing channels for analysts' reports. If chaebol-affiliated analysts are motivated to generate more trades via optimistic recommendations, they are likely to produce biased reports in favor of the affiliated stocks (Mola and Guidolin, 2009).

Studies have shown that analysts' career concerns also affect their reports. Analysts tend to provide more informative and accurate forecasts and recommendations for firms that are more important to their career, discouraging analyst optimism (Harford et al., 2018). However, accuracy becomes less dependent on career outcomes when analysts cover stocks underwritten by their brokerage firms (Hong and Kubik, 2003). Similarly, Yang et al. (2024) find that affiliated analysts do not face a higher risk of job loss compared to

⁸ This practice is called a "campaign" in the industry. A campaign not only focuses on the affiliated funds being intensively promoted in the market but also generates high sales fees for the brokerage firm (see Shin-Dong-A, Securities firms, sales firms, AMCs should do their own job. December 2008; <https://shindonga.donga.com/Library/3/03/13/108026/3> [in Korean]).

⁹ According to *Chung-ang Ilbo*, affiliated funds paid more fees, July 2012; <https://news Joins.com/article/8764691> [in Korean].

unaffiliated analysts even when their forecasts are less accurate. These studies indicate that analysts belonging to chaebol firms may be less concerned about the adverse effect of inaccurate forecasts on their future career, as the chaebol group can protect them if their optimism is intended to enhance the overall group profit.¹⁰

Accordingly, we propose the following hypothesis:

H1. *Analysts in a chaebol group provide more optimistic recommendations and less accurate forecasts overall for stocks in which an affiliated AMC in the same chaebol group invests than for other stocks.*

However, the market might question the credibility of a continuously optimistic forecast for affiliated stocks. Evidence shows that analyst forecasts become more accurate and less biased as investors and regulators become more concerned with the conflicts of interest that the analysts face. Kadan et al. (2009) examine the informativeness of analyst recommendations by measuring market reactions to the 2003 Global Analyst Research Settlement (the Global Settlement), a US regulation established to mitigate the interdependence between the research and investment divisions within the same banking entity. They reported that since the settlement, optimistic recommendations have become less frequent and forecasts have become more informative. Wu et al. (2017) further examine the effect of the Global Settlement on analyst optimism in stock recommendations surrounding merger and acquisition (M&A) announcements, where an affiliated analyst's employer is an M&A advisor for the covered firm. They note a greater reduction in the relative optimism for affiliated US analysts than for affiliated analysts from non-US countries. Furthermore, Tseng and Wilson (2020) report reductions in analyst optimism following the changes to the analyst recommendation rating systems induced by the implementation of NASD 2711. Meanwhile, Gu and Xue (2008) argued that the presence of independent analysts can act as a disciplinary measure for non-independent analysts. They find that non-independent analysts' forecast accuracy was about 20 % higher when independent analysts issued reports for the same firms as non-independent analysts. Furthermore, the market has been reported to react less strongly to optimistic recommendations made by affiliated analysts. For example, the average daily abnormal return of buy recommendations made by independent analysts is 3.1 basis points higher than that of those announced by non-independent analysts from investment banks (Barber et al., 2007). In the setting of a chaebol-affiliation between financial and non-financial firms, Lim and Kim (2019) investigate the market reaction to chaebol analysts' recommendations of other member companies within the same business group. They find that investors do recognize this optimistic bias in the "buy" recommendations of chaebol-affiliated analysts and that the market reaction to such reports is weaker compared with other analyst recommendations.

Furthermore, chaebol groups tend to own multiple financial institutions. For example, Samsung Group owns subsidiaries such as Samsung Life Insurance, Samsung Fire & Marine Insurance, Samsung Card, Samsung Securities, Samsung Asset Management, and Samsung Venture Investment. These separate firms provide financial services across the financial sector, allowing each member firm to collect market-wide information through diverse channels. Subsequently, the business group can utilize the research and financial resources of multiple financial firms within the group to achieve strategic goals. Moreover, employees in the same chaebol group regularly communicate via a group-level intranet portal service and through close business ties. They also share human resources by allowing the movement of employees among member firms (Lim and Jung, 2012). Some chaebol groups even strategically locate their financial firms close together to facilitate this communication between employees within the group.¹¹ The information and research capacities formally and informally shared among the member firms can make the chaebol brokerage firm more effective than an independent brokerage firm. Furthermore, buy-side analysts and fund managers from the AMC and sell-side analysts from the brokerage firm can interact easily, sharing exclusive research information on their covered stocks using various group communication channels. This information sharing can enable sell-side analysts to provide more accurate forecasts for their affiliated stocks.¹² Li et al. (2021) demonstrated that an information channel between brokerage firms and AMCs exists when the information collected by brokers from insider trading increases both the accuracy of affiliated analysts' reports and the profitability of affiliated mutual funds.

Given chaebol groups' greater research capacity and information pool, providing selectively optimistic reports while taking advantage of information sharing may be the optimal strategy for analysts and affiliated fund managers. By cooperating closely with fund managers, analysts can provide accurate recommendations and thus maintain their reputation and credibility. Based on their reputation, analysts can maximize the benefits accruing to their affiliated AMCs by releasing biased reports on certain affiliated stocks, especially those most valuable to the AMCs. If the total amount invested in a stock is not sufficiently large, analyst recommendations will not substantially affect the profits of affiliated AMCs or the chaebol group. However, if the funding amount increases, the affiliated analysts may be compelled to offer more favorable recommendations. In line with this selective optimism argument, we present the following hypotheses:

H2a. *Analysts in a chaebol group provide more accurate forecasts for stocks in which an affiliated AMC in the same chaebol group invests than*

¹⁰ We thank the anonymous reviewer for raising this point.

¹¹ Samsung Group, for example, moved Samsung Securities, Samsung Asset Management, and Samsung Life Insurance into the same building. The primary goal of the movement was to create synergy among employees in the financial industry through close cooperation and frequent meetings (The Korea Economic Daily, Samsung Group's Financial Units Open "Seocho-dong" Era, August 16, 2016; <https://english.hankyung.com/business/2016/08/16/1137001/span-classkeywordsamsungspan-groups-financial-units-open-span-classkeywordseochospandong-era> [in Korean]).

¹² Securities firms often play an important role in the internal capital market within a chaebol group (Shin and Park, 1999). Informal interviews conducted with analysts in major brokerage firms in Korea revealed that securities firms are often considered strategically more important within chaebol groups than AMCs. Moreover, employees in these firms who are close to retirement or not performing well often move to an affiliated AMC; such movement within the business group is common regardless of the employees' level or experience. This anecdotal evidence indicates that key information is likely to flow from other member firms to the securities firm in the chaebol group given its strategic importance.

for other stocks..

H2b. *Analyst optimism (forecast accuracy) increases (decreases) as the amount of funding invested in affiliated stocks allocated by an affiliated AMC increases*

3. Sample selection and research design

3.1. Sample selection

We combined the following databases to construct our sample. First, all earnings forecasts and stock recommendations were obtained from the DataGuidePro database for non-financial companies listed on the Korean Stock Exchange and the Korean Securities Dealers Automated Quotation from July 1, 2000, to December 31, 2016.¹³ Moreover, the monthly fund holdings of each equity mutual fund offered during the sample period are provided by ZEROIN and the Asset Management Association of Korea.¹⁴ The Korean mutual fund holdings data are more detailed than other countries' databases because the full holdings details of all financial instruments, such as equity, bonds, and derivatives, are provided monthly. For each analyst forecast and recommendation, we identified whether the analyst who issues the forecast belongs to a chaebol brokerage firm and whether the recommended stock is included in a fund portfolio managed by an affiliated fund manager (i.e., affiliated stock). Prior studies, such as Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024), focus on chaebol subsidiaries followed by chaebol-affiliated analysts. In our research setting, an affiliated stock is not necessarily a fellow subsidiary firm belonging to the same chaebol group, as we focus on firms held by chaebol-affiliated AMCs. Fig. 1 depicts these different types of chaebol-affiliated stocks. Our definition of affiliated stocks includes both type 1 and type 3 listed stocks in the figure.¹⁵ Chaebol affiliations are identified based on the list of business groups provided by the Korea Fair Trade Commission (KFTC).¹⁶

To alleviate the effects of reiteration, we use the most recent analyst forecasts prior to the actual earnings reporting dates for each year, which are obtained from the TS-2000 database. To measure the relative optimism in earnings forecasts and stock recommendations, we eliminate stock recommendations and earnings forecasts if the recommended stocks are followed by only one analyst.¹⁷ Finally, we exclude observations with missing values to generate control variables. Table 1 describes the study's sample selection process. The final sample includes 86,320 earnings forecasts and 79,712 stock recommendations.¹⁸

Table 2 presents the distribution of analyst earnings forecasts in our final sample.¹⁹ Panel A shows the distribution of earnings forecasts by year. Earnings forecasts are shown to be evenly distributed across our sample period with no apparent time-series pattern. Panel B shows the distribution of earnings forecasts by industry, classified according to the Korean Standard Industrial Code. Most forecasts are found in the manufacturing industry (52.74 %), followed by the high-tech (11.80 %) and information and communication technology industries (11.73 %).²⁰

3.2. Research design

To test our hypotheses, we employ *Relative recommendation* as the dependent variable following Firth et al. (2013). First, the level of an analyst's stock recommendations is coded as 4 for "Strong Buy," 3 for "Buy," 2 for "Hold," 1 for "Underperform," and 0 for "Sell." The *Relative recommendation* variable is calculated as the individual stock recommendation minus the median stock recommendation from all recommendations issued by analysts covering the same stock for the month. Then, the following model is estimated:

¹³ Lim and Jung (2012) and Song et al. (2012) also use analyst forecast and stock recommendation data taken from this source.

¹⁴ In Korea, the term "mutual fund" is narrowly defined as a "closed-end fund." The more popular "open-end" mutual funds are known as "beneficiary certificates." For consistency with previous studies, we include both types of mutual funds (i.e., closed-end mutual funds and beneficiary certificates) in our sample but exclude private equity funds.

¹⁵ Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024) examine cases in which chaebol-affiliated analysts follow their fellow subsidy firms in the chaebol group (i.e., type 2 and type 3 listed stocks in the figure). Non-affiliated stocks in our research setting include the following firms: those covered by analysts from a chaebol brokerage but not held by a chaebol-affiliated AMC, those held by a chaebol AMC but not followed by chaebol-affiliated analysts, and those not covered by either analysts from chaebol brokerages or chaebol AMCs, irrespective of whether these firms are chaebol subsidiaries.

¹⁶ The KFTC defines a business group as a collection of companies that functions as one economic entity with a common source of control (e.g., a single controlling shareholder, his/her relatives, or their affiliated companies) owning more than 30% of the total equity value of the company.

¹⁷ When different cutoff points, such as three, four, or five analysts following the firm, are employed, the results are not qualitatively different from our main results.

¹⁸ The earnings forecasts sample is larger than the stock recommendations sample because we include earnings forecasts for all future financial years, following Lim and Jung (2012). We also re-run our main regression model in Equation (2) using earnings forecasts for the next financial year only. The results (untabulated) are qualitatively the same.

¹⁹ The distribution of stock recommendations is similar to that of analyst earnings forecasts and is thus untabulated for simplicity.

²⁰ The high concentration of manufacturing firms in our sample reflects Korea's manufacturing-intensive economy and is comparable with the distribution in the larger population. In 2016, for instance, around 67% of all listed companies in Korea belonged to the manufacturing sector. Our main results are qualitatively the same when manufacturing firms are excluded from the sample.

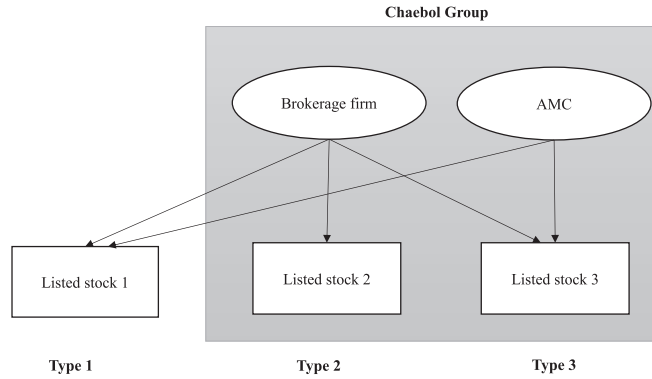


Fig. 1. Chaebol affiliation types.

Table 1
Sample construction.

Panel A: Stock recommendations		
	Frequency of stock recommendations	Percentage of stock recommendations
All stock recommendations for non-financial firms on DataGuidePro from July 2001 to December 2016	520,226	
<i>Affiliated</i> = 0	475,184	91.34 %
<i>Affiliated</i> = 1	45,042	8.66 %
Less: Recommendations other than the most recent recommendations before the actual earnings announcement date for a year	(435,164)	
Less: Recommendations for firms followed by fewer than two analysts	(2,354)	
Less: Recommendations with missing control variables	(305)	
Final sample:	79,712	
<i>Affiliated</i> = 0	72,018	90.35 %
<i>Affiliated</i> = 1	7,694	9.65 %
Panel B: Analyst earnings forecasts		
	Frequency of earnings forecasts	Percentage of earnings forecasts
All analyst earnings forecasts for non-financial firms on DataGuidePro from July 2001 to December 2016	1,174,839	
<i>Affiliated</i> = 0	1,076,889	91.66 %
<i>Affiliated</i> = 1	97,951	8.34 %
Less: Earnings forecasts other than the most recent forecasts before the actual earnings announcement date for a year	(1,080,213)	
Less: Earnings forecasts for firms followed by fewer than two analysts	(42)	
Less: Earnings forecasts with missing control variables	(8,264)	
Final sample:	86,320	
<i>Affiliated</i> = 0	78,513	90.96 %
<i>Affiliated</i> = 1	7,807	9.04 %

Note: This table shows the sample selection process. See Appendix A for variable definitions.

$$\begin{aligned}
 \text{Relative recommendation}_{i,j,t} = & \beta_0 + \beta_1 \text{Affiliated}_{i,j,t} + \beta_2 \text{FAMT}_{i,j,t} + \beta_3 \text{Funded}_{i,j,t} + \beta_4 \text{BrokerChaebol}_{i,j,t} + \beta_5 \text{FirmChaebol}_{i,j,t} \\
 & + \beta_6 \text{FirmSize}_{i,j,t} + \beta_7 \text{Career experience}_{i,j,t} + \beta_8 \text{Firm specific experience}_{i,j,t} + \beta_9 \text{Firm coverage}_{i,j,t} + \beta_{10} \text{Industry coverage}_{i,j,t} \\
 & + \beta_{11} \text{Broker size}_{i,j,t} + \beta_{12} \text{Analyst followings}_{i,j,t} + \beta_{13} \text{Forecast accuracy}_{i,j,t} + \text{Year fixed effects} + \text{Industry fixed effects} + \varepsilon_{i,j,t},
 \end{aligned} \quad (1)$$

where i , j , and t denote the analyst, covered stock, and year, respectively. Our main independent variable, *Affiliated*, is a dummy variable that equals 1 if the recommendation is issued by affiliated analysts for affiliated stocks and 0 otherwise. If chaebol-affiliated analysts release more favorable recommendations for affiliated stocks, consistent with H1, the coefficient of *Affiliated*, β_1 , would be positive. We also include the amount invested in an affiliated stock by creating the *FAMT* variable to test the selective optimism augmentation of H2a and H2b. Following Mola and Guidolin (2009), we measure *FAMT* as the total natural log of the amount invested (per million Korean won) by an affiliated AMC for individual affiliated stocks. By construct, this variable incorporates the interaction feature with our main variable of interest, *Affiliated*. It has a value only for affiliated stocks and is 0 for stocks that are not held by affiliated AMCs or when there is no affiliated AMC. If affiliated analysts provide more optimistic recommendations for affiliated stocks as the amount of funding invested in the stocks increases, the sign of *FAMT*, β_2 , would be positive, which is consistent with H2b.

Table 2
Sample distribution.

Panel A: Distribution by year		
Year	Frequency	Percentage (%)
2001	3,561	4.47
2002	5,980	7.50
2003	6,539	8.20
2004	6,239	7.83
2005	6,738	8.45
2006	5,970	7.49
2007	5,837	7.32
2008	5,379	6.75
2009	5,508	6.91
2010	4,802	6.02
2011	3,792	4.76
2012	3,459	4.34
2013	3,480	4.37
2014	4,175	5.24
2015	4,357	5.47
2016	3,896	4.89
Total	79,712	
Panel B: Distribution by industry		
Industry classification	Frequency	Percentage (%)
Construction	3,222	4.04
Mining and quarrying	9	0.01
Education	489	0.61
Financial and insurance activities	6,762	8.49
Agriculture, forestry, and fishing	58	0.07
Wholesale and retail service	4,414	5.54
Real estate, renting, and leasing	15	0.02
Business facilities and management services	701	0.88
Accommodation and food service	51	0.06
Arts, sports, and leisure services	743	0.93
Transportation	1,952	2.45
Electricity, gas, steam, and water supply	1,288	1.62
Professional, scientific, and technical activities	9,506	11.93
Manufacturing	40,484	50.81
Information and communications	9,798	12.30
Sewerage, waste management, materials recovery, and remediation activities	34	0.04
Membership organizations, repair, and other personal services	186	0.23
Total	79,712	

We control for the firm-, brokerage firm-, and analyst-specific characteristics that have been found to affect analysts' forecasts in the studies of [Lim and Jung \(2012\)](#), [Song et al. \(2012\)](#), and [Firth et al. \(2013\)](#). Specifically, we control for the following firm characteristics. *Firm size* is the logarithmic value of the recommended firm's market capitalization. *FirmChaebol* is a dummy variable that equals 1 if the target firm belongs to a chaebol group and 0 otherwise. *Analyst following* is the number of analysts following the recommended firm at the end of the year. To control for brokerage firm characteristics, we include *Broker size*, which is the number of analysts at a brokerage firm, and *BrokerChaebol*, a dummy variable whose value is equal to 1 if the brokerage firm belongs to a chaebol group and 0 otherwise. Finally, we control for the following analyst characteristics. *Firm coverage* and *Industry coverage* are the number of companies and industries, respectively, covered by the analyst each year. *Career experience* is the number of years since the analyst was first listed in the DataGuidePro database. *Firm-specific experience* is the number of years of experience of a particular firm since the analyst's first recommendation appeared in the DataGuidePro database.

Next, following [Hong and Kubik \(2003\)](#), we define analyst forecast accuracy (*Forecast accuracy*) as the absolute value of the difference between individual forecasted earnings and actual reported earnings, which is scaled by price and multiplied by -1 .

To further test [H2a](#), we employ the accuracy of analysts' forecasts as a dependent variable.

$$\begin{aligned}
 \text{Forecast accuracy}_{i,j,t} = & \beta_0 + \beta_1 \text{Affiliated}_{i,j,t} + \beta_2 \text{FAMT}_{i,j,t} + \beta_3 \text{Funded}_{i,j,t} + \beta_4 \text{BrokerChaebol}_{i,j,t} + \beta_5 \text{FirmChaebol}_{i,j,t} + \beta_6 \text{Firm size}_{i,j,t} \\
 & + \beta_7 \text{Career experience}_{i,j,t} + \beta_8 \text{Firm specific experience}_{i,j,t} + \beta_9 \text{Firm coverage}_{i,j,t} + \beta_{10} \text{Industry coverage}_{i,j,t} \\
 & + \beta_{11} \text{Broker size}_{i,j,t} + \beta_{12} \text{Analyst followings}_{i,j,t} + \beta_{13} \text{Forecast horizon}_{i,j,t} + \text{Year fixed effects} + \text{Industry fixed effects} + \varepsilon_{i,j,t},
 \end{aligned} \tag{2}$$

where i, j , and t denote the analyst, covered stock, and year, respectively. If chaebol-affiliated analysts release more accurate forecasts for affiliated stocks, consistent with [H2a](#), then the coefficient of *Affiliated*, β_1 , would be positive. For [H2b](#), as the amount of funding invested in the affiliated stocks by AMCs increases, the coefficient of *FAMT*, β_2 , would be negative.

The control variables used in Equation (1) are also included in Equation (2) except for *Forecast accuracy*, which is replaced by

Forecast horizon. *Forecast horizon* is the number of years between the earnings forecast date and the corresponding report date of the actual earnings on the TS-2000 database. We also control for year and industry fixed effects. All control variables are measured at year-end before the forecast's issuance. Detailed variable definitions are provided in [Appendix A](#).

4. Results

4.1. Descriptive statistics

[Table 3](#) presents the descriptive statistics of the variables used in the main regression Equations (1) and (2). The mean and median of *Relative recommendation* are -0.049 and 0 , respectively. The fact that these values are close to 0 implies that analysts tend to conform toward the median recommendation levels. Herding behavior is also confirmed by the mean (2.767) and median (3.000) of *Recommendation*, where 3 represents a neutral “hold” recommendation. *Forecast accuracy* has a mean value of -0.089 with a median of -0.025 . The mean value of our main independent variable *Affiliated* indicates that 9.0% of earnings forecasts are for affiliated stocks. *FAMT* has 2.051 and 0 as its mean and median, respectively.²¹ *Affiliated* has a mean value of 0.110 , indicating that 11% of the reports are on affiliated stocks. On the other hand, *Funded* has a mean value of 72.6% , showing that a much larger number of stocks are held by AMCs. For target firms, around 45.1% of the reports are on subsidiaries within a chaebol group (*FirmChaebol*). Analyst characteristics show that the average analyst has worked for only 4 years in the same brokerage (*Career experience*) with even less *Firm-specific experience* (2.147 years). The busiest analysts cover more than 16 companies within a year.

When the sample is separated into affiliated and non-affiliated stocks in panel B, all the variables show statistically significant differences. Affiliated stocks tend to be less favorable on relative recommendations but have more accurate forecasts. Affiliated stocks are more likely to be stocks within a chaebol group, where 62.1% of the covered stocks are chaebol stocks. We also observe that analysts covering affiliated stocks tend to have more experience (5.313 vs. 3.875 years) and cover a smaller number of firms (11.019 vs. 13.651). These analyst characteristics provide univariate evidence that analysts following affiliated stocks are more senior and more specialized to a small number of stocks.

4.2. Correlations

[Table 4](#) presents the Pearson (upper-right triangle) and Spearman (lower-left triangle) correlations among our dependent and independent variables. In both the Pearson and Spearman matrices, we find that *Affiliated* is negatively correlated with *Relative recommendation*, which means that recommendations by affiliated analysts are less optimistic than those by others. In addition, *Affiliated* is positively correlated with *Forecast accuracy*, implying that forecasted earnings for affiliated stocks are more accurate than those for others.

4.3. Multivariate analysis

[Table 5](#) presents our multivariate regression results with *Relative recommendation* and *Forecast accuracy* as the dependent variables. In column (1), with *Relative recommendation* as the dependent variable, we use $79,712$ stock recommendation-year observations to examine the impact of our hypothesized relationship on affiliated stocks. The coefficient of *Affiliated* is significantly negative (coeff. = -0.027 , t -stats = -5.00), thereby rejecting [H1](#). In contrast, the coefficient of *FAMT* is significantly positive (coeff. = 0.001 , t -stats = 3.86), supporting [H2b](#). With the average value of *FAMT* being 22.6802 , the combined effect is close to 0 for an average firm, indicating that the negative effect of *Affiliated* is offset by the positive effect of *FAMT*. This result implies that although analyst recommendations for affiliated stocks are generally less optimistic than those for others, they become more optimistic as the amount of funding invested in stocks increases. For the affiliated stocks, which have an average funding amount of 22.68 , the combined impact on *Relative recommendation* is close to 0 , which means that the negative impact of *Affiliated* is offset by the positive impact of *FAMT*.²² Note that the first and third quintiles of *Relative recommendation* are 0 . This suggests that a small value above the mean *FAMT* for affiliated stocks would place these stocks within the top 25% of highly recommended stocks based on relative recommendation measures.

When the accuracy of the earnings forecasts is tested, the coefficient of *Affiliated* in column (3) is significantly positive (coeff. = 0.029 ; t -stats = 1.73), which is consistent with [H2a](#). This result implies that the earnings forecasts issued for affiliated stocks are more accurate than those for non-affiliated stocks. In addition, the coefficient of *FAMT* is significantly negative (coeff. = -0.002 , t -stats = -2.45), indicating that accuracy deteriorates as the funding amount for the stock within the affiliated AMC increases. These results support our selective optimism argument presented in [H2a](#) and [H2b](#).

Columns (1) and (3) present the results of regression analyses based on the whole sample, which includes analysts working for both chaebol and non-chaebol brokerage firms. This may make it difficult to tell whether our results are mainly driven by different treatment of affiliated and non-affiliated stocks by analysts belonging to chaebol brokerage firms or by heterogeneous forecasting behaviors between analysts working for chaebol-affiliated and non-chaebol-affiliated brokerage firms. To confirm that our results are

²¹ The statistics for *FAMT* in [Table 3](#) include all sample stocks. When only affiliated stocks are considered (i.e., *Affiliated*=1), *FAMT* has 22.6802 and 22.8297 as its mean and median, respectively.

²² The combined impact of *FAMT* on *Relative recommendation* for affiliated stocks is calculated as follows: $-0.027 + 22.6802 \times 0.001$. The results remain unchanged when *FAMT* is replaced with a decile score of such variable.

Table 3
Descriptive statistics.

Panel A: Descriptive statistics of variables in our main research model						
Variables	N	Mean	Median	S.D.	Q1	Q3
<i>Relative recommendation</i>	79,712	−0.049	0.000	0.402	0.000	0.000
<i>Recommendation</i>	79,712	2.767	3.000	0.459	3.000	3.000
<i>Forecast accuracy</i>	86,320	−0.089	−0.025	0.204	−0.081	−0.006
<i>Affiliated</i>	79,712	0.110	0.000	0.312	0.000	0.000
<i>FAMT</i>	79,712	9.934	0.000	11.116	0.000	0.000
<i>Funded</i>	79,712	0.726	1.000	0.446	0.000	1.000
<i>BrokerChaebol</i>	79,712	0.568	1.000	0.495	0.000	1.000
<i>FirmChaebol</i>	79,712	0.451	0.000	0.498	0.000	1.000
<i>Firm size</i>	79,712	13.957	14.088	1.816	12.612	15.336
<i>Career experience</i>	79,712	4.032	3.000	3.371	1.000	6.000
<i>Firm-specific experience</i>	79,712	2.147	1.000	2.580	0.000	3.000
<i>Firm coverage</i>	79,712	13.363	12.000	7.527	9.000	16.000
<i>Industry coverage</i>	79,712	2.670	2.000	1.442	2.000	3.000
<i>Broker size</i>	79,712	22.786	22.000	8.826	17.000	29.000
<i>Analyst following</i>	79,712	19.585	20.000	9.684	12.000	26.000
<i>Forecast horizon</i>	79,712	0.974	1.000	0.249	1.000	1.000
Panel B: Differences in characteristics between forecasts with and without Affiliation						
Variables	Affiliated=1		Affiliated=0		Mean difference	
	N	Mean	N	Mean	P-value	
<i>Relative recommendation</i>	8,734	−0.098	70,978	−0.043	0.000	***
<i>Recommendation</i>	8,734	2.806	70,978	2.762	0.000	***
<i>Forecast accuracy</i>	8,734	−0.065	70,978	−0.092	0.000	***
<i>FAMT</i>	8,734	10.894	70,978	0.000	0.000	***
<i>Funded</i>	8,734	1.000	70,978	0.693	0.000	***
<i>BrokerChaebol</i>	8,734	1.000	70,978	0.515	0.000	***
<i>FirmChaebol</i>	8,734	0.621	70,978	0.430	0.000	***
<i>Firm size</i>	8,734	14.889	70,978	13.842	0.000	***
<i>Career experience</i>	8,734	5.313	70,978	3.875	0.000	***
<i>Firm-specific experience</i>	8,734	2.902	70,978	2.054	0.000	***
<i>Firm coverage</i>	8,734	11.019	70,978	13.651	0.000	***
<i>Industry coverage</i>	8,734	2.411	70,978	2.701	0.000	***
<i>Broker size</i>	8,734	23.203	70,978	22.735	0.000	***
<i>Analyst following</i>	8,734	21.545	70,978	19.344	0.000	***
<i>Forecast horizon</i>	8,734	0.982	70,978	0.973	0.000	***

Note: Panel A of this table presents the descriptive statistics of the variables used in the main regression models. S.D. represents standard deviation. Q1 and Q3 represent the first and third quartiles, respectively. N denotes the number of observations. Panel B is a univariate comparison of the variables for subsamples where *Affiliated* is either 1 or 0. Detailed definitions of all variables in this table are provided in [Appendix A](#).

mainly driven by analysts from chaebol brokerage firms, we limit our sample to chaebol brokerages only and repeat our main regression tests, the results of which are shown in columns (2) and (4). Overall, they are consistent with our main findings that forecast accuracy is higher for affiliated stocks ([H2a](#)) but recommendations become more optimistically biased when the amount of funding allocated to the stock (i.e., *FAMT*) increases ([H2b](#)). To check for robustness, we introduce individual analysts' fixed effects to the main regression models to control for the possible impacts of the unobservable characteristics of reporting analysts. The results are qualitatively the same after including the fixed effects (untabulated).

4.4. Robustness tests

4.4.1. Heckman two-stage regression

While our sample includes both stocks in which mutual funds invest and those in which they do not invest, stocks classified as *Affiliated* must be included in mutual funds, by construct. However, there is the potential for sample selection bias caused by any systematic differences between stocks included in mutual funds and those that are not. Specifically, the former may have more information available in the market than the latter, resulting in more accurate and less optimistic analyst forecasts. In this case, the coefficients of *Affiliated* can be overestimated. Moreover, if analysts selectively choose to forecast for firms invested in mutual funds, this endogeneity can induce systematic bias in the analysts' forecasts ([McNichols and O'Brien, 1997](#); [O'Brien and Bhushan, 1990](#)).

To address this issue, we use the Heckman two-stage method. In the first step, we estimate a logit regression with *Funded* as the dependent variable, which equals 1 if a forecasted stock is included in any mutual funds and 0 otherwise. Following [Ljungqvist et al. \(2007\)](#) and [Firth et al. \(2013\)](#), we use *Broker industry coverage* as an instrumental variable, which is the ratio of the number of forecasts from a brokerage firm that cover stocks belonging to the given stock's industry to the total number of forecasts issued by the brokerage firm. In the second step, we re-estimate our regression Equations (1) and (2) with the *Inverse Mills' ratio* calculated from the first stage.

The results in panel A of [Table 6](#), columns (1) and (3), show the first-stage logit regression with *Funded* as the dependent variable.

Table 4

Pearson and Spearman correlations among variables of interest.

#	Variables	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	<i>Relative recommendation</i>	79,712	1.00	0.59 (0.00)	0.11 (0.00)	−0.04 (0.00)	0.00 (0.72)	−0.03 (0.00)	−0.05 (0.00)	−0.04 (0.00)	−0.07 (0.00)	−0.04 (0.00)	−0.05 (0.00)	0.01 (0.04)	0.02 (0.00)	−0.03 (0.00)	−0.08 (0.00)	−0.01 (0.03)
2	<i>Recommendation</i>	79,712	0.58 (0.00)	1.00	0.05 (0.00)	0.03 (0.00)	0.02 (0.00)	0.12 (0.00)	−0.10 (0.00)	0.04 (0.00)	0.11 (0.00)	0.10 (0.00)	0.02 (0.00)	−0.08 (0.00)	−0.06 (0.00)	−0.10 (0.00)	0.04 (0.00)	0.03 (0.00)
3	<i>Forecast accuracy</i>	86,320	0.12 (0.00)	0.05 (0.00)	1.00	0.04 (0.00)	0.04 (0.00)	0.12 (0.00)	−0.02 (0.00)	0.09 (0.00)	0.28 (0.00)	0.09 (0.00)	0.09 (0.00)	−0.05 (0.00)	−0.03 (0.00)	−0.04 (0.00)	0.16 (0.00)	−0.25 (0.00)
4	<i>Affiliation</i>	79,715	−0.04 (0.00)	0.03 (0.00)	0.06 (0.00)	1.00	0.19 (0.00)	0.22 (0.00)	0.31 (0.00)	0.12 (0.00)	0.18 (0.00)	0.13 (0.00)	0.10 (0.00)	−0.11 (0.00)	−0.06 (0.00)	0.02 (0.00)	0.07 (0.00)	0.01 (0.00)
5	<i>FAMT</i>	79,716	−0.04 (0.00)	0.03 (0.00)	0.06 (0.00)	1.00	1.00	0.04 (0.00)	0.06 (0.00)	0.05 (0.00)	0.09 (0.00)	0.02 (0.00)	0.02 (0.00)	−0.04 (0.00)	−0.03 (0.00)	0.00 (0.93)	0.06 (0.00)	0.01 (0.13)
6	<i>Fund</i>	79,717	−0.03 (0.00)	0.12 (0.00)	0.19 (0.00)	0.22 (0.00)	0.21 (0.00)	1.00	−0.07 (0.00)	0.11 (0.00)	0.22 (0.00)	0.32 (0.00)	0.18 (0.00)	−0.18 (0.00)	−0.09 (0.00)	−0.08 (0.00)	0.09 (0.00)	0.11 (0.00)
7	<i>BrokerChaebol</i>	79,718	−0.05 (0.00)	−0.10 (0.00)	−0.02 (0.00)	0.31 (0.00)	0.31 (0.00)	−0.07 (0.00)	1.00	0.00 (0.52)	−0.02 (0.00)	−0.02 (0.00)	0.03 (0.00)	0.04 (0.00)	0.04 (0.00)	0.21 (0.00)	0.00 (0.26)	−0.02 (0.00)
8	<i>FirmChaebol</i>	79,719	−0.04 (0.00)	0.03 (0.00)	0.12 (0.00)	0.12 (0.00)	0.12 (0.00)	0.11 (0.00)	0.00 (0.52)	1.00	0.53 (0.00)	0.13 (0.00)	0.18 (0.00)	−0.13 (0.00)	−0.04 (0.00)	−0.02 (0.00)	0.35 (0.00)	0.03 (0.00)
9	<i>Firm size</i>	79,720	−0.07 (0.00)	0.10 (0.00)	0.32 (0.00)	0.18 (0.00)	0.19 (0.00)	0.22 (0.00)	−0.02 (0.00)	0.54 (0.00)	1.00	0.25 (0.00)	0.29 (0.00)	−0.22 (0.00)	−0.19 (0.00)	−0.06 (0.00)	0.63 (0.00)	0.02 (0.00)
10	<i>Career experience</i>	79,721	−0.05 (0.00)	0.10 (0.00)	0.16 (0.00)	0.13 (0.00)	0.14 (0.00)	0.31 (0.00)	−0.02 (0.00)	0.14 (0.00)	0.27 (0.00)	1.00	0.65 (0.00)	0.01 (0.12)	−0.05 (0.00)	−0.04 (0.00)	0.00 (0.46)	0.08 (0.00)
11	<i>Firm-specific experience</i>	79,722	−0.05 (0.00)	−0.01 (0.00)	0.18 (0.00)	0.10 (0.00)	0.10 (0.00)	0.15 (0.00)	0.04 (0.00)	0.19 (0.00)	0.31 (0.00)	0.63 (0.00)	1.00	−0.06 (0.00)	−0.09 (0.00)	0.02 (0.00)	0.14 (0.00)	0.02 (0.00)
12	<i>Firm coverage</i>	79,723	0.01 (0.07)	−0.10 (0.00)	−0.07 (0.00)	−0.14 (0.00)	−0.14 (0.00)	−0.21 (0.00)	0.03 (0.00)	−0.15 (0.00)	−0.23 (0.00)	0.04 (0.00)	−0.01 (0.00)	1.00	0.49 (0.00)	0.01 (0.00)	−0.11 (0.00)	0.00 (0.93)
13	<i>Industry coverage</i>	79,724	0.02 (0.00)	−0.07 (0.00)	0.00 (0.54)	−0.07 (0.00)	−0.07 (0.00)	−0.10 (0.00)	0.04 (0.00)	−0.02 (0.00)	−0.19 (0.00)	−0.06 (0.00)	−0.09 (0.00)	0.43 (0.00)	1.00	0.03 (0.00)	−0.16 (0.00)	0.14 (0.00)
14	<i>Broker size</i>	79,725	−0.03 (0.00)	−0.08 (0.00)	−0.03 (0.00)	0.01 (0.05)	0.01 (0.04)	−0.05 (0.00)	0.19 (0.00)	−0.01 (0.03)	−0.04 (0.00)	0.01 (0.00)	0.06 (0.00)	−0.03 (0.00)	0.02 (0.00)	1.00	−0.05 (0.00)	−0.04 (0.00)
15	<i>Analyst following</i>	79,726	−0.08 (0.00)	0.03 (0.00)	0.20 (0.00)	0.08 (0.00)	0.08 (0.00)	0.10 (0.00)	0.00 (0.51)	0.35 (0.00)	0.62 (0.00)	0.02 (0.00)	0.20 (0.00)	−0.13 (0.00)	−0.17 (0.00)	−0.06 (0.00)	1.00	−0.01 (0.01)
16	<i>Forecast horizon</i>	79,727	−0.01 (0.07)	0.03 (0.00)	−0.42 (0.00)	0.01 (0.00)	0.01 (0.00)	0.11 (0.00)	−0.02 (0.00)	0.04 (0.00)	0.02 (0.00)	0.06 (0.00)	−0.02 (0.00)	−0.01 (0.00)	0.17 (0.00)	−0.04 (0.00)	−0.02 (0.00)	1.00

Note: Table 4 presents Pearson (upper-right triangle) and Spearman (lower-left triangle) correlations among the variables of interest used in the main regression models. N denotes the number of observations. Detailed definitions of all variables in this table are provided in Appendix A. Figures in parentheses are p-values.

Table 5
Forecast optimism and accuracy.

Independent variables	Relative recommendation Whole		Relative recommendation Chaebol Brokerage		Forecast accuracy Whole		Forecast accuracy Chaebol Brokerage	
	(1)		(2)		(3)		(4)	
<i>Affiliated</i>	−0.027 (−5.00)	***	−0.029 (−4.85)	***	0.029 (1.73)	*	0.035 (2.01)	**
<i>FAMT</i>	0.001 (3.86)	***	0.001 (3.72)	***	−0.002 (−2.45)	**	−0.002 (−2.99)	***
<i>Funded</i>	−0.005 (−1.28)		−0.005 (−0.86)		0.016 (8.64)	***	0.019 (7.26)	***
<i>BrokerChaebol</i>	−0.032 (−10.19)	***			−0.002 (−1.09)			
<i>FirmChaebol</i>	0.002 (0.47)		−0.007 (−1.36)		−0.044 (−25.70)	***	−0.039 (−16.26)	***
<i>Firm size</i>	−0.001 (−0.84)		−0.001 (−0.27)		0.044 (67.30)	***	0.043 (46.98)	***
<i>Career experience</i>	−0.001 (−3.49)	***	−0.002 (−1.63)		0.000 (−0.11)		0.001 (0.74)	
<i>Firm-specific experience</i>	0.003 (1.87)	*	−0.003 (−2.40)	**	−0.002 (−5.70)	***	−0.002 (−4.05)	***
<i>Firm coverage</i>	−0.001 (−7.86)	***	−0.001 (−0.34)		0.000 (−2.73)	***	−0.001 (−2.36)	**
<i>Industry coverage</i>	−0.003 (−13.84)	***	−0.001 (−0.13)		0.002 (2.99)	***	0.002 (2.88)	***
<i>Broker size</i>	−0.002 (−2.36)	**	−0.002 (−8.80)	***	0.000 (−2.63)	***	−0.001 (−1.60)	
<i>Analyst following</i>	−0.001 (−1.27)		−0.003 (−10.69)	***	−0.002 (−18.18)	***	−0.001 (−10.25)	***
<i>Forecast accuracy</i>	−0.029 (−4.42)	***	−0.040 (−4.33)	***				
<i>Forecast horizon</i>					−0.046 (−65.13)	***	−0.046 (−46.51)	***
Intercept	0.077 (1.02)		0.057 (0.58)		−0.529 (−17.64)	***	−0.528 (−13.20)	***
Industry fixed effect	Yes		Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes		Yes	
Adj. R ²	0.014		0.016		0.153		0.152	
[F-value] or { χ^2 }	[26.36]	***	[14.76]	***	[354.35]	***	[192.55]	***
N	79,712		43,899		86,320		45,897	

Note: Table 5 presents the results of the regression examining the optimistic bias in the stock recommendations and accuracy in the forecasted earnings by an analyst in the chaebol-affiliated mutual fund–brokerage firm business relationship. Columns (1) and (2) show the results of an OLS regression with *Relative recommendation* as the dependent variable, and columns (3) and (4) show the results using *Forecast accuracy* as the dependent variable. Numbers in parentheses are t-values. Detailed definitions of all variables in this table are provided in Appendix A. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively.

With *Relative recommendation* and *Forecast accuracy* as the dependent variables, columns (2) and (4), respectively, report the second-stage regression results after the *Inverse Mills' ratio* obtained from the first stage is controlled for. The *Inverse Mills' ratio* is statistically significant in both columns, confirming the necessity to control for selection bias. The second-stage results in column (2) regarding *Relative recommendation* show that the coefficient of *Affiliated* is significantly negative (coeff. = −0.027; t-stats = −5.03), whereas that of *FAMT* is significantly positive (coeff. = 0.001; t-stats = 3.84), echoing the results in Table 5. Consistently, when *Forecast accuracy* is the dependent variable in column (4), the coefficient of *Affiliated* is significantly positive (coeff. = 0.021; t-stats = 1.66), and that of *FAMT* is significantly negative (coeff. = −0.001; t-stats = 1.93), supporting the selective optimism hypotheses. This result indicates that our hypothesized relationship still holds when sample selection bias is controlled. To further check the robustness of our results, we perform an ordered logit regression with the coded level of recommendations as the dependent variable. The untabulated results confirm that the coefficient of *Affiliated* is still significantly negative. The overall results confirm the selective optimism argument presented in H2a and H2b.

4.4.2. Alternative measure for dependent variable

In this section, we adopt an alternative measure for the dependent variable. First, an alternative measure for optimism is introduced using the level of optimism in a forecast (*Forecast optimism*). It is calculated as the individual earnings forecast minus the average earnings forecast for the firm in the same target year, which is scaled by the standard deviation of forecasts for the same firm and target year. Using *Forecast optimism* as the dependent variable, we re-estimate Equation (2) and present the results in panel B of Table 6.

Column (1) shows the hypothesized relationship between analysts' optimism and affiliated stocks using 86,320 earnings forecast-year observations. The coefficient of *Affiliated* is significantly negative (coeff. = −0.390, t-stats = −5.04), whereas that of *FAMT* is significantly positive (coeff. = 0.048, t-stats = 5.55), thereby supporting H2b. For the affiliated stocks, which have an average funding

Table 6
Stock recommendations.

Panel A. Heckman two-stage regression								
	<i>Funded = 1</i>		<i>Relative recommendation</i>		<i>Funded = 1</i>		<i>Forecast accuracy</i>	
Independent variables	(1)		(2)		(3)		(4)	
<i>Affiliated</i>			−0.027 (−5.03)	***			0.021 (1.66)	*
<i>FAMT</i>			0.001 (3.84)	***			−0.001 (−1.93)	*
<i>Funded</i>			−0.004 (−0.84)				0.013 (6.53)	***
<i>BrokerChaebol</i>	0.021 (1.55)		−0.032 (−10.15)	***	0.028 (2.21)	**	−0.002 (−1.31)	
<i>FirmChaebol</i>	−0.063 (−3.79)	***	0.002 (0.41)		−0.176 (−10.65)	***	−0.042 (−24.22)	***
<i>Firm size</i>	−0.075 (−13.23)	***	−0.002 (−1.25)		0.007 (1.22)		0.044 (67.59)	***
<i>Career experience</i>	−0.004 (−4.47)	***	−0.001 (−2.24)	**	0.020 (4.82)	***	0.000 (−0.78)	
<i>Firm-specific experience</i>	0.016 (2.71)	***	−0.001 (−1.46)		−0.027 (−6.14)	***	−0.002 (−4.60)	***
<i>Firm coverage</i>	−0.001 (−1.22)		−0.001 (−3.64)	***	−0.005 (−6.02)	***	0.000 (−1.84)	*
<i>Industry coverage</i>	0.032 (34.16)	***	0.003 (1.99)	**	0.005 (0.99)		0.002 (2.57)	**
<i>Broker size</i>	0.017 (3.43)	***	−0.001 (−7.89)	***	−0.002 (−2.41)	**	0.000 (−2.41)	**
<i>Analyst following</i>	−0.034 (−7.14)	***	−0.003 (−11.19)	***	0.034 (37.78)	***	−0.002 (−19.83)	***
<i>Forecast accuracy</i>	0.149 (5.68)	***	−0.028 (−4.25)	***				
<i>Forecast horizon</i>					−0.012 (−1.83)	*	−0.046 (−65.14)	***
<i>Broker industry coverage</i>	−0.303 (−2.49)	**			−0.559 (−5.19)	***		
<i>Inverse Mills' ratio</i>			0.018 (1.71)	*			−0.040 (−8.23)	***
Intercept	5.197 (0.32)		0.082 (1.08)		4.225 (0.19)		−0.524 (−17.47)	***
Industry fixed effect	Yes		Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes		Yes	
Adj. R ²	0.580		0.014		0.562		0.153	
[F-value] or { χ^2 }	{40827.7}	***	[13.00]	***	{41518.6}	***	[348.25]	***
N	79,712		79,712		86,320		86,320	
Panel B. Alternative measure (<i>Forecast optimism</i>)								
	<i>Forecast optimism</i>		<i>Funded=1</i>		<i>Forecast optimism</i>			
Independent variables	(1)		(2)		(3)			
<i>Affiliated</i>	−0.390 (−5.04)	***					−0.407 (−5.25)	***
<i>FAMT</i>	0.017 (5.04)	***					0.018 (5.27)	***
<i>Funded</i>	0.048 (5.55)	***					0.040 (4.52)	***
<i>BrokerChaebol</i>	−0.012 (−1.79)	*	0.028 (2.21)	**			−0.012 (−1.89)	*
<i>FirmChaebol</i>	−0.008 (−1.06)		−0.176 (−10.65)	***			−0.004 (−0.48)	
<i>Firm size</i>	−0.006 (−1.94)	*	0.007 (1.22)				−0.005 (−1.80)	*
<i>Career experience</i>	0.003 (2.21)	**	0.020 (4.82)	***			0.002 (1.88)	*
<i>Firm-specific experience</i>	−0.009 (−5.89)	***	−0.027 (−6.14)	***			−0.008 (−5.34)	***
<i>Firm coverage</i>	−0.006 (−13.42)	***	−0.005 (−6.02)	***			−0.006 (−12.93)	***
<i>Industry coverage</i>	0.017 (6.10)	***	0.005 (0.99)				0.016 (5.89)	***

(continued on next page)

Table 6 (continued)

Panel B. Alternative measure (<i>Forecast optimism</i>)						
	<i>Forecast optimism</i>		<i>Funded=1</i>		<i>Forecast optimism</i>	
Independent variables	(1)		(2)		(3)	
<i>Broker size</i>	−0.003 (−7.85)	***	−0.002 (−2.41)	**	−0.003 (−7.74)	***
<i>Analyst following</i>	0.008 (18.39)	***	0.034 (37.78)	***	0.007 (13.76)	***
<i>Forecast horizon</i>	0.316 (96.60)	***	−0.012 (−1.83)	*	0.316 (96.61)	***
<i>Broker industry coverage</i>			−0.559 (−5.19)	***		
<i>Inverse Mills' ratio</i>					−0.086 (−3.86)	***
Intercept	−0.376 (−2.73)	***	4.225 (0.19)		−0.365 (−2.65)	***
Industry fixed effect	Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes	
Adj. R ²	0.124		0.562		0.124	
[F-value] or { χ^2 }	[279.28]	***	{41518.6}	***	[273.44]	***
N	86,320		86,320		86,320	

Note: Table 6 panel A reports the Heckman selection model for optimistic bias in the stock recommendations and accuracy in the forecasted earnings by an analyst in the chaebol-affiliated mutual fund-brokerage firm business relationship. Results of the first-stage logit regression with *Funded* as the dependent variable are presented in columns (1) and (3). Following Firth et al. (2013), we used *Broker industry coverage* as an instrumental variable. Columns (2) and (4) report the second-stage regression result with *Relative recommendation* and *Forecast accuracy* as the dependent variables after controlling for the *inverse Mills' ratio* obtained from the first stage. Panel B repeats the main analysis in Table 5 using an alternative measure of *Forecast optimism*. Column (1) shows the OLS regression results, and columns (2) and (3) show the Heckman selection regression results. Numbers in parentheses are t-values. Detailed definitions of all variables in this table are provided in Appendix A. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively.

amount of 22.68, the combined impact on *Forecast optimism* is greater than 0 for an average firm, which means that the negative impact of *Affiliated* is dominated by the positive impact of *FAMT* for the affiliated stock. This result implies that although the earnings forecasts for affiliated stocks are generally less optimistic than those for others, they become more positively biased and optimistic as the amount of funding invested in such stocks increases. When the funding amount goes above the mean value, the combined impact on *Forecast optimism* for affiliated stocks becomes positive. The results remain qualitatively the same in column (2) when *Funded* (i.e., a dummy variable for the stock included in a fund) is included as an additional control variable. The inclusion of a stock in mutual funds indicates the popularity of the stock as an investment and can be linked to analyst optimism.

Furthermore, we employ an alternative measure for analyst forecasts. Our main regression uses analyst earnings forecasts immediately before earnings announcements to capture the latest forecasts. However, prior research has shown that managers may guide analysts to revise their earnings forecasts downward closer to the earnings announcement dates to make the forecasts easier to meet or beat (Matsumoto, 2002), raising a concern that this tendency may influence our dependent variable. To address this, we further check the robustness of our results by replacing the dependent variable in the main regression model with the annual average of all analyst earnings forecasts issued before the earnings announcements. The untabulated results confirm that the coefficients of our key variables, *Affiliated* and *FAMT*, are statistically significant and consistent with the selective optimism hypothesis.²³

5. Additional tests

5.1. Affiliated stock types

Our empirical results support the selective optimism hypothesis. In this section, we further assess how AMCs might benefit by working closely with their affiliated analysts. H2b already tested the idea that affiliated analysts are strongly motivated to selectively provide biased reports on stocks that are more valuable to fellow AMCs. To investigate this in greater depth, we perform additional tests to determine if affiliated analysts indeed give a certain type of affiliated stock in a particular situation more favorable forecasts and recommendations.

5.1.1. Recommendation changes

When new stock is included in a fund portfolio, the returns on the fund are likely evaluated in the market and used as an estimate proxy for the capability of the fund manager. Thus, when new stocks are initially included in a fund, the fund manager may ask the affiliated analysts to help boost the performance of this newly created fund. To test this argument, we examine the changes in

²³ We thank the anonymous reviewer for suggesting this test.

recommendations made during the initial year of a new stock's inclusion in the fund and during the termination year of the stock coverage from the fund. Specifically, we perform an OLS regression with $\Delta Recommendation$ as the dependent variable and logit regressions with *Upgrade* and *Downgrade*. $\Delta Recommendation$ is an indicator variable that is equal to 1 for an upgraded stock recommendation, -1 for a downgraded stock recommendation, and 0 for an unchanged stock recommendation. *Upgrade* (*Downgrade*) is a dummy variable that is equal to 1 if an analyst issues a stock recommendation that is upgraded (downgraded) relative to the previous recommendation and 0 otherwise. The new independent variable of interest *Affiliation_Start* (*Affiliation_End*) is a dummy variable that is equal to 1 if it is the first year that a recommended stock is included (excluded from) in the affiliated fund and 0 otherwise. The regression results are shown in panel A of Table 7. Consistent with our assumption, the coefficient of *Affiliation_Start* is significantly positive (coeff. = 0.169, *t*-stats = 1.67) when *Upgrade* is used as the dependent variable and significantly negative (coeff. = -0.408 , *t*-stats = -3.52) when *Downgrade* is used as the dependent variable. The result implies that affiliated analysts are more (less) likely to upgrade (downgrade) their recommendations in the first year that a stock is newly included in a fund. However, the coefficients of *Affiliation_End* are not statistically significant for *Upgrade* and *Downgrade*. The results for $\Delta Recommendation$ are consistent with those for *Upgrade* and *Downgrade*, showing a significantly positive coefficient for *Affiliation_Start* (coeff. = 0.029, *t*-stats = 3.53) but an insignificant coefficient for *Affiliation_End*. These results confirm that affiliated analysts create more optimistic recommendations for stocks newly included in funds held by affiliated mutual fund managers during the initial year of inclusion.

5.1.2. Management fees

Mutual fund companies charge different levels of management fees to reflect the different contributions that those funds make to firm profits.²⁴ The results for the funding amounts (i.e., *FAMT*) indicate that affiliated analysts may issue distorted recommendations for stocks that are more valuable to affiliated AMCs. Likewise, they may issue more favorable recommendations for stocks included in funds that carry high management fees, as doing so can contribute to the profits of the mutual fund firm and the entire business group. We use the average annual fee percentage charged to clients for the funds linked to the affiliated stock (*Management fee*) to capture this effect. With the new variable, we re-estimate our main regression models in Equations (1) and (2). Table 7 panel B presents the regression results for our main dependent variables: *Relative recommendation* and *Forecast accuracy*. Each dependent variable is tested for two subsamples with management fee data (i.e., *Funded* = 1 and *Affiliated* = 1). Among our sample firms in which mutual funds invest, 15,208 recommendations with management fee data are available, of which 509 are issued by affiliated analysts. Moreover, there are 16,548 forecast observations with management fee data, 484 of which are issued by affiliated analysts.

In column (1), *Relative recommendation* is positively related to management fees for affiliated stocks (coeff. = 0.118, *t*-stats = 2.27), while the management fee variable itself is not associated with *Relative recommendation*. In contrast, forecast accuracy is negatively related to management fees in column (3) (coeff. = -0.020 , *t*-stats = -4.43), and the negative effect is more than doubled (coeff. = -0.026 , *t*-stats = -1.71) when forecasts are issued by affiliated analysts. This result implies that analysts issue more favorable but less accurate forecasts for affiliated stocks with higher management fees than other stocks, confirming our assumption. The results from a subsample of affiliated stocks only in columns (2) and (4) also show the positive (negative) relationship between *Management fee* and *Relative recommendation* (*Forecast accuracy*). Provided that *Affiliated* is still negatively associated with *Relative recommendation* in column (1) and positively associated with *Forecast accuracy* in column (3), the overall result confirms that affiliated analysts' forecasts and recommendation behavior follow the selective optimism strategy.

5.2. Optimistic bias for non-financial firms within same chaebol family

In addition, Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024) argue that a systematic bias emerges in the recommendations and earnings forecasts issued by chaebol-affiliated analysts who release recommendations on a fellow subsidiary firm within the same chaebol family. In our research setting, affiliated stocks are those in which affiliated AMCs invest. Thus, the affiliated stocks defined in our context are not necessarily fellow subsidiary firms belonging to the same chaebol groups. As noted in Fig. 1, our definition of affiliated stocks includes both type 1 and type 3 listed stocks. According to Lim and Jung (2012), Song et al. (2012), and Yang et al. (2024), chaebol affiliation refers to cases in which chaebol-affiliated analysts follow their fellow subsidy firms in the chaebol group (i.e., type 2 and type 3 listed stocks in the figure). Among these stocks, type 3 satisfies both the definitions of chaebol affiliations, where a chaebol-affiliated analyst follows a fellow subsidy firm belonging to the same chaebol family that is also held by an affiliated AMC. In this section, we test how the different types of affiliations affect affiliated analysts' recommendations and forecasts and examine which effect is dominant. To do so, we introduce three variables related to chaebol affiliation: *GA_GF*, *GA_NGF*, and *NGA_GF*. Based on Lim and Jung (2012) and Yang et al. (2024), the dummy variable *GA_GF* equals 1 if a chaebol-affiliated analyst issues a stock recommendation on a firm belonging to the same chaebol group as the analyst's brokerage firm and 0 otherwise. The other two variables are *GA_NGF*, set as 1 if chaebol-group-affiliated analysts follow non-chaebol-group-affiliated firms and 0 otherwise, and *NGA_GF*, having a value of 1 if non-chaebol-group-affiliated analysts follow chaebol-group-affiliated firms and 0 otherwise. The regression results with these three variables are presented in Table 8.²⁵

Consistent with prior literature, we find that *GA_GF* has a positive coefficient for *Relative recommendation* in columns (1) to (3) and a negative coefficient for *Forecast accuracy* in columns (4) to (6), indicating that chaebol-affiliated analysts issue more optimistic and

²⁴ AMCs impose various transaction fees for the fund's management, sales, and consignment. Among these, only the management fee is directly paid to mutual fund firms.

²⁵ We thank the anonymous reviewer for suggesting these three types of chaebol affiliations.

Table 7
Importance of affiliated stocks.

Panel A. Change in recommendations around start and end of fund coverage						
Independent variables	<i>ΔRecommendation</i>		<i>Upgrade</i>		<i>Downgrade</i>	
	(1)		(2)		(3)	
<i>Affiliation_Start</i>	0.029 (3.53)	***	0.169 (1.67)	*	−0.408 (−3.52)	***
<i>Affiliation_End</i>	−0.003 (−0.44)		−0.193 (−1.62)		−0.106 (−1.02)	
<i>Affiliated</i>	−0.002 (−0.43)		0.102 (1.55)		0.119 (1.91)	*
<i>Funded</i>	−0.002 (−0.68)		0.102 (2.32)	**	0.123 (3.01)	***
<i>BrokerChaebol</i>	−0.004 (−1.37)		0.155 (4.47)	***	0.197 (6.09)	***
<i>FirmChaebol</i>	−0.007 (−2.06)	**	0.091 (2.24)	**	0.191 (4.97)	***
<i>Firm size</i>	0.005 (3.96)	***	−0.026 (−1.71)	*	−0.106 (−7.28)	***
<i>Firm coverage</i>	0.000 (−1.31)		0.003 (1.12)		0.007 (3.09)	***
<i>Industry coverage</i>	0.001 (0.63)		0.007 (0.50)		−0.005 (−0.37)	
<i>Broker size</i>	0.000 (1.90)	*	−0.002 (−0.93)		−0.006 (−3.60)	***
<i>Analyst following</i>	0.000 (1.10)		0.010 (3.95)	***	0.005 (2.12)	**
<i>Career experience</i>	0.000 (0.60)		0.005 (0.53)		−0.005 (−0.56)	
<i>Firm-specific experience</i>	0.001 (1.26)		0.184 (21.48)	***	0.156 (19.72)	***
<i>Absolute forecast accuracy</i>	0.015 (2.66)	***	0.183 (2.17)	**	−0.119 (−1.78)	*
<i>Intercept</i>	−0.058 (−0.89)		−13.991 (−0.07)		−12.845 (−0.07)	
Industry fixed effect	Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes	
Adj. R ²	0.005		0.065		0.054	
[F-value] or {χ ² }	[8.47]	***	{1819.0}	***	{1636.3}	***
N	79,712		79,712		79,712	
Panel B. Effect of management fees on analyst forecasts and recommendations						
Independent variables	<i>Relative recommendation</i>		<i>Forecast accuracy</i>			
	Funded only	Affiliated only	Funded only	Affiliated only		
	(1)	(2)	(3)	(4)		
<i>Management fee</i>	−0.017 (−1.51)	0.167 (1.90)	−0.020 (−4.43)	−0.100 (−2.21)	***	**
<i>Affiliated</i>	−0.052 (−2.00)		0.140 (1.91)		*	
<i>Management fee*Affiliated</i>	0.118 (2.27)		−0.026 (−1.71)		*	
<i>FAMT</i>	−0.001 (−0.29)	−0.001 (−0.19)	−0.009 (−2.38)	−0.010 (−2.85)	**	***
<i>BrokerChaebol</i>	−0.025 (−3.23)		−0.007 (−2.21)		**	
<i>FirmChaebol</i>	−0.006 (−0.64)	−0.001 (−0.03)	−0.018 (−4.10)	0.003 (0.15)	***	
<i>Firm size</i>	−0.001 (−0.28)	−0.033 (−1.39)	0.061 (38.86)	0.025 (3.44)	***	***
<i>Career experience</i>	−0.003 (−1.01)	−0.027 (−1.81)	−0.001 (−0.63)	−0.006 (−1.38)		
<i>Firm-specific experience</i>	0.007 (2.36)	0.004 (0.30)	−0.003 (−2.28)	0.002 (0.57)	**	
<i>Firm coverage</i>	−0.001 (−2.61)	−0.006 (−1.46)	0.000 (−0.42)	0.002 (1.49)		
<i>Industry coverage</i>	0.010 (3.07)	0.065 (3.27)	0.001 (0.77)	0.006 (0.90)		
<i>Broker size</i>	−0.002 (−4.59)	−0.005 (−1.97)	0.000 (−0.82)	0.002 (1.77)		*

(continued on next page)

Table 7 (continued)

Panel B. Effect of management fees on analyst forecasts and recommendations							
Independent variables	Relative recommendation			Forecast accuracy			
	Funded only	Affiliated only		Funded only	Affiliated only		
	(1)	(2)		(3)	(4)		
Analyst following	−0.003 (−6.09)	***	−0.001 (−0.29)	−0.002 (−6.90)	***	0.000 (−0.10)	
Forecast horizon				−0.060 (−36.29)	***	−0.020 (−3.01)	***
Forecast accuracy	−0.050 (−3.27)	***	0.116 (0.75)				
Intercept	−0.084 (−0.31)		0.600 (0.99)	−0.701 (−12.88)	***	−0.391 (−2.14)	**
Industry fixed effect	Yes	Yes		Yes	Yes		
Year fixed effect	Yes	Yes		Yes	Yes		
Adj. R ²	0.014		0.018	0.207		0.150	
[F-value]	[6.13]	***	[1.36]	[103.31]	***	[3.42]	***
N	15,208		509	16,548		484	

Note: Panel A presents the results of the regression examining the change in recommendations around our hypothesized affiliations' start and end. Column (1) shows the results of an OLS regression with $\Delta Recommendation$ as the dependent variable. Columns (2) and (3) show the results of logit regressions with *Upgrade* and *Downgrade*, respectively, as the dependent variables. Panel B presents the results of the regression examining the effect of fund management fees on our hypothesized relationship. The dependent variables are *Relative recommendation* in columns (1) and (2) and *Forecast accuracy* in columns (3) and (4). In columns (1) and (3), we use the subsample including forecasts on funded stocks (*Funded*=1). In columns (2) and (4), we restrict our sample to our hypothesized relationship (*Affiliated*=1). Numbers in parentheses are t-values. Detailed definitions of all variables in this table are provided in Appendix A. *** and ** indicate significance at the 1 % and 5 % levels, respectively.

biased analyst forecasts for fellow chaebol firms. Our main results for *Affiliation* and *FAMT* are robust when these variables are included with *GA_GF* in column (3), showing that analyst recommendations become more optimistically biased as the amount of funding invested in the affiliated stock increases. As a subsidiary within the same chaebol group followed by an affiliated analyst could also be held by an affiliated AMC, we investigate the combined impact of *GA_GF* and *Affiliated*. The combined coefficient for *GA_GF* and *Affiliated*, tested as *GA_GF* + *Affiliated* in the last row of Table 8, has an overall positive sign for *Relative recommendation*. This indicates a dominant effect of optimistic bias in analyst recommendations when following a fellow chaebol firm in which the affiliated AMC invests. For *Forecast accuracy*, the coefficient of *GA_GF* is negative in columns (4) to (6), while that of *Affiliated* is significantly positive. The combined effect of *GA_GF* and *Affiliated* being positive (i.e., $-0.031 + 0.059 = 0.028$) demonstrates an overall higher accuracy level. These results are consistent with those reported by Ertimur et al. (2007) in that higher accuracy is associated with more optimistic recommendations when analysts' conflicts of interest increase. In fact, prior literature has shown that conflicts of interest more adversely affect recommendations than forecasts (Dugar and Nathan, 1995). This could be because forecast accuracy is verifiable in a timely manner, while recommendation bias cannot be easily assessed and does not have an objective benchmark. Moreover, biased recommendations tend to generate more trading via the brokerage firm, while a similar effect has not been clearly demonstrated for forecast errors (Irvine, 2004). Accordingly, Ertimur et al. (2007) argue that the relationship between recommendations and forecast accuracy becomes weaker in the presence of conflicts of interest, as the conflicts of interest have stronger effects on recommendation bias. In our case, when two types of chaebol affiliations are combined, affiliated analysts issue biased recommendations yet maintain their forecast accuracy. However, *FAMT* has a significantly negative coefficient. For an average firm with the mean value of *FAMT* (i.e., 22.68), the overall effect on *Forecast accuracy* is close to 0 and decreases as the amount of funding invested in the affiliated stock increases, confirming selective optimism.

5.3. Comparison between chaebol families and other business groups

We further investigate whether our results are driven by different types of chaebols. We split our chaebol groups into two categories: non-financial and financial chaebols. The first category (i.e., non-financial chaebols) includes chaebol groups that have a mix of financial and non-financial subsidiaries (e.g., Samsung Group), while the second (i.e., financial chaebols) includes chaebol families that have financial subsidiaries only (e.g., Mirae Asset Financial Group). Unlike financial chaebols, non-financial chaebols face restrictions on the types of financial subsidiaries they can hold, as they are prohibited from holding commercial or savings banks. The non-financial chaebols historically originated from the manufacturing industry and have expanded their business into various industries, including the financial industry. Hence, analysts could benefit from the diverse information shared within the group when forming forecasts for these firms. Accordingly, we separate our sample where *Affiliated* equals 1 (i.e., *Affiliated* – *Non-financial Chaebol* and *Affiliated* – *Financial Chaebol*) based on these categories.

In Table 9, we replicate our main models using these two types of *Affiliated* firms in columns (1) and (3). Both types of chaebol firms (i.e., financial chaebol groups (*Affiliated* – *Financial Chaebol*) and non-financial chaebol groups (*Affiliated* – *Non-financial Chaebol*)) show less biased recommendations and higher accuracy. This could be explained by the fact that both types of chaebols are strictly regulated by the government. Consistent with our main result, recommendations by affiliated analysts become more optimistic and

Table 8
Effects of additional chaebol family relationship.

Independent variables	Relative recommendation			Forecast accuracy		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>GA_GF</i>	0.103 (6.75)	*** (5.11)	0.521 (5.64)	*** (5.64)	−0.014 (−1.90)	* (−4.87)
<i>GA_NGF</i>		−0.225 (−9.34)	*** (−7.97)	*** (−7.97)	−0.020 (−12.46)	*** (−10.71)
<i>NGA_GF</i>		0.066 (2.11)	** (2.38)	** (2.38)	−0.041 (−18.74)	*** (−19.57)
<i>Affiliated</i>			−0.022 (−4.21)	*** (−4.21)		0.059 (3.89)
<i>FAMT</i>			0.001 (3.47)	*** (3.47)		−0.001 (−4.95)
<i>Firm size</i>	−0.001 (−1.14)	−0.012 (−1.38)	−0.002 (−1.50)	0.037 (61.42)	*** (61.42)	0.040 (64.80)
<i>Career experience</i>	−0.002 (−2.58)	*** (−2.16)	−0.009 (−2.36)	** (−2.36)	−0.001 (−0.07)	−0.001 (−0.31)
<i>Firm-specific experience</i>	−0.001 (−1.53)	−0.005 (−1.00)	−0.001 (−1.04)	−0.002 (−6.79)	*** (−6.40)	−0.002 (−6.48)
<i>Firm coverage</i>	−0.001 (−3.34)	*** (−3.28)	−0.001 (−3.29)	*** (−3.29)	−0.001 (−2.72)	−0.001 (−2.89)
<i>Industry coverage</i>	0.002 (1.57)	0.016 (1.80)	* (1.77)	* (2.71)	0.002 (2.91)	0.002 (2.97)
<i>Broker size</i>	−0.002 (−11.20)	*** (−8.98)	−0.010 (−8.67)	*** (−8.67)	−0.001 (−2.95)	* (−1.85)
<i>Analyst following</i>	−0.003 (−14.12)	*** (−13.68)	−0.003 (−14.15)	*** (−14.15)	−0.002 (−17.53)	−0.002 (−17.02)
<i>Forecast horizon</i>				−0.046 (−63.92)	*** (−63.92)	−0.046 (−64.54)
<i>Forecast accuracy</i>	−0.030 (−4.46)	*** (−4.39)	−0.191 (−4.37)	*** (−4.37)		
<i>Intercept</i>	0.068 (0.91)	0.089 (0.07)	0.087 (1.16)	−0.424 (−14.20)	*** (−14.20)	−0.457 (−15.31)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.012	0.015	0.015	0.145	0.148	0.149
[F-value]	[25.42]	*** [27.98]	*** [27.90]	*** [366.78]	*** [359.26]	*** [344.69]
N	79,712	79,712	79,712	86,320	86,320	86,320
F-test for: <i>GA_GF</i> + <i>Affiliated</i> = 0						*

Note: Table 8 reports the results when analysts are following affiliated target firms within the same chaebol family group. *GA_GF* represents the case in which a chaebol analyst is reporting on a chaebol target firm. *GA_NGF* is for chaebol-group-affiliated analysts following non-chaebol-group-affiliated firms, and *NGA_GF* is for non-chaebol-group-affiliated analysts following chaebol-group-affiliated firms. Using the earnings forecasts and stock recommendations issued by the analysts in chaebol brokerage firms, we present the results of the regression examining the optimistic bias in the stock recommendations in columns (1) – (3) and accuracy in the forecasted earnings in columns (4) – (6) by an analyst in the chaebol-affiliated mutual fund–brokerage firm business relationship. Numbers in parentheses are t-values. Detailed definitions of all variables in this table are provided in Appendix A. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively.

biased when the financial benefit of the group gained through the AMC increases due to higher holdings of the target firm (i.e., when *FAMT* is higher).

According to the F-test results in the bottom row, while relative recommendations in column (1) are not statistically different among analysts from financial and non-financial chaebol groups, forecast accuracy reported in column (3) is different for these two types. Specifically, non-financial chaebol group analysts produce significantly more accurate reports than financial chaebol group analysts. This could be because analysts require deeper knowledge of the industrial sector and insights to produce more accurate forecasts. Analysts from non-financial chaebol groups, which operate in diverse industrial sectors, could produce more accurate reports based on a broader range of information gathered through the chaebol groups' business operations.

Next, there are other types of business groups that the KFTC does not classify as chaebols. Typically, chaebol families are subject to more rigorous regulatory requirements, including voting right limitations of 5 % for any subsidiaries held through their affiliated financial institutions, whereas non-chaebol business groups are not strictly regulated by the KFTC. To differentiate chaebol groups from other business groups, we conduct an additional test after introducing a variable for overall business group affiliation, *Business group affiliation*. This variable is equal to 1 if an analyst works for a brokerage firm belonging to a business group and the affiliated AMC from the same business group invests in the recommended stock and 0 otherwise. A business group here is a broader concept that includes both chaebol and non-chaebol business groups. The additional regulatory restrictions on chaebol groups may make chaebol-affiliated analysts less likely to be constantly optimistic to improve mutual fund performance, as it could damage the reputation of the chaebol group as a whole. Thus, we expect selective optimism to be more prominent for chaebol-affiliated analysts. We also introduce a new variable, *GAMT*, which indicates the amount of funding allocated to the stock in which the business-group-affiliated AMC invests.

Table 9
Chaebol families and business groups.

Independent variables	Relative recommendation				Forecast accuracy			
	(1)		(2)		(3)		(4)	
<i>Affiliated – Non-financial Chaebol</i>	–0.021 (–3.77)	***	–0.025 (–3.84)	***	0.037 (2.40)	**	0.050 (3.15)	***
<i>Affiliated – Financial Chaebol</i>	–0.019 (–1.92)	*	–0.023 (–2.24)	**	0.018 (1.11)		0.032 (1.94)	*
<i>Business group affiliation</i>			0.007 (1.50)				–0.015 (–7.23)	***
<i>FAMT</i>	0.001 (3.62)	***	0.001 (3.75)	***	–0.002 (–2.82)	***	–0.002 (–2.96)	***
<i>GAMT</i>			0.001 (1.73)	*			–0.001 (–1.21)	
<i>Funded</i>	–0.005 (–1.33)		–0.006 (–1.44)		0.016 (8.54)	***	0.017 (8.89)	***
<i>BrokerChaebol</i>	–0.034 (–10.81)	***	–0.034 (–10.66)	***	–0.001 (–0.86)		–0.002 (–1.55)	
<i>FirmChaebol</i>	0.002 (0.49)		0.002 (0.44)		–0.044 (–25.67)	***	–0.044 (–25.51)	***
<i>Firm size</i>	–0.001 (–0.86)		–0.001 (–1.04)		0.044 (67.38)	***	0.044 (67.80)	***
<i>Career experience</i>	–0.001 (–3.39)	***	–0.001 (–3.42)	***	–0.001 (–0.11)		0.001 (0.04)	
<i>Firm-specific experience</i>	0.002 (1.78)	*	0.002 (1.79)	*	–0.002 (–5.70)	***	–0.002 (–5.43)	***
<i>Firm coverage</i>	–0.001 (–8.07)	***	–0.001 (–8.26)	***	–0.001 (–2.64)	***	–0.001 (–2.59)	***
<i>Industry coverage</i>	–0.003 (–13.86)	***	–0.003 (–13.95)	***	0.002 (2.93)	***	0.002 (2.89)	***
<i>Broker size</i>	–0.002 (–2.36)	**	–0.002 (–2.39)	**	–0.001 (–3.04)	***	–0.001 (–2.01)	***
<i>Analyst following</i>	–0.001 (–1.15)		–0.001 (–1.22)		–0.002 (–18.23)	***	–0.002 (–18.01)	***
<i>Forecast horizon</i>					–0.046 (–65.15)	***	–0.046 (–65.31)	***
<i>Forecast accuracy</i>	–0.029 (–4.42)	***	–0.029 (–4.35)	***				
<i>Intercept</i>	0.082 (1.09)		0.086 (1.15)		–0.529 (–17.65)	***	–0.535 (–17.82)	***
Industry fixed effect	Yes		Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes		Yes	
Adj. R ²	0.014		0.014		0.153		0.153	
[F-value]	[25.91]	***	[24.96]	***	[346.95]	***	[333.59]	***
N	79,712		79,712		86,320		86,320	
F-test for: <i>NFC = FC</i>	[0.06]		[0.04]		[16.04]	***	[14.13]	***

Note: Table 9 presents the results where we split chaebol groups into *financial* and *non-financial* groups. *Financial chaebol groups* are firms that only consist of financial institutions, whereas *non-financial chaebol groups* can hold manufacturing subsidiaries within the group but are prohibited from holding a commercial/savings bank. In columns (2) and (4), *Business group affiliation* indicates the business group, which includes both non-chaebol groups and chaebol groups. GAMT represents the amount of funding allocated to the stock in which the business-group-affiliated AMC invests. The dependent variables are *Relative recommendation* in columns (1) and (2) and *Forecast accuracy* in columns (3) and (4). Numbers in parentheses are t-values. Detailed definitions of all variables are provided in Appendix A. *** and ** indicate significance at the 1 % and 5 % levels, respectively.

The results for the model, including *Business group affiliation* and *GAMT*, are reported in columns (2) and (4) of Table 9. The business group dummy has a positive and statistically insignificant coefficient for *Relative recommendation* (coeff. = 0.007, *t*-stats = 1.50), while it has a negative and significant coefficient for *Forecast accuracy* (coeff. = –0.015, *t*-stats = –7.19). This result demonstrates generally optimistic and biased analyst recommendations and forecasts for business-group-affiliated stocks. These effects become stronger when the amount invested in these stocks increases, as demonstrated in the results for *GAMT*. In contrast, the results for chaebol-affiliated stocks (i.e., *Affiliated* and *FAMT*) still support our selective optimism hypothesis where the analyst forecasts and recommendations become optimistic and biased when the amount of funding allocated to the stock increases. The findings echo our main results where chaebol groups that are under stricter regulatory scrutiny wish to evade unnecessary attention by avoiding optimistically biased and inaccurate reports.

6. Conclusion

This study examines whether and how the group affiliation between AMCs and brokerage firms affects the independence of sell-side analyst recommendations in business groups. Our overall results are consistent with the selective optimism argument, showing that

affiliated analysts generally make more accurate forecasts for stocks held by affiliated mutual funds but that analyst optimism increases in line with the holding amount of the stocks invested. Optimism also becomes stronger when affiliated fund managers charge high fund management fees. Moreover, optimistic bias increases when a stock is newly included in an affiliated fund where the fund manager needs to demonstrate good performance.

Our findings have practical implications for corporate managers, investors, and regulators. The increased forecast accuracy of affiliated analysts supports the notion that establishing a business cluster for companies in the finance industry can create a synergy effect. This strategy is particularly effective for companies such as brokerage firms (responsible for the marketing and sales of funds) and AMCs (engaged in fund management and stock trading) with long-term business relationships, especially when they belong to the same business group as their subsidiaries. Information shared among member firms can be utilized to identify investment opportunities in both the financial and manufacturing sectors. However, investors may need to be protected from the possible adverse effects of close cooperation between fund managers and financial analysts. We have shown that analysts strategically provide optimistic opinions on selected stocks to maximize the group's overall profits in favor of the affiliated fund managers. This type of subtle manipulation is difficult to detect, especially for individual investors who rely on analyst recommendations. In addition, conflicts of interest may exist where higher commission fees are paid on mutual fund sales to the brokerage firm to support such collaborations.

CRediT authorship contribution statement

Bobae Choi: Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Doowon Lee:** Software, Investigation, Writing – review & editing. **Kyoungwon Mo:** Methodology, Software, Formal analysis, Visualization, Investigation, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Variable definitions

Variable name	Variable definition
<i>Forecast accuracy</i>	The absolute value of the difference between individual forecasted earnings and actual reported earnings for the same financial year scaled by the stock price, multiplied by -1
<i>Forecast optimism</i>	Individual forecasted earnings minus the average forecasted earnings by all analysts that report a forecast for the same firm and target year, scaled by the standard deviation of forecasts for the firm and target year
<i>Recommendation</i>	The level of an analyst's stock recommendations coded as 4 for "Strong Buy," 3 for "Buy," 2 for "Hold," 1 for "Underperform," and 0 for "Sell"
<i>Relative recommendation</i>	The individual stock recommendation minus the median stock recommendation of all recommendations issued by the analysts covering the same stock within the month prior to the earnings announcement date each year
<i>ΔRecommendation</i>	An indicator variable that is equal to 1 for an upgraded stock recommendation, -1 for a downgraded stock recommendation, and 0 for an unchanged stock recommendation
<i>Upgrade</i>	A dummy variable that is equal to 1 if an analyst releases an upgraded stock recommendation from the previous recommendation and 0 otherwise
<i>Downgrade</i>	A dummy variable that is equal to 1 if an analyst releases a downgraded stock recommendation from the previous recommendation and 0 otherwise
<i>Buy-and-hold 3-day abnormal return</i>	A size-adjusted buy-and-hold abnormal return during the 3 days surrounding the recommendation date calculated as the buy-and-hold return minus the average of the buy-and-hold return for the relevant size decile
<i>Affiliated</i>	A dummy variable that is equal to 1 if a recommendation is issued by an analyst belonging to a chaebol-affiliated brokerage firm and, simultaneously, a mutual fund managed by a firm within the same chaebol group as the brokerage firm also invests in the recommended stock and 0 otherwise
<i>Funded</i>	A dummy variable that is equal to 1 if a recommended stock is included in any mutual fund and 0 otherwise
<i>Management fee</i>	The percentage of annual fees related to the management of the fund paid by a fundholder
<i>GA_GF</i>	A dummy variable that is equal to 1 if a chaebol-affiliated analyst issues a forecast on a firm belonging to the same chaebol group as the analyst's brokerage firm and 0 otherwise
<i>Affiliation_Start</i>	A dummy variable that is equal to 1 for the year in which a recommended stock is newly included in a fund owned by an affiliated AMC and 0 otherwise
<i>Affiliation_End</i>	A dummy variable that is equal to 1 for the year in which a recommended stock is first excluded from a fund owned by an affiliated AMC and 0 otherwise
<i>Buy</i>	A dummy variable that is equal to 1 if the recommendation is Strong Buy or Buy and 0 otherwise
<i>Sell</i>	A dummy variable that is equal to 1 if the recommendation is Hold, Underperform, or Sell and 0 otherwise
<i>FAMT</i>	The logarithmic value of the total amount invested per million won by mutual funds within the affiliated AMC. The value is 0 for stock that is not held by the affiliated AMC or when the analyst is not affiliated with an AMC.
<i>GAMT</i>	The logarithmic value of the total amount invested per million won by mutual funds. The value is 0 for stocks in which no mutual fund invests.
<i>BrokerChaebol</i>	A dummy variable that is equal to 1 for the year if the brokerage firm is within a chaebol group and 0 otherwise
<i>FirmChaebol</i>	A dummy variable that is equal to 1 for the year if the target firm is within a chaebol group and 0 otherwise

(continued on next page)

(continued)

Variable name	Variable definition
<i>Firm size</i>	The log of market capitalization
<i>Firm coverage</i>	The number of companies covered by an analyst for the year
<i>Industry coverage</i>	The number of industries covered by an analyst for the year
<i>Broker size</i>	The number of analysts at the brokerage firm
<i>Analyst following</i>	The number of analysts following the recommended firm at the end of the year
<i>Career experience</i>	The number of years since the analyst was first included in the DataGuidePro database
<i>Firm-specific experience</i>	The number of years of experience related to a particular firm since the analyst's first recommendation appeared in the DataGuidePro database
<i>Broker industry coverage</i>	The ratio of the number of forecasts from the brokerage firm that cover stocks belonging to the given stock's industry to the total number of forecasts issued by that brokerage firm
<i>Forecast horizon</i>	The number of years between the earnings forecast date and the corresponding report date of the actual earnings on the TS-2000 database

Data availability

The authors do not have permission to share data.

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