Common Ownership and Analyst Forecasts[1]

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Abstract: We examine the effect of the common ownership relation between brokerage houses and the firms covered by their analysts (referred to as co-owned brokerage houses, co-owned firms, and connected analysts, respectively) on analyst forecast performance. Common ownership can help the connected analysts have better access to co-owned firms, leading to higher-quality analyst research. However, common owners have incentives for higher valuation of the co-owned firms and thus can exert pressure on the connected analysts to issue optimistically biased research reports for these firms. We find that common ownership improves analyst forecast accuracy. This result is robust to a difference-in-differences design that exploits exogenous shocks to common ownership. The effects vary systematically with the quality of alternative sources of information that analysts can access for the co-owned firms. Overall, our paper contributes to the literature by documenting that common ownership can facilitate information communication.

Keywords: common ownership; analyst forecasts; institutional environments

JEL classifications: H20; H25; C83; O57

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1. Introduction

In the past three decades, publicly traded companies have become increasingly interconnected by having the same large shareholders, mostly institutional investors. We refer to the phenomenon of large shareholders having equity stakes in multiple companies as common ownership. An emerging literature examines the effect of common ownership on various corporate decisions, such as the pricing of products, the collaborations among industry peers, and corporate disclosures (Azar et al., 2018; Elhauge, 2015; J. He & Huang, 2017; Park et al., 2019).[2]

While most of these studies focus on common ownership in industry peers or firms connected through production along the supply chain, based on 13F filings, more than 53% of U.S. institutional investors hold portfolio firms from more than one industry at the one-digit SIC code level. In addition, 25% of institutional investors hold at least one financial institution and one industrial firm. Given the prevalence of common ownership between a financial and a non-financial firm, understanding the economic consequences of such common ownership is important. In this paper, we focus on the common ownership between brokerage houses and firms covered by the brokerage houses (hereafter co-owned brokerage houses and co-owned firms, respectively) and examine how it affects the quality of earnings forecasts issued by the analysts employed by the co-owned brokerage houses (hereafter connected analysts) for the co-owned firms.[3]

[2] These studies have led to a hot debate on the antitrust effect of common ownership. For example, the antitrust regulatory bodies in the United States and Europe are contemplating the adverse impact of common ownership among industry peers on the extent of competition and customer welfare (Federal Trade Commission, 2018).

[3] Figure A1 in the online appendixes provides an illustrative example for our research question. Vanguard Group Inc. holds beneficial stakes in several brokerage houses, including 6.65% of J.P. Morgan and 6.02% of General Electric Company (GE), among many others in 2019. An analyst, J. Inch, employed by J. P. Morgan issued earnings forecasts for GE in 2019. In this example, Vanguard is the common owner of the co-owned brokerage house, J. P. Morgan, and the co-owned firm, GE, and J. Inch is the connected analyst. Other analysts covering GE in 2019 who were employed by the brokerage houses that do not have common owners with GE are the non-connected analysts. In this paper, we explore how the common ownership relationship between J. P. Morgan and GE affects the quality of the forecasts issued for GE by the connected analyst, J. Inch, compared

Common ownership can affect analyst forecast performance for two non-exclusive reasons. First, common ownership can help connected analysts obtain access to co-owned firms, allowing them to have more interactions with firms' management and thus obtain information about firms' operations and investments. While such information is likely immaterial, when combined with other information that analysts possess, it can help analysts "complete a 'mosaic' of information" that is material, as suggested by the Securities and Exchange Commission (SEC) and prior studies (e.g., Cheynel & Levine, 2020),[4] and thus can improve analyst forecast accuracy. We refer to this prediction as the information hypothesis.

Second, common owners might exploit their ownership and control to exert undue influence on co-owned brokerage houses for self-serving purposes through their communications with management (Fichtner et al., 2017). Given common owners' preference for higher valuation of co-owned firms, the connected analysts might be under pressure to issue optimistic forecasts for co-owned firms, especially if common owners intend to sell their shares in the near future. If this is the case, we expect that common ownership reduces analyst research independence and induces connected analysts to issue optimistically biased forecasts for co-owned firms. We refer to this prediction as the conflicts-of-interest hypothesis.

Using a sample of 321,905 analyst forecasts from the 1990–2019 period, we find evidence consistent with the information hypothesis. In particular, we find that connected analysts issue more accurate forecasts than other analysts covering the same firms. These results suggest that common ownership improves forecast performance. However, we do not find results consistent with the conflicts-of-interest hypothesis: the forecasts issued by

with non-connected analysts covering GE.

[4] See SEC's *Final Rule: Selective Disclosure and Insider Trading* at https://www.sec.gov/rules/final/33-7881.htm.

connected analysts do not differ from those issued by non-connected analysts in forecast bias.

The documented effect of common ownership on analyst forecast performance may be subject to the endogeneity concern if some unobservable variables are correlated with both analysts' choice of following firms with common ownership and the analysts' forecast performance. Our empirical design of comparing forecast performance of connected and non-connected analysts covering the same firms and the inclusion of firm-year fixed effects controls for unobservable firm-year effects on analyst forecast performance. In addition, we employ the mergers of financial institutions as exogenous shocks that can lead to the formation of common ownership between brokerage houses and their followed firms. Using a difference-in-differences (DiD) design, we obtain the same inferences. We also alleviate the endogeneity concern by retesting our hypotheses using a reduced sample after applying the propensity score matching approach based on the likelihood of analysts following firms with common ownership relationships, after controlling for analysts' fixed effects, and after performing a falsification test.[5] Overall, our tests suggest that endogeneity is unlikely to overturn the main results.

We perform several cross-sectional tests to reinforce the main inferences and to provide additional insights. Because we only find results consistent with the information hypothesis regarding forecast accuracy, and not the conflicts-of-interest hypothesis regarding forecast bias, our cross-sectional analyses focus on the factors that strengthen or weaken the results under the information hypothesis. First, given that common ownership can facilitate analysts' information acquisition activities, it follows that the effect of common ownership should be stronger when common owners hold a large stake in the co-owned firms and the brokerage houses. That is, the effect of common ownership should increase with its level.

[5] Details of these additional tests are presented in Table A3 of the online appendixes.

Consistent with the prediction, we find that the effect of common ownership on forecast accuracy is more pronounced when the level of the ownership that common owners have in the co-owned firms and brokerage houses is higher. Second, we consider the factors that can affect the incremental value of the information acquired through common ownership on analyst forecast accuracy. We argue that the incremental effect of the additional information that connected analysts obtain from co-owned firms should be stronger and thus the effect of common ownership should be greater when firms' earnings are more difficult to forecast and when analysts have fewer alternative sources of information about firms. Using the earnings quality and operational complexity to capture the difficulty in forecasting firms' earnings and the existence of management forecasts to capture analysts' alternative sources of information, we find results consistent with our predictions.

To further triangulate the inferences based on the information hypothesis that common ownership helps connected analysts obtain access to firm management and facilitates their information acquisition activities, we conduct two additional tests. First, we test the argument underlying the information hypothesis by investigating the mechanism through which connected analysts obtain favorable treatment in information acquisition activities.[6] Using analysts' ability to ask questions during firms' earnings conference calls as a proxy for their access to firm management (e.g., Mayew, 2008), we find that compared with other analysts covering the same firms, connected analysts are more likely to ask questions during co-owned firms' earnings conference calls. These results are not driven by the greater effort (proxied for by forecast frequency) exerted by connected analysts; the connected

[6] In untabulated tests, we investigate whether the Fair Disclosure (FD) regulation passed by the SEC in August 2000, which intends to prevent selective disclosure by publicly traded firms to market professionals and certain shareholders, has any effect on the association between common ownership and forecast performance. We do not find any mitigation effect of the FD regulation on the association. One interpretation for the result is that connected analysts obtain immaterial information from co-owned firms and thus this connection is not affected by the FD regulation.

analysts actually issue earnings forecasts less frequently than non-connected analysts. Second, because more accurate forecasts might reflect the information already compounded into the stock prices rather than the information obtained via common ownership, we investigate the informativeness of earnings forecasts using the short-window market reactions to the issuance of these forecasts. We find that earnings forecasts issued by connected analysts are associated with stronger market reactions than those issued by non-connected analysts covering the same firms, suggesting that the forecasts issued by connected analysts are not only more accurate but also more informative.

Lastly, to shed light on whether co-owned firms benefit from the information role of the common ownership relation, we examine the effect of common ownership on co-owned firms' information environment quality. Using the bid-ask spread, stock illiquidity, the proportion of days with zero returns, and analyst forecast dispersion to capture the inverse of firms' information environment quality, we find that co-owned firms have a higher-quality information environment than other firms.

Our study contributes to the literature in two ways. First, we contribute to the literature on the economic consequences of common ownership by examining the effect of common ownership between brokerage houses and firms on analyst research quality. Extant studies suggest that common ownership reduces product market competition because firms within the network of common ownership tend to coordinate (e.g., Azar et al., 2018; Elhauge, 2015; J. He & Huang, 2017). However, most of these studies focus on industry peers. Given that common ownership also occurs among firms that are not in the same product market, it is important to understand the economic consequences of such common ownership.[7]

[7] While Kedia et al. (2017) also examine the common ownership between a financial institution, Moody's, and its rated firms, our paper differs from theirs in several important dimensions. First, unlike Kedia et al. (2017), who document an adverse effect of common ownership on the credit ratings issued by Moody's, we investigate the effect of common ownership on *equity* analysts' forecast performance. Owing to the differences in regulatory and institutional environments for credit and equity analysts, the results documented in Kedia et al. (2017) might not generalize to our setting. Second, focusing on analyst forecast performance, including both

Second, we contribute to the literature on analyst research by identifying another important determinant of analyst research quality: the common ownership between brokerage houses and their covered firms. Such common ownership can induce conflicts of interest that impair analyst research independence, but it can also simultaneously facilitate information communications between analysts and co-owned firms' management, leading to improved forecast performance.

Our results suggest that common ownership is associated with more accurate forecasts that are not more optimistically biased, indicating that the information effect of common ownership dominates the conflicts-of-interest effect. There are two possible reasons for the lack of conflicts-of-interest effect. First, the strong investor protection and tough legal enforcements by the SEC likely reduce the conflicts of interest faced by equity analysts (Kadan et al., 2009; Mehran & Stulz, 2007). For example, under the Global Analyst Research Settlement in 2003, investment banks are required to insulate their analyst research departments from their investment banking businesses to ensure analysts' independence. In addition, the SEC requires analysts to disclose matters that might give rise to conflicts of interest in their research reports.[8] These measures are documented to be highly effective in improving analyst research independence (Kadan et al., 2009). Second, most common owners are institutional investors focusing on index funds. As such, their incentives to boost stock prices of co-owned firms for trading purposes or better portfolio performance are likely lower. However, regulatory strength and common owners' incentives vary across countries.

forecast bias and accuracy, allows us to examine both the positive and the negative effects of common ownership. Doing so would be difficult, if possible at all, in the credit rating setting. Lastly, we indeed document that common ownership improves analyst forecast performance.

[8] Under the Global Analyst Research Settlement, the 10 largest U.S. investment banks involved in the settlement have been required to implement a series of reforms to improve analyst independence, such as separating research from investment banking business, linking analyst compensation to stock-picking ability, and disclosing any conflicts of interest faced by analysts in analyst reports. The SEC has also imposed various other disclosure and regulatory requirements to improve analyst research independence. See the SEC's investor publication, "Analysing Analyst Recommendations," available at https://www.sec.gov/tm/reportspubs/investor-publications/investorpubsanalystshtm.html.

Thus, whether common ownership has a similar effect on analyst forecast performance in other countries/regions as in the United States is unclear and is left to future research.

The rest of the paper proceeds as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes data and the research design. Section 4 presents the main empirical results, and Section 5 reports additional analyses. Section 6 concludes.

2. Related Literature and Hypothesis Development

2.1. Literature Review on Common Ownership

In the past three decades, publicly traded companies have become increasingly interconnected by having the same large shareholders. Common ownership blurs firm boundaries, influences the objectives of co-owned firms, and facilitates the strategic coordination among the co-owned firms (Elhauge, 2015). Unlike a stand-alone relationship between a shareholder and a firm, a common shareholder maximizes its stake in all co-owned firms, rather than the profit of individual portfolio firms. A stream of recent studies examines the effect of common ownership among firms in the same product market on market competition. For example, Elhauge (2015), J. He and Huang (2017), and Azar et al. (2018) find that common ownership facilitates the strategic cooperation between peer firms in the same industry and reduces product market competition. Focusing on the common ownership in the supply chain setting, Freeman (2018) argues that common ownership mitigates frictions associated with incomplete contracting and information asymmetry and fosters cooperation between co-owned firms in the supply chain, improving the longevity of the supply chain relationship.

Common ownership also helps facilitate information communication among firms in the same common ownership network. For example, Matvos and Ostrovsky (2008) find that common ownership can facilitate information communication between acquirers and targets,

allowing the common owner to undertake acquisitions that maximize the total value of the acquirer and the target.[9] Park et al. (2019) argue that common ownership improves the information environment of co-owned firms because the relaxed product competition among co-owned firms reduces the proprietary cost of disclosures and incentivizes these firms to increase voluntary disclosures.

However, while prior studies primarily focus on common ownership among firms in the same product market, around 25% of U.S. institutional investors hold at least one financial institution and one industrial firm simultaneously, based on their 13F filings. In this paper, we focus on one type of such common ownership, that between brokerage houses and firms covered by these brokerage houses, and investigate its effect on the quality of analyst research.

2.2. Hypothesis Development

Common ownership can affect analyst forecast performance in two non-exclusive ways. First, common ownership can have a positive effect on analysts' earnings forecast accuracy, which we refer to as the information hypothesis. Information acquisition is an important task for analysts and plays a critical role in improving the accuracy of their forecasts (e.g., Cheng et al., 2016; Jennings et al., 2017). Due to their career and reputation concerns, financial analysts have strong incentives to acquire information so their research quality can be higher (e.g., Harford et al., 2019). Prior research finds that common ownership fosters information sharing among the parties held by a common owner (e.g., J. He & Huang, 2017; Massa & Žaldokas, 2017; Matvos & Ostrovsky, 2008). It is conceivable that common ownership can help the analysts connect with management of their covered co-owned firms. Thus, compared

[9] Prior studies also provide evidence on the information communication role of common ownership in other settings, such as the credit market (Massa & Žaldokas, 2017).

with non-connected analysts, connected analysts likely have better access to management and obtain more information about these firms. Connected analysts might also receive preferential treatment in information gathering activities such as conference calls, investor relationship meetings, and corporate site visits.

Although the information obtained through better communications with firm management might be immaterial on its own, it can be combined with other information that analysts have to generate more accurate forecasts, as argued in prior research (Cheng et al., 2016; Cheynel & Levine, 2020). This notion is also recognized by the regulators. For example, in *Final Rule: Selective Disclosure and Insider Trading*, the SEC states that

> an issuer is not prohibited from disclosing a non-material piece of information to an analyst, even if, unbeknownst to the issuer, that piece helps the analyst complete a "mosaic" of information that, taken together, is material. Similarly, since materiality is an objective test keyed to the reasonable investor, Regulation FD will not be implicated where an issuer discloses immaterial information whose significance is discerned by the analyst. Analysts can provide a valuable service in sifting through and extracting information that would not be significant to the ordinary investor to reach material conclusions.

Thus, our first hypothesis is as follows:

> ***H1 (Information hypothesis):*** *Ceteris paribus, earnings forecasts issued by connected analysts are more accurate than those issued by non-connected analysts covering the same firm.*

Note that we are not suggesting that common owners proactively provide information about the co-owned firms directly to connected financial analysts or help these analysts approach the firms. Instead, we argue that connected analysts have incentives to provide high-quality research and use the common ownership between their employers and the covered firms to seek favorable treatment in information gathering activities, similar to how social connections help analysts obtain favorable treatment in information acquisition

activities (e.g., Li et al., 2020).[10] We test this mechanism directly later in the paper. However, to the extent that connected analysts fail to obtain favorable treatment from co-owned firms in information acquisition activities, we will not find results consistent with H1.

Second, common ownership can also have a negative effect on analyst forecast performance, which we refer to as the conflicts-of-interest hypothesis. Under this hypothesis, we argue that common ownership between a brokerage house and the firm followed by its analysts can reduce the independence of analyst research and lead the analysts to issue biased forecasts for the interest of common owners. Given their holdings of co-owned firms' shares, common owners generally prefer that their portfolio firms have higher stock prices, which can lead to higher fund performance and improve fund inflow and fund managers' compensation (Mola & Guidolin, 2009).

In addition to the incentives, common owners also have the ability to influence analyst research. Common owners' ownership position in the brokerage houses allows them to influence the brokerage houses' operational decisions, including the tone of analyst research. We provide detailed discussions of the mechanisms through which common owners can influence co-owned brokerage houses' operations in the next section. In practice, brokerage houses decide which analyst reports to disseminate (Maber et al., 2014). The dissemination process of analyst research allows the brokerage houses to influence the contents of analyst research reports or select the optimistic research reports so that the disseminated research reports provide optimistic prospects of the covered firms. As a result, the forecasts issued by connected analysts are more optimistically biased than those issued by other analysts covering the same firms. We state our second hypothesis as follows:

[10] The argument for the information hypothesis is not based on common owners' incentives to increase the value of their investee firms or brokerage houses; instead, it is built on connected analysts' incentives to improve their forecast performance.

H2 (Conflicts-of-interest hypothesis): *Ceteris paribus, earnings forecasts issued by connected analysts are more optimistically biased than those issued by non-connected analysts covering the same firm.*

Given the different predictions of the two hypotheses, the net effect of common ownership on analyst forecast performance is an empirical question. We postulate that whether the information effect or the conflicts-of-interest effect dominates depends on the strength of the institutional environments, including the regulatory environment on investor protection and legal enforcements. Prior studies suggest that market participants, including financial analysts, behave differently under institutional environments with stronger reputational capital (e.g., Bradshaw et al., 2019; Mehran & Stulz, 2007). They find that strong investor protection and legal enforcements impose higher costs on analysts' opportunistic behavior, thus alleviating self-serving behaviors of market participants and analyst forecast biases. That is, strong institutional environments can mitigate the adverse effect of common ownership on analyst research independence. [11]

2.3. The Mechanisms Through which Common Owners Influence Firm Decisions

As with other studies on common ownership, an important issue for this study, particularly for the conflicts-of-interest argument, is the mechanisms through which common owners influence portfolio firms' decisions. Prior studies provide ample evidence and detailed discussions on how common owners can influence portfolio firms' decisions.[12] Specifically, common owners can influence corporate decisions through (1) direct communication with firms' management; (2) their votes on shareholder proposals, election of directors, changes to

[11] We acknowledge that we lack direct empirical evidence to support such a conjecture. Tests would require a set of data on common ownership relationships between analysts' brokerage houses and the firms that analysts follow across countries with different institutional environments in terms of the strengths of legal enforcements and investor protection. However, such tests are infeasible due to the limited availability of the data. We leave this question for future research when the data may become available.

[12] For example, see Barroso et al. (2018), Ge et al. (2021), McCahery et al. (2016), Edmans et al. (2018), and Appel et al. (2019).

corporate structure or charter, executives compensation, or proxy contests; and (3) the threat of exit (i.e., selling their shares). In addition, Azar et al. (2018) and Schmalz (2018) suggest that managers of co-owned firms take common owners' interest into consideration without their explicit involvement.

There are two common criticisms on common ownership studies related to the underyling mechanisms. The first is that common owners usually have a very small ownership stake in the co-owned firms and thus have little influence on their decisions. To address this issue, as discussed later, we restrict our sample of common owners to blockholders (i.e., those with ownership of 5% or higher). As a result, the average ownership of common owners on co-owned firms is 8.1% and on the co-owned brokerage houses is 7.7%, as reported in panel A of Table 1. Given the high ownership stake, common owners have both the incentives and the abilities to influence co-owned firms' and brokerage houses' decisions.

The second common criticism is that because the majority of common owners in the United States are passive investors such as index funds, they usually do not have the incentive or ability to influence investees' corporate decisions. However, recent research suggests that because the index funds and other passive investors tend to hold shares for a long time and cannot sell shares of poorly performing firms, they care more about the long-term performance and governance of their portfolio firms (Appel et al., 2019).[13] These studies also suggest that the largely "passive" asset management firms, such as Blackrock, State Street, and Vanguard, engage with corporate management "behind the scenes" and play an important role in many

[13] This mentality is summarized succinctly by the former CEO of Vanguard Funds, F. William McNabb, in one of his speeches, "We're going to hold your stock when you hit your quarterly earnings target. And we'll hold it when you don't. We're going to hold your stock if we like you. And if we don't. We're going to hold your stock when everyone else is piling in. And when everyone else is running for the exits. That is precisely why we care so much about good governance." https://corpgov.law.harvard.edu/2015/06/24/getting-to-know-you-the-case-for-significant-shareholder-engagement/.

corporate governance decisions.[14] Many fund companies comment that while they are passive investors, they are not passive owners. In addition to the "voice" means, fund companies also actively vote on shareholder proposals. J. He et al. (2019) find that common owners' vote is an effective mechanism to influence corporate decisions and it tends to go against management in shareholder-sponsored governance proposals. Note that although shares are managed by individual funds under the same institution, most of these institutions have a central team in charge of the governance and stewardship process, and they always vote with a single voice (Schmalz, 2018). Please see Appel et al. (2019), Fichtner et al. (2017), and Schmalz (2018) for detailed discussions and analyses.

In summary, the above discussions suggest that common owners have both the incentives and the abilities to influence corporate decisions through engaging with management (voice) and voting on governance and corporate decisions (vote). To the extent that common owners have weak incentives and abilities to influence co-owned firms and brokerage houses, we will not find results consistent with the hypotheses.

3. Data and Research Design

3.1. Data

To construct the sample, we first identify all analyst annual forecasts issued after the earnings announcement for the prior year, but before the fiscal-year end of the current year for the U.S. firms that are followed by at least two analysts, as commonly done in prior studies (e.g., Call et al., 2009; Malmendier & Shanthikumar, 2014). We limit the firms to non-financial firms (two-digit SIC code not between 60 and 69) and obtain analyst forecast data for the sample

[14] See Appel et al. (2019), McCahery et al. (2016), and Fichtner et al. (2017). Also see "Meet the new corporate power brokers: Passive investors," *Wall Street Journal.* October 24, 2016. https://www.wsj.com/articles/the-new-corporate-power-brokers-passive-investors-1477320101.

firms from the I/B/E/S database.

Following prior literature (Call et al., 2009; Clement, 1999), we keep the last forecast issued by each analyst for a firm-year.[15] To identify whether a firm and a brokerage house share a common owner, we collect the ownership data from Thomson's CDA/Spectrum database (form 13F). We only keep the shareholders whose holdings in both brokerage houses and firms are at least 5% of the outstanding shares to increase the power of the test; common owners with a smaller ownership likely have limited influence on the co-owned brokerage houses or firms. We then match the names of the shareholders of the listed firms with those of the brokerage houses whose analysts have been following the firms. For each firm-year, we require at least one analyst employed by the co-owned brokerage house (i.e., connected analyst) and one non-connected analyst following the same firm in the year.

We obtain financial information and stock price information from Compustat and CRSP, respectively. The final sample includes 321,905 analyst forecasts issued for 23,776 firm-years in the period of 1990–2019.[16]

Panel A of Table 1 presents descriptive statistics on the level of common ownership for the connected analyst subsample. Each firm-year-analyst has 1.363 common owners on average. The common owners hold an average of 8.1% of the co-owned firms and 7.7% of the co-owned brokerage houses.[17] Panel B of Table 1 lists the top 20 common owners for our

[15] The latest forecasts capture the information collected by analysts throughout the year and can thus better reflect analysts' ability to collect and interpret information. In an untabulated test, we employ the first forecast issued by each analyst for a firm-year. The main references remain the same.

[16] Prior research suggests that the 13F institutional ownership data are subject to some quality problems (e.g., missing information in 13F reports and incomplete coverage of securities) for the period after June 2013 (Lewellen & Lowry, 2021; J. He et al., 2020). To ensure that our inferences are not affected by these data problems, we replicate the analyses using the data from the 1990–2013 period. The inferences remain the same. Please refer to the following documents for detailed information about the data quality problems and the potential fix for these problems:
https://wrds-www.wharton.upenn.edu/documents/533/Research_Note_-Thomson_S34_Data_Issues.pdf;
https://wrds-www.wharton.upenn.edu/documents/952/S12_and_S34_Regenerated_Data_2010-2016.pdf.

[17] The common ownership variables have relatively tight distributions because we require common ownership to be at least 5%. When a firm shares multiple common owners with an analyst's affiliated brokerage house in a

sample firms. Because we restrict common owners to 13F institutions, the list includes exclusively financial institutions.[18]

3.2. Research Design

We use a pooled OLS regression to test H1 and H2:

$$ACCURACY_{ijt},\ BIAS_{ijt} = \beta_0 + \beta_1 COMMON_{ijt} + \gamma Controls + Firm\text{-}year\ FE + Broker\ FE + \varepsilon_{ijt} \quad (1)$$

where *i*, *j*, and *t* denote analyst *i*, firm *j*, and year *t*, respectively. The unit of observations is at the firm-year-analyst level, and the sample includes the latest annual earnings forecasts issued by connected and non-connected analysts for the same firm-year of co-owned firms. The dependent variable is analyst forecast accuracy or bias. Following prior studies (e.g., Gormley & Matsa, 2014), forecast accuracy ($ACCURACY_{ijt}$) is defined as −100 times the absolute value of the difference between analyst *i*'s annual EPS forecast and actual EPS for firm *j* in year *t*, deflated by the stock price immediately after the earnings announcements of the previous year; that is, $-100 * \frac{|EPS\ Forecast_{ijt} - Actual\ EPS_{jt}|}{Price_{jt-1}}$.[19] The higher the value of $ACCURACY_{ijt}$ is, the more accurate analyst *i*'s earnings forecast is. Similarly, forecast bias ($BIAS_{ijt}$) is defined as 100 times the signed value of the difference between analyst *i*'s annual EPS forecast and the actual EPS for firm *j* in year *t*, deflated by the stock price immediately after the earnings announcements of the previous year; that is, $100 * \frac{EPS\ Forecast_{ijt} - Actual\ EPS_{jt}}{Price_{jt-1}}$. The higher the value of $BIAS_{ijt}$ is, the more optimistic analyst *i*'s

year, we use the average ownership these common owners have in the co-owned firm and brokerage house in the analyses.

[18] While these common owners are likely important clients of co-owned brokerage houses, they are also likely important clients of non-co-owned brokerage houses. Our empirical design of comparing forecast performance between connected and non-connected analysts following the same firm-year controls for the potential client catering effect these common owners have on analyst forecast performance.

[19] Following prior studies (e.g., Cheong & Thomas, 2011; Kini et al., 2009), we also use total assets per share or the range of analyst forecast error (the difference between the maximum and minimum forecast error) as the deflator and obtain the same inferences. The same applies to the forecast bias measure.

earnings forecast is.

Our independent variable of interest is the indicator variable for common ownership, $COMMON_{ijt}$, which equals one if analyst *i*'s brokerage house shares a common owner with firm *j* in year *t*, and zero otherwise. When the dependent variable is *ACCURACY*, H1 predicts the coefficient on *COMMON* to be positive. When the dependent variable is *BIAS*, H2 predicts that the coefficient on *COMMON* is positive.

Following prior research (e.g., Clement, 1999; Kini et al., 2009), we control for the analyst characteristics that likely affect analyst forecast performance, including the number of firms followed by the analyst (*NFIRM*), the number of industries followed by the analyst (*NIND*), the analyst's general experience (*GEXP*), firm-specific experience (*FEXP*), and forecast frequency in the year (*FREQ*). We also control for the horizon of the forecast (*HORIZON*) and the size of the brokerage house (*BANALYST*). The Appendix presents variable definitions. We winsorize all continuous variables at the 1% and 99% levels to alleviate the effect of extreme values.

To control for the effect of firm-year characteristics on forecast performance, we include firm-year fixed effects in the regression model. This design essentially leads to a within firm-year comparison between the forecasts issued by connected and non-connected analysts.[20] We also include brokerage house fixed effects to control for time-invariant characteristics of the brokerage houses (e.g., resources available to analysts) on analyst forecast performance. Because each firm is covered by multiple analysts, we adjust standard errors by clustering at the firm level (Petersen, 2009).

[20] Gormley and Matsa (2014) show that controlling for firm-year fixed effects yields more consistent estimates than adjusting both the dependent and independent variables by their corresponding firm-year means as in other papers in the analyst literature (e.g., Call et al., 2009; Clement, 1999). When we use the mean-adjusted specification, our inferences remain the same.

3.3. Descriptive Statistics

Table 2 presents descriptive statistics on the raw values of the variables used in the analyses. The mean values of *ACCURACY* and *BIAS* are −0.95 and 0.14, respectively, which are similar to those reported in prior studies (Bae et al., 2008; W. He et al., 2020). The mean value of *COMMON* is 44%, which is comparable to 40% of common ownership relation between firms in the same industry reported by J. He and Huang (2017) and lower than 59% reported by Park et al. (2019).[21] Our sample analysts follow an average of 16.23 firms (*NFIRM*) and 3.81 industries (*NIND*), have an average of 11.25 (3.92) years of general (firm-specific) experience (*GEXP* and *FEXP*, respectively), and issue 3.71 forecasts in a year (*FREQ*). The forecasts are on average issued 95.43 days before the fiscal year end (*HORIZON*). In addition, brokerage houses on average employ 64.40 analysts (*BANALYST*). These descriptive statistics are generally comparable to those reported in prior studies (Call et al., 2009; Chan et al., 2018; Klettke et al., 2015).

4. Empirical Analyses

4.1. Main Results—Tests of H1 and H2

Tables 3 reports the regression results for testing H1 based on Equation (1) with *ACCURACY* as the dependent variable. H1 (the information hypothesis) predicts that connected analysts issue more accurate forecasts and thus the coefficient on *COMMON* in the regression is expected to be positive.

As reported in column (1) of Table 3, we find that the coefficient on *COMMON* is significantly positive (t = 2.87). This result is consistent with H1, suggesting that connected

[21] We also note that different from the definition of common ownership relationships in our study, the percentage firms having common ownership relationships in J. He and Huang (2017) and Park et al. (2019) are for firms in the same industry. Relatedly, Matvos and Ostrovsky (2008) report 15.5% of institutional shareholders simultaneously own both a target firm and an acquirer firm.

analysts issue more accurate forecasts than other analysts following the same firms. Following J. He and Huang (2017) and Freeman (2018), we replace the dummy variable *COMMON* with the number of common owners that analysts' affiliated brokerage houses and their covered firms have, denoted as *N_COMMON*, as an alternative measure of the common ownership relationship. The higher the value of *N_COMMON* is, the greater the benefit that analysts might gain from the common ownership relationship in facilitating information communication with firm management, thus the greater the effect of common ownership on analyst research. Column (2) of Table 3 shows a positive and significant coefficient on *N_COMMON* (t = 2.34), consistent with that reported in column (1).[22]

One argument might be that the above results are driven by analysts' catering to institutional investors (i.e., the common owners). Chiu et al. (2021) argue that analysts cater to the information need of institutional investors and find that analysts issue more timely and accurate forecasts for firms with high institutional investor attention. Based on this argument, it is possible that connected analysts issue more accurate forecasts for co-owned firms in order to cater to the common owners who are likely to be analysts' clients. However, this is probably not the case because common owners are likely to be important clients for both connected and non-connected analysts following the same firms. Given that our results are based on the difference in forecast accuracy between connected and non-connected analysts for the same firm-years, our research design essentially controls for the catering effect. In addition, as reported later, we do not find that connected analysts issue more frequent forecasts (a proxy for analyst effort) for the co-owned firms as suggested by the catering effect argument.

The results for the control variables are generally consistent with those reported in

[22] The highest variance inflation factor score for the variables in the regression analyses is much smaller than the conventional cut-off value of 10, suggesting that multicollinearity is unlikely to be a concern that would overturn our results.

prior research (e.g., Kini et al., 2009). We find that forecasts issued by analysts who cover more firms (*NFIRM*), analysts who issue more frequent forecasts (*FREQ*), and analysts who are employed by larger brokerage houses (*BANALYST*) are more accurate. We also find that forecasts with a longer horizon (*HORIZON*) and forecasts issued by analysts who have longer firm experience (*FEXP*) are less accurate.[23]

Table 4 presents the results testing H2 (the conflicts-of-interest hypothesis) with *BIAS* as the dependent variable. We find that the coefficient on *COMMON* is negative yet statistically insignificant at the conventional levels in column (1), suggesting that connected analysts are not different from other analysts in their forecast bias. The coefficient becomes positive and remains statistically insignificant when we replace *COMMON* with *N_COMMON* in column (2).

Because Malmendier and Shanthikumar (2014) argue and find that strategic distortion of analysts' research leads to biased recommendations, but not necessarily biased forecasts, we also conduct the bias analyses using analysts' stock recommendations. We find that connected analysts do not issue more favorable recommendations than non-connected analysts; there is no difference in recommendation bias between the two groups of analysts (untabulated).

Taken together, the results in Tables 3 and 4 are consistent with the informational effect of common ownership (H1), leading to a positive effect of common ownership on analyst forecast accuracy, and are not consistent with the conflicts-of-interest hypothesis (H2).

[23] The negative association between analyst firm experience and forecast accuracy is surprising, and inconsistent with Clement (1999). However, this association is also shown in Kini et al. (2009), suggesting that the direction of the relationship may vary depending on the research setting and the sample used in testing the relationship.

4.2. Addressing the Potential Endogeneity Concern

Endogeneity arises when omitted factors are correlated with both a connected analyst's decision to cover a co-owned firm and her forecast performance for the firm. For example, a co-owned brokerage house might assign a high-ability analyst to follow the co-owned firm. In this case, the difference in the innate ability between connected and non-connected analysts might explain the documented differences in forecast performance between these two groups of analysts. While our empirical analyses control for analyst characteristics and thus alleviate this concern, we utilize exogenous shocks to common ownership and employ a difference-in-differences (DiD) design to further address the potential endogeneity concern.

The exogenous shock we exploit is the merger of financial institutions, usually unrelated to the fundamentals of their portfolio firms (J. He & Huang, 2017), which results in the merging institutions' portfolios being managed by the merged entity, leading to a formation of common ownership between a brokerage house and the firms followed by its affiliated analysts.[24] Empirically, we require (1) the brokerage house to be held by one of the merging institutions and the firm to be held by the other merging institution in the year prior to the merger, and (2) the brokerage house and the firm to be held simultaneously by the surviving institution after the merger. During our sample period, we identify 22,737 broker-firm-years that experience the formation of common ownership (representing 1,526 co-owned firms and 143 co-owned brokerage houses). For each co-owned firm, the treatment analysts are those employed by the brokerage houses that experience the formation of common ownership relation with the firm, and the control analysts are the other, non-connected analysts covering the same firm.

To implement the DiD analyses, we require that a firm-year is covered by at least one

[24] Note that these are not mergers of brokerage houses, which do not lead to a formation of common ownership between a brokerage house and a firm.

analyst from the treatment brokerage house and one analyst from the control brokerage house and that the treatment and control analysts issue at least one earnings forecast for the firm three years before (the pre-event period) and three years after (the post-event period) the merger. These data requirements control for analyst and firm-year fixed effects, but significantly reduce the sample size, resulting in a final sample of 13,091 forecasts issued for 457 firms. The regression specification for the DiD analysis is as follows:

$$ACCURACY_{i,j,t},\ BIAS_{i,j,t} = \beta_0 + \beta_1 TREAT_{ij} + \beta_2 TREAT_{ij} * POST + \gamma Controls + Firm\text{-}year\ FE + Broker\ FE + \varepsilon_{ijt} \quad (2)$$

where $TREAT_{ij}$ is an indicator variable that equals one if analyst *i* works in a brokerage house that experiences a change in common ownership with firm *j*, and zero otherwise. $POST_{jt}$ is the indicator variable that equals one (zero) for the three years after (before) the merger of financial institutions. Our variable of interest is the interaction term, *TREAT * POST*. Because the merger of financial institutions leads to a *formation* of common ownership, we expect the coefficient on *TREAT * POST* to be positive in the analysis of forecast accuracy (bias) based on H1 (H2). In other words, the formation of common ownership leads to improved accuracy and increased optimistic bias.

Table 5 reports the regression results. We find that the coefficient on *TREAT * POST* is significantly positive (t = 1.85) in the *ACCURACY* regression in column (1), consistent with H1 and the results in Table 3. However, we find that the coefficient on *TREAT * POST* is insignificant in column (2), the *BIAS* regression. These results indicate that the exogenous formation of common ownership improves analyst forecast accuracy, consistent with the information hypothesis (H1), but has no effect on analyst forecast bias, inconsistent with the conflicts-of-interest hypothesis (H2).

We also alleviate the endogeneity concern using three additional approaches. First, we re-estimate Equation (1) using a reduced sample after the propensity score matching approach, whereby we first predict the likelihood of an analyst covering a co-owned firm in a

year based on the list of analyst and broker characteristics in Equation (1). For each connected analyst covering a firm-year, we identify three non-connected analysts covering the same firm-year with the closest likelihood of being a connected analyst (a maximum caliper width of 0.1 as in Bigus and Häfele (2018)).[25] Untabulated results are consistent with those reported in Table 3 and Table 4. Second, we include analysts' fixed effects in Equation (1) to rule out the alternative interpretation that the findings we document above are driven by observable and unobservable differences between connected and non-connected analysts.[26] Our inferences remain unchanged. Our third approach is to conduct a falsification test in which we randomly select one non-co-owned firm-year followed by each connected analyst as the pseudo-co-owned firm, and then identify all other non-connected analysts following the same firm in the year as non-connected analysts. We then estimate Equation (1) and repeat this process 100 times. Based on the average values of the coefficient estimates and *t*-values, we find insignificant results (untabulated) for both *ACCURACY* and *BIAS*. Taken together, our analyses suggest that the documented effect of common ownership on analyst forecast performance is unlikely to be driven by endogeneity, differences in analyst characteristics between connected and non-connected analysts, or a spurious effect.

4.3. Cross-sectional Analyses

In this section, we conduct cross-sectional analyses conditioning on the factors that affect the value of the information obtained by connected analysts from co-owned firms and thus its effects on analyst forecast accuracy (H1). Such analyses can shed light on the potential

[25] We acknowledge that the propensity score matching method is matched on observables and thus is limited in mitigating selection bias due to unobservables. Therefore, readers need to be cautious in generalizing the inferences of our results.

[26] In the model, we remove analysts with equal to or less than one standard deviation of the number of forecasts (seven forecasts) to alleviate the estimation biases due to insufficient time series in high-dimensional fixed effects model (DeHaan, 2021; Phillips & Sul, 2007). We note that we do not control for analyst fixed effects in our baseline regression model to avoid the same issues. In an untabulated test, we also conduct a within-analyst test and obtain the same inferences.

mechanisms through which common ownership affects analyst forecast performance. Because we do not find evidence consistent with H2, we only conduct cross-sectional analyses for H1.[27]

We first consider the level of ownership common owners have on the co-owned firms and the brokerage houses, which can affect the accessibility of analysts to firm management and thus analyst forecast accuracy. We then consider three factors that likely affect the incremental value of the information obtained by connected analysts from the covered co-owned firms: earnings quality, forecast difficulty, and the availability of an alternative source of information—management forecasts.

4.3.1. *Common Owners' Ownership Level*

Following J. He and Huang (2017) and Freeman (2018), we test whether the level of the common ownership in the co-owned firms and brokerage houses has incremental explanatory power for analyst forecast accuracy. We use two indicator variables to capture the ownership that the common owner has in the co-owned firm and brokerage house. *HIGH_OWN_F* (*HIGH_OWN_B*) is an indicator variable that equals one if the ownership of the common owner in the co-owned firm (co-owned brokerage house) is greater than 10%, and zero otherwise.[28] We use a 10% threshold of ownership to measure the significance of the

[27] In untabulated tests, we explore the economic incentives that can strengthen or weaken the common ownership-induced conflicts of interest. First, as optimistically biased analyst forecasts can help uphold high stock prices, it is possible that common owners have stronger incentives to induce connected analysts to issue optimistic forecasts before selling their shares of the co-owned firms. We use the ex-post reduction in common owners' holdings in the firm to capture their trading incentives. Second, prior research suggests that institutional investors with a short investment horizon care more about short-term stock price movements and focus more on the trading gains than those with a long investment horizon (e.g., Bushee & Goodman, 2007). Therefore, it is possible that the effect of common ownership on analyst forecast bias is more pronounced when common owners have a shorter investment horizon. We follow Gaspar et al. (2005) and use the frequency that common owners balance their positions on all of the stocks in their portfolios in a quarter, referred to as the churn rate, as the proxy for their investment horizon. However, we do not find any results consistent with the predictions.

[28] When a firm-year-analyst has more than one common owner, we use the average of ownership held by all common owners in the firm (brokerage house) in the regressions.

economic stake of the common owners in the co-owned firm (brokerage house).[29] We expect that the higher the ownership that common owners have in the co-owned firm (co-owned brokerage house), the greater the effect of common ownership on analyst research performance.

Panel A of Table 6 reports the regression results. We find that the coefficient on *COMMON* remains significantly positive, and those on *HIGH_OWN_F* and *HIGH_OWN_B* are also significantly positive when they are included separately in the regression, as reported in column (1) and column (2). Because *HIGH_OWN_F* and *HIGH_OWN_B* are positively correlated with each other, to ensure that the results in columns (1) and (2) capture different constructs, we include *HIGH_OWN_F* and *HIGH_OWN_B* simultaneously in the regression and report the regression results in column (3). Although the coefficient on *COMMON* remains positive yet statistically insignificant at conventional p-values, those on *HIGH_OWN_F* and *HIGH_OWN_B* remain significantly positive with a magnitude similar to those in columns (1) and (2). These results indicate an incremental effect of common owners' high ownership stake on analyst forecast accuracy.

4.3.2. *Alternative Sources of Information*

Earnings quality. Theory suggests that when investors have multiple information signals, the value of one signal is stronger (weaker) when the other signal is of lower (higher) quality. In the setting of analyst forecasts, prior research finds that analysts' private information is more valuable in improving their earnings forecast accuracy when earnings quality is lower (e.g., Barth et al., 2001). It thus follows that the information obtained from co-owned firms via common ownership is more valuable to the connected analysts when the co-owned firms'

[29] The finance literature commonly uses 10% or 5% ownership to define the control interests of institutions, funds, or family owners (e.g., Becht et al., 2009). Note that we only keep common owners whose holdings in both brokerage houses and firms are at least 5% of the outstanding shares to increase the power of the test in the sample selection process.

earnings quality is lower. To capture earnings quality, we compute the absolute value of discretionary working capital accruals (*DD*) estimated using the Dechow and Dichev (2002) model. A higher value of *DD* indicates lower earnings quality. We then construct an indicator variable for firm-years with *DD* above the sample median, *HIGH_DD*, and add its interaction with *COMMON* to the regression model. Column (1) of Panel B in Table 6 reports the regression results.[30] Consistent with our expectation, we find that the coefficient on *COMMON * HIGH_DD* is significantly positive, suggesting that the effect of common ownership on forecast accuracy is more pronounced for firms with poorer earnings quality.

Operation complexity. Prior studies show that operation complexity increases the cost of collecting and disseminating information to external parties, leading to a higher level of information asymmetry and greater difficulty to forecast earnings (e.g., Jung & Kwon, 1988). Thus, the additional information collected by connected analysts is more valuable when operation complexity is higher. To measure operation complexity, we follow Feng et al. (2009) and construct a factor score (*COPX*) based on the number of segments a firm has and whether the firm has foreign operations or restructuring transactions. A higher value of *COPX* implies greater operational complexity and thus greater difficulty in forecasting the firm's earnings. We then construct an indicator variable for firm-years with *COPX* above the sample median, *HIGH_COPX*, and add its interaction with *COMMON* to the regression model. Column (2) of Panel B in Table 6 reports the regression results. Consistent with our expectation, we find that the coefficient on *COMMON * HIGH_COPX* is significantly positive, suggesting that the effect of common ownership on forecast accuracy is more pronounced when a firm's operations are more complex and thus it is more difficult to forecast the firm's earnings.

[30] Note that *HIGH_DD* and *HIGH_COPX* discussed below are measured at the firm-year level and are thus not included in the regression owing to the inclusion of firm-year fixed effects. In contrast, *MGT_FC* discussed below is measured at the firm-year-analyst level and is thus included in the regression.

Availability of management forecasts. When other sources of public information are available, the value of the information obtained from co-owned firms via common ownership is lower. Given that a common source of public information is management forecasts, we expect that the effect of common ownership on analyst forecast accuracy is lower when managers issue management forecasts. To test this prediction, we obtain the management forecast data from the I/B/E/S Guidance database and add the interaction term of *COMMON* and an indicator variable, *MGT_FC*, which equals one if a firm has issued any earnings forecast prior to the issuance of analyst forecast in the year, and zero otherwise. Column (3) of Panel B in Table 6 reports the regression results. We find that the coefficient on *COMMON * MGT_FC* is significantly negative, suggesting that when management provides earnings forecasts, the effect of common ownership on analyst forecast accuracy is reduced.

5. Additional Analyses

5.1. Connected Analysts' Access to Firm Management

One key premise underlying H1 is that connected analysts use common ownership between their employers and the covered firms to seek favorable treatment in information acquisition activities, thus gaining information advantages over other analysts. In this section, we test this underlying assumption by using the likelihood of analysts asking questions during firms' earnings conference calls as a proxy for their access to firm management, as in Mayew (2008).[31] While analysts can have access to firm management via other means, such as office meetings and social interactions, such means are unobservable to researchers. Thus, we investigate whether connected analysts are more likely to ask questions during the Q&A sessions of firms' earnings conference calls than non-connected analysts.

[31] Mayew (2008) argues that managers can use their discretion to give some analysts more opportunities to ask questions during firms' conference calls, while discriminating against others.

Table 7 reports the regression results. The dependent variable CC_ASK_{ijt} is the natural logarithm of one plus the number of times analyst *i* asks questions during conference calls held by firm *j* in year *t*. We follow Mayew (2008) for the choice of the control variables. As reported in the table, the coefficient on *COMMON* is significantly positive ($t = 2.14$), suggesting that common ownership facilitates analysts' information acquisition activities, which in turn can improve the accuracy of their forecasts for co-owned firms.

An alternative explanation for the results in Table 7 is that connected analysts exert greater efforts in the information acquisition of the co-owned firms owing to their higher economic incentives associated with common ownership and therefore ask more questions during conference calls. To test this conjecture, we regress the level of analyst effort, proxied for by forecast frequency (*FREQ*) on *COMMON*. Untabulated results show that the coefficient on *COMMON* is significantly negative ($t = -2.40$), rejecting the alternative explanation that greater research efforts by connected analysts explain the results reported in Table 7 or the accuracy results documented earlier.

Collectively, the results in Table 7 suggest that connected analysts' preferential access to firm management through common ownership, but not their effort, at least partially explains their better forecast performance for co-owned firms.

5.2. Market Reaction to the Issuance of Analyst Forecasts

Under the information hypothesis, we argue that analysts obtain information from co-owned firms and thus have more accurate forecasts. If so, the market reaction to such forecasts should be stronger. To test whether this prediction holds, we investigate whether the market reaction to earnings forecasts issued by connected analysts differs from that issued by non-connected analysts. For this purpose, we conduct an analysis of the short-window market reaction to forecast revisions, $CAR_{ijt}(-w, w)$, which is calculated as the cumulative market-

adjusted returns in two alternative windows, a three-day window and a five-day window, surrounding the issuance of analyst *i*'s earnings forecast for firm *j* in year *t*.

Table 8 reports the regression results. The main variable of interest is the interaction term between *COMMON* and earnings forecast revision, $FREV_{ijt}$, which is calculated as analyst *i*'s EPS forecast for firm *j* in year *t* minus the latest consensus annual EPS forecasts issued within the 90 days prior to the issuance of the focal forecast, divided by stock price immediately after the earnings announcements of the previous year. We include a list of control variables following prior studies (Chan et al., 2018; Cheng et al., 2016). Consistent with the information content of analysts' forecast revision, we find that the coefficient on *FREV* is significantly positive in both columns (1) and (2), when the dependent variable is *CAR (−1, +1)* and *CAR (−2, +2)*, respectively. More importantly, we find that the coefficient on *COMMOM * FREV* is significantly positive for both the analysis of *CAR (−1, +1)* (*t* = 3.09) and the analysis of *CAR (−2, +2)* (*t* =2.75), suggesting that the market reacts more positively to forecast revisions issued by connected analysts than to those by non-connected analysts. This result is consistent with the earlier finding that connected analysts issue more accurate forecasts than non-connected analysts.[32]

5.3. Common Ownership and Information Environment Quality

Our main results suggest that common ownership fosters information communication and leads to an improvement in connected analysts' forecast accuracy without inducing analysts' optimistic biases. To shed light on whether co-owned firms also benefit from the information role of the common ownership relation, we examine the effect of common ownership on co-

[32] We repeat the analyses on the differential market reaction upon stock recommendations issued by connected analysts as opposed to non-connected analysts. Untabulated results suggest an incremental positive (negative) and significant market reactions upon strong buy (strong sell) recommendations issued by connected analysts, consistent with stock recommendations issued by connected analysts being more credible than those by non-connected analysts.

owned firms' information environment quality.

Following prior studies, we use four variables to capture firms' information environment quality: bid-ask spread, stock illiquidity, proportion of days with zero returns during a year, and analyst forecast dispersion (Fiechter et al., 2018; Gao et al., 2016; Lang & Lundholm, 1996). Firms with better information environments have lower bid-ask spread (*BID_ASK*), stock illiquidity (*ILLIQ*), proportion of days with zero returns (*ZERO_RET*), and analyst forecast dispersion (*DISP*). For this test, we include all non-financial U.S. firms with available data in Compustat and CRSP since 1990. We then construct a firm-year level indicator variable for co-owned firms, *COMMON_FIRM*, which equals one if a firm is covered by analysts employed by brokerage houses that share common owners with the firm in the year, and zero otherwise. Note that the analyses are conducted at the firm-year level.

Table 9 reports the regression results. Consistent with information role of common ownership and its positive effect on connected analysts' forecast accuracy, we find that the coefficient on *COMMON_FIRM* is significantly negative in all four specifications, suggesting that firm-years covered by connected analysts exhibit lower bid-ask spread, stock illiquidity, proportion of zero-return days, and analyst forecast dispersion. These results are consistent with our main results on the positive effect of common ownership on analyst forecast accuracy, suggesting that common ownership has a positive effect on co-owned firms' information environment quality.

6. Conclusion

We examine the effect on analyst forecast performance of the common ownership between brokerage houses and the firms followed by the analysts employed by the brokerage houses. On the one hand, common ownership helps analysts to be connected with firm management and to have better access to the information about the firms that share the same owners as the

analysts' brokerage houses, leading to higher-quality analyst research. On the other hand, common ownership can also reduce the independence of analysts because common owners can use their ownership and control over the brokerage houses to exert pressure on the analysts to issue biased research reports on the firms in their portfolios.

We find that connected analysts issue more accurate, but not more optimistically biased forecasts than non-connected analysts. Such an effect is robust after using various approaches to address the endogeneity of common ownership. We also find that the effect is stronger when common owners have higher ownership in the co-owned firms and brokerage houses, and when the incremental value of the information obtained by connected analysts from the covered co-owned firms is greater—that is, when firms have lower earnings quality, more complex operations and thus greater forecast difficulty, and do not issue management forecasts. Lastly, we find the positive effect of common ownership on analyst forecast accuracy helps improve co-owned firms' information environment, which manifests as lower bid-ask spread, stock illiquidity, proportion of zero-return days, and analyst forecast dispersion.

Overall, our paper contributes to the literature by documenting that common ownership can facilitate better communications of co-owned firms' managers with financial analysts and enhance firms' information environments.

Supplemental Data and Research Materials

Appendix Table A1. Sample selection
Appendix Table A2. Pearson correlation matrix for main variables
Appendix Table A3. Additional tests to address the potential endogeneity
Appendix Table A4. Common ownership and analyst effort
Appendix Figure A1. An example illustrating the empirical setting

References

Appel, I., Gormley, T., & Keim, D. (2019). Standing on the shoulders of giants: The effect of passive investors on activism. *Review of Financial Studies, 32*(7), 2720–2774.

Azar, J., Schmalz, M., & Tecu, I. (2018). Anti-competitive effects of common ownership. *The Journal of Finance, 73*(4), 1513–1565.

Bae, K.-H., Stulz, R. M., & Tan, H. (2008). Do local analysts know more? A cross-country study of the performance of local analysts and foreign analysts. *Journal of Financial Economics, 88*(3), 581–606.

Barroso, R., Ben Ali, C., & Lesage, C. (2018). Blockholders' ownership and audit fees: The impact of the corporate governance model. *European Accounting Review, 27*(1), 149–172.

Barth, M., Kasznik, R., & McNichols, M. (2001). Analyst coverage and intangible assets. *Journal of Accounting Research, 39*(1), 1–34.

Becht, M., Franks, J., Mayer, C., & Rossi, S. (2009). Returns to shareholder activism: Evidence from a clinical study of the Hermes UK Focus Fund. *The Review of Financial Studies, 22*(8), 3093–3129.

Bigus, J., & Häfele, S. (2018). Shareholder loans and earnings smoothing—Empirical findings from German private firms. *European Accounting Review, 27*(1), 37–74.

Bradshaw, M., Huang, A., & Tan, H. (2019). The effects of analyst-country institutions on biased research: Evidence from target prices. *Journal of Accounting Research, 57*(1), 85–120.

Bushee, B., & Goodman, T. (2007). Which institutional investors trade based on private information about earnings and return. *Journal of Accounting Research, 45*(9), 289–322.

Call, A. C., Chen, S., & Tong, Y. H. (2009). Are analysts' earnings forecasts more accurate when accompanied by cash flow forecasts? *Review of Accounting Studies, 14*(2), 358–391.

Chan, J., Lin, S., Yu, Y., & Zhao, W. (2018). Analysts' stock ownership and stock recommendations. *Journal of Accounting and Economics, 66*(2–3), 476–498.

Cheng, Q., Du, F., Wang, X., & Wang, Y. (2016). Seeing is believing: Analysts' corporate site visits. *Review of Accounting Studies, 21*(4), 1245–1286.

Cheong, F., & Thomas, J. (2011). Why do EPS forecast error and dispersion not vary with scale? Implications for analyst and managerial behavior. *Journal of Accounting Research, 49*(2), 359–401.

Cheynel, E., & Levine, C. (2020). Public disclosures and information asymmetry: A theory of the Mosaic. *The Accounting Review*, 95(1), 79–99.

Chiu, P. C., Lourie, B., Nekrasov, A., & Teoh, S. H. (2021). Cater to thy client: Analyst responsiveness to institutional investor attention. *Management Science*, 67(12), 7455-7471.

Clement, M. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics*, 27, 285–303.

Dechow, P., & Dichev, I. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review, 77*(s-1), 35–59.

deHaan, E. (2021). Using and interpreting fixed effects models. Working paper, University of Washington.

Edmans, A., Levit, D., & Reilly, D. (2018). Governance under common ownership. *Review of Financial Studies, 32*(7), 2673–2719.

Elhauge, E. (2015). Horizontal shareholding. *Harvard Law Review, 129*, 1267–1317.

Federal Trade Commission. (2018). FTC hearing #8: Common ownership hearings on competition and consumer protection in the 21st century. December 6, 2018.
Feng, M., Li, C., & McVay, S. (2009). Internal control and management guidance. *Journal of Accounting and Economics, 48*(2), 190–209.
Fichtner, J., Heemskerk, E., & Garcia-Bernardo, J. (2017). Hidden power of the big three? Passive index funds, re-concentration of corporate ownership, and new financial risk. *Business and Politics, 19*(2), 298–326.
Fiechter, P., Halberkann, J., & Meyer, C. (2018). Determinants and consequences of a voluntary turn away from IFRS to local GAAP: Evidence from Switzerland. *European Accounting Review, 27*(5), 955–989.
Freeman, K. (2018). The effects of common ownership on customer-supplier relationships. Working paper, University of Indiana.
Gao, F., Dong, Y., Ni, C., & Fu, R. (2016). Determinants and economic consequences of non-financial disclosure quality. *European Accounting Review, 25*(2), 287–317.
Gaspar, J., Massa, M., & Matos, P. (2005). Shareholder investment horizons and the market for corporate control. *Journal of Financial Economics, 76*(1), 135–165.
Ge, X., Bilinski, P., & Kraft, A. (2021). Institutional blockholders and voluntary disclosure. *European Accounting Review, 30*(5), 1013–1042.
Gormley, T., & Matsa, D. (2014). Common errors: How to (and not to) control for unobserved heterogeneity. *Review of Financial Studies, 27*(2), 617–661.
Harford, J., Jiang, F., Wang, R., & Xie, F. (2019). Analyst career concerns, effort allocation, and firms' information environment. *Review of Financial Studies, 32*(6), 2179–2224.
He, J., & Huang, J. (2017). Product market competition in a world of cross-ownership: Evidence from institutional blockholdings. *The Review of Financial Studies, 30*(8), 2674–2718.
He, J., Huang, J., & Zhao, S. (2019). Internalizing governance externalities: The role of institutional cross-ownership. *Journal of Financial Economics, 134*(2), 400–418.
He, J., Li, L., & Yeung, P. E. (2020). Two tales of monitoring: Effects of institutional cross-blockholding on accruals. Working paper, University of Georgia and Cornell University.
He, W., Jackson, A., & Li, C. (2020). Hierarchy and performance of analyst teams. *European Accounting Review, 29*(5), 877–900.
Jennings, J., Lee, J., & Matsumoto, D. (2017). The effect of industry co-location on analysts' information acquisition costs. *The Accounting Review*, 92 (6), 103-127.
Jung, W., & Kwon, Y. (1988). Disclosures when the market is unsure of information endowment of managers. *Journal of Accounting Research, 26*(1), 146–153.
Kadan, O., Madureira, L., Wang, R., & Zach, T. (2009). Conflicts of interest and stock recommendations: The effects of the Global Settlement and related regulation. *Review of Financial Studies, 22*(10), 4189–4217.
Kedia, S., Rajgopal, S., & Zhou, X. (2017). Large shareholders and credit ratings. *Journal of Financial Economics, 124*(3), 632–653.
Kini, O., Mian, S., Rebello, M., & Venkateswaran, A. (2009). On the structure of analyst research portfolios and forecast accuracy. *Journal of Accounting Research, 47*(4), 867–909.
Klettke, T., Homburg, C., & Gell, S. (2015). How to measure analyst forecast effort. *European Accounting Review, 24*(1), 129–146.
Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review, 71*(4), 467–492.
Lewellen, K., & Lowry, M. (2021). Does common ownership really increase firm coordination? *Journal of Financial Economics, 141*(1), 322–344.

Li, Z., Wong, T. J., & Yu, G. (2020). Information dissemination through embedded financial analysts: Evidence from China. *The Accounting Review, 95*(2), 256–281.
Maber, D., Groysberg, B., & Healy, P. (2014). The use of broker votes to reward brokerage firms' and their analysts' research activities. Working paper, Harvard business school.
Malmendier, U., & Shanthikumar, D. (2014). Do security analysts speak in two tongues? *The Review of Financial Studies, 27*(5), 1287–1322.
Massa, M., & Žaldokas, A. (2017). Information transfers among co-owned firms. *Journal of Financial Intermediation, 31*, 77–92.
Matvos, G., & Ostrovsky, M. (2008). Cross-ownership, returns, and voting in mergers. *Journal of Financial Economics, 89*(3), 391–403.
Mayew, W. J. (2008). Evidence of management discrimination among analysts during earnings conference calls. *Journal of Accounting Research, 46*(3), 627–659.
McCahery, J., Sautner, Z., & Starks, L. (2016). Behind the scenes: The corporate governance preferences of institutional investors. *The Journal of Finance, 71*(6), 2905–2932.
Mehran, H., & Stulz, R. (2007). The economics of conflicts of interest in financial institutions. *Journal of Financial Economics, 85*(2), 267–296.
Mola, S., & Guidolin, M. (2009). Affiliated mutual funds and analyst optimism. *Journal of Financial Economics, 93*(1), 108–137.
Park, J., Sani, J., Shroff, N., & White, H. (2019). Disclosure incentives when competing firms have common ownership. *Journal of Accounting and Economics*, 67(2–3), 387–415.
Petersen, M. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies, 22*(1), 435–480.
Phillips, P. C. B., & Sul, D. (2007). Bias in dynamic panel estimation with fixed effects, incidental trends and cross section dependence. *Journal of Econometrics, 137*(1), 162–188.
Schmalz, M. (2018). Common-ownership concentration and corporate conduct. *Annual Review of Financial Economics, 10*(1), 413–448.

Appendix. Variable definitions

Variable	Definition
Dependent variables for forecast bias and accuracy analyses	
$ACCURACY_{ijt}$	Analyst forecast accuracy, calculated as −100 * |$EPS\ Forecast_{ijt}$ − $Actual\ EPS_{jt}$|/Stock price one day after the earnings announcement date of the previous year. $EPS\ Forecast_{ijt}$ is analyst *i*'s annual EPS forecast for firm *j* in year *t*; $Actual\ EPS_{jt}$ is the actual EPS for firm *j* in year *t*. Analysts' latest annual EPS forecasts for year *t* issued after the earnings announcement of year *t*−1 but before the fiscal year end of year *t* are used. The higher the value is, the more accurate the forecast is.
$BIAS_{ijt}$	Analyst forecast bias, calculated as 100 * ($EPS\ Forecast_{ijt}$ − $Actual\ EPS_{jt}$)/Stock price one day after the earnings announcement date of the previous year. The variable definitions are the same as above. The higher the value, the more optimistically biased the forecast.
Independent variables for forecast bias and accuracy analyses	
$COMMON_{ijt}$	A dummy variable for the common ownership relation between brokerage houses and covered firms, equal to 1 if the forecast is issued by a connected analyst *i*, defined as the analyst who is employed by a brokerage house that shares common shareholders with firm *j* in year *t*, and 0 otherwise.
N_COMMON_{ijt}	The number of common shareholders between the brokerage house of analyst *i* and firm *j* covered by the analyst in year *t*.
Control variables for forecast bias and accuracy analyses	
$NFIRM_{it}$	The natural logarithm of 1 plus the number of firms followed by an analyst *i* in year *t*.
$NIND_{it}$	The natural logarithm of 1 plus the number of industries (two-digit SIC code) that analyst *i* follows in year *t*.
$GEXP_{it}$	Analyst general experience, measured as the natural logarithm of 1 plus the number of years analyst *i* has been in the database (I/B/E/S) till year *t*.
$FEXP_{ijt}$	Analyst firm-specific experience, measured as the natural logarithm of 1 plus the number of years analyst *i* has been issuing forecasts for firm *j* in the database (I/B/E/S) till year *t*.
$FREQ_{ijt}$	The natural logarithm of 1 plus the total number of annual earnings forecasts issued by analyst *i* for firm *j* in year *t*.
$HORIZON_{ijt}$	The natural logarithm of 1 plus the number of days between the date when the forecast is issued by analyst *i* for firm *j* and the fiscal year-end date of year *t*.
$BANALYST_{it}$	The natural logarithm of 1 plus the number of analysts who are affiliated with the brokerage house of analyst *i* in year *t*.
Conditioning variables for cross-sectional analyses of forecast bias and accuracy	
$HIGH\_OWN\_F_{ijt}$	An indicator variable for high ownership in co-owned firm *j*, 1 if the common owners' average ownership in firm *j* that is covered by analyst *i* at the end of year *t* is greater than 10%, and 0 otherwise.

$HIGH\_OWN\_B_{ijt}$	An indicator variable for high ownership in the co-owned brokerage house, 1 if the common owners' average ownership in the brokerage house of analyst *i* who covers firm *j* at the end of year *t* is greater than 10%, and 0 otherwise.
$HIGH\_DD_{jt}$	An indicator variable for low accrual quality, 1 if the absolute value of firm *j*'s discretionary accruals in year *t* is higher than the sample median, and 0 otherwise. Discretionary accruals are the residuals from the Dechow and Dichev (2002) regression model estimated annually for each of Fama and French's 48 industries with at least 20 firms in year *t*.
$HIGH\_COPX_{jt}$	An indicator variable for high operational complexity, 1 if firm *j*'s operational complexity in year *t* is higher than the sample median, and 0 otherwise. Operational complexity is calculated as the principal factor from a factor analysis of the number of geographic and operating segments (Compustat item, *GEOSEG* and *OPSEG*), the existence of foreign transactions (*FCAQ*), and the existence of restructuring changes (*RCPQ*).
MGT_FC_{ijt}	An indicator variable for management forecast issuance, 1 if firm *j* releases management earnings forecasts before the issuance of the forecast by analyst *i* in year *t*, and 0 otherwise.
Additional variables for the analyses of conference calls	
CC_ASK_{ijt}	The nature logarithm of 1 plus the number of times analyst *i* asks questions during conference calls of firm *j* during year *t*.
$lagASK\_DUM_{ijt}$	A dummy variable that equals 1 if analyst *i* participates in conference calls of firm *j* in year *t*−1, and 0 otherwise.
CC_OTHER_{ijt}	The nature logarithm of 1 plus the number of other firms' conference calls analyst *i* following firm *j* participates in year *t*.
$lagSBUY_{ijt}$	A dummy variable that equals 1 if the last stock recommendation issued by analyst *i* for firm *j* in year *t*−1 is a strong buy, and 0 otherwise.
$lagBUY_{ijt}$	A dummy variable that equals 1 if the last stock recommendation issued by analyst *i* for firm *j* in year *t*−1 is a buy, and 0 otherwise.
$lagHOLD_{ijt}$	A dummy variable that equals 1 if the last stock recommendation issued by analyst *i* for firm *j* in year *t*−1 is a hold, and 0 otherwise.
$lagSELL_{ijt}$	A dummy variable that equals 1 if the last stock recommendation issued by analyst *i* for firm *j* in year *t*−1 is a sell, and 0 otherwise.
Additional variables for the analyses of market reaction to earnings forecast revisions and firms' information environment	
$CAR_{ijt}(-w, w)$	The cumulative abnormal return in the [−*w*, *w*] window surrounding the issuance date (day 0) of analyst *i*'s earnings forecast for firm *j* in year *t*.
$FREV_{ijt}$	Analyst forecast revision, defined as analyst *i*'s annual EPS forecast for firm *j* in year *t*, minus the latest consensus annual EPS forecast in the 90 days prior to the issuance of the forecast, scaled by stock price immediately after the earnings announcements of year *t*−1.
BID_ASK_{jt}	The annual average of firm *j*'s daily bid-ask spread from CRSP (variables *ask* and *bid*) in year *t*.

$ILLIQ_{jt}$	The natural logarithm of one plus the Amihud illiquidity ratio for firm *j* in year *t*. Amihud illiquidity ratio is calculated as the average of the daily value of [10,000,000 * |*RET*| ÷ (*PRC* * *VOL*)], where *RET* is the holding return, *PRC* stock price, and *VOL* share volume.
$ZERO\_RET_{jt}$	The fraction of zero-return days to the total number of trading days of the stock of firm *j* in year *t*.
$DISP_{jt}$	Analyst forecast dispersion for firm *j* in year *t*, calculated as the standard deviation of the latest forecasts issued by all analysts for firm *j* in year *t*.
$COMMON\_FIRM_{jt}$	An indicator that equals 1 if firm *j* is covered by at least one connected analyst in year *t*, and zero otherwise.
$NANALYST_{jt}$	The natural logarithm of 1 plus the number of analysts following firm *j* in year *t*.
$SIZE_{jt}$	The natural logarithm of 1 plus the market value of equity (*CSHO* * *PRCC_F*) of firm *j* at the end of year *t*.
MB_{jt}	The market-to-book ratio for firm *j* in year *t*, calculated as *CSHO* * *PRCC_F / CEQ* at the end the year.
$INST_{jt}$	The total percentage of ownership by institutional investors for firm *j* at the end of year *t*.
LEV_{jt}	Financial leverage for firm *j* at the end of year *t*, calculated as total liability (*LT*) divided by total assets (*AT*) at the end of the year.
RD_{jt}	Research and development expenses (*XRD*) divided by total assets (*AT*) of firm *j* at the end of year *t*. It is set as zero if the value of *XRD* is missing.
$MISS\_RD_{jt}$	An indicator for missing value of R&D expenses, 1 if *XRD* is a missing value for firm *j* at the end of year *t*, and 0 otherwise.
$LOSS_{jt}$	An indicator for financial losses, 1 if earnings per share before extraordinary items (*EPSPX*) for firm *j* at the end of year *t* is negative, and 0 otherwise.
$EARN\_GRW_{jt}$	Earnings growth for firm *j* at the end of year *t*, calculated as year *t*'s annual earnings (*IB*) minus year *t*−1's annual earnings, deflated by year *t*−1's annual earnings.
STD_RET_{jt}	The standard deviation of monthly stock returns (RET) of firms *j* over year *t*.
RET_{jt}	The average monthly stock returns (*RET*) of firm *j* over year *t*.
STD_ROA_{jt}	The standard deviation of return on assets (calculated as *IB*/*AT*) for firm *j* over three years prior to year *t*.

Table 1. Descriptive statistics on common owners

Panel A. Descriptive statistics on common ownership

	N	Mean	Q1	Median	Q3	STD
The number of common owners between a firm and a brokerage house	140,238	1.363	1.000	1.000	2.000	0.584
Ownership in the co-owned firm	140,238	0.081	0.063	0.075	0.093	0.024
Ownership in the co-owned brokerage house	140,238	0.077	0.058	0.067	0.078	0.048

Panel B. Top 20 common owners by the frequency of appearance

Rank	Financial institution	N	%
1	Vanguard Group, Inc.	67,255	35.19
2	Blackrock Inc.	38,874	20.34
3	Fidelity Management & Research Co.	30,642	16.03
4	Barclays Bank Plc.	9,826	5.14
5	T. Rowe Price Associates, Inc.	9,652	5.05
6	State Street Corporation	8,310	4.35
7	AXA Financial, Inc.	4,338	2.27
8	Capital Research & Management Co.	2,902	1.52
9	Dimensional FD Advisors, Inc.	2,789	1.46
10	Wellington Management Co., LLP	2,631	1.38
11	Capital World Investors	1,450	0.76
12	Goldman Sachs & Company	1,174	0.61
13	Legg Mason Inc.	1,168	0.61
14	JP Morgan Chase & Co.	1,154	0.60
15	MSDW & Company	1,135	0.59
16	Mellon Bank N.A.	804	0.42
17	Private Capital Management, Inc.	714	0.37
18	Royce & Associates, LLC	686	0.36
19	Prudential Insurance Co/Amer	593	0.31
20	Earnest Partners, LLC	507	0.27
	Others	4,498	2.35
	Total	191,102	100

Panel A presents descriptive statistics on common owners' ownership for the 140,238 firm-year-analysts with *COMMON* = 1. When a firm-year-analyst has more than one common owner, we report the average ownership held by all common owners in the firm (brokerage house) for each firm-year-analyst observation. Panel B presents the top 20 financial institutions by their frequency of being common owner in the *COMMON* = 1 subsample. The number of observations is 191,102 firm-analyst-owner-year (140,238 × 1.3627, with 1.3627 being the average number of common owners between a firm and a brokerage house) for the 140,238 firm-year-analysts with *COMMON* = 1.

Table 2. Descriptive statistics on the main variables used in the analyses

Variable Name	N	Mean	Q1	Median	Q3	STD
COMMON	321,905	0.44	0.00	0.00	1.00	0.50
ACCURACY	321,905	−0.95	−0.68	−0.22	−0.07	2.62
BIAS	321,905	0.14	−0.24	−0.04	0.17	1.88
NFIRM	321,905	16.23	11.00	15.00	20.00	8.58
NIND	321,905	3.81	2.00	3.00	5.00	2.64
GEXP	321,905	11.25	4.00	9.00	17.00	8.55
FEXP	321,905	3.92	1.00	2.00	6.00	4.54
FREQ	321,905	3.71	2.00	3.00	5.00	2.20
HORIZON	321,905	95.43	53.00	65.00	122.00	79.61
BANALYST	321,905	64.40	21.00	50.00	97.00	53.24

This table presents descriptive statistics for the main variables used in the analyses from 1990 to 2019. It reports the raw values (not the log value) of *NFIRM*, *NIND*, *GEXP*, *FEXP*, *FREQ*, *HORIZON*, and *BANALYST*. Please see the Appendix for variable definitions. All continuous variables are winsorized at the top and bottom 1% levels.

Table 3. The effect of common ownership on analyst forecast accuracy

Dependent Variable	Predicted Sign	*ACCURACY*	
		(1)	(2)
COMMON	+	0.0195***	
		(2.87)	
N_COMMON	+		0.0110**
			(2.34)
NFIRM	+/−	0.0398***	0.0398***
		(5.36)	(5.36)
NIND	−	−0.0129	−0.0130
		(−1.45)	(−1.46)
GEXP	+	−0.0039	−0.0038
		(−1.10)	(−1.09)
FEXP	+	−0.0227***	−0.0227***
		(−6.67)	(−6.66)
FREQ	+	0.3414***	0.3413***
		(26.11)	(26.11)
HORIZON	−	−0.3162***	−0.3162***
		(−35.30)	(−35.29)
BANALYST	+	0.0261***	0.0267***
		(2.77)	(2.83)
Firm-year FE		Yes	Yes
Brokerage FE		Yes	Yes
Observations		321,905	321,905
Adjusted R^2		0.790	0.790

This table presents the regression analyses of analyst forecast accuracy (*ACCURACY*) on the common ownership relation between brokerage houses and the firms covered by the brokerage houses' analysts (*COMMON* or *N_COMMON*). The sample period is from 1990 to 2019. Please see the Appendix for variable definitions. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.

Table 4. The effect of common ownership on analyst forecast bias

Dependent Variable	Predicted Sign	*BIAS*	
		(1)	(2)
COMMON	+	−0.0080	
		(−1.23)	
N_COMMON	+		0.0002
			(0.06)
NFIRM	+	−0.0199***	−0.0200***
		(−2.90)	(−2.91)
NIND	+	0.0027	0.0027
		(0.33)	(0.34)
GEXP	−	0.0067**	0.0067**
		(2.10)	(2.12)
FEXP	−	0.0077**	0.0077**
		(2.42)	(2.40)
FREQ	−	−0.1069***	−0.1069***
		(−11.23)	(−11.23)
HORIZON	+	0.1354***	0.1354***
		(17.59)	(17.59)
BANALYST	−	−0.0188**	−0.0197**
		(−2.00)	(−2.10)
Firm-year FE		Yes	Yes
Brokerage FE		Yes	Yes
Observations		321,905	321,905
Adjusted R^2		0.638	0.638

This table presents the regression analyses of analyst forecast bias (*BIAS*) on the common ownership relation between brokerage houses and the firms covered by the brokerage houses' analysts (*COMMON* or *N_COMMON*). The sample period is from 1990 to 2019. Please see the Appendix for variable definitions. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.

Table 5. DiD analyses to address the potential endogeneity

Dependent Variable	*ACCURACY*	*BIAS*
	(1)	(2)
TREAT	−0.0299	0.0202
	(−0.54)	(0.33)
*TREAT * POST*	0.1022*	−0.0164
	(1.85)	(−0.29)
Controls	Yes	Yes
Firm-year FE	Yes	Yes
Brokerage FE	Yes	Yes
Observations	13,091	13,091
Adjusted R^2	0.635	0.526

This table presents the DiD regression results for the effect of the formation of common ownership between firms and brokerage houses resulted from the mergers of financial institutions from 1990 to 2019 on analyst forecast accuracy and biases. *TREAT* is an indicator variable that equals one for treatment forecasts, which are issued by analysts who are affiliated with the brokerage houses that experience the formation of common ownership relation with the covered firms due to financial institutions mergers, and zero for earnings forecasts issued by other analysts covering the same firm-year. *POST* is an indicator variable that equals one for the three-year period after the mergers, and zero for the three-year period before the mergers. Control variables included are the same as those in Table 4. Please see the Appendix for the definitions of all other variables. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.

Table 6. Cross-sectional analyses on analyst forecast accuracy

Panel A. The incremental effect of common ownership level on analyst forecast accuracy

Dependent Variable	Predicted Sign	*ACCURACY*		
		(1)	(2)	(3)
COMMON	+	0.0134*	0.0171**	0.0114
		(1.85)	(2.45)	(1.55)
HIGH_OWN_F	+	0.0270**		0.0257**
		(2.25)		(2.13)
HIGH_OWN_B	+		0.0249**	0.0229*
			(2.10)	(1.92)
Controls		Yes	Yes	Yes
Firm-year FE		Yes	Yes	Yes
Brokerage FE		Yes	Yes	Yes
Observations		321,905	321,905	321,905
Adjusted R^2		0.790	0.790	0.790

Panel B. The conditional effect of accrual quality, operational complexity, and management forecasts

Dependent Variable	Predicted Sign	*ACCURACY*		
		(1)	(2)	(3)
COMMON	+	0.0110	0.0104	0.0363***
		(1.42)	(1.32)	(3.83)
*COMMON * HIGH_DD*	+	0.0184*		
		(1.86)		
*COMMON * HIGH_COPX*	+		0.0220**	
			(2.02)	
*COMMON * MGT_FC*	−			−0.0394***
				(−3.73)
MGT_FC	+			0.1121***
				(3.49)
Controls		Yes	Yes	Yes
Firm-year FE		Yes	Yes	Yes
Brokerage FE		Yes	Yes	Yes
Observations		272,282	321,905	321,905
Adjusted R^2		0.792	0.790	0.790

Panel A presents the results on the incremental effect of the level of the common owner's ownership in co-owned firms (brokerage houses) on analyst accuracy. *HIGH_OWN_F (HIGH_OWN_B)* is an indicator variable that equals one if the ownership of the common owner in the co-owned firm (co-owned brokerage house) is greater than 10%, and zero otherwise. Panel B reports the results on the effect of common ownership on analyst forecast accuracy, conditional on accrual quality (*HIGH_DD*), operational complexity (*HIGH_COPX*), and the availability of management earnings forecasts (*MGT_FC*). Control variables included are the same as those in Table 4. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Common ownership and analysts' conference call participation

Dependent Variable	*CC_ASK*
COMMON	0.0119**
	(2.14)
NFIRM	−0.2070***
	(−25.03)
NIND	−0.0247***
	(−3.03)
GEXP	−0.0266***
	(−6.70)
FEXP	0.0350***
	(7.94)
FREQ	0.2508***
	(40.98)
HORIZON	−0.0155***
	(−7.73)
BANALYST	0.0224**
	(2.45)
lagACCURACY	0.0006
	(0.20)
lagASK_DUM	0.4311***
	(60.87)
CC_OTHER	0.3072***
	(73.97)
lagSBUY	0.1894***
	(10.43)
lagBUY	0.1907***
	(10.07)
lagHOLD	0.0506***
	(2.86)
lagSELL	−0.0405**
	(−2.11)
Firm-year FE	Yes
Brokerage FE	Yes
Observations	88,206
Adjusted R^2	0.557

This table presents the regression results on the effect of common ownership on the frequency of analysts asking questions in conference calls of co-owned firms (*CC_ASK*). The sample period is from 2002 to 2019 when conference call transcripts are available. Please see the Appendix for variable definitions. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8. Market reaction to earnings forecast revisions

Dependent Variable	*CAR (−1,+1)*	*CAR (−2,+2)*
	(1)	(2)
FREV	0.8428***	0.8927***
	(23.34)	(23.26)
*COMMON * FREV*	0.1189***	0.1139***
	(3.09)	(2.75)
COMMON	0.0002	0.0002
	(0.66)	(0.62)
NFIRM	−0.0005	−0.0007*
	(−1.38)	(−1.82)
NIND	−0.0002	0.0001
	(−0.57)	(0.18)
GEXP	0.0000	0.0002
	(0.09)	(0.96)
FEXP	0.0001	0.0000
	(0.46)	(0.18)
FREQ	−0.0003	−0.0004
	(−0.82)	(−0.87)
HORIZON	0.0001	0.0002
	(0.49)	(0.64)
BANALYST	−0.0007	−0.0007
	(−1.57)	(−1.39)
Firm-year FE	Yes	Yes
Brokerage FE	Yes	Yes
Observations	310,937	310,936
Adjusted R^2	0.390	0.391

This table presents the regression results on the differential market reactions to forecast revisions issued by connected analysts as opposed to nonconnected analysts. The sample period is from 1990 to 2019. Please see the Appendix for variable definitions. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9. Common ownership and firms' information environment quality

Dependent Variable	*BID_ASK*	*ILLIQ*	*ZERO_RET*	*DISP*
	(1)	(2)	(3)	(4)
COMMON_FIRM	−1.2801***	−0.8190***	−0.0376***	−0.0446***
	(−17.80)	(−25.30)	(−18.57)	(−4.18)
NANALYST	0.7256***	0.4188***	0.0219***	0.0152***
	(22.77)	(29.18)	(24.30)	(3.41)
SIZE	−1.0717***	−0.6322***	−0.0306***	0.0131***
	(−45.30)	(−63.47)	(−52.58)	(5.08)
MB	0.0060***	0.0024***	−0.0000	0.0002
	(3.72)	(3.79)	(−0.96)	(0.88)
INST	−0.0513	−0.3810***	−0.0190***	0.0088
	(−0.71)	(−13.66)	(−8.96)	(0.99)
LEV	0.6549***	0.1539***	0.0158***	0.0543***
	(8.29)	(5.61)	(8.73)	(5.87)
RD	−0.6941***	−0.0588	−0.0155***	−0.0825***
	(−4.57)	(−0.98)	(−4.17)	(−3.43)
MISS_RD	−0.1322*	0.0079	−0.0022	−0.0040
	(−1.70)	(0.29)	(−1.11)	(−0.54)
LOSS	0.1574***	0.0524***	0.0046***	0.1045***
	(6.44)	(5.96)	(7.36)	(25.01)
EARN_GRW	−0.0000	0.0005	−0.0002***	−0.0000
	(−0.01)	(0.84)	(−3.60)	(−0.04)
STD_RET	1.5755***	−0.4044***	−0.1315***	0.4007***
	(9.87)	(−7.56)	(−35.05)	(16.57)
RET	2.8941***	3.9100***	0.1853***	−0.6001***
	(15.13)	(50.05)	(36.50)	(−20.70)
STD_ROA	0.4133***	0.0974***	0.0036**	−0.0045
	(5.97)	(3.94)	(2.21)	(−0.45)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	104,405	106,440	108,908	74,035
Adjusted R^2	0.757	0.832	0.838	0.304

This table presents regression results on the effect of the common ownership relation between brokerage houses and firms covered by their analysts on firms' information environment quality. *COMMON_FIRM* is an indicator variable for co-owned firms that equals one if a firm is covered by analysts employed by brokerage houses that share common owners with the firm in the year and zero otherwise. We estimate the models with firm-year as the unit of analysis. All continuous variables are winsorized at the top and bottom 1% level. Robust *t*-statistics reported in parentheses are based on standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.