The interplay between bond analyst and equity analyst

Yufei Liu Ruichang Lu Xiaojun Zhang[1]

Abstract

We explore the interplay between sell-side bond and equity analysts in information provision. We use plausibly exogenous variation in the equity analyst coverage to show that bond analysts actively react to the reduction in equity analyst coverage by initiating coverage, issuing more reports, issuing reports with more pages and larger size. Moreover, these reports also have larger market impact. These effects are more pronounced for firms with less existing bond analyst coverage and firms with management earnings guidance. Overall, our results suggest that bond analyst can causally influence and shape the information environment of the firms.

Keywords: Information Provision; Bond Analyst; Equity Analyst; Intermediaries Interplay; Information Environment

[1] Yufei Liu, yufeiliu@pku.edu.cn, Department of Finance, Guanghua School of Management, Peking University; Ruichang Lu (corresponding author), ruichanglu@gsm.pku.edu.cn, Department of Finance, Guanghua School of Management, Peking University; Xiaojun Zhang, zxj@gsm.pku.edu.cn, Department of Finance, Guanghua School of Management, Peking University. We would also like to thank seminar participants and discussants at Peking University. We would also like to thank Zhi Da, Laura Liu, Bing Han, Harrison Hong, Ji-Chai Lin, Ravi Jagannathan, William Megginson, João Santos, Anand Srinivasan, and Hao Zhou for their comments. Lu thanks Peking University Guanghua School of Management "Richudongfeng young scholar" research grant for financial support for this project.

1. Introduction

Corporate information environment is largely shaped by the disclosure by the firm and information provided by the financial intermediaries including equity analysts, credit rating agencies, and debt analysts. Although the literature generally focuses on sell-side equity analysts as a key information intermediary, other information intermediaries are important in understanding the development of the overall corporate information environment. Especially due to the endogenous nature of the corporate information environment, the information provision by different sources are dynamically balanced. Therefore, the interdependencies between the various parts of the information environment are of great importance to study.

In this paper, we investigate the interplay between bond analysts and equity analysts, in response to the call in Berger (2011) and Beyer et al. (2010)[2]. Both equity analysts and bond analysts play an important role in shaping the corporate information environment, by primarily serving the needs of the equity investors and debt investors respectively. Healy and Palepu (2001) suggest that the information asymmetry between capital providers and firm managers drives the demand for information intermediaries, who engage in private information production to uncover managers' superior information. Consistent with this, a large literature in finance and accounting examines the consequences of equity analyst research. While there is relatively less research on bond analyst, recent studies such as Johnston et al. (2009), De

[2] In the survey papers, Berger (2011) encourages the research "considering the role of debt analysts in the firm's information environment." Beyer et al. (2010) encourage the studies related to "the interplay between the information provided by sell-side security analysts and other information intermediaries (such as debt analysts)."

Franco et al. (2009), De Franco et al. (2014), and Gurun, et al. (2016), highlight the importance of debt analysts in the firms' information environment.

Conceptually, the information provided by debt and equity analysts could be complimentary, substitutable, or non-related. Since both equity and bond analyst collect and interpret information (i.e. cash flow and risk) about public corporate securities and provide investment recommendation to market participants, there will be some overlapped information which is valuable to both equity investors and debt investors. Bond analysts' reports provide an extensive review of firms' financial performance, including detailed examinations of EBITDA, free cash flow, capital expenditures, and liquidity and leverage ratios. The implications of firms' growth potential on these measures are often discussed (BMA, 2004). Such information is frequently covered in the equity analyst report as well.

The overlapped information could lead to two opposite prediction on the interplay between bond and equity analyst. On one hand, the information overlap could lead to a substitution effect. The reduction in information provision by equity analysts may cause information shortage in the market. Bond analysts would play the substitutional role by providing more information because now the information provided may become more valuable and demanded by the investors due to the information shortage in the market.

On the other hand, the information overlap could lead to a complementary effect. To obtain accurate valuation and pricing information for debt securities, bond analysts can work in close cooperation with sales and trading personnel as well as equity analysts (BMA, 2004). If equity analyst reduces information provision, it worse off the information environment and increases the information collection and interpretation cost for the bond analyst. Therefore, the bond

analyst would reduce the information provision in response to the reduction in equity analyst coverage.

Alternatively, since both bond and equity analysts' reports primarily serve the needs of their respective investors, the information provided by equity and bond analysts could be non-related. Because of the differences in security payoffs and market characteristics, bond and equity investor groups have different informational needs. Since the payoff of the bondholders is more sensitive to the downside risk, bond investors have an asymmetric demand for information about the firm's prospect and future performance. In contrast, equity investors would be more sensitive to the upside risk news. This feature could be reflected in the equity and bond reports and leads to different information content in their reports. Therefore, the bond analyst may not react to the change of equity coverage.

The main empirical challenge in studying the interplay is that both bond analyst and equity analyst coverage are endogenous: bond analyst chooses to provide more information for reasons that could well affect equity analyst directly. For example, evidence indicates that bond analysts provide more reports when firms have debt-equity conflict events, e.g. M&A, share repurchases, or excessive dividend payments (De Franco et al, 2014). However, these events would well affect shareholder's value and lead to a larger information demand for equity investors and thereby more coverage by equity analyst. As the changes of equity analyst following are not random (McNichols and O'Brien, 1997), to test the effect of equity analysts on bond analyst has therefore proved challenging and overlooked in the academic literature.

We use plausibly exogenous variation in the supply of equity analyst information to show that bond analysts react actively in terms of information provision frequency and information

content. Our tests exploit a natural experiment first explored in Hong and Kacperczyk (2010, henceforth HK). Between 1988 and 2005, there were 14 mergers between brokerage houses. If both the acquirer and target cover the same stock before the merger, usually the analyst from the acquirer remains and the analyst from the target leaves, resulting in the reduction of equity analyst coverage. HK demonstrate that the equity analyst coverage termination caused by brokerage mergers is unrelated to the coverage decision of the analysts and the firm characteristics. Therefore, the brokerage mergers provide us with an ideal setting to examine the causal relationship between the change of equity analyst coverage and the reaction of bond analysts.

We identify firms in HK's sample with bond outstanding at the event date and having at least one bond analyst report in the database. The treatment group is firms that covered by both merging brokerage houses and the control group is the remaining firms. We use the difference-in-differences methodology to isolate the partial effect of the merger on the information provision behavior of bond analysts.

Our key findings are as follow. First, we begin with verifying the validity of the setting by showing that, before the shock, the treated and control firms have a similar trend in bond analyst coverage. However, after the shock, the control firms continued their trend in bond analyst coverage while the treated firms exhibit a significant increase in bond analyst coverage and the number of bond analyst reports. Specifically, the treated firms experience an increase in the number of bond analyst coverage by 0.23 (sample mean=0.31), an increase in the number of bond reports by 0.33 (sample mean=0.49), an increase in the number of pages per report by 0.16 (sample mean=0.85), and an increase in the file size per report by 12.9 kb (sample

mean=17.1kb). These effects are both statistically and economically significant, which indicate that when there is less information provided by equity analyst, the bond analysts will play the substitutional role and provide more information to the market.

Second, we investigate the valuation impact of bond analyst report after the shock. When there is a shortage in information provision in the equity side, the information from bond analyst could be more valuable for equity investors. We investigate the short-run abnormal return around the disclosure of bond analyst report in the equity market. The results are consistent with our conjecture in that the post-shock market reaction is stronger. The finding suggests that bond analyst provides more information into the market and this information is more valuable to the market participants.

Third, we use cross-sectional analysis to further understand how the cost and benefit affect the bond analysts' decision. When there is a reduction in equity analyst coverage, in general, the information collection costs would be higher for bond analyst but the marginal benefit from generating additional reports would be higher as well. First, we group the firms into three categories based on existing bond analyst coverage—none coverage, one coverage, and multiple coverages. We find that there is an inverse J-shape relation between exiting bond analyst coverage and the treatment effect. The bond analysts produce more information for treated firms with none bond analyst coverage, but the magnitude is smaller than that for treated firms with one existing bond analyst coverage. However, bond analysts produce less information for treated firms with multiple bond analyst coverage. The finding suggests that the reduction in equity coverage increases the information processing cost for the bond analyst, and the existing bond analyst coverage may mitigate the cost while also reduce the benefit of

issuing reports. Bond analysts face this trade-off and decide to increase or decrease the coverage accordingly. These finding also suggests that the substitutional and complementary effect may co-exist between equity analyst and bond analyst.

We next turn to the firms with and without earnings guidance. It helps to further understand the relationship between provision behavior of bond analysts and company voluntary disclosure. We find that the treatment effect is stronger for firms with earnings guidance than firms without earnings guidance. This is consistent with literature that company voluntary disclosure lowers the cost of information acquisition (Bhushan, 1989a, b; Lang and Lundholm, 1996; Graham, Harvey, and Rajgopal, 2005).

To mitigate the concern that our main results may be driven by the heterogeneity between treatment and control samples, we conduct a series of robustness test using a matching technique. We assign each of the firms in the treatment sample to its own benchmark portfolio. The matching criteria are same one-digit SIC industry, same initial bond analyst coverage (0/1/>=2), and same market capitalization group (2 groups). The results of the benchmark-adjusted difference-in-differences estimator (BDID) and the regressions using the matched sample are similar to the results using the total sample.

This study makes three contributions to the literature. First, to the best of our knowledge, our paper is the first attempt to investigate the interplay between bond analyst and equity analyst. Our study directly responses to the calls of Beyer et al (2010) and Berger (2011) for more research on the interplay among different information intermediaries in shaping the information environment of the firms. Balakrishnan et al (2014) find that firms actively shape their information environments by voluntarily disclosing more information than regulations mandate

when the coverage of equity analyst reduces. We provide causal evidence by showing that the bond analyst as an important information source reacts actively to the equity analyst information provision.

Second, we contribute directly to a small but growing literature on bond analysts. Johnston, et al. (2009) study the determinants and market impact of sell-side debt research, providing evidence that bond analyst reports influence stock prices. De Franco, et al. (2009) argues that the bond analyst provides new information to bond investors, issues more negative reports than equity analysts, and provides more information about low credit quality firms. De Franco et al (2014) investigate how the tone of sell-side debt analysts' discussions about debt-equity conflict events affects the informativeness of debt analysts' reports in debt markets. Gurun, et al. (2016) finds that bond analysts reduce information asymmetry between equity and fixed income markets, as debt returns lag equity returns less when debt research coverage exists. Our paper provides evidence that the informational role of bond analyst would be affected by the information environment of the firms.

Third, we contribute to the literature on the impact of equity analyst. Irani and Oesch (2013) find that a reduction in equity analyst coverage causes a deterioration in financial reporting quality. Irani and Oesch (2016) studies the impact of equity analysts on firm's earnings management, showing that managers respond to the coverage loss by decreasing real earnings management while increasing accrual manipulation. Also, firms respond to the loss of equity analyst coverage by providing more timely and informative earnings guidance. Fong et al. (2014) find a drop in analyst coverage due to brokerage house mergers result in greater optimism bias in credit ratings, consistent with the view that security analyst coverage

disciplines credit rating agencies. Our study further highlights the importance of equity analyst in influencing the decision of other financial intermediaries.

The next section describes the identification strategy, the sample construction procedure, and the variables construction. The main results of the DID estimators and regression evidence are presented in Section 3. In Section 4, we implement a series of robustness tests. We conclude in Section 5.

2. Empirical Design and Sample Construction

2.1. Empirical design

In this paper, our purpose is to examine the relation between the information provision by bond analysts and equity analysts. However, the changes of equity analyst following are not random (McNichols and O'Brien, 1997) and the termination of equity analyst coverage are usually viewed as an extremely negative signal about the firm (Scherbina, 2008). Thus, the ordinary OLS estimation is problematic because of endogeneity (e.g. omitted variables bias), since bond analyst chooses to provide more information for reasons that could well affect equity analyst directly. For example, evidence indicates that bond analysts provide more reports when firms have debt-equity conflict events, e.g. M&A, share repurchases, or excessive dividend payments (De Franco et al, 2014). However, these events would well affect shareholder's value and lead to a larger information demand for equity investors and thereby more coverage by equity analyst.

To address the endogeneity concern, we utilize the setting of brokerage house mergers to identify a source of exogenous variation in equity analyst coverage. If both the acquiror and target cover the same stock before the merger, usually the analyst from the acquiror remains and the analyst from the target leaves, resulting in the reduction of equity analyst coverage. HK demonstrate that the equity analyst coverage termination caused by brokerage mergers is unrelated to the coverage decision of the analysts and the firm characteristics. Therefore, the brokerage mergers provide us with an ideal setting to examine the causal relationship between the change of equity analyst coverage and the reaction of bond analysts.

We follow Hong and Kacperczyk (2010) to identify relevant mergers. We start with the sample of financial mergers from the Securities Data Company (SDC) Mergers and Acquisition database, and screen out the deals with the target company with the four-digit SIC code as 6211 ("Investment Commodity Firms, Dealers, and Exchanges"). We then select the mergers with both the bidder and target brokerage houses covered by Thomson Reuters Institutional Brokers' Estimate System (I/B/E/S). In addition, we require both merging brokerage houses cover at least two stocks at the same time before the merger. These sample restrictions result in a sample of fifteen mergers. Our final sample contains 14 mergers after merging with the bond analyst reports data.

In order to test the potential effect of the exogenous decrease of equity analyst coverage on the information provision of bond analysts, we need to identify a representative event window before and after the merger. As the frequency of bond analyst reports is relatively low, we need to maintain an event window long enough to examine the reaction of bond analysts after the merger. However, if the window is too long, it may mix the effect of mergers and other

irrelevant information. For this reason, we choose a two-year event window consisting of a one-year pre-merger period and a one-year post-merger period[3], which is consistent with the identification strategy in previous studies (e.g. Hong and Kacperczyk, 2010; Irani and Oesch, 2013; Irani and Oesch, 2016).

We use (-1,+1) year event window to calculate the number of equity analysts following as well as the information provision activity of bond analysts, including the number of bond analysts following, the average and the total number of pages of bond analyst reports and the average and total file size of bond analyst reports.

Simply calculating the change of information provision by bond analysts of treated firms after the merger may overlook the trend in bond analysts' information provision behavior from year to year for all the firms. To account for the potential time trend, we use the standard difference-in-differences (DID) methodology. In this study, the overall sample includes all companies having bond outstanding at each event date with at least one bond analyst report as at the end of 2014[4], which excludes the companies that have never been covered by bond analysts. The treatment group includes firms with overlapping coverage by both merging brokerage houses. The control group includes the remaining firms. By denoting the average variable of interest in the treatment group (T) and control group (C) in the pre- and post-merger

[3] Alternatively, we also tried the (-2, +2) and (-3, +3) year as event window. The results are qualitatively the same.

[4] We choose 2014 as the ending year, because the average maturity for the bonds at issue is about 8.4 years and last merger event was in 2005. In order to capture the bond analyst's decision on covering the bond, we can't drop those firms without bond analyst coverage, otherwise there would be sample selection problem. Meanwhile, there are some firms never covered by bond analyst, so including these firms will decrease the testing power of the treatment. Therefore, we require that firms need to have ever been covered by the end of our data collection period, capturing the idea that these firms are potential candidate for the coverage choice. As robustness tests, we tried to require the firms ever covered by the end of 2008, 2010, and 2012.The results are qualitatively the same. We also tried to require the firms to have bond analyst coverage in the (-1,+1) or (-3,+3) event window, while the sample reduces significantly, the results are qualitatively the same.

year as V_(T,1), V_(T,2), V_(C,1), and V_(C,2), the DID estimator which measures the effect of the merger is calculated as follows.

$$DID=(V\_(T,2)-V\_(T,1))-(V\_(C,2)-V\_(C,1)) \quad (1)$$

The variables of interest are information provision behavior of bond analysts and stock market reaction to bond analyst reports. The DID estimator compares the differences in the characteristics across the event window between the treatment and control firms. The DID estimator is unbiased as long as the merger events are not systematically related to other factors affecting variables of interest.

One remaining concern with the DID estimator is that the treatment and control groups may be significantly different from each other. If this is the case, the "DID estimator" we calculate from equation (1) may capture the differences in the characteristics of the two groups in addition to the effect of the merger. For example, large firms are more likely to be covered by equity analysts and thus have a higher probability to be treated firms. Meanwhile, these large firms may also are more likely to attract the attention of bond analysts. Thus, we need to control for such systematic differences between the treatment and control groups. We provide two approaches to mitigate this potential concern. One is to include additional control variables in regression models as detailed below; the other is to implement a matching technique between the treatment and control groups, as detailed in Section 4.

We run panel regressions using DID methodology with the following model:

$$V=\alpha+\beta_1 POST+\beta_2 TREATED+\beta_3 POST\times TREATED+Controls+\varepsilon, \quad (2)$$

where V is our variable of interest; POST is an indicator variable that equals to one after the event and zero otherwise; TREATED is a dummy variable that indicates whether the firm

is in the treated group or not; and Controls is a vector of firm characteristics affecting V. The coefficient of the interaction term, β_3, is our primary of interest, which captures the partial effect of the merger on the variables of interest, corresponding to the DID estimator in equation (1).

The regressions use fixed effects estimation include merger and firm fixed effects, which accounts for time-invariant characteristics that may affect the behavior of bond analysts and the influence of bond analyst reports. We calculate standard errors by clustering at the merger groupings, which address the concern that the errors are correlated within merger grouping (Moulton, 1986).

2.2. Sample Construction

We describe how we construct our sample in this section. We follow Hong and Kacperczyk (2010) to select the set of relevant mergers. We start by collecting data on equity analyst coverage from Thomson Reuters Institutional Brokers' Estimate System (I/B/E/S). For each merger, we calculate analyst coverage of a firm in the one-year pre-merger period and the one-year post-merger period. Between 1988 and 2005, there were 14 mergers between brokerage houses.

The data on bond analyst reports are manually collected from ThomsonOne Banker, covering the period 1984-2014. We examine the number of bond analysts covering a firm, the number of pages and the file size of bond analyst reports. The data on the bond amount outstanding is from Mergent Corporate Bond Securities Database.

The trading data of firms over the period 1985-2006 is from the Center for Research in Security Prices (CRSP). We obtain daily and monthly stock returns, monthly closing prices,

and monthly shares outstanding of stocks listed in NYSE, AMEX, and NASQAD. We focus on firms' ordinary share with CRSP share codes of 10 or 11. The annual financial data and S&P long-term issuer credit rating are from COMPUSTAT.

The final sample includes all companies with non-zero bond outstanding at the event date, and with at least one bond analyst report by the end of 2014[5]. The treatment group includes firms with overlapping coverage by both merging brokerage houses and the control group includes all of the remaining firms. These requirements result in a final sample of 7,909 firm-merger observation, including 630 treated firm-merger observations. Table 1 presents the sample selection process.

2.3. Measuring information provision behavior of bond analysts

Typically, bond analysts identify whether firms' credit fundamentals are improving or weakening, and forecast whether firms' bond securities are likely to outperform (or underperform) relative to bonds of comparable risk with similar contractual features. This analysis is reflected in an investment recommendation (i.e., buy, hold, or sell) issued to bond investors.

We measure the information provision behavior of bond analysts using several different variables, which are the number of bond analyst following the firm, the number of analyst reports, as well as the pages and file size of bond analyst reports. For firms with zero bond analyst coverage, we denote the number, the page and file size of bond analyst reports as zero.

[5] Check footnote 2 for the detailed discussion.

We winsorize the number of pages and file size for the top 2.5% percentile because these measures are highly skewed.

For each merger, we construct the variables in the one-year pre-merger period and one-year post-merger period. Specifically, *Bond_Coverage* is the number of bond analysts covering the bond issued by the firm during the one-year period. *Report_Number* is the number of bond analyst reports about the bond issued by the firm during the one-year period. *Page_Mean* is the average number of pages of bond analyst reports about the bond issued by the firm during the one-year period. *Page_Total* is the total number of pages of bond analyst reports about the bond issued by the firm during the one-year period. *Size_Mean* is the average file size of the bond analyst reports about the firm during the one-year period. *Size_Total* is the total file size of bond analyst reports about the firm during the one-year period.

2.4. Measuring stock market reaction to bond analyst reports

We measure the importance of the information provided by bond analysts using the stock market reaction to bond analyst reports. We consider the cumulative abnormal return in (-1 day, +1 day), (-2 day, +2 day), and (-3 day, +3 day) event window around the issuance of bond analyst report, denoting as CAR1, CAR2, and CAR3, respectively. *CAR1_Mean* is the average effect of bond analyst reports on one stock during the one-year period, calculated as the mean of the absolute values of CAR1. *CAR1_Total* is the total effect of a bond analyst report for each stock during the one-year period, calculated as the sum of absolute values of CAR1. *CAR2_Mean*, *CAR2_Total*, *CAR3_Mean*, *CAR3_Total* are defined in a similar way.

We do not look at the bond market reaction, because the bond market trading data is only gradually available after the implementation of Trade Reporting and Compliance Engine (TRACE) in July 2002 (Bessembinder and Maxwell, 2008). Therefore, our sample does not have enough observation to conduct the tests.

2.5. Control Variables

We control for a series of firm characteristics in the regressions to mitigate the concern that the systematic differences between the treatment and control group may drive the observed results. *Ln(Size)* is the natural logarithm of the firm's market capitalization at the end of the year. Return is the average monthly return of the stock. *Ln(BM)* is the natural logarithm of the firms Book to market ratio at the end of the year. The dummy variable *SP500* equals one when the stock is included in the S&P500 index, and zero otherwise. *Coverage* is the number of equity analysts covering the stock during the one-year period. *Sigma* is the variance of daily returns of the stock during the year. *Profit* is the firm's ROA (operating income divided by book value of assets) at the end of the year. *SPRating* is the S&P long-term issuer credit rating, with 1 indicating rating AAA and 21 indicating rating C.

Table 2 presents the summary statistics for the treatment (Panel A) and control (Panel B) groups in the pre-merger period. Treated firms have a larger firm size, a lower book to market ratio and slightly higher profitability compared to control firms. The median credit rating for treated and control firms are BBB+ and BBB, respectively. 66% of firms in the treatment

sample are included in S&P500 Index, which is twice of the percentage in the control sample. The mean equity analyst coverage for treatment and control groups are 26 and 14, respectively[6].

For treated firms (control firms), the average number of bond analyst following per firm is 0.31 (0.37), the average number of analyst report per firm is 0.48 (0.55), with the average 0.85 (0.88) pages and 17.1 (21.2) kb per report and 2.02 (2.01) pages and 41.6 (53.9) kb in all reports for a firm in the pre-merger period. A simple t-test shows the difference between treated and control firms are not statistically significant (untabulated).

3. Empirical Results

In this section, we provide DID estimator and regression evidence for the change in information provision by bond analysts and stock market reaction to bond analyst reports in Section 3.1 and 3.2. In Section 3.3, we implement cross-sectional analysis to test how the treatment effect varies with the initial bond analyst coverage and the issuance of earnings guidance of companies. These results help us further understand the interaction among information from different sources.

3.1. Information Provision Behavior of Bond Analysts

Figure 1 plots the trends between the treatment and control group around the merger, providing evidence about the validity of our identification strategy. We plot the trend of bond

[6] In our setting, the treated firms must have overlapping coverage by at least two merging brokerage houses. Many of the mergers in our sample involve large brokerage houses, which tend to cover large firms (Hong and Kacperczyk, 2010; Irani and Oesch, 2016). The above reasons may help to explain why treated firms have larger size and greater equity analyst coverage than control firms. We attempt to show that our results are not driven by these differences in firm characteristics in the following analysis.

analyst coverage and the number of bond analyst reports in a given year for the six-year event window around the merger, three years before and three years after. The average effects of treatment firms are in solid lines, and control firms in dotted lines.

We plot the results separately for bond analyst coverage (Panel A) and the number of bond analyst reports (Panel B). The pre-trends of the two variables are parallel, and the trends of the control group are consistent before and after the merger. The trends of the treatment group change dramatically after the merger.

As Figure 1 confirms the validity of our DID method, we examine the reaction of bond analysts after the exogenous decrease of equity analyst coverage caused by brokerage houses mergers with DID estimator and regression in this section. Table 3 reports the results of equation (1), including the average changes of treated firms after the merger (Post-Pre) and the DID estimators. The information provision by bond analysts for treated firms almost doubled after the merger, with on average 0.33 more bond analyst following, 0.52 more bond analyst report, 0.43 more page, and 22kb larger file size for each report, and totaling 1.58 more pages and 58kb larger file size for each firm.

After deducting the time trend of the control group, the DID estimators are still very significant statistically and economically. Additionally, the merger on average brings 0.23 more bond analyst following for treated firms, with the number of bond analyst reports increase by 0.33, the file size is higher by 0.32, and totaling page and file size increase by 0.94 and 39.37 respectively. The results indicate that bond analysts tend to provide more information when there is an exogenous reduction of information provided by equity analyst. Bond analysts fill

the information gap by initiating coverage of the treated firms, issuing a greater number of reports, and providing reports that are more information content.

We continue the regression analysis based on DID methodology. Table 4 reports the regression evidence of model (2). The dependent variables for the column (1)-(6) are natural logarithm of one plus the variables measuring information provision behavior of bond analysts. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groups.

The coefficients of the interaction term *POST* × *TREATED* are all statistically significant. After controlling for other variables, the partial effect of the merger on the information provision behavior of bond analysts increases by 9.87% to 53.01%, measured by six different dependent variables. The results of Table 4 are consistent with those of Table 3.

The coefficients of *TREATED* are significantly negative for all the six specifications, indicating that the average information provision by bond analysts for treated firms are 7.54%-33.99% lower than that of control firms, which are very significant economically. The coefficients of *POST* are significantly positive for all the six specifications, suggesting that the information provision by bond analysts is increasing over time for all firms. The information provision by bond analysts in the post-event year is 7.22%-43.65% higher than the pre-event year.

As for the control variables, the book to market ratio and profitability of firms are negatively correlated with the information production of bond analysts, consistent with bond analyst literature that bond analysts focus more on down-side risk (Johnston, Markov, and Ramnath, 2009; Gurun, Johnston and Markov, 2015; etc.), as lower book to market ratio and

profitability indicates higher possibility of financial distress. The dummy variable S&P500 also has strong explanatory power for the information provision behavior of bond analysts. The equity and bond analysts both tend to follow companies incorporated in the S&P500 Index, since S&P500 firms have a larger investor base and thus greater demand for information from security analysts.

Overall, the above results suggest that bond analysts and equity analysts are substitutional in information provision. When there is an exogenous reduction in equity coverage, the bond analysts would react by providing more information to the market.

3.2. Stock Market Reaction to Bond Analyst Reports

In the above section, we show the information substitution between bond analysts and equity analysts. How is this information evaluated by market participants? We expect that after the exogenous decline of information provided by equity analysts, the importance of the information provided by bond analysts will be higher and equity investors paying more attention to bond analyst reports. We measure the importance of the information provided by bond analysts by the stock market reaction to bond analyst reports and test the above hypothesis. We distinguish the intensive margin—the effect of an individual bond analyst report (*CAR_Mean*) and extensive margin--the total effect of bond analyst reports about a firm during the one-year period (*CAR_Total*), in order to rule out the possibility that bond analysts just react by slicing the same information set into more reports. We choose three windows to calculate cumulative abnormal return: (-1 day, +1 day), (-2 day, +2 day), and (-3 day, +3 day) respectively. We use the absolute value of cumulative abnormal returns to calculate the average and total influence of bond analyst reports on the stock price.

Table 5 reports the average changes of treated firms after the merger (Post-Pre) and the DID estimators involving the stock market reaction to bond analyst reports. The average absolute cumulative abnormal return around the issuance of bond reports for treated firms experience a large increase after the merger, with average 0.48%-0.73% increase for each bond analyst report, and totaling 2.16%-3.00% increase for each firm.

After deducting the time trend of the control group, the DID estimators for CAR_Total are still very significant statistically and economically, while the DID estimators for CAR_Mean become not significant at 10% level. The partial effect of the merger on stock market reaction to bond analyst reports, measured by total absolute cumulative abnormal return caused by bond analyst reports about a firm during the one-year period, is significantly positive at 5% level. The economic magnitude of the merger's effect varies from 0.08% to 1.42% across the three windows. The increase of influence of an individual bond analyst reports on stock price is not significant, while the change of total influence of bond analyst reports on a firm during the period is positive. The results suggest that the total information provided by bond analysts have a greater influence on the stock market after the exogenous reduction of information provided by equity analysts. The treatment effect is mainly concentrated in the extensive margin (greater number of bond analyst reports) rather than the intensive margin (richer information in each report).

We further implement the regressions to test the stock market reaction to bond analyst reports. Table 6 reports the results of the model (2), with the dependent variables measuring the importance of the information provided by bond analysts. The dependent variables for the column (1)-(6) are mean and total absolute CAR with three-day, five-day, and seven-day

window, respectively. All specifications include merger and firm fixed effects. Standard errors are clustered at the merger groupings.

Our main interest is the coefficients of the interaction term POST × TREATED, which measures the DID effect of the merger. As expected, the coefficients of *POST* × *TREATED* are all positive, with the coefficients of column (2) and (5) significant at 10% level. After controlling for other variables, the partial effect of the merger on stock market reaction to bond analyst reports increases by 0.18% for average CAR in (-2 day, +2 day) window and 1.01% for total CAR in the same window. These results are even larger than simple DID estimators.

The coefficients of TREATED are significantly negative in column (4)-(6), indicating that the influence of bond analyst reports on the stock market are lower for treated firms which have larger equity analyst coverage. The coefficients of POST are significantly positive for all the six specifications, suggesting that the influence of bond analyst reports on the stock market is increasing over time for the total sample.

Overall, the results of this section are consistent with the baseline results of Section 3.1 that there is information substitution rather than information complementarity between bond and equity analysts.

3.3. Cross-sectional Analysis

We use cross-sectional analysis to further understand how the cost and benefit affect the bond analysts' decision. When there is a reduction in equity analyst coverage, in general, the information collection costs would be higher for bond analyst but the marginal benefit from generating additional reports would be higher as well. Since the existing bond analyst coverage may mitigate the cost while also reduce the benefit of issuing reports, bond analysts are subject

to this trade-off and decide to increase or decrease the coverage accordingly. We attempt to understand the impact of existing bond analyst coverage (Section 3.3.1). We next turn to the firms with and without earnings guidance. The extant literature suggests that company voluntary disclosure lowers the cost of information acquisition (Bhushan, 1989a, b; Lang and Lundholm, 1996; Graham, Harvey, and Rajgopal, 2005), therefore the treatment effect on bond analyst may vary with the company voluntary disclosure (Section 3.3.2).

3.3.1. Impact of Existing Bond Analyst Coverage

We calculate the DID estimators of variables measuring information provision behavior by bond analysts using equation (2). Table 7 presents average changes of treated firms after the merger (Post-Pre) and the DID estimators involving the information provision behavior of bond analysts. Panel A, B, and C using the subsample of firms with zero existing bond analyst coverage, firms with one existing bond analyst coverage, and firms with more than one existing bond analyst coverage, respectively.

In our sample, most of the treated firms (504 out of 630) have zero bond analyst coverage before the merger. As shown in Panel A of Table 7, for the treated firms with zero existing bond analyst following, about 40% of them attract bond analyst following after the merger. For these 201 (=0.3988×504) firms that experience an increase of bond analyst coverage, the average number of bond analyst report during the one-year post-merger period is 1.48 (=0.5893÷0.3988). The average number of pages and file size of each bond analyst report is 1.57 (=0.9252÷0.5893) and 47kb (=27.8709÷0.5893), respectively. The average number of pages of total bond analyst reports about a firm in the one-year post-merger period is 3.68

(=2.1687÷0.5893) and 99kb (=58.1924÷0.5893), respectively. The effect is still very strong after deducting the time trend of the control group. The DID estimators are all significant at 1% level. For the treated firms with positive bond analyst coverage, the average number of bond analyst following is 1.27 before the merger, the average number of bond reports per firm in the one-year pre-merger period is 2.44, and the average number of pages and file size of each bond analyst report are 4.27 and 85kb respectively. Considering these numbers, the treatment effect in the subsample of firms with zero existing bond analyst following is very significant economically.

In the sample, 91 out of 630 treatment group have one bond analyst coverage before the merger. As shown in Panel B of Table 7, for the treated firms with one existing bond analyst following, the bond analyst coverage rise by 39%, increase to 1.39 after the merger. These firms experience an average 0.77 increase in the number of the bond analyst reports, while the average number of pages decrease by 1.79. The DID estimators of bond analyst coverage, the number of bond analyst reports and the total file size of bond analyst reports are significantly positive, while the DID estimator of the average number of pages of bond analyst reports is significantly negative. The results indicate that bond analysts produce more information for the treated firms with one existing bond analyst coverage by initiating following and issuing more reports, rather than providing reports with more information content. A possible explanation is that bond analysts try to fill in the information gap after the decrease of equity analyst coverage quickly by issuing reports shortly after the shock, rather than providing an in-depth report that requires a lot of time.

Only 35 out of 630 treated firms have more than one bond analysts following before the merger. As shown in Panel C of Table 7, for the treated firms with more than one existing bond analyst following, the information provision of bond analysts decrease after the merger. These firms on average lose 0.89 bond analyst following, and the number of bond analyst reports decrease by 1.17. The mean/total pages and file size of bond analyst reports decrease at the same time. The DID estimators of bond analyst coverage and number of bond analyst reports are significantly negative at 1% and 5% respectively.

To obtain accurate valuation and pricing information for debt securities, bond analysts can work in close cooperation with sales and trading personnel as well as equity analysts (BMA, 2004). If equity analyst reduces information provision, it worse off the information environment and increases the information collection and interpretation cost for the bond analyst. Meanwhile, the potential benefit of issuing bond report could be small due to existing multiple bond analyst coverage. Therefore, the bond analyst may choose to reduce the coverage as well if the cost outweighs the benefit.

Overall, the finding suggests that the substitutional and complementary effect may co-exist between equity analyst and bond analyst, depending on the cost and benefit tradeoff of issuing the bond reports.

3.3.2. Impact of Company Voluntary Disclosure

Studies like Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) indicate that voluntary disclosure reduces information asymmetry between uninformed and informed investors. Bhushan (1989a, b) and Lang and Lundholm (1996) argue that company voluntary

makes it easier for analysts to acquire information and thus increase the number of analysts following the firm. The survey evidence of Graham, Harvey, and Rajgopal (2005) are consistent with the above arguments.

In this part, we examine the impact of company voluntary disclosure on the response of bond analysts on the exogenous reduction of equity analyst coverage. Since voluntary disclosure lowers the information collection cost, the bond analyst may respond more to those treated firms with more voluntary disclosure, all else equal. We use the issuance of earnings guidance (Balakrishnan et al., 2014) as a proxy of company voluntary disclosure to verify this conjecture.

We calculate the DID estimators of variables measuring information provision behavior by bond analysts using equation (2). Table 8 shows the average changes of treated firms after the merger (Post-Pre) and the DID estimators of the information provision behavior by bond analysts. Panel A and B using the subsample of firms with and without earnings guidance respectively.

About 40% of the treated firms (247 out of 630) do not issue earnings guidance before the merger. As shown in Panel A of Table 8, for the treated firms with zero earnings guidance, the bond analysts respond to the exogenous decrease of equity analysts by initiating following and providing more information in each report (as shown by DID estimators of average pages and file size), while the number of reports decreases. The results indicate that bond analysts respond to the merger by issuing reports that are more informative rather than increase the number of reports for the firms without earnings guidance.

The remaining 60% of the treated firms (383 out of 630) issue earnings guidance before the merger. As shown in Panel B of Table 8, for the treated firms with earnings guidance, the bond analysts respond to the exogenous decrease of equity analysts by initiating following, increasing the number of reports, and providing reports with more information content. The DID estimators for all six variables are significant at 1% level. The treatment effect is also very significant economically.

Overall, the finding suggests that the treatment effect of equity coverage shock vary with the information processing for the bond analyst.

4. Robustness Tests

In this section, we implement a series of analysts to test the robustness of the previous estimated average treatment effect in Section 3.1 and 3.2. A potential concern of our identification method is that ex ante differences between the treatment and control groups may bias the estimation of the effect of the merger. In this section, we provide further robustness test for our previous findings by implementing a matching technique between the treatment and control groups.

To account for systematic differences across the two samples, we match each treated firm with its own benchmark portfolio of firms in the control sample. For each merger, we match the two samples using the pre-merger firm characteristics. We first divide the sample in each merger into 10 industry groups based on one-digit SIC code. Next, we divide firms in each industry group into three groups with existing bond analyst coverage of 0, 1, and >=2,

respectively. Finally, we sort firms in each of the above 30 groups into two portfolios according to their market capitalizations. The matching principles result in 60 (=10*3*2) portfolios. Within each of the 60 groups, the control firms are the benchmark portfolio for the treated firms. Finally, we have 596 out of 630 treated firms are matched with its own benchmark. On average, each treated firm are matched with four control firms.

Table 9 presents the summary statistics for the matched sample. The treated firms and controls firm in the matched sample are similar in characteristics such as market capitalization, profitability, S&P500, equity analyst coverage, and credit rating.

We then construct benchmark-adjusted difference-in-differences estimator (BDID) using the above matching principle. For each treated firm, the BDID estimator is calculated as follows.

$$BDID=(V\_(T,2)-V\_(T,1))-(〖BV〗\_(C,2)-〖BV〗\_(C,1)) \quad (3)$$

The first component of equation (3) is the difference in variables of the treated firm between the post- and pre-merger period. The second component is the difference in the average characteristics of the benchmark portfolio between the post- and pre-merger period. The BDID estimator captures the DID effect of the merger on the treated firms. We take the mean of all individual BDID estimators to estimate the average effect for the treatment group.

Table 10 reports the results of equation (3), including the average changes of treated firms after the merger (Post-Pre) and the BDID estimators involving the information provision behavior of bond analysts. The results are consistent with that in Table 3. For the number of bond analyst coverage and the number of pages of bond analyst reports, the BDID estimators are even larger than DID estimators.

Table 11 reports the average changes of treated firms after the merger (Post-Pre) and the BDID estimators for the stock market reaction to bond analyst reports. Similar to the DID estimators presented in Table 5, the BDID estimators for total CAR are all significant at 1% level, and the magnitude of estimators are comparable for *CAR1_Total* and *CAR3_Total*. The BDID estimator for *CAR2_Total* is much larger than DID estimator.

We also run the regressions of the model (2) using the matched sample, deleting those firms in the control sample that not contained in the benchmark portfolios. Table 12 reports the regression evidence using the matched sample, with the dependent variables measuring the information provision behavior of bond analyst. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groups and reported in parentheses. The coefficients of *POST* × *TREATED* are all significant at 5% or 10% level, which is similar to the results of Table 4. The magnitude of the coefficients of POST × TREATED is also similar.

Table 13 reports the results of the model (2) using the matched sample, with the dependent variables measuring the importance of the information provided by bond analysts. The dependent variables for the column (1)-(6) are mean and total absolute CAR with three-day, five-day, and seven-day window, respectively. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groups and reported in parentheses. The coefficients of *POST* × *TREATED* for total CAR in column (4)-(6) are significant at 5% level, and the magnitude of the coefficients is larger than that of Table 6. For average CAR in column (1)-(3), the coefficients of the interaction term remain not significant.

Overall, the results of our robustness tests are consistent with the main analysis.

5. Conclusion

Both equity analysts and bond analysts are important in shaping the corporate information environment, by primarily serving the needs of the equity investors and debt investors respectively. To the best of our knowledge, our study takes the first attempts to study the interplay between bond and equity analysts. Using brokerage houses mergers as a quasi-experiment, we are able to test the reaction of bond analysts after the exogenous reduction of equity analyst. We find that when firms experience equity analyst coverage reduction, bond analysts react by initiating coverage, issuing more reports as well as providing reports with more information content. The information provided by bond analysts also has a greater impact on the equity market after the shock. The analysis using a matching approach show that our main results are not driven by heterogeneity between treatment and control samples.

The cross-sectional analysis helps us further understand the information provision behavior of bond analysts. The results suggest that the treatment effect on bond analyst vary with the information collection cost (voluntary disclosure by the firms) and the marginal benefit (exiting bond analyst coverage) from issuing a report. Overall, our study highlights the dynamic interaction and interplay between information intermediaries that shaping the information environment of corporations.

Reference

Anderson S P, Foros Ø, Kind H J. Competition for advertisers and for viewers in media markets [J]. The Economic Journal, 2017, 128(608): 34-54.

Berger, P. G. 2011. "Challenges and Opportunities in Disclosure Research: A Discussion of 'the Financial Reporting Environment: Review of the Recent Literature,'" Journal of Accounting and Economics 51 (1-2): 204–218.

Beyer, A., D. A. Cohen, T. Z. Lys, and B. R. Walther. 2010. "The Financial Reporting Environment:
Review of the Recent Literature," Journal of Accounting and Economics, 50 (2-3), 296–343.

Bhushan R. Collection of information about publicly traded firms: Theory and evidence [J]. Journal of Accounting and Economics, 1989a, 11(2-3): 183-206.

Bhushan R. Firm characteristics and analyst following [J]. Journal of Accounting and Economics, 1989b, 11(2-3): 255-274.

Balakrishnan, Karthik, Mary Brooke Billings, Bryan Kelly, and Alexander Ljungqvist. "Shaping liquidity: On the causal effects of voluntary disclosure." the Journal of Finance 69, no. 5 (2014): 2237-2278.

Becker B, Milbourn T. Reputation and competition: evidence from the credit rating industry [M]. Harvard Business School, 2008.

Becker B, Milbourn T. How did increased competition affect credit ratings? [J]. Journal of Financial Economics, 2011, 101(3): 493-514.

Dhaliwal D S, Radhakrishnan S, Tsang A, et al. Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure [J]. The Accounting Review, 2012, 87(3): 723-759.

Diamond D W, Verrecchia R E. Disclosure, liquidity, and the cost of capital [J]. The journal of Finance, 1991, 46(4): 1325-1359.

De Franco G, Vasvari F P, WITTENBERG-MOERMAN R. The informational role of bond analysts [J]. Journal of Accounting Research, 2009, 47(5): 1201-1248.

De Franco, G., F. Vasvari, D. Vyas, and R. Wittenberg-Moerman. 2014. "Debt Analysts' View of Debt-Equity Conflicts of Interest," The Accounting Review 89 (2): 571-604.

Fong K, Hong H, Kacperczyk M, et al. Do security analysts discipline credit rating agencies? Working Paper, 2014.

Gentzkow M, Shapiro J M. Competition and Truth in the Market for News [J]. Journal of Economic perspectives, 2008, 22(2): 133-154.

Gentzkow M, Shapiro J M, Sinkinson M. Competition and ideological diversity: Historical evidence from us newspapers [J]. American Economic Review, 2014, 104(10): 3073-3114.

Graham J R, Harvey C R, Rajgopal S. The economic implications of corporate financial reporting [J]. Journal of accounting and economics, 2005, 40(1-3): 3-73.

Gurun U G, Johnston R, Markov S. Sell-side debt analysts and debt market efficiency [J]. Management Science, 2015, 62(3): 682-703.

Irani R M, Oesch D. Monitoring and corporate disclosure: Evidence from a natural experiment [J]. Journal of Financial Economics, 2013, 109(2): 398-418.

Irani R M, Oesch D. Analyst coverage and real earnings management: Quasi-experimental evidence [J]. Journal of Financial and Quantitative Analysis, 2016, 51(2): 589-627.

Johnston R, Markov S, Ramnath S. Sell-side debt analysts [J]. Journal of Accounting and Economics, 2009, 47(1-2): 91-107.

Kim O, Verrecchia R E. Market liquidity and volume around earnings announcements [J]. Journal of accounting and economics, 1994, 17(1-2): 41-67.

Lang M H, Lundholm R J. Corporate disclosure policy and analyst behavior [J]. Accounting review, 1996: 467-492.

Ljungqvist A, Marston F, Wilhelm Jr W J. Competing for securities underwriting mandates: Banking relationships and analyst recommendations [J]. The Journal of Finance, 2006, 61(1): 301-340.

Lys T, Soo L G. Analysts' forecast precision as a response to competition [J]. Journal of Accounting, Auditing & Finance, 1995, 10(4): 751-765.

Moulton B R. Random group effects and the precision of regression estimates [J]. Journal of econometrics, 1986, 32(3): 385-397.

McNichols M, O'Brien P C. Self-selection and analyst coverage [J]. Journal of Accounting Research, 1997, 35: 167-199.

Mullainathan S, Shleifer A. The market for news [J]. American Economic Review, 2005, 95(4): 1031-1053.

Scherbina A. Suppressed negative information and future underperformance [J]. Review of Finance, 2007, 12(3): 533-565.

Appendix A: Variable Definition

Variable		Definition
Ln(Size)	=	the natural logarithm of the firm's market capitalization (closing price times shares outstanding) at the end of the year.
Ln(BM)	=	the natural logarithm of the firms BM ratio (book value of equity over market capitalization) at the end of the year.
Profit	=	the firm's ROA (operating income divided by book value of assets) at the end of the year.
SP500	=	dummy variable equals one when the stock is included in the S&P500 index.
Coverage	=	the number of equity analysts covering the stock during the one-year period.
SPRating	=	the S&P long-term issuer credit rating, with 1 indicating rating AAA and 21 indicating rating C.
Bond_Coverage	=	the number of bond analysts covering the bond issued by the firm during the one-year period.
Report_Number	=	the number of bond analyst reports about the bond issued by the firm during the one-year period.
Page_Mean	=	the average number of pages of bond analyst reports about the bond issued by the firm during the one-year period.
Page_Total	=	the total number of pages of bond analyst reports about the bond issued by the firm during the one-year period.
Size_Mean	=	the average file size of the bond analyst reports about the firm during the one-year period.
Size_Total	=	the total file size of bond analyst reports about the firm during the one-year period.
CAR1	=	the cumulative abnormal return in three-day window (-1 day, +1 day) around the issuance of bond analyst report.
CAR1_Mean	=	the average effect of bond analyst reports on one stock during the one-year period, calculated as the mean of the absolute values of CAR1.
CAR1_Total	=	the total effect of bond analyst report on one stock during the one-year period, calculated as the sum of absolute values of CAR1.
CAR2	=	the cumulative abnormal return in in five-day window (-2 day, +2 day) around the issuance of bond analyst report.
CAR3	=	the cumulative abnormal return in even-day window (-3 day, +3 day) around the issuance of bond analyst report.

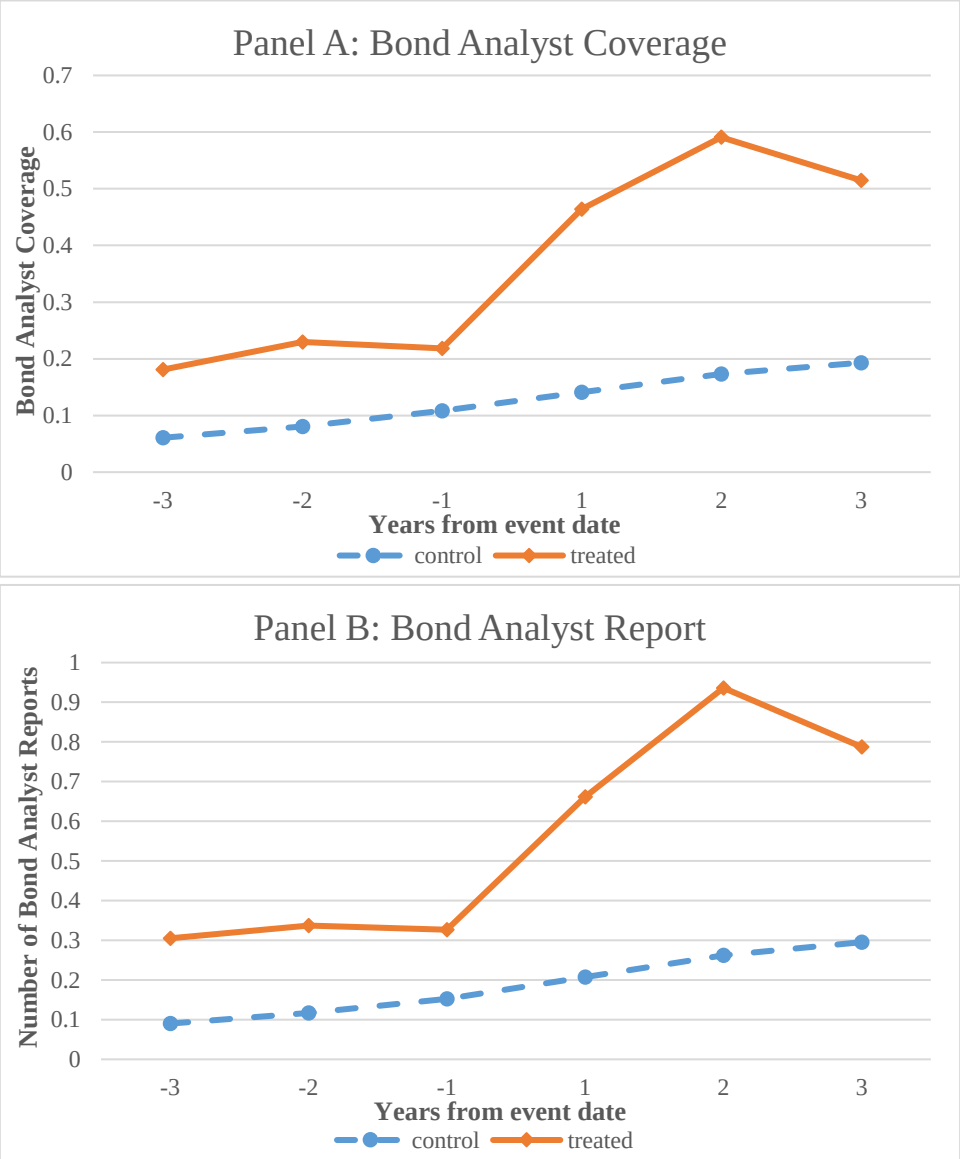

Figure 1. Bond Analyst Coverage and Bond Analyst Report:

Treatment Sample VS Control Sample

This figure depicts the trend of bond analyst coverage and the number of bond analyst reports in a given year around the merger events (e.g. and "3" means during the third year after the event). The average effects of treatment firms are shown in solid lines, and control firms in dotted lines. The total sample includes all companies having bond outstanding at the event date and having at least one bond analyst report as the end of 2014. The treatment group are firms that are covered by both merging brokerage houses and the control group is the remaining firms.

Table 1 Sample Selection

	Total		Affected Firms		Non-affected Firms	
	Unique Firms	Unique Firm-Mergers	Unique Firms	Unique Firm-Mergers	Unique Firms	Unique Firm-Mergers
Follow Hong and Kacperczyk (2010)	9,906	55,291	970	1,708	9,879	53,583
Merge with bond analyst report data	(7602)	(33697)	(384)	(574)	(7536)	(33123)
Deleting firms with no bond outstanding at event dates	(1,099)	(13,685)	(228)	(504)	(1,144)	(13,181)
Observations for DID analysis (Table 1, 2, 4, 6, 7)	1,205	7,909	358	630	1,199	7,279
Deleting firms with missing SIGMA	0	(756)	0	(18)	0	(738)
Deleting firms with missing LNSIZE	0	(8)	0	0	0	(8)
Deleting firms with missing PROFIT	(8)	(341)	(2)	(15)	(8)	(326)
Deleting firms with missing LNBM	(19)	(4)	(3)	(2)	(19)	(2)
Observations for main regression (Table 3, 5)	1,178	6,800	353	595	1,172	6,205

Notes: This table shows the sample selection criteria for our main empirical analysis. A specific firm may be affected in some mergers and not affected in others. As a result, the total firm number is less than the sum of affected firms and non-affected firms.

Table 2. Summary Statistics for the Treatment and Control Samples before the merger

Panel A: Treatment Sample						
Variable	Obs	Mean	Std. Dev.	Min	Max	Median
Ln(Size)	614	8.5392	1.3904	4.7797	12.4043	8.4816
Ln(BM)	610	-0.9682	0.8376	-4.8054	1.3199	-0.8478
Profit	610	0.1355	0.0810	-0.1954	0.9175	0.1310
SP500	613	0.6623	0.4733	0	1	1
Coverage	630	26.1632	10.6789	4	62	25
SPRating	619	7.9499	3.1621	1	17	8
Bond_Coverage	630	0.3059	0.7705	0	6	0
Report_Number	630	0.4881	1.5180	0	19	0
Page_Mean	630	0.8529	2.4607	0	15	0
Page_Total	630	2.0222	6.7464	0	48	0
Size_Mean	630	17.0737	57.1896	0	421	0
Size_Total	630	41.5911	158.7317	0	1243	0

Panel B: Control Sample						
Variable	Obs	Mean	Std. Dev.	Min	Max	Median
LNSIZE	6,709	7.4138	1.5771	2.7429	13.0470	7.3518
LNBM	6,500	-0.8291	0.7995	-6.7227	2.6188	-0.7474
PROFIT	6,634	0.1185	0.0927	-0.8834	0.9175	0.1190
SP500	6,686	0.3280	0.4695	0	1	0
COVERAGE	7,279	14.5262	9.3890	1	59	13
SPRating	6,766	9.6644	3.4341	1	25	9
Bond_Coverage	7,279	0.3667	0.9206	0	13	0
Report_Number	7,279	0.5579	1.7212	0	33	0
Page_Mean	7,279	0.8846	2.2011	0	15	0
Page_Total	7,279	2.2162	6.8671	0	48	0
Size_Mean	7,279	21.2306	59.9608	0	421	0
Size_Total	7,279	53.9966	180.2200	0	1243	0

Notes. This table reports summary statistics for the treatment and control samples in the year before the merger. The total sample includes all companies having bond outstanding at the event date and having at least one bond analyst report as the end of 2014 with the required data. The treatment group are firms that are covered by both merging brokerage houses and the control group is the remaining firms. Definition of variables can be found in Appendix A.

Table 3. Reaction of Bond Analysts: DID Estimator

Variable	Obs	Mean	t-statistic
Bond_Coverage (Post-Pre)	630	0.3265***	8.5121
Bond_Coverage (DID)	630	0.2259***	5.8901
Report_Number (Post-Pre)	630	0.5166***	6.1741
Report_Number (DID)	630	0.3288***	3.9298
Page_Mean (Post-Pre)	630	0.4339***	3.8337
Page_Mean (DID)	630	0.1679	1.4833
Page_Total (Post-Pre)	630	1.5880***	4.5974
Page_Total (DID)	630	0.9398***	2.7208
Size_Mean (Post-Pre)	630	22.0616***	7.4102
Size_Mean (DID)	630	12.9501***	4.3498
Size_Total (Post-Pre)	630	58.0618***	6.8497
Size_Total (DID)	630	39.3668***	4.6442

Notes. This table presents the reaction of bond analysts after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. For each merger, we calculate the variables in the one-year pre-merger period and one-year post-merger period. We report the average difference between the post-merger period and pre-merger period of treatment sample, as well as the difference in differences (DID) estimator. Bond_Coverage is the number of bond analysts covering the bond issued by the firm during the one-year period. Report_Number is the number of bond analyst reports about the bond issued by the firm during the one-year period. Page_Mean is the average number of pages of bond analyst reports about the bond issued by the firm during the one-year period. Page_Total is the total number of pages of bond analyst reports about the bond issued by the firm during the one-year period. Size_Mean is the average file size of the bond analyst reports about the firm during the one-year period. Size_Total is the total file size of bond analyst reports about the firm during the one-year period. *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Reaction of Bond Analysts: Regression Evidence

	(1) Ln(Bond Coverage)	(2) Ln(Report Number)	(3) Ln(Page Mean)	(4) Ln(Page Total)	(5) Ln(Size Mean)	(6) Ln(Size Total)
POST	0.0955***	0.0722***	0.1132***	0.1665***	0.3747***	0.4365***
	(0.0195)	(0.0155)	(0.0251)	(0.0357)	(0.0859)	(0.0950)
TREATED	-0.0840***	-0.0754***	-0.0881***	-0.1228***	-0.3399***	-0.3828***
	(0.0241)	(0.0183)	(0.0264)	(0.0399)	(0.0705)	(0.0849)
POST × TREATED	0.1058**	0.0987**	0.1195*	0.1748*	0.4641**	0.5301**
	(0.0413)	(0.0335)	(0.0567)	(0.0820)	(0.1849)	(0.2119)
Ln(Size)	-0.0329***	-0.0187*	-0.0379*	-0.0545*	-0.1290**	-0.1516**
	(0.0103)	(0.0093)	(0.0190)	(0.0261)	(0.0449)	(0.0512)
Return	-0.1283	-0.1068	0.0049	-0.0769	-0.0336	-0.1404
	(0.1322)	(0.1084)	(0.1834)	(0.2501)	(0.4903)	(0.5785)
Ln(BM)	-0.0244*	-0.0177**	-0.0256	-0.0412*	-0.0680	-0.0870*
	(0.0117)	(0.0072)	(0.0149)	(0.0218)	(0.0395)	(0.0471)
Coverage	0.0065**	0.0050**	0.0077***	0.0118***	0.0267***	0.0314***
	(0.0024)	(0.0020)	(0.0026)	(0.0039)	(0.0070)	(0.0085)
Sigma	3.8915	3.1692	10.5091	13.6574	-10.4038	-8.7619
	(11.1699)	(8.0292)	(11.8982)	(18.5931)	(29.0616)	(37.5657)
Profit	-0.3656***	-0.2555***	-0.3362***	-0.6484***	-0.9385***	-1.2865***
	(0.0780)	(0.0637)	(0.1037)	(0.1458)	(0.2919)	(0.3333)
SP500	0.1374***	0.1091***	0.1150***	0.1981***	0.3468***	0.4475***
	(0.0287)	(0.0207)	(0.0182)	(0.0368)	(0.0609)	(0.0838)
Constant	-0.0142	-0.0606*	-0.0122	-0.0182	-0.0576	-0.0446
	(0.0373)	(0.0284)	(0.0725)	(0.0852)	(0.1488)	(0.1521)
R^2	0.188	0.192	0.155	0.184	0.170	0.186
adj. R^2	0.186	0.190	0.153	0.183	0.169	0.184
N	13600	13600	13600	13600	13600	13600

Notes. The sample includes all companies having bond outstanding at the event date and having at least one bond analyst report as the end of 2014 with the required data. The dependent variables for the column (1)-(6) are natural logarithm of one plus the variables. Definition of variables can be found in Appendix A. For each merger, we calculate the variables in the one-year pre-merger period and one-year post-merger period. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groupings and reported in parentheses with * for p<0.10, ** for p<0.05, and *** for p<0.01.

Table 5. Stock Market Reaction to Bond Analyst Reports: DID Estimator

Variable	Obs	Mean	t
CAR1_Mean (Post-Pre)	630	0.4838%***	3.3647
CAR1_Mean (DID)	630	0.0923%	0.6419
CAR2_Mean (Post-Pre)	630	0.6207%***	3.6426
CAR2_Mean (DID)	630	0.0827%	0.4855
CAR3_Mean (Post-Pre)	630	0.7326%***	3.8682
CAR3_Mean (DID)	630	0.0432%	0.2282
CAR1_Total (Post-Pre)	630	2.1597%***	4.3632
CAR1_Total (DID)	630	1.1438%**	2.3107
CAR2_Total (Post-Pre)	630	2.6032%***	4.8018
CAR2_Total (DID)	630	0.0827%**	2.3550
CAR3_Total (Post-Pre)	630	3.0017%***	4.8142
CAR3_Total (DID)	630	1.4243%**	2.2844

Notes. This table presents the stock market reaction to bond analyst reports after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. For each merger, we calculate the variables in the one-year pre-merger period and one-year post-merger period. We report the average difference between the post-merger period and pre-merger period of treatment sample, as well as the difference in differences (DID) estimator. CAR1 is the cumulative abnormal return in a three-day window (-1 day, +1 day) around the issuance of a bond analyst report. CAR1_Mean is the average effect of bond analyst reports on the firm during the one-year period, calculated as the mean of the absolute values of CAR1. CAR1_Total is the total effect of the bond analyst reports on the firm during the one-year period, calculated as the sum of absolute values of CAR1. CAR2 and CAR3 are cumulative abnormal return in a five-day window (-2 day, +2 day) and a seven-day window (-3 day, +3 day) around the issuance of bond analyst report, respectively. *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Stock Market Reaction to Bond Analyst Reports: Regression Evidence

	(1) CAR1 Mean	(2) CAR2 Mean	(3) CAR3 Mean	(4) CAR1 Total	(5) CAR2 Total	(6) CAR3 Total
POST	0.0031***	0.0042***	0.0053***	0.0089**	0.0117***	0.0137***
	(0.0007)	(0.0008)	(0.0009)	(0.0030)	(0.0034)	(0.0033)
TREATED	-0.0024**	-0.0023**	-0.0027*	-0.0088***	-0.0099***	-0.0120***
	(0.0009)	(0.0010)	(0.0014)	(0.0025)	(0.0028)	(0.0034)
POST × TREATED	0.0015	0.0018*	0.0013	0.0081	0.0101*	0.0109
	(0.0013)	(0.0010)	(0.0012)	(0.0049)	(0.0059)	(0.0069)
Ln(Size)	-0.0030**	-0.0030**	-0.0041***	-0.0093**	-0.0107**	-0.0145***
	(0.0013)	(0.0012)	(0.0012)	(0.0040)	(0.0041)	(0.0041)
Return	-0.0173**	-0.0168**	-0.0205**	-0.0746***	-0.0752**	-0.0887**
	(0.0078)	(0.0074)	(0.0090)	(0.0250)	(0.0290)	(0.0323)
Ln(BM)	-0.0013	-0.0014	-0.0005	-0.0073	-0.0090	-0.0086
	(0.0008)	(0.0010)	(0.0009)	(0.0044)	(0.0059)	(0.0066)
Coverage	0.0006***	0.0006***	0.0006***	0.0016***	0.0019***	0.0020***
	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0005)	(0.0005)
Sigma	2.4117**	2.7567**	2.7918*	8.0014**	8.8067*	9.2988*
	(0.9102)	(1.0891)	(1.3541)	(3.7025)	(4.2578)	(4.7956)
Profit	0.0017	-0.0007	-0.0011	-0.0517***	-0.0651***	-0.0562***
	(0.0036)	(0.0052)	(0.0052)	(0.0111)	(0.0162)	(0.0131)
SP500	0.0054***	0.0058***	0.0081***	0.0247***	0.0277***	0.0341***
	(0.0010)	(0.0014)	(0.0018)	(0.0049)	(0.0066)	(0.0081)
Constant	-0.0247**	-0.0204**	-0.0164	-0.0244	-0.0190	0.0003
	(0.0105)	(0.0087)	(0.0103)	(0.0193)	(0.0215)	(0.0234)
R^2	0.084	0.088	0.088	0.104	0.103	0.104
adj. R^2	0.082	0.086	0.085	0.102	0.100	0.102
N	13600	13600	13600	13600	13600	13600

Notes. The sample includes all companies having bond outstanding at the event date and having at least one bond analyst report as the end of 2014 with the required data. The dependent variables in column (1)-(6) are intended to measure the stock market reaction to bond analyst reports. Definition of variables can be found in Appendix A. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groupings and reported in parentheses with * for p<0.10, ** for p<0.05, and *** for p<0.01.

Table 7. Existing Bond Analyst Coverage: DID Estimator

Panel A: Initial Bond Coverage=0			
Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	504	0.3988***	11.8977
Bond_Coverage (DID)	504	0.4712***	9.6203
Report_Number (Post-Pre)	504	0.5893***	8.8109
Report_Number (DID)	504	0.4669***	4.8334
Page_Mean (Post-Pre)	504	0.9253***	10.6264
Page_Mean (DID)	504	1.8440***	12.7765
Page_Total (Post-Pre)	504	2.1687***	7.7496
Page_Total (DID)	504	2.9610***	8.1584
Size_Mean (Post-Pre)	504	27.8709***	10.3308
Size_Mean (DID)	504	36.8994***	9.0580
Size_Total (Post-Pre)	504	58.1925***	8.3904
Size_Total (DID)	504	54.7398***	5.9544
Panel B: Initial Bond Coverage=1			
Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	91	0.3956***	2.8504
Bond_Coverage (DID)	91	0.5342***	3.1727
Report_Number (Post-Pre)	91	0.7692**	2.3229
Report_Number (DID)	91	0.8359**	2.2221
Page_Mean (Post-Pre)	91	-1.7915***	-3.4975
Page_Mean (DID)	91	-0.8828*	-1.6544
Page_Total (Post-Pre)	91	0.0989	0.0656
Page_Total (DID)	91	1.7356	1.1041
Size_Mean (Post-Pre)	91	1.3739	0.1238
Size_Mean (DID)	91	0.8470	0.0796
Size_Total (Post-Pre)	91	92.0879***	2.8727
Size_Total (DID)	91	85.8553**	2.5626
Panel C: Initial Bond Coverage>=2			
Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	35	-0.8857***	-3.2656
Bond_Coverage (DID)	35	-0.8388***	-2.9469
Report_Number (Post-Pre)	35	-1.1714	-1.5937
Report_Number (DID)	35	-1.5500**	-2.0310
Page_Mean (Post-Pre)	35	-0.8444	-1.4740
Page_Mean (DID)	35	-0.5077	-0.7008
Page_Total (Post-Pre)	35	-2.8571	-1.1082
Page_Total (DID)	35	-3.3897	-1.2299
Size_Mean (Post-Pre)	35	-7.1734	-0.3240
Size_Mean (DID)	35	-23.6457	-1.0181
Size_Total (Post-Pre)	35	-30.6286	-0.3841
Size_Total (DID)	35	-88.2384	-1.0762

Notes. This table presents the reaction of bond analysts after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. Panel A reports the results of firms with zero initial bond analyst coverage, Panel B reports results of firms with one initial bond analyst coverage, and Panel C reports results of firms with no less than two initial bond analyst coverage. Definition of variables can be found in Appendix A. *, **, and *** indicate significance at 1%, 5%, and 10% levels, respectively.

Table 8. Firms With and Without Guidance: DID Estimator

Panel A: Guidance=0			
Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	247	0.2105***	4.4008
Bond_Coverage (DID)	247	0.3689***	5.6298
Report_Number (Post-Pre)	247	0.1376*	1.6771
Report_Number (DID)	247	0.1280	1.0693
Page_Mean (Post-Pre)	247	0.3835***	2.5118
Page_Mean (DID)	247	1.5594***	6.6155
Page_Total (Post-Pre)	247	0.5870	1.6271
Page_Total (DID)	247	1.8352***	3.8059
Size_Mean (Post-Pre)	247	17.4886***	4.0708
Size_Mean (DID)	247	35.3250***	5.4568
Size_Total (Post-Pre)	247	29.7247***	3.3145
Size_Total (DID)	247	37.7917***	3.1943
Panel B: Guidance=1			
Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	383	0.4021***	7.3314
Bond_Coverage (DID)	383	0.4324***	6.1086
Report_Number (Post-Pre)	383	0.7624***	6.0604
Report_Number (DID)	383	0.5888***	3.8250
Page_Mean (Post-Pre)	383	0.4675***	2.9502
Page_Mean (DID)	383	1.1648***	5.9885
Page_Total (Post-Pre)	383	2.2376***	4.3281
Page_Total (DID)	383	2.8156***	4.8274
Size_Mean (Post-Pre)	383	25.0684***	6.1985
Size_Mean (DID)	383	23.8159***	4.9333
Size_Total (Post-Pre)	383	76.4883***	6.0552
Size_Total (DID)	383	59.9968***	4.1328

Notes. This table presents the reaction of bond analysts after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. Panel A reports the results of firms with earnings guidance, and Panel B reports that of firms without earnings guidance. For each merger, we calculate the variables in the one-year pre-merger period and one-year post-merger period. We report the average difference between the post-merger period and pre-merger period of treatment sample, as well as the difference in differences (DID) estimator. Definition of variables can be found in Appendix A. *, **, and *** indicate significance at 1%, 5%, and 10% levels, respectively.

Table 9. Summary Statistics: Matched Sample

Panel A: Treatment Sample

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
Ln(Size)	579	8.5086	1.3921	4.7797	12.4043	8.4425
Ln(BM)	576	-0.9583	0.8322	-4.8054	1.3199	-0.8430
Profit	575	0.1350	0.0801	-0.1954	0.9175	0.1296
SP500	578	0.6557	0.4755	0	1	1
Coverage	596	25.9463	10.6509	4	62	24
SPRating	584	7.8955	3.1857	1	17	8
Bond_Coverage	596	0.2198	0.6562	0	6	0
Report_Number	596	0.3591	1.2470	0	13	0
Page_Mean	596	0.5289	1.7020	0	15	0
Page_Total	596	1.2030	4.7176	0	48	0
Size_Mean	596	9.9711	40.4801	0	421	0
Size_Total	596	23.4983	106.9998	0	1243	0

Panel B: Control Sample

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
LNSIZE	2,488	7.3833	1.5393	2.7699	13.0470	7.4377
LNBM	2,410	-0.8282	0.7978	-4.6676	1.7198	-0.7383
PROFIT	2,458	0.1221	0.0877	-0.4229	0.9175	0.1222
SP500	2,480	0.3431	0.4749	0	1	0
COVERAGE	2,860	14.3406	9.0577	1	52	13
SPRating	2,673	9.4291	3.4004	1	20	9
Bond_Coverage	2,860	0.1206	0.4494	0	8	0
Report_Number	2,860	0.1773	0.7347	0	12	0
Page_Mean	2,860	0.4011	1.6475	0	15	0
Page_Total	2,860	0.7594	3.5525	0	48	0
Size_Mean	2,860	7.4971	36.3736	0	421	0
Size_Total	2,860	14.7636	83.2912	0	1243	0

Notes. This table reports summary statistics for the matched control samples in the year before the merger. For each merger, we construct benchmark portfolios using the control sample based on one-digit SCI industry, initial bond analyst coverage (0/1/>=2), and size (two portfolios). Each firm in the treatment sample is assigned to its own matched benchmark portfolio. Definition of variables can be found in Appendix A.

Table 10. Reaction of Bond Analysts: BDID Estimator

Variable	Obs	Mean	t
Bond_Coverage (Post-Pre)	596	0.5721***	6.8612
Bond_Coverage (BDID)	596	0.2509***	2.9925
Report_Number (Post-Pre)	596	0.3574***	9.4716
Report_Number (BDID)	596	0.1774***	5.0040
0Page_Mean (Post-Pre)	596	0.6813***	7.0120
Page_Mean (BDID)	596	0.3125***	3.2164
Page_Total (Post-Pre)	596	2.1695***	7.0927
Page_Total (BDID)	596	1.2082***	3.8469
Size_Mean (Post-Pre)	596	26.1966***	9.3898
Size_Mean (BDID)	596	9.9548***	3.4591
Size_Total (Post-Pre)	596	67.6107***	8.7425
Size_Total (BDID)	596	29.7523***	3.7475

Notes. This table presents the reaction of bond analysts after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. For each merger, we construct benchmark portfolios using the control sample based on one-digit SCI industry, initial bond analyst coverage (0/1/>=2), and size (two portfolios). Each firm in the treatment sample is assigned to its own matched benchmark portfolio. We calculate the variables in the one-year pre-merger period and one-year post-merger period for each merger. We report the average difference between the post-merger period and pre-merger period of treatment sample, as well as the benchmark difference in differences (BDID) estimator. Definition of variables can be found in Appendix A. *, **, and *** indicate significance at 1%, 5%, and 10% levels, respectively.

Table 1. Stock Market Reaction to Bond Analyst Reports: BDID Estimator

Variable	Obs	Mean	t
CAR1_Mean (Post-Pre)	596	0.3109%**	2.1306
CAR1_Mean (DID)	596	0.2172%*	1.8272
CAR2_Mean (Post-Pre)	596	0.3115%**	2.1306
CAR2_Mean (DID)	596	0.1919%	1.2860
CAR3_Mean (Post-Pre)	596	0.4329%***	2.6617
CAR3_Mean (DID)	596	0.2187%	1.2744
CAR1_Total (Post-Pre)	596	1.7452%***	3.7356
CAR1_Total (DID)	596	1.2817%***	2.7528
CAR2_Total (Post-Pre)	596	1.9885%***	3.9175
CAR2_Total (DID)	596	1.5662%**	2.5834
CAR3_Total (Post-Pre)	596	2.3715%***	4.0325
CAR3_Total (DID)	596	1.4226%***	2.8228

Notes. This table presents the stock market reaction to bond analyst reports after the exogenous reduction in equity analyst coverage caused by brokerage house mergers. For each merger, we construct benchmark portfolios using the control sample based on one-digit SCI industry, initial bond analyst coverage (0/1/>=2), and size (two portfolios). Each firm in the treatment sample is assigned to its own matched benchmark portfolio. For each merger, we calculate the variables in the one-year pre-merger period and one-year post-merger period. We report the average difference between the post-merger period and pre-merger period of treatment sample, as well as the difference in differences (DID) estimator. CAR1 is the cumulative abnormal return in the three-day window (-1 day, +1 day) around the issuance of a bond analyst report. CAR1_Mean is the average effect of bond analyst reports on one stock during the one-year period, calculated as the mean of the absolute values of CAR1. CAR1_Total is the total effect of bond analyst report on one stock during the one-year period, calculated as the sum of absolute values of CAR1. CAR2 and CAR3 are cumulative abnormal return in the five-day window (-2 day, +2 day) and the seven-day window (-3 day, +3 day) around the issuance of bond analyst report, respectively. *, **, and *** indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2. Reaction of Bond Analysts: Regression Evidence using Matched Sample

	(1) Ln(Bond Coverage)	(2) Ln(Report Number)	(3) Ln(Page Mean)	(4) Ln(Page Total)	(5) Ln(Size Mean)	(6) Ln(Size Total)
POST	0.1335***	0.1102***	0.1827***	0.2404***	0.6129***	0.6843***
	(0.0334)	(0.0281)	(0.0492)	(0.0651)	(0.1684)	(0.1864)
TREATED	-0.0277*	-0.0323**	-0.0460**	-0.0572*	-0.1730**	-0.1811**
	(0.0150)	(0.0132)	(0.0205)	(0.0280)	(0.0616)	(0.0693)
POST × TREATED	0.0802**	0.0714**	0.0813*	0.1399*	0.2904**	0.3517**
	(0.0365)	(0.0279)	(0.0399)	(0.0657)	(0.1308)	(0.1587)
Ln(Size)	-0.0080	0.0002	-0.0044	-0.0131	-0.0255	-0.0384
	(0.0160)	(0.0142)	(0.0238)	(0.0287)	(0.0747)	(0.0807)
Return	-0.2298	-0.1764	-0.1047	-0.2665	-0.0599	-0.2584
	(0.1702)	(0.1411)	(0.2755)	(0.3380)	(0.7691)	(0.8465)
Ln(BM)	0.0063	0.0070	0.0106	0.0082	0.0709	0.0653
	(0.0117)	(0.0088)	(0.0193)	(0.0237)	(0.0533)	(0.0575)
Coverage	0.0053**	0.0046**	0.0069*	0.0097**	0.0235**	0.0269**
	(0.0021)	(0.0021)	(0.0037)	(0.0042)	(0.0105)	(0.0111)
Sigma	-5.0846	-1.5475	26.1199	19.4321	-6.1200	-15.1392
	(11.3680)	(9.4640)	(15.4201)	(19.6292)	(43.8594)	(49.0840)
Profit	-0.4104***	-0.3103***	-0.5354***	-0.8370***	-1.2499***	-1.5989***
	(0.0941)	(0.0712)	(0.1409)	(0.2039)	(0.3400)	(0.4000)
SP500	0.0768***	0.0539**	0.0517	0.1082**	0.1436	0.2099*
	(0.0244)	(0.0212)	(0.0310)	(0.0423)	(0.1006)	(0.1126)
Constant	-0.4659***	-0.5110***	-0.8848***	-0.9766***	-2.4769***	-2.5842***
	(0.1219)	(0.1228)	(0.2889)	(0.2980)	(0.7758)	(0.7901)
R^2	0.183	0.191	0.181	0.189	0.209	0.215
adj. R^2	0.179	0.186	0.177	0.185	0.205	0.210
N	6094	6094	6094	6094	6094	6094

Notes. The sample we use in this table includes the treatment firms and the matched benchmark firms. For each merger, we construct benchmark portfolios using the control sample based on one-digit SCI industry, initial bond analyst coverage (0/1/>=2), and size (two portfolios). Each firm in the treatment sample is assigned to its own matched benchmark portfolio. The dependent variables in column (1)-(6) are intended to measure the information provision by bond analysts. Definition of variables can be found in Appendix A. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groupings and reported in parentheses with * for p<0.10, ** for p<0.05, and *** for p<0.01.

Table 3. Stock Market Reaction to Bond Analyst Reports: Regression Evidence using Matched Sample

	(1) CAR1 Mean	(2) CAR2 Mean	(3) CAR3 Mean	(4) CAR1 Total	(5) CAR2 Total	(6) CAR3 Total
POST	0.0039***	0.0051***	0.0066***	0.0063***	0.0082***	0.0109**
	(0.0010)	(0.0014)	(0.0018)	(0.0020)	(0.0027)	(0.0037)
TREATED	-0.0003	0.0003	0.0004	-0.0025	-0.0026	-0.0026
	(0.0006)	(0.0011)	(0.0013)	(0.0021)	(0.0030)	(0.0028)
POST × TREATED	0.0004	0.0002	-0.0001	0.0095**	0.0118**	0.0123**
	(0.0012)	(0.0013)	(0.0014)	(0.0038)	(0.0051)	(0.0051)
Ln(Size)	0.0017*	0.0020**	0.0009	0.0025	0.0023	-0.0007
	(0.0009)	(0.0008)	(0.0007)	(0.0020)	(0.0019)	(0.0026)
Return	-0.0207***	-0.0226***	-0.0334***	-0.0906***	-0.1086***	-0.1381***
	(0.0064)	(0.0070)	(0.0097)	(0.0199)	(0.0252)	(0.0341)
Ln(BM)	0.0014	0.0022*	0.0027**	0.0013	0.0018	0.0023
	(0.0009)	(0.0012)	(0.0012)	(0.0016)	(0.0020)	(0.0019)
Coverage	0.0004**	0.0004***	0.0005***	0.0011***	0.0013***	0.0014***
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)
Sigma	0.7002	1.0963	1.2368	1.7325	2.3397	2.9324*
	(1.0303)	(1.1060)	(1.1234)	(1.4300)	(1.4765)	(1.5474)
Profit	-0.0138***	-0.0140**	-0.0233***	-0.0721***	-0.0792***	-0.0756***
	(0.0040)	(0.0065)	(0.0075)	(0.0156)	(0.0159)	(0.0133)
SP500	0.0028*	0.0038*	0.0058**	0.0137***	0.0164***	0.0232***
	(0.0015)	(0.0019)	(0.0023)	(0.0034)	(0.0046)	(0.0072)
Constant	-0.0467***	-0.0714***	-0.0655***	-0.0930***	-0.1188***	-0.1118***
	(0.0074)	(0.0093)	(0.0072)	(0.0160)	(0.0175)	(0.0237)
R^2	0.174	0.175	0.180	0.216	0.227	0.223
adj. R^2	0.151	0.153	0.158	0.195	0.207	0.202
N	6094	6094	6094	6094	6094	6094

Notes. The sample we use in this table includes the treatment firms and the matched benchmark firms. For each merger, we construct benchmark portfolios using the control sample based on one-digit SCI industry, initial bond analyst coverage (0/1/>=2), and size (two portfolios). Each firm in the treatment sample is assigned to its own matched benchmark portfolio. The dependent variables in column (1)-(6) are intended to measure the stock market reaction to bond analyst reports. Definition of variables can be found in Appendix A. All specifications use fixed effects estimation include merger and firm fixed effects. Standard errors are clustered at the merger groupings and reported in parentheses with * for p<0.10, ** for p<0.05, and *** for p<0.01.