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Spillover Effect of Analysts' Stock Recommendations: The Channel Effect of Firm Industrial Position

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Abstract
We investigated the spillover effects of stock recommendations by studying the impact of changes in analysts' recommendations on non-rated firms in the same industry. The empirical results suggest that investors use the information embedded in analyst recommendations of a rated firm to value the stock of a non-rated firm in the same industry. The cumulative abnormal return (CAR) of non-rated firms increases when leaders in the sector receive an upgrade in recommendation revisions. The contagious effects of recommendation downgrades have also been documented for peer firms.

Keywords
stock recommendations, spillover effect

Introduction

The intra-industry spillover effects of accounting and financial information have been extensively investigated in capital market research. For example, bankruptcies (Le and Ngo 2022), earnings announcements (Ramnath 2002; Kovacs 2016), and analyst outputs (Akhigbe et al. 2006; Hilary and Shen 2013) of a firm have all shown to impact peer firms in the same industry. This impact

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may be contagious with good (or bad) news for a firm that positively (or negatively) affects the peer, or it may be competitive with an inverse effect on the peer. In this study, we assess the impact of changes in analysts' recommendations for a firm on other firms in the same industry and then analyse whether this impact is conditional on whether the rated firm is a market leader or a close peer.

Financial analysts provide price targets, earnings forecasts, and stock recommendations to assist investors in their decisions. Sell-side analysts are employed by financial institutions and brokerage houses. They play a crucial role as information intermediaries in the market. Generally, analysts produce these outputs in reports for the firms they follow and involves an overall industry analysis. Moreover, analysts tend to follow several firms within the same industry, whereas industry diversification (i.e. following several industries simultaneously) is known to deteriorate analyst forecast accuracy (Kini et al. 2009). Hence, we infer that analysts' stock recommendations contain both firm-specific and industry-wide information that has a spillover effect that may benefit investors. This spillover effect is all the more relevant, especially for non-rated firms (i.e., those that are not followed by analysts). Demiroglu and Ryngaert (2010) suggest that 35% of all publicly traded US companies have no analyst coverage. However, in the EU, Lang et al. (2021) report a significant reduction in analyst forecast coverage after the implementation of the MiFID II regulation in 2018. Furthermore, analysts who followed fewer firms issued fewer forecasts. Thus, a large number of firms are neglected by analysts, especially firms that receive no recommendations. We posit that these firms are impacted by recommendation changes in an industry depending on whether the rated firm is an industry leader or a close peer of the non-rated firm.

We study the impact of an analyst recommendation change on a rated firm compared to a non-rated firm in the same industry. The impact is measured by the cumulative abnormal return (CAR) in the three-day period around the issuance of recommendations. Non-rated firms should experience significant CARs around the same time that an analyst issues a recommendation to another firm in the industry *ceteris paribus*. Using analyst recommendations and CARs of non-financial EU firms from 2010 to 2020 we find that investors generally use the information embedded in analysts' recommendations for a rated firm to value the stocks of a non-rated firm in the same industry. That is, recommendation changes significantly impact CARs of non-rated firms in the same industry. This impact is contagious if the rated firm is an industry leader and the recommendation change is upgraded. Similarly, the impact is contagious if the rated firm is a close peer and the recommendation change is a downgrade. These findings are consistent with those of Akhigbe et al. (2006), who also report contagion effects of recommendations. Our results are robust after including firm fixed effects and a subsample that excludes the two countries with the most observations. By testing a two-step Heckman model, we also address endogeneity and self-selection bias.

We are not the first to argue that industry leaders and close peers have spillover effects on non-rated firms. Brown et al. (2018) document that comment letters sent by SEC to industry leaders and close rivals have a significant impact on the qualitative corporate disclosure of "no-letter firms" in the industry. While industry leaders set the tone for the direction and future of the industry, close rivals bring competitiveness to non-rated firms. Leaders tend to experience a contagion effect when good news exist as it is likely to benefit the overall industry. Conversely, bad news in the industry is least likely to impact industry leaders as it has a stronghold in an industry with economies of scale and a secure market share. Thus, a recommendation downgrade for an industry leader tends to be firm specific and contains less industry-wide information. Meanwhile, close peers have a greater impact on non-rated firms in the case of bad news than good news. For two similar firms in the same industry, the information transfer of bad news is more likely to spill over than that of good news. Therefore, a recommendation downgrade for a close peer negatively affects a non-rated firm. Our results show that investors use the recommendation upgrades of industry leaders and the downgrades of close peers to value the stock of non-rated firms.

Our study contributes to the literature on the spillover effects of analysts' stock recommendations (Premti et al. 2019; Akhigbe et al. 2006; Hilary and Shen 2013), information contained in these recommendations (Womack 1996; Liu 2011), and intra-industry information transfers (Beatty et al. 2013; Brown et al. 2018; Le and Ngo 2022). It reports how investors perceive and use information from analysts' stock recommendations of leaders and close peers to value the stocks of non-rated firms in the same industry. Our results have implications for the management of neglected, non-rated firms, and investors. Given the increasing number of non-rated firms due to directives, our study contributes to the assessment of the marginal impact of these regulations on the transparency of information transfers in capital markets.

Literature Review

Analyst recommendations provide investors with useful information regarding their investment decisions. Purchasing (or selling short) stocks with the most (or least) favourable recommendation ratings results in annual average abnormal returns of 4% (Barber et al. 2001). The literature on spillover effects suggests that firms are affected by accounting and financial information released by their peers. Le and Ngo (2022) show that, when a firm files for bankruptcy, its peers contract capital expenditure, reduce new debt issuance, and face a higher cost of debt. These spillovers weaken if the peer firm is less closely related to the bankrupt firm, indicating higher spillovers for closely related firms. (Ramnath 2002) finds that informative spillovers exist for firms announcing earnings later than their peers, but analysts or investors do not fully take advantage. These spillovers come from firms announcing earnings early or the first announcers and can benefit peers in industries that announce earnings later. The author predicts forecast errors of subsequent earnings announcements using those of the first announcers. Meanwhile, Thomas and Zhang (2008) document that the market overreacts to the intra-industry information contained in the first announcer's earnings for the late announcer's earnings. This overestimation is corrected when the late announcer's announce their earnings. (Gleason et al. 2008) report that adverse accounting restatements for one firm negatively impact the stock price of other firms in the same industry. These studies confirm the existence and usefulness of spillover effects of a firm's accounting and financial information on its peers.

The literature has two types of spillover effects: contagion and competitive effects. Contagion effects are present when an adverse event at one firm also conveys negative information about the valuation of other firms. An example is when the failure of one bank portends financial distress at other banks that have similar clientèles, lending practices, and geographical concentration. Competitive effects are present when an adverse informational event conveys favourable information about related firms. An example is when the failure of one bank is expected to induce predatory responses by competitors that yield increased market share and profitability (Gleason et al. 2008). If analysts include firm-specific information in their recommendations, these recommendations will have little or no spillover effects because they provide little incremental information for non-rated firms. However, if analysts incorporate industry-wide information into their recommendations, a systematic contagion effect occurs. That is, a recommendation upgrade brings good news to the industry and positively impacts non-rated peers, whereas a downgrade entails bad news and has the opposite effect. Premti et al. (2019) show exactly this for the banking industry: analyst recommendations have contagion effects that are pronounced for larger and riskier rivals. Additionally, the authors show that the effect is greater for firms with more analysts following positive recommendations. We find a similar contagion effect for analysts' recommendations in non-financial industries.

Prior studies provide evidence of intra-industry information transfers associated with analysts' recommendations and earnings forecasts. Firms in the same sector as the rated firms experience significant abnormal returns from stock recommendation revisions (Akhigbe et al. 2006; Liu 2011). Liu (2011) finds that analysts produce more firm-specific information than industry-level information in recommendation changes. As more industry-wide, rather than firm-specific, information is incorporated into stock prices, investors have difficulty gaining profit from private industry-wide information and can easily gain profit from private firm-specific information, which provides analysts an incentive to produce more firm-specific information. Liu (2011) also reports that industry-specific information in a recommendation increases with the rated-firm's industry beta and decreases with its idiosyncratic volatility. Akhigbe et al. (2006) find that analyst recommendations for rated firms significantly impact stock prices of non-rated firms in the same industry. Generally, the impact bears contagion effects, indicating the presence of industry-wide information in the recommendations. Nonetheless, these studies were conducted at the industrial level without controlling for non-rated firm idiosyncrasies because non-rated firms have not been specifically investigated. As an increasing number of firms are being uncovered by analysts, a lack of research coverage affects company valuation and liquidity. Therefore, investors benefit from the information contained in rated firms' recommendations to value the stocks of non-rated firms.

Although we test similar constructs surrounding the spillover effects of analyst recommendations, as in Akhigbe et al. (2006), our studies differ in several meaningful ways. First, while these authors tested for intra-industry spillover effects on a portfolio of non-rated firms, we tested for individual firms in the industry. Their model includes the first-rated firm in a five-day window, as they eliminate all other rated firms in that period. We build an even stricter model in which we include the observation in our sample if only one rated firm in a given three-day window has issued a recommendation. For example, if a recommendation is issued on day t=0 for firm i and day t=1 for firm j, we exclude both observations. In the same example, Akhigbe et al. (2006) would keep firm i and would then calculate the impact of this recommendation on all other firms in the industry (excluding firm j). The problem with this misspecification is that the spillover effects of a single rated firm on non-rated firms cannot be isolated because more than one firms is rated during the time window. Second, Akhigbe et al. (2006) distinguish between competitive and contagion spillover effects based on whether the CAR of the non-rated firm is positive (or negative) for recommendation upgrades (or downgrades) or vice versa. Subsequently, they test other firm and analyst characteristics that further augment competitive or contagion effects. We do not distinguish positive and negative CARs of non-rated firms. In fact, we show that competitive or contagion effects depend on whether a rated firm is a leader or a close rival. Therefore, our results measure the isolated and marginal impact of recommendations and the firm- and analyst-level characteristics on the CAR of non-rated firms. Third, we run our models, including firm, country, year, and industry fixed effects, but they do not do so. In a model in which more than 500 different industries are studied, variations in the industries should be neutralised to reduce noise for better coefficient interpretation.

Methodology

Sample description

Our study is based on two major datasets: investment recommendations issued by equity analysts and financial and accounting data at the firm level.

We obtained our sample of stock recommendations from the *I/B/E/S* database. Stock recommendations are based on a standard five-point scale, where 1 = strongly sell, 2 = Underperform, 3 = hold, 4 = buy, and 5 = strongly buy. Our initial sample includes all stock recommendations issued by non-financial firms listed in EU countries from January 2010 to December 2020. A total of 91331 stock recommendations is available in our initial sample of stock recommendations. We further exclude stock recommendations if another recommendation exists in the same sector within ±1 day of the recommendation date. This step ensures that market reactions to other recommendations issued within the same time window do not induce recommendation announcement returns. Our final sample of stock recommendations includes 40057 recommendation revisions.

We obtain firms' accounting and financial data from the *Compustat* database. We define *rated firms* as those that receive stock recommendations from financial analysts on a given date. *Non-rated firm* refers to companies in the same sector as the *rated firm* that did not receive any stock recommendation. Our initial sample contains non-financial firms listed in EU countries from 2010 to 2020. We calculate the three-day cumulative abnormal return using the Fama-French three three-factor model. Thereafter, we merge the CAR with a stock recommendation file and retain the CAR of firms that do not receive a recommendation, but for which another firm in the same industry receives a recommendation. We exclude the CAR of non-rated firms with no financial or accounting data available for a given recommendation announcement date. We also exclude the CAR of non-rated firms, for which we cannot calculate the CAR of rated firms. The final sample comprises 282728 CAR observations of 4030 firms in EU firms from 2010 to 2020.

⟨ Insert Table 1 for ⟩

Table 2 describes the distribution of observations by EU countries in the final sample. Most CAR observations are recorded for Swedish firms. We documents 42153 three-day CAR for 661 non-rated firms in Sweden during the sample period. For a non-rated Swedish firm, when another firm received a stock recommendation in the same sector, the average CAR value was -0.27% with a standard deviation of 6.36%.

⟨ Insert Table 2 here ⟩

Table 3 reports the descriptive statistics for the three-day CAR around the recommendation announcement dates for rated and non-rated firms. We categorise stock recommendations into three types based on the change in recommendation level compared with previous recommendations issued by the same analysts for the same firm: reiteration, downgrade, and upgrade. Consistent with the literature, the mean CAR of rated firms is significantly negative (or positive) for a downgrade (or upgrade) at the stock recommendation level. Regarding non-rated firms, statistics show that the CAR is significantly negative for all three types of recommendations. This suggests that, on average, investors in non-rated firms react negatively to stock recommendations issued for other firms in the same sector.

⟨ Insert Table 3 for ⟩

To investigate the possible spillover effects of stock recommendations on non-rated firms, we employed two samples of changes in recommendation revisions: upgrades and downgrades. Furthermore, we focused only on the downgraded and upgraded recommendations associated with a negative (or positive) CAR for rated firms. The procedure provides a downgrade subsample of 78339 three-day CAR for non-rated firms and an upgrade subsample of 80663 three-day CAR.

Firm characteristics

Firm-specific conditions may influence the spillover effects of stock recommendations on non-rated firms in the same industry. We followed prior studies (*e.g.* Brown et al. (2018)) and measured the position of a rated firm in its industry in two dimensions: whether it is a leader in the industry and whether it is a peer to non-rated firms. A rated firm with at least 20% market share of sales in year t is considered the industry leader. Further, if the total assets of a rated firm are close to those of a non-rated firm (within 10%), it is considered a peer of the non-rated firm.

Control variables

We followed prior studies (Cooper et al. 2001; Chan and Hameed 2006) and controlled for factors at the firm, recommendation, and analyst levels that may influence the association between stock recommendation announcements and abnormal returns of non-rated firms. First, we controlled for the analyst coverage of non-rated firms (measured as the number of equity analysts covering a firm during a one-year period) and firm size (measured as the natural logarithm of total assets). Second, as analysts' characteristics also affect market reactions to investment recommendations, we controlled for analysts' general experience and workload (*i.e.* the number of firms and industries covered by analysts). Moreover, as a broker-level control variable, we used the size of brokerage houses for which analysts expect to find a positive relationship between broker size and the spillover effect of stock recommendations. Finally, we controlled for the three-day cumulative abnormal return of rated firms. The Appendix presents the abbreviations and definitions of the variables.

Research design

We used standard event-study methodology to measure the CARs in response to a recommendation revision. The empirical model for testing the spillover effect of stock recommendations on non-rated firms in the same sector as the rated firm is expressed as follows:

$$\mathrm{CAR}_{i,j,t} = \mu + \nu + \iota + \tau + \beta_1 \mathrm{Factors} + \theta \mathbf{X}_{i,j,t} + \epsilon_{i,j,t}. \tag{1}$$

The dependent variable CAR is the absolute value of non-rated firms' three-day abnormal return around rated firms' recommendation announcement. The daily abnormal return is estimated using the Fama-French three-factor model. ν are country-fixed effects, ι are industry-fixed effects, and τ are year-fixed effects. The variable of interest is *Factors*, which represents the firm-level factors of rated firms that should have spillover effects of stock recommendations on non-rated firms, that is, the market share of a rated firm (*Leader*) and firm size of a rated firm (*Peer*). $\mathbf{X}_{i,j,t}$ is a set of control variables (e.g. firm size and analyst coverage). The definitions and measurements of all the variables are detailed in the Appendix. The standard errors are clustered at the firm level. All the continuous variables are winsorised at 0.01% from the two tails.

Subscripts i, j, and t refer to the recommendation, firm, and recommendation dates, respectively.

Empirical Results

Descriptive statistics

Table 4 reports a comparison of stock returns for non-rated firms, depending on whether the rated firm was considered a leader in the sector or a peer of non-rated firms. For recommendation upgrades, the CAR of non-rated firms is, on average, positive (0.050%) when the rated firm is a leader in the sector, compared to the negative CAR recorded for non-rated firms when recommendation upgrades concern a non-leader-rated firm. The $t$test suggests that this difference is significant at the 0.01 level. The same difference is recorded for the peer relationship between non-rated and rated firms; *that is*, the CAR of non-rated firms is, on average, positive (0.302%) when the rated firm is its peer, whereas a negative mean CAR (−0.040%) is recorded for non-rated firms when the recommendation upgrade comes from a non-peer-rated firm. The $t$test suggests that this difference is significant at the 0.01 level. For the subsample of recommendation downgrades, the rated firm being either a leader or a peer of the non-rated firm does not have a significant impact on the CAR of non-rated firms.

⟨ Insert Table 4 for ⟩

Table 5 presents the descriptive statistics of the main variables used in this study. Panel A (B) provides the statistics for the subsample of recommendation upgrades (or downgrades). For the upgrade subsample, the mean CAR for the non-rated (or rated) firm is −0.034% (or 4.106%). The average brokerage size is 24 equity analysts with, on average, general experience of approximately 9 years. Finally, the analysts cover an average 6 firms in 4 sectors. The mean analyst coverage of non-rated firms is 1.3 with the highest at 18. For the downgrade subsample, the mean CAR for the non-rated (or rated) firm is −0.280% (or −4.023%). Similar statistics were obtained for the remaining variables.

⟨ Insert Table 5 for ⟩

Main results

Table 6 presents the results for the spillover effects of stock recommendations.

Spillover effect of recommendation and sector leader We first regressed the CAR of non-rated firms on *Leader* using the control variables. In Column 1, the coefficient of *Leader* is positive and statistically significant at the 1% level for the upgrade subsample. Therefore, when the rated firm is a sector leader, the recommendation upgrade has a positive spillover effect. We subsequently ran the same model for the downgrade subsample. The results are presented in Column 2. In this case, the coefficient of *Leader* is not statistically significant. This suggests that, in the case of recommendation downgrades, sector leaders do not have an additional impact on the CAR of non-rated firms.

Spillover effect of recommendation and sector peer For our next hypothesis, we argue that, due to the similarity in firm size, peer firms have more spillover effects on stock recommendations. To test this empirically, we regressed the CAR of the non-rated firm on *Peer* using control variables. Columns 3 and 4 of Table 6 present the results for recommendation upgrades and downgrades, respectively. We find an insignificant coefficient of *Peer* for the upgrade subsample. Therefore, no difference exists regarding recommendation upgrades issued for a peer-rated firm. Regarding recommendation downgrades, we find a negatively significant relationship between the two variables. Therefore, when a sector peer receives a recommendation downgrade, a negative spillover effect exists on non-rated firms.

⟨ Insert Table 6 here, ⟩

Robustness Tests

Alternative measures

We performed a battery of robustness checks to evaluate and confirm the reliability of the main results. First, we used alternative measures for the key variables. We calculated cumulative abnormal returns generated around stock recommendations using a simple market. model (i.e. capital asset pricing model (CAPM)). Estimation was performed using the $\sqsubset -1, 1 \sqsupset$ time window. The results are presented in Table 7. Variable *leader* remains positively significant for the upgrade subsample, and *peer* is negatively significant for the downgrade subsample. Therefore, our results are not sensitive to alternative measures of market reactions.

⟨ Insert Table 7 for ⟩

We then check the robustness of our main results by employing two alternative proxies: *leader* and *peer*. We use market capitalisation to measure whether a rated firm is a leader. A rated firm is labelled a leader if its market capitalisation is greater than 20% within an industry (*lmc*). The results are presented in columns 1-2 of Table 8. As an alternative measure of *peer*, we use the return on assets ratio (RoA), and a rated firm is labelled as a peer of the non-rated firm if its RoA falls in the range of 10% above or below that of a non-rated firm (*proa*). The results are presented in Columns 3-4 of Table 8. The variable *lmc* remains positively significant for the upgrade subsample and *proa* is negatively significant for the downgrade subsample, indicating that our results are not sensitive to alternative measures of leaders or peers.

⟨ Insert Table 8 for ⟩

Fixed-effects estimation

One possible concern with our main results is omitted variable bias, indicating that some omitted variables in our baseline models could affect the spillover effect of stock recommendations. We addressed this issue by including firm-fixed effects in our baseline models, which control for firm characteristics that are time invariant and unobserved. The results are presented in Table 9. Again, we find a significant positive association between *Leader* and *CAR* for recommendation upgrades and a significant negative association between *Peer* and *CAR* for recommendation downgrades. Therefore, our baseline results are robust to omitted variable bias.

⟨ Insert Table 9 for ⟩

Sub-sample excluding observations

Poland and Sweden contributed the largest number of observations to the final sample. To ensure that the spillover effect is not driven by stock recommendations from these two countries, we created a subsample that excludes recommendations for Polish and Swedish firms and re-estimated the baseline regressions in Table 6. Table 10 presents the subsample test results. The coefficient estimate of *Leader* (*Peer*) remains positive and significant for recommendation upgrades (downgrades), confirming the inferences about *Leader* (*Peer*) from the full sample.

⟨ Insert Table 10 for ⟩

Heckman selection model

Endogeneity can be caused by selection bias. The endogeneity problem in this study is primarily a selection bias, because non-rated firms, for which we can match a leader or a peer in the same sector, could be systematically different from those for whom this match cannot be found. We corrected for potential bias in the standard OLS regressions due to self-selection by adopting the classical econometric selection model (Heckman 1979). Using the two-stage procedure of Heckman (1979), we estimated the treatment-effect self-selection model (Lennox et al. 2012). Precisely, in the first stage, consistent estimates for α were obtained from a probit regression of the dummy variables *Leader* (*Peer*), *RFsale* (*nbFSic*), and $\mathbf{X}$. *nbFSic* measures the number of firms in a sector for a given year. We used these estimates to compute the inverse Mills ratio (IMR) λ. Then, in the second stage, the CAR of non-rated firms is estimated by OLS with the IMR included as an additional explanatory variable. Our self-selection model is given as

For the probit models in the first stage,

$$\text{Leader}_{i,j,t} = \mu + \alpha_1 \text{RFsale} + \alpha \mathbf{X}_{i,j,t} + \epsilon_{i,j,t} \tag{2}$$

$$\text{Peer}_{i,j,t} = \mu + \gamma 1 \text{nbFSic} + \gamma \mathbf{X}_{i,j,t} + \epsilon_{i,j,t} \tag{3}$$

For the OLS models in the second stage,

$$\text{CAR}_{i,j,t} = \mu + \nu + \iota + \tau + \beta_1 \text{Leader} + \beta_2 \text{IMRl}_{i,j,t} + \theta \mathbf{X}_{i,j,t} + \epsilon_{i,j,t} \tag{4}$$

$$\text{CAR}_{i,j,t} = \mu + \nu + \iota + \tau + \beta_1 \text{Peer} + \beta_2 \text{IMRp}_{i,j,t} + \theta \mathbf{X}_{i,j,t} + \epsilon_{i,j,t} \tag{5}$$

Table 11 reports the results of the first-stage Heckman model, which controls for the rated firm's sales in the leader model and firm numbers within a sector, using the log of the number of firms in the peer model. Columns 1 and 2 report the regression results for the recommendation upgrade subsample. The regression results for the recommendation downgrade subsample are presented in Columns 3 and 4.

⟨ Insert Table 11 here; ⟩

The results of the second-stage Heckman model are presented in Table 12. The *IMRl* values in Columns 1 and 2 are calculated from Models 1 and 3 of Table 11 for the recommendation upgrade. Columns 3 and 4 use the *IMRp* calculated from Models 2 and 4 in Table 11 for recommendation downgrades. Using the two-stage Heckman approach, we find a significant positive relationship between the spillover effects of stock recommendations and sector leaders for recommendation upgrades and a significant negative relationship between the spillover effects of stock recommendations and sector peers for recommendation downgrades. This further alleviates endogeneity concerns, particularly self-selection bias.

⟨ Insert Table 12 for ⟩

Moderating role of analyst coverage

Analyst coverage adds value to a firm because it reduces information asymmetries regarding the firm's future performance and maintains investor recognition of that firm's stock (Mola et al. 2013; Li and You 2015). An analyst's choice to follow a firm is not random. Thus, we posit that the spillover effect of stock recommendations for leader or peer firms is moderated if the non-rated firm is followed by the same analyst as the rated firm. To test this assertion, we added a new variable, *NFSA*, to the baseline model. *NFSA* is a binary variable that equals to 1 if the non-rated firm has received at least one recommendation issued by the same analyst prior to the recommendation date. The results (Table 13) indicate that, for leader firms, downgrades in recommendations have a contagious effect on non-rated firms if the latter have been covered previously by the same analyst. We find no additional effects of analyst coverage for peer firms.

⟨ Insert Table 13 for ⟩

Discussion and Conclusion

We studied the impact of changes in analysts' recommendations on non-rated firms in the same industry. We hypothesised that investors use recommendations issued by other firms to value the stock prices of non-rated firms in an industry.

This depends on whether the rated firm is the market leader of the industry, as analysts' recommendations for this firm contain industry-wide information that might affect other firms in the industry. Alternatively, if the rated firm is a close peer of the non-rated firm, an analyst recommendation may impact similar firms. Our results confirm that investors use the recommendation upgrades of industry leaders and the downgrades of close peers to value the stock of non-rated firms. This shows that good news (not bad news) for leaders tends to impact the industry and benefit other firms, whereas bad news (not good news) for a firm affects its close peers. Our results are robust to additional fixed effects, after testing for possible endogeneity problems.

References

Akhigbe A, Madura J and Newman M (2006) Industry effects of analyst stock revisions. *Journal of Financial Research* 29(2): 181–198.

Barber B, Lehavy R, McNichols M and Trueman B (2001) Can investors profit from the prophets? security analyst recommendations and stock returns. *The Journal of Finance* 56(2): 531–563.

Beatty A, Liao S and Yu JJ (2013) The spillover effect of fraudulent financial reporting on peer firms' investments. *Journal of Accounting and Economics* 55(2-3): 183–205.

Brown SV, Tian X and Wu Tucker J (2018) The spillover effect of sec comment letters on qualitative corporate disclosure: Evidence from the risk factor disclosure. *Contemporary Accounting Research* 35(2): 622–656.

Chan K and Hameed A (2006) Stock price synchronicity and analyst coverage in emerging markets. *Journal of Financial Economics* 80(1): 115–147.

Cooper RA, Day TE and Lewis CM (2001) Following the leader: a study of individual analysts' earnings forecasts. *Journal of Financial Economics* 61(3): 383–416.

Demiroglu C and Ryngaert M (2010) The first analyst coverage of neglected stocks. *Financial Management* 39(2): 555–584.

Fama EF and French KR (1993) Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33(1): 3–56.

Gleason CA, Jenkins NT and Johnson WB (2008) The contagion effects of accounting restatements. *The Accounting Review* 83(1): 83–110.

Heckman JJ (1979) Sample selection bias as a specification error. *Econometrica: Journal of the econometric society* : 153–161.

Hilary G and Shen R (2013) The role of analysts in intra-industry information transfer. *The Accounting Review* 88(4): 1265–1287.

Kini O, Mian S, Rebello M and Venkateswaran A (2009) On the structure of analyst research portfolios and forecast accuracy. *Journal of Accounting Research* 47(4): 867–909.

Kovacs T (2016) Intra-industry information transfers and the post-earnings announcement drift. *Contemporary Accounting Research* 33(4): 1549–1575.

Lang MH, Pinto J and Sul E (2021) Mifid ii unbundling and sell side analyst research. *Available at SSRN 3408198* .

Le N and Ngo PT (2022) Intra-industry spillover effects: Evidence from bankruptcy filings. *Journal of Business Finance & Accounting* 49(7-8): 1113–1144.

Lennox CS, Francis JR and Wang Z (2012) Selection models in accounting research. *The accounting review* 87(2): 589–616.

Li KK and You H (2015) What is the value of sell-side analysts? evidence from coverage initiations and terminations. *Journal of Accounting and Economics* 60(2-3): 141–160.

Liu MH (2011) Analysts' incentives to produce industry-level versus firm-specific information. *Journal of Financial and Quantitative Analysis* 46(3): 757–784.

Mola S, Rau PR and Khorana A (2013) Is there life after the complete loss of analyst coverage? *The Accounting Review* 88(2): 667–705.

Premti A, Garcia-Feijoo L and Madura J (2019) Spillover effects of analyst recommendations in the banking industry. *Journal of Accounting and Finance* 19(6): 143–160.

Ramnath S (2002) Investor and analyst reactions to earnings announcements of related firms: An empirical analysis. *Journal of Accounting Research* 40(5): 1351–1376.

Thomas J and Zhang F (2008) Overreaction to intra-industry information transfers? *Journal of Accounting Research* 46(4): 909–940.

Womack KL (1996) Do brokerage analysts' recommendations have investment value? *The journal of finance* 51(1): 137–167.

Appendix. Variable Definitions

Variables and Measurements	
Dependent variable:	
CAR	Cumulative abnormal returns over a three-day window around the recommendation announcement day for non-rated firms. We use the three-factor model developed by Fama and French (1993) to estimate expected daily returns. We measure the CAR in percentages (*i.e.* return×100).
capm3d	Cumulative abnormal returns over a three-day window around the recommendation announcement day for non-rated firms. We use the CAPM model to estimate the expected daily returns. We measure the CAR in percentages (*i.e.* return×100).
Variables of interest:	
leader	Dummy variable that equals one if the rated firm's market share of sales is larger than 20% within an industry.
peer	Dummy variable that equals one if the total assets in USD of a non-rated firm fall in the range of 10% up or below the rated firm;
lmc	Dummy variable that equals one if the rated firm's market capitalisation is larger than 20% within an industry.
proa	Dummy variable that equals one if the return on asset of non-rated firms falls in the range of 10% up or below that of the rated firm.
Control variables - rated firm:	
rfCAR	Cumulative abnormal returns over a three-day window around the recommendation announcement day for rated firms.
nbFSic	Number of firms in the same sector as rated firms in a given year.
Control variables - non-rated firm:	
ac	Analyst coverage; the number of analysts covering firm i during the one-year time window before recommendation date t
atUSD	Total assets of firm i in the current fiscal year
sameCty	Indicator variable equal to one if the non-rated firm's headquarter is in the same country as the rated firm.
saleUSD	Sales revenue in USD for a given year.
Control variables - recommendation:	
Brokersize	Number of analysts working for the institution/estimator/brokerage house in a given 12-month period;

Continued on next page

Table 1 *Continued on the previous page*

Variables	Measurement
GeExp	Analysts' general experience; the number of days between an analyst's first recommendation and date i;
Portsize	Number of unique firms for which the analyst issued a recommendation in the previous 12 months
SIC4	Number of industries (4 digit SIC codes) for which the analyst issued a recommendation in the previous 12 months
atRF	Total assets of rated firms
nfsa	Indicator variable equal to one if the non-rated firm received at least one recommendation issued by the same analyst before the recommendation date.

Tables

Table 1. Sample selection

This table details the sample selection procedure.

Sample selection procedure	No. of observations
Three-day CAR for non-financial EU firms from 2010 to 2020	9430151
keep CAR of firms without rec but another firm in the same sic received a rec	591132
Keep CAR of firms with financial and accounting data	346444
Keep CAR of non-rated firms for which we can calculate the CAR of rated firm	282728

Table 2. Descriptive statistics

This table reports the number of stock recommendations (*nRec*), mean value of CAR (*mCAR*), standard deviation of CAR (*sdCAR*) for non-rated firms, and number of firms for all the countries (*nFirm*) in our sample.

Country	nRec	mCAR	sdCAR	nFirm
AUT	2660	0.07	3.71	45
BEL	7377	-0.09	4.30	91
BGR	4956	-0.19	5.04	59
CYP	5068	-0.29	5.67	60
CZE	1051	0.02	2.94	15
DEU	39423	-0.15	4.95	536
DNK	5812	-0.07	5.43	90
ESP	11076	-0.09	4.30	134
EST	1059	-0.02	2.96	14
FIN	9525	-0.12	4.59	135
FRA	39542	-0.09	4.98	523
GRC	13170	-0.07	6.75	180
HRV	5361	-0.07	4.90	71
HUN	2269	0.06	4.41	28
IRL	3533	-0.42	7.00	47
ITA	19958	-0.10	4.15	322
LTU	1710	-0.18	4.99	32
LUX	1743	-0.32	5.51	34
LVA	1290	-0.41	6.25	21
MLT	1296	0.18	4.11	15
NLD	8288	-0.13	4.88	117
POL	41198	-0.24	6.87	598
PRT	4427	-0.33	5.44	43
ROU	7401	-0.24	5.40	128
SVK	665	0.06	3.92	6
SVN	1864	-0.27	4.86	25
SWE	42153	-0.27	6.36	661

Table 3. Market reactions to stock recommendations

This table reports the three-day cumulative abnormal returns around the recommendation date. Here, *recChg* is the recommendation change compared to the previous recommendation issued by the same analyst for the same firm. *reit*, *down*, and *up* refer to a reiteration, downgrade, and upgrade in the recommendation change, respectively. *rfMean* refers to the average value of the three-day cumulative abnormal returns for rated firms. *nrfMean* denotes the average value of the three-day cumulative abnormal returns for non-rated firms. The t-test is performed, and p values are presented in *rfPvalue* for rated firms and in *nrfPvalue* for non-rated firms. *rfN* (*rfP*) is the number of CAR that are negative (positive) for a rated firm at the recommendation announcement date.

recChg	rfMean	rfPvalue	nrfMean	nrfPvalue	rfN	rfP
reit	0.06	0.02	-0.20	0.00	17079	18147
down	-1.44	0.00	-0.15	0.00	78339	43737
up	1.59	0.00	-0.17	0.00	45910	80663

Table 4. Market reactions of non-rated firms

This table reports the three-day cumulative abnormal returns around the recommendation date for firms not receiving any recommendation (*i.e.* non-rated firms). Here, *recChg* is the recommendation change compared to the previous recommendation issued by the same analyst for the same firm. *down* and *up* refer to a downgrade and upgrade in the recommendation revisions, respectively. *Lmean* (*nLmean*)refers to the scenario where the rated firm is (not) an industrial leader in the sector of non-rated firms. The t-test is performed to compare the difference between the two scenario, and *LpValue* refers to the p-value of the t-tests. *Pmean* (*nPmean*) refers to the scenario where the rated firm is (not) a peer of non-rated firms. The t-test is performed to compare the difference between the two scenario, and *PpValue* refers to the p-value of the t-tests.

recChg	nLmean	Lmean	LpValue	nPmean	Pmean	PpValue
up	-0.064	0.050	0.009	-0.040	0.302	0.003
down	-0.268	-0.310	0.329	-0.277	-0.433	0.135

Table 5. Descriptive statistics for regression variables

This table reports the number of observations, mean, median, standard deviation, minimum, and maximum for all the continuous variables from our empirical design. (See Appendix for variable definitions.)

Panel A. Upgrade

Variable	n	min	avg	median	sd	max
CAR	80663.000	-20.327	-0.034	-0.010	5.596	22.549
atRF	80663.000	20.350	10954.885	2318.497	24383.681	143668.942
ac	80663.000	0.000	1.337	0.000	3.368	18.000
atUSD	80663.000	0.320	2508.989	92.947	9756.193	75204.878
Brokersize	80663.000	1.000	24.514	19.000	19.888	85.000
GeExp	80663.000	91.000	3408.920	3192.000	2292.465	9053.000
Portsize	80663.000	1.000	6.212	4.000	8.236	59.000
rfCAR	80663.000	0.047	4.106	2.789	4.141	23.409
SIC4	80663.000	1.000	4.815	4.000	6.088	43.000

Panel B. Downgrade

Variable	n	min	avg	median	sd	max
CAR	78284.000	-20.626	-0.280	-0.155	5.478	21.298
atRF	78284.000	15.672	11197.551	2414.439	27544.286	198535.065
ac	78284.000	0.000	1.348	0.000	3.391	18.000
atUSD	78284.000	0.393	2626.341	97.422	10055.483	77235.106
Brokersize	78284.000	1.000	24.291	19.000	19.728	84.000
GeExp	78284.000	98.000	3310.551	3062.500	2216.321	8661.000
Portsize	78284.000	1.000	6.101	4.000	8.178	60.000
rfCAR	78284.000	-30.997	-4.023	-2.638	4.708	-0.059
SIC4	78284.000	1.000	4.716	3.000	5.993	43.000

Table 6. Spillover effects of stock recommendations - Multivariate regression analyses

This table reports our baseline model regarding the spillover effect of stock recommendations. Columns 1 and 2 present multivariate regression results regarding the leadership of the rated firm for upgrade and downgrade sub-samples, respectively. Columns 3 and 4 present the multivariate regression results regarding the peer relationship of the rated firm for upgrade and downgrade sub-samples, respectively. (See Appendix for variable definitions.)

Dependent Variable:			CAR	
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.233***	-0.039		
	(0.066)	(0.060)		
ac	-0.0005	-0.015***	-0.002	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)
atUSD	0.107***	0.053***	0.105***	0.055***
	(0.013)	(0.013)	(0.013)	(0.013)
Brokersize	-0.002*	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
GeExp	0.021	-0.041*	0.021	-0.041*
	(0.021)	(0.021)	(0.021)	(0.021)
Portsize	-0.001	0.006	0.0005	0.006
	(0.015)	(0.015)	(0.014)	(0.015)
rfCAR	0.011*	0.014***	0.008	0.013***
	(0.005)	(0.005)	(0.005)	(0.005)
sameCtyTRUE	0.091	-0.080	0.085	-0.076
	(0.064)	(0.064)	(0.064)	(0.064)
SIC4	0.005	-0.010	0.004	-0.011
	(0.020)	(0.020)	(0.020)	(0.020)
peerTRUE			0.161	-0.222**
			(0.117)	(0.106)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	78,284	80,663	78,284
R^2	0.00635	0.00462	0.00620	0.00465
Within R^2	0.00162	0.00049	0.00148	0.00051

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 7. Spillover effects of stock recommendations - CAPM measures

This table presents the results of the impact of the rated firm size and peer relationship on spillover effects of recommendations using an alternative measure of CAR. The dependent variable is three-day cumulative abnormal return estimated by using the CAPM model (*capm3d*). (See Appendix for variable definitions.)

Dependent Variable:	capm3d			
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.190***	-0.036		
	(0.064)	(0.058)		
ac	0.0008	-0.016***	-9.32×10^{-5}	-0.015***
	(0.005)	(0.005)	(0.005)	(0.005)
atUSD	0.113***	0.062***	0.111***	0.063***
	(0.013)	(0.012)	(0.013)	(0.012)
Brokersize	-0.002*	-0.001	-0.002	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
GeExp	0.029	-0.045**	0.029	-0.045**
	(0.020)	(0.021)	(0.020)	(0.021)
Portsize	-0.002	0.004	-0.0009	0.003
	(0.014)	(0.014)	(0.014)	(0.014)
RFcapm3d	0.014***	0.014***	0.012**	0.014***
	(0.005)	(0.005)	(0.005)	(0.005)
sameCtyTRUE	0.104	-0.084	0.099	-0.081
	(0.064)	(0.062)	(0.064)	(0.062)
SIC4	0.006	-0.008	0.005	-0.009
	(0.019)	(0.020)	(0.019)	(0.020)
peerTRUE			0.173	-0.240**
			(0.113)	(0.101)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	78,284	80,663	78,284
R^2	0.00659	0.00502	0.00649	0.00505
Within R^2	0.00193	0.00065	0.00184	0.00068

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 8. Spillover effects of stock recommendations - alternative measures

This table presents the results of the impact of the rated firm size and peer relationship on spillover effects of recommendations using alternative measures for rated-firms' leadership and peer relationship. Here, *lmc* is a dummy variable that equals one if the market capitalization of the rated firm is larger than 20% within an industry. *proa* is a dummy variable that equals one if the return on asset of the non-rated firm falls in the range of 10% up or below the rated firm. (See Appendix for variable definitions.)

Dependent Variable:			CAR	
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
lmcTRUE	0.206***	-0.028		
	(0.059)	(0.055)		
ac	-0.0001	-0.015***	-0.001	-0.013**
	(0.005)	(0.005)	(0.005)	(0.005)
atUSD	0.102***	0.053***	0.103***	0.039***
	(0.013)	(0.013)	(0.014)	(0.013)
Brokersize	-0.002**	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
GeExp	0.019	-0.032	0.021	-0.041*
	(0.021)	(0.022)	(0.021)	(0.021)
Portsize	-0.006	0.006	0.0007	0.005
	(0.015)	(0.015)	(0.014)	(0.015)
rfCAR	0.012**	0.017***	0.009	0.013***
	(0.006)	(0.005)	(0.005)	(0.005)
sameCtyTRUE	0.078	-0.070	0.084	-0.082
	(0.065)	(0.065)	(0.064)	(0.064)
SIC4	0.009	-0.010	0.003	-0.010
	(0.020)	(0.021)	(0.020)	(0.020)
proaTRUE			-0.055	-0.181***
			(0.047)	(0.047)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
Fit statistics				
Observations	78,473	76,302	80,654	78,277
R^2	0.00620	0.00475	0.00622	0.00483
Within R^2	0.00155	0.00051	0.00149	0.00069

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 9. Spillover effects of stock recommendations - fixed-effects estimation

This table presents the results of the impact of the rated firm size and peer relationship on the spillover effects of recommendations using a fixed-effects estimator at the firm level. (See Appendix for variable definitions.)

Dependent Variable:			CAR	
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.223***	-0.053		
	(0.068)	(0.062)		
ac	0.0009	0.0006	0.001	0.0005
	(0.014)	(0.013)	(0.014)	(0.013)
atUSD	0.196***	0.004	0.194***	0.005
	(0.053)	(0.058)	(0.053)	(0.058)
Brokersize	-0.002*	-0.001	-0.002	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
GeExp	0.025	-0.047**	0.025	-0.047**
	(0.021)	(0.022)	(0.021)	(0.022)
Portsize	-0.0001	0.011	0.002	0.011
	(0.015)	(0.015)	(0.015)	(0.015)
rfCAR	0.012**	0.013***	0.010*	0.012***
	(0.006)	(0.005)	(0.005)	(0.005)
sameCtyTRUE	0.107	-0.073	0.101	-0.070
	(0.076)	(0.074)	(0.076)	(0.074)
SIC4	0.003	-0.017	0.002	-0.018
	(0.020)	(0.021)	(0.020)	(0.021)
peerTRUE			0.159	-0.211*
			(0.124)	(0.113)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
gvkey	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	78,284	80,663	78,284
R^2	0.05961	0.05941	0.05949	0.05942
Within R^2	0.00056	0.00023	0.00042	0.00024

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 10. Spillover effects of stock recommendations - subsample

This table presents the results of the impact of the rated firm size and peer relationship on the spillover effects of recommendations after excluding stock recommendations for firms in two countries with the most observations. (See Appendix for variable definitions.)

Dependent Variable:	CAR			
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.181***	-0.041		
	(0.069)	(0.067)		
ac	-0.0004	-0.009*	-0.001	-0.009
	(0.006)	(0.005)	(0.006)	(0.006)
atUSD	0.100***	0.041***	0.098***	0.043***
	(0.016)	(0.016)	(0.016)	(0.016)
Brokersize	-0.0006	-0.002	-0.0002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
CLUSTER	0.012	-0.005	0.013	-0.005
	(0.018)	(0.019)	(0.018)	(0.019)
GeExp	0.003	-0.027	0.003	-0.027
	(0.022)	(0.024)	(0.022)	(0.024)
Portsize	-0.010	0.0002	-0.008	9.17×10^{-5}
	(0.016)	(0.016)	(0.016)	(0.016)
rfCAR	0.019***	0.013**	0.018***	0.013**
	(0.006)	(0.005)	(0.006)	(0.005)
sameCtyTRUE	0.087	-0.177***	0.084	-0.174**
	(0.069)	(0.068)	(0.069)	(0.068)
SIC4	0.013	-0.007	0.011	-0.007
	(0.022)	(0.022)	(0.022)	(0.022)
peerTRUE			0.178	-0.231**
			(0.128)	(0.110)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
Fit statistics				
Observations	56,744	55,403	56,744	55,403
R^2	0.00811	0.00625	0.00801	0.00629
Within R^2	0.00173	0.00056	0.00164	0.00060

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 11. Spillover effects of stock recommendations - Heckman model stage 1

This table presents the results of the impact of the rated firm size and peer relationship on the spillover effects of recommendations using the Heckman two-stage model. It also provides the results of the first stage. (See Appendix for variable definitions.)

Dependent Variables:	leader	peer	leader	peer
	Up		Down	
Model:	(1)	(2)	(3)	(4)
Variables				
RFsale	$4.62 \times 10^{-5***}$		$4.36 \times 10^{-5***}$	
	(4.68×10^{-6})		(4.33×10^{-6})	
ac	-0.0002	-1.16×10^{-5}	0.002	0.002
	(0.007)	(0.006)	(0.008)	(0.006)
atUSD	-0.037***	0.149***	-0.048***	0.143***
	(0.008)	(0.010)	(0.009)	(0.011)
Brokersize	0.009***	-0.003***	0.011***	-0.003***
	(0.0004)	(0.0008)	(0.0004)	(0.0008)
CLUSTER	-0.248***	-0.053***	-0.307***	-0.036***
	(0.010)	(0.011)	(0.009)	(0.010)
GeExp	-0.035***	-0.026**	-0.017**	-0.008
	(0.006)	(0.012)	(0.007)	(0.013)
Portsize	-0.125***	-0.031***	-0.143***	-0.021**
	(0.008)	(0.009)	(0.008)	(0.010)
rfCAR	-0.032***	0.017***	0.032***	-0.015***
	(0.002)	(0.003)	(0.002)	(0.002)
sameCtyTRUE	-0.042	0.121*	-0.043	0.159**
	(0.058)	(0.062)	(0.058)	(0.069)
SIC4	0.183***	0.034***	0.208***	0.017
	(0.011)	(0.012)	(0.010)	(0.013)
nbFSic		0.002***		0.001***
		(0.0002)		(0.0002)
Fixed-effects				
year	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	80,663	78,284	78,284
Squared Correlation	0.29914	0.01043	0.28048	0.01118
Pseudo R^2	0.22421	0.07997	0.22260	0.07824
BIC	72,955.3	13,765.2	72,082.0	13,722.6

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 12. Spillover effects of stock recommendations - Heckman model stage 2

This table presents the results of the impact of the rated firm size and peer relationship on the spillover effects of recommendations using the Heckman two-stage model. It also provides the results of the second stage. Here, *IMRl* (*IMRp*) refers to inversed Mill's ratio for the leader (peer) sub-sample. (See Appendix for variable definitions.)

Dependent Variable:	CAR			
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.274**	-0.147		
	(0.126)	(0.108)		
IMRl	-0.030	0.078		
	(0.077)	(0.070)		
ac	-0.0005	-0.015***	-0.001	-0.011**
	(0.005)	(0.005)	(0.005)	(0.005)
atUSD	0.107***	0.052***	0.108***	0.070***
	(0.013)	(0.013)	(0.016)	(0.015)
Brokersize	-0.002*	-0.0009	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
CLUSTER	0.013	-0.021	0.010	-0.019
	(0.019)	(0.018)	(0.018)	(0.017)
GeExp	0.022	-0.041*	0.021	-0.042*
	(0.021)	(0.021)	(0.021)	(0.021)
Portsize	-4.47×10^{-5}	0.003	1.18×10^{-5}	0.004
	(0.015)	(0.015)	(0.015)	(0.015)
rfCAR	0.011**	0.014***	0.009	0.011**
	(0.006)	(0.005)	(0.006)	(0.005)
sameCtyTRUE	0.090	-0.080	0.088	-0.050
	(0.064)	(0.064)	(0.065)	(0.066)
SIC4	0.003	-0.006	0.004	-0.009
	(0.020)	(0.021)	(0.020)	(0.020)
peerTRUE			-0.329	-3.19***
			(1.17)	(1.23)
IMRp			0.207	1.25**
			(0.501)	(0.530)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	78,284	80,663	78,284
R^2	0.00636	0.00464	0.00621	0.00471
Within R^2	0.00163	0.00051	0.00148	0.00058

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

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Table 13. Spillover effects of stock recommendations - Analyst coverage

This table presents the results of the impact of the rated firm size and peer relationship on the spillover effects of recommendations by studying the moderating effect of analyst coverage. (See Appendix for variable definitions.)

Dependent Variable:			CAR	
	Lup	Ldown	Pup	Pdown
Model:	(1)	(2)	(3)	(4)
Variables				
leaderTRUE	0.235***	-0.025		
	(0.066)	(0.061)		
nfsaTRUE	0.186	-0.135	0.165*	-0.278***
	(0.119)	(0.106)	(0.099)	(0.095)
ac	-0.003	-0.010*	-0.004	-0.010*
	(0.005)	(0.005)	(0.005)	(0.005)
atUSD	0.106***	0.054***	0.105***	0.055***
	(0.013)	(0.013)	(0.013)	(0.013)
Brokersize	-0.002*	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
GeExp	0.021	-0.040*	0.020	-0.040*
	(0.021)	(0.021)	(0.021)	(0.021)
Portsize	-0.003	0.008	-0.001	0.008
	(0.015)	(0.015)	(0.015)	(0.015)
rfCAR	0.011*	0.014***	0.008	0.013***
	(0.005)	(0.005)	(0.005)	(0.005)
sameCtyTRUE	0.078	-0.061	0.073	-0.054
	(0.066)	(0.066)	(0.066)	(0.066)
SIC4	0.007	-0.013	0.006	-0.014
	(0.020)	(0.020)	(0.020)	(0.020)
leaderTRUE × nfsaTRUE	-0.057	-0.475***		
	(0.195)	(0.174)		
peerTRUE			0.154	-0.219**
			(0.123)	(0.111)
peerTRUE × nfsaTRUE			0.059	0.019
			(0.379)	(0.332)
Fixed-effects				
SIC	Yes	Yes	Yes	Yes
fic	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes
Fit statistics				
Observations	80,663	78,284	80,663	78,284
R^2	0.00637	0.00471	0.00622	0.00470
Within R^2	0.00164	0.00057	0.00149	0.00056

Clustered (gvkey) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*