Non-Deal Roadshows, Investor Welfare, and Analyst Conflicts of Interest

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September 9, 2019

Abstract

Non-deal roadshows (NDRs) are private meetings between management and institutional investors, typically organized by analysts. We find that around NDRs, local institutional investors trade heavily and profitably, while retail trading is significantly less informative. Analysts who sponsor NDRs issue significantly more optimistic recommendations and target prices, coupled with more "beatable" earnings forecasts, consistent with analysts issuing strategically biased forecasts in order to win NDR business. Our results suggest that NDRs result in wealth transfers from small retail investors to large institutional investors and create significant conflicts of interests for the analysts that organize them.

Keywords: Non-deal roadshows, investor welfare, analyst conflicts of interest, private meetings

JEL classifications: G20, G23

We would like to thank Steve Dennis, Ying Duan, Clifton Green, Alexander Vedrashko and seminar participants at Kent State University and Simon Fraser University for helpful comments and suggestions. All errors are our own.

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1. Introduction

Firms devote a significant amount of time meeting privately with institutional investors.[1] Existing evidence suggests that these private meetings offer significant benefits to the firm in the form of improved liquidity, lower cost of capital, and higher valuation ratios (Karolyi and Liao, 2019). However, private meetings may also have a number of adverse consequences, including creating potential wealth transfers from small retail investors to large institutional investors and distorting the incentives of the institutions who often arrange these meetings. Given financial regulators' interest in creating a more level informational playing (e.g., Regulation Fair Disclosure) and minimizing conflicts of interest in financial institutions (e.g., Global Settlement), a deeper understanding of the costs of private meetings is of clear relevance to policy makers.

In this paper, we examine the potential costs associated with the "non-deal roadshow" (NDR). A company "roadshow" is a series of targeted private meetings over several days across different cities where firm management meets with institutional investors to provide them with information regarding their firm. Roadshows are commonly associated with presentations given by firms seeking to issue securities, such as in an initial public offering. However, firms frequently go on roadshows unrelated to securities issuance, which are referred to as non-deal roadshows. An important difference between NDRs and other investor relation activities (e.g., conference calls, investor conferences, and analyst-investor days) is that NDRs are not publicly disclosed, which likely explains why very little is known about them. However, as we describe in Section 2, survey evidence suggests they are rated as the most important investor outreach channel by both institutional investors and firms.

The secretive nature of NDRs exacerbates concerns relating to both conflicts of interest and retail investor welfare. In particular, anecdotal evidence suggests that sell-side analysts have strong incentives to issue overly optimistic research in order to organize firms' NDRs.[2] The lack of disclosure surrounding NDRs makes it more difficult for investors to detect and adjust for this bias, which

[1] For example, in 2015, the average publicly traded firm conducted more than 100 one-on-one meetings with investors (Ipreo, 2016).

[2] For example, the *Wall Street Journal* writes, "Securities firms have struggled ever since the settlement to make their research profitable. As a result, analysts' relationships with company executives, including the ability to line up private meetings for investor clients, have become an increasingly vital revenue source. And that is increasing the pressure for analysts to be bullish on the publicly traded companies they follow" (https://www.wsj.com/articles/new-wall-street-conflict-analysts-say-buy-to-win-special-access-for-their-clients-1484840659).

increases the risk that these conflicts ultimately distort market prices and reduce economic efficiency.[3] In addition, the private nature of NDRs makes it far more difficult for smaller investors to recognize that they may be at a potential informational disadvantage, amplifying the risk of wealth transfers from smaller retail investors to larger institutional investors.

A primary challenge in empirically examining the consequences of NDRs is that data on NDRs are generally not observable. We overcome this challenge by hand-collecting a novel sample of more than 60,000 NDRs from 2013-2018. The data include information on the date and location(s) of the NDR, and when applicable, the brokerage firm that organizes them.

We begin by examining the consequences of NDRs for large institutional investors located near the NDR, as well as smaller retail investors who are unlikely to be aware of the NDR. We find that institutional investors who are headquartered in (or near) the city where a firm conducts an NDR increase their trading in the NDR firm by a highly significant 110% during the quarter when the firm conducts the NDR. Moreover, we find that local institutional trading is significantly more informative. For example, the 20% of stocks most heavily purchased by local institutions following an NDR outperform the 20% of stocks most heavily sold by local institutions following an NDR by roughly 0.40% per month over the subsequent three months. In contrast, we find that retail trading (estimated using the method of Boehmer, Jones, Zhang, and Zhang, 2019) is significantly less informative in the weeks following an NDR. Our findings are consistent with NDRs generating wealth transfers from retail investors to institutional investors who are able to attend private meetings. As a benchmark, we also compare retail investor trading around NDRs to their trading around investor conferences. Interestingly, we find no evidence that retail investors' trading is less informative in the weeks following an investor conference. This finding is consistent with the more secretive nature of NDRs exacerbating the costs of private meetings for smaller investors.

We next examine the implications of NDRs for the brokerage firm that organizes the event. Using a large sample of institutional transaction data to identify brokerage commissions, we document that commission revenue increases substantially for the sponsoring broker during the week of the NDR and continues to remain elevated over the subsequent two weeks. This finding suggests that institutional investors direct trades to the broker as payment for management access.

[3] A growing literature documents that biased research can, in at least some circumstances, lead to significant mispricing (see, e.g., Michaely and Womack, 1999; and So, 2013).

Given that NDRs are valuable to the broker sponsoring the NDR, we examine the possible conflicts that they may create for sell-side analysts. The incentives created by NDRs are similar to investment banking conflicts. That is, analysts may issue overly optimistic forecasts for NDR clients, like banking clients, to secure business. Consistent with this view, we find that brokers who take a firm on an NDR (hereafter NDR Brokers) issue substantially more optimistic investment recommendations and target prices for the firm compared to other brokers. This difference in optimism peaks in the period immediately surrounding the NDR-month, and it holds when we include broker and analyst characteristics and include firm-time fixed effects. The magnitude of the bias is also substantial. For example, while we find that brokerage firms with an investment banking affiliation or a conference-hosting affiliation also issue significantly more optimistic research, the optimism of NDR brokers is typically at least three times as large as the optimism associated with investment banking or hosting a conference.

The optimism of NDR brokers is consistent with analysts attempting to gain favor with management to increase their likelihood of taking the firm on an NDR. However, an alternative view is that analysts behave honestly and NDR firms naturally gravitate towards analysts who have sincerely optimistic views of the company. To distinguish between strategic versus sincere optimism, we follow Malmendier and Shanthikumar (2014) who argue that sincerely optimistic analysts should issue both optimistic recommendations and optimistic short-term earnings forecasts, while analysts aiming to curry favor with management will issue optimistic earnings coupled with more pessimistic (or "beatable") short-term earnings forecasts. We find that NDR brokers issue substantially more pessimistic earnings forecasts, consistent with NDR brokers' bias being strategically motivated.

Our final set of tests examines the market reaction to recommendation changes and target price revisions. If NDR brokers issue upgrades when holds (or downgrades) are warranted, we should observe their upgrades underperforming relative to non-NDR upgrades. Similarly, if NDR brokers are reluctant to issue downgrades, then downgrades, when issued, likely reflect very unfavorable news and should lead to more negative returns. We find mixed support for these predictions. Specifically, the quarterly returns following NDR upgrades are statistically insignificant, however, the quarterly returns for NDR downgrades are significantly negative and economically large. Further, when we decompose the quarterly return into the immediate market reaction (event days 0 and 1) and the subsequent drift (event days 2 through 63), we find that nearly all of the effect accrues during the drift period. This finding is consistent with market participants being largely unaware of the NDR optimism bias.

Our paper contributes to the nascent literature on the consequences of private meetings in capital markets. Much of the prior research has focused on private meetings between investors and management at widely disclosed events such as analyst investor days (Kirk and Markov, 2016) and investor conferences (Bushee, Jung, and Miller, 2011, and Green et al., 2014a and 2014b). Solomon and Soltes (2015) examine all the one-on-one meetings of an NYSE-traded firm, including both NDRs (23% of their sample) and investor conferences (64% of their sample), but their results are difficult to generalize because their data are only from one firm. Perhaps closest in spirit to our work, Bushee, Gerakos and Lee (2018) develop a clever approach to identify a large-scale sample of possible NDR activity—they track corporate flight patterns by forming non-overlapping three-day flight windows to financial money centers and non-money centers where firm-specific institutional ownership is high. Our paper differs in three important ways. First, and most importantly, our data include information on the broker sponsoring the NDR. This allows us to examine the impact of NDRs on trading commissions, analyst bias, and the market reactions to the sponsoring analyst's research. Second, we offer direct evidence on the consequences of NDRs for retail investors. Lastly, we exploit a unique, large sample of NDRs that is less susceptible to measurement error. This likely explains why we find significantly stronger results for both the intensity and profitability of institutional trading around NDRs compared to their study.

Our paper also has implications for Regulation Fair Disclosure (Reg FD), which was enacted in 2000. Reg FD prohibits managers from disclosing material, non-public information to analysts and institutional investors. However, it continues to allow for private meetings between investors and management, provided material non-public information is not disclosed. While NDRs do not necessarily violate Reg FD, our findings suggest that they do run counter to Reg FD's stated objective of creating a more level informational playing field. Further, our findings that retail investor trading is significantly less informative around NDRs relative to broker-hosted conferences suggests that disclosure of NDR activity might mitigate some of the adverse effects of NDRs on retail investor welfare.

Finally, our paper contributes to our understanding of conflicts of interest in financial institutions (see Mehran and Stulz [2007] for a review). It has long been recognized that investment research creates conflicts of interest for investment banks. For example, an internal Morgan Stanley memo from the 1990s stated that their objective "is to adopt a policy, fully understood by the entire firm, including the Research Department, that we do not make negative or controversial comments about our clients as a matter of sound business practice" (Mishkin and Eakins, 2018, page 158). Lin

and McNichols (1998) and Michaely and Womack (1999) document that the relationship between investment banking and analyst optimism is systematic. Regulators responded to such abuses by imposing severe fines on major financial institutions (2003 Global Analyst Research Settlement), requiring that there be a "Chinese wall" between investment banking and investment research and mandating explicit disclosure of banking relationships. As part of the Global Settlement (GS), research analysts were prohibited from participating, either directly or indirectly, in roadshows where security issuances are pitched to investors. Our findings suggest that broker-sponsored non-deal roadshows also pose serious conflicts of interest that result in optimistic equity research. Yet, these private meetings do not fall under the GS or other regulatory purviews and thus should be of great interest to policy makers.

2. Institutional details of NDRs

Executives generally know more about the economic conditions of their firm than do outside investors who provide capital to the firm. To mitigate this information asymmetry, managers spend a significant amount of time disclosing information to investors. Many disclosures simply involve disseminating news to a wide audience (e.g., financial reports, press releases, and conference calls). However, managers also regularly meet with investors at private events like investor conferences, analyst/investor (AI) days, and non-deal roadshows. While a number of academic papers have studied investor conferences (e.g., Bushee, Jung, and Miller 2011, 2017; and Green et al. 2014a, and 2014b) and AI days (Kirk and Markov, 2016), much less is known about NDRs. In this section, we provide more institutional background on NDRs, with a particular emphasis on contrasting NDRs with other private meetings.

One potentially important feature of NDRs is that they tend to be more private and discreet than other investor relation activities. While broker-hosted conferences and AI days are private in the sense that investors must be invited to attend, the calendars for these events are publicly disclosed well in advance of the event, and the firms participating and the executives attending are known. In addition, transcripts of the events are released with little delay. In fact, many brokers and firms have begun to webcast not only the presentations, but also the more private break-out sessions.[4] In contrast, the dates and locations of NDRs are almost never disclosed, and to our knowledge, transcripts of NDRs do not exist. In a regulatory world aimed at leveling the playing field for small investors with

[4] For example, http://investors.alnylam.com/events/event-details/37th-annual-jp-morgan-healthcare-conference-qa-breakout-session.

more disclosure and transparency, NDRs appear to have fallen below the radar where virtually no disclosure is provided.

NDRs also tend to allow for more intimate and in-depth discussions with managers. For example, it's common for hundreds (and occasionally thousands) of investors to attend both AI days and investor conferences. While these events typically offer time for Q&A and less formal discussions, they generally do not provide time for investors to ask in-depth private questions with management in a one-on-one setting.[5] In contrast, in an NDR, managers privately meet with one buy-side firm at the investor's office.

To get further insight into the importance of these differences, we interviewed a senior buy-side analyst at an investment company with over $200 billion in assets. He emphasized that NDRs are the most valuable channel for access to management for two reasons. First, unlike broker-hosted conferences or AI days that he also attends, NDRs are one-on-one meetings in his home turf and the face time he gets with management is significantly longer compared to broker conferences or AI days. He suggested that at the latter venues, interactions with executives typically occur in breakout sessions after the firm presentation and this is shared with many other investors in a different room. The questions he asks in these semi-public forums are much different than the ones he would ask when a company is visiting his office. For instance, he refrains from asking tough questions or questions that might give a competing firm additional insight, but indicated he would ask anything behind closed doors. Second, he noted that the typical break-out session at a conference is only 30-minutes long, while NDR meetings tend to be at least one hour. He feels that the longer duration of NDR meetings allows for him to dig into topics much more deeply.

The views of this buy-side analyst are consistent with ample anecdotal and survey-based evidence on the importance of NDRs. For example, Ryan and Jacobs (2005) quote investor relations officers (IROs) as stating, "the non-deal roadshow is the most effective forum to develop interest in a stock because the portfolio manager can ask questions, look management in the eye, and share concerns in a private setting" (p.205). Brown et al. (2018) poll IROs at 610 publicly-traded firms and find that out of the 12 most common information disclosure channels that firms use to convey the company's message to institutional investors, NDRs rank as the 2nd most valuable form of investor outreach channels just behind earnings conference calls (and ahead of press releases, private phone calls, sell-side analysts, 10-K/10-Q/8-K filings, on-site visits, media, management forecasts, informal

[5] For example, Bushee, Jung and Miller (2017) report that only 14.7% of conference presentations are accompanied by one-on-one meetings, while 41.1% have breakout sessions, and the remaining 44.2% have no formal offline meetings.

settings such as golf and social media). Further, NDRs are growing in importance relative to other investor outreach channels. For example, a 2018 survey of investor relation officers by Citigate Dewe Rogerson finds that 45% of firms plan to dedicate more time to NDRs while only 4% plan to dedicate less time to NDRs. In contrast, only 23% of firms plans to dedicate more time to investor conferences, compared to 18% who plan to dedicate less time.[6]

3. Data, descriptive statistics and NDR determinants

3.1. Data and descriptive statistics

We hand-collect NDR data from theflyonthewall.com (FLY), which is a subscription-based publisher of real-time financial news.[7] For each NDR, the FLY reports the date, the firm, the location, whether the NDR is company-sponsored or broker-sponsored, and the brokerage firm organizing the NDR (when applicable). The sample spans from 2013, the first full year for which FLY reports NDR data, through 2018.

We also collect information on investor conferences from the Bloomberg Corporate Events Database over the same period. The conference data include information on the date of the conference, the names of each of the presenting companies, and the brokerage firm organizing the conference (when applicable).

Panel A of Table 1 provides descriptive statistics of our NDR sample after merging the sample with CRSP and Compustat. We include only common stocks (share code 10 or 11) and limit the sample to stocks with a minimum stock price of $1 at the previous month end. The sample contains 62,684 unique firm-date observations (hereafter: NDRs) and 69,458 firm-date-locations. The sample includes NDRs organized by 112 brokerage firms for over 6,100 firms. The majority of NDRs (~65%) are sponsored by a broker. We are able to match 80% of broker-sponsored NDRs with I/B/E/S, resulting in a final sample of 89 I/B/E/S brokers. Panel B of Table 1 provides similar descriptive statistics for the conference sample. The conference sample includes 75,144 conference presentations at 6,793 unique investor conferences.

[6] See: https://citigatedewerogerson.com/wp-content/uploads/2018/09/CDR-IR-Survey-2018.pdf

[7] Since NDRs are rarely publically disclosed, the scope and representativeness of the NDRs reported on Fly are unclear. Bradley, Clarke, and Zeng (2019) compare recommendations leaked on Fly to the universe of I/B/E/S recommendations. They find that Fly contains 58.4% of all recommendations in I/B/E/S and that the Fly sample tilts towards smaller growth firms and larger brokerage firms.

In Panel C, we provide statistics on the top 30 cities visited by firm management during NDRs.[8] For each city, we also compute the fraction of total institutional trading that is driven by local institutional investors. Specifically, we merge institutional quarterly holdings from form 13-F with the data on fund headquarters location provided on Form ADV.[9] Following Coval and Moskowitz (2001), we define an institutional investor as local if its headquarters are within 100 kilometers of the downtown of the city. For each institution-firm-quarter, we compute *total trading* as the absolute value of the change in the institution's holdings across the adjacent quarters scaled by shares outstanding, and we aggregate to a city-firm-quarter level by summing across all local institutions.[10] We report the average across all firm-quarters for each city.

Not surprisingly, typical money centers where institutional investors are concentrated dominate the most visited cities. For instance, New York City comprises approximately 22% of NDRs, and accounts for 34% of total institutional trading. This is followed by Boston, which is also the second highest locale for institutional trading. More generally, across the 30 cities, we document a correlation between *Total NDRs* and *Local Inst. Trading* of 97%.

3.2. Determinants of NDRs

We next examine the determinants of NDRs. We expect the number of NDRs to be determined in equilibrium by both institutional investor demand for information and firms' incentives to supply information. Following Green et al. (2014a), we conjecture that institutional demand for management access is likely greater for firms that are harder to value with more complex information environments. We thus conjecture that firms with higher levels of intangibles (*Recognized Intangibles*), high R&D expenses ((*R&D + ADV)/OE*), greater growth opportunities, as proxied by market-to-book ratios (*MB*), and high idiosyncratic volatility (*IVOL)* are more likely to attend NDRs.

Given that NDRs provide opportunities for firms to meet with current institutional investors, we expect the number of NDRs to be positively correlated with the percentage of the firm owned by institutional investors (*Institutional Ownership).* In addition, we expect that the benefits of NDRs might

[8] The location variable provides a valid US city for 53,040 observations, of which more than 70% are concentrated within 30 cities. The remaining observations include non-us observations (e.g., London), broad US regions (e.g., "Mid Atlantic"), or missing data.

[9] We thank Stephen Dimmock, Will Gerken and Joe Farizo for making the Form ADV data available here: https://uknowledge.uky.edu/finance_data/1/. Additional details are available in Dimmock and Gerken (2012) and Dimmock, Farizo, and Gerken (2018).

[10] We note this measure does not capture intra-quarter round-trip trading or short-sales and thus understates total institutional trading.

be larger for younger firms with lower visibility *(Age*), firms that will issue new shares in the next two years (*SEO*), and firms that will make an acquisition in the next two years (*M&A - Acquirer*).

We also control for analyst coverage (*Coverage)* as a proxy for demand for published analyst research, as well as several additional factors known to influence the magnitude of published analyst research including *Number of Institutions*, *Size, Turnover*, and the r-squared from a market model regression (*R-squared*) (Bhushan, 1989). Finally, we explore whether a firm's tendency to go on an NDR varies with recent performance as measured by its stock's return over the prior month (Ret_{m-1}) or prior two to twelve months ($Ret_{m-12, m-2}$). A detailed description of all variables can be found in Appendix A.

To examine the relation between NDR and the set of firm characteristics discussed above, we estimate a linear probability model where the dependent variable, *NDR*, equals 1 if the firm participated in a NDR in the firm-month, and zero otherwise. All independent variables are standardized to have zero mean and unit variance. Month fixed effects are included and standard errors are clustered by firm.

Table 2 reports the results. Specification 1 provides results for the full sample of NDRs. As predicted, firms that are harder to value are more likely to do NDRs. For instance, across all NDRs, we find that a one-standard deviation in *Recognized Intangibles is* associated with an approximately 1.0% increase in the probability of participating in an NDR. We also find that NDRs are positively correlated with *(R&D +ADV)/OE, MB*, and *IVOL*. The other estimates are also largely consistent with our predictions. For example, we find that younger firms, and firms that are about to make an acquisition or SEO are more likely to do an *NDR*. We also find that firms with greater analyst coverage, greater institutional ownership, and stronger returns over the prior year are more likely to participate in *NDR*s.

In Specifications 2 and 3, we separately analyze broker-organized NDRs and company-sponsored NDRs. Consistent with the view that firms that are harder to value have a greater need for the provision of research services, firms with more intangible assets, more R&D expenses, and greater growth opportunities are more likely to choose a broker to organize their NDRs. Likewise, analysts cater to institutional investors and, as expected, firms with higher levels of institutional investor ownership and analyst coverage are more likely to have a broker organize their NDRs.

Overall, our results from this section are generally consistent with expectations. Firms are more likely to participate in NDRs when the demand for private access to management is high and when the expected benefits of providing private management access are greater. Moreover, a firm with a more complex information environment is more likely to use a broker to organize its NDR.

4. NDRs and investor welfare

In this section, we examine the impact of NDRs on the welfare of two groups of investors: 1) institutional investors headquartered in or near the city where a firm conducts an NDR and 2) retail investors who are unlikely to be aware that an NDR is taking place.[11]

4.1. NDRs and Local Institutional Trading

We begin by examining the trading of institutions located in close proximity to the NDR. For instance, on January 9, 2017, Community Healthcare (CHCT) participated in a two-day NDR to St. Louis, Dallas and Houston. We ask two questions. First, do institutions headquartered in (or near) these cities (i.e., local institutions) increase trading in Community Healthcare in Q1, 2017, relative to other institutional investors outside of these three cities (i.e., non-local institutions)? Second, is the net trading of local institutions informative about future returns?

4.1.1. The intensity of institutional trading around local NDRs

For each fund *f*, firm *i*, and quarter *t*, we measure $Trading_{fit}$ as the absolute value of the difference in split-adjusted shares held from quarter *t-1* to quarter *t*. For each of the top 30 NDR destinations (see Panel C of Table 1), we aggregate $Trading_{fit}$ to a city-level measure (*Total* $Trading_{cit}$) by summing across all local institutions, defined as any institutional investor headquartered within 100 kilometers of the downtown of the city. Similarly, for each fund *f*, firm *i*, and quarter *t*, we measure $NetITrading_{fit}$ as the signed value of the difference in split-adjusted shares held from quarter *t-1* to quarter *t*, and we aggregate this measure to a city-level measure (*Total Net* $Trading_{cit}$) by summing across all local institutions and then taking the absolute value. Thus, *Total* $Trading_{cit}$ measures whether local institutional investors are trading in any direction, while *Total Net* $Trading_{cit}$ measures whether local institutional investors are trading in a correlated direction.[12]

In Panel A of Table 3 we provide a univariate comparison of local institutional trading during local NDR firm-quarters (2.09% of the firm's total shares outstanding) compared to firm-quarters in which there was no local NDR (0.37% of shares outstanding). Likewise, the difference in *Total Net*

[11] We consider both broker-sponsored and company-sponsored NDRs. In untabulated analysis, we find that the results are very similar for both types of NDRs.

[12] For example, if one local institutional purchased 1% of shares outstanding in a firm and a second institution sold 1% of the share outstanding in the firm, *Total Trading* would equal 2% while *Total Net Trading* would equal 0%.

Trading is also larger when Local NDR=1 compared to Local NDR=0 (1.28% versus 0.27%, respectively). While these differences are economically large, firms tend to participate in NDRs when information demanded by institutions is high. Thus, the increase in trading volume may be attributed to an information shock corresponding to a change in the firm's information environment. We control for this possibility by estimating the following regression:

$$\text{Trading}_{cit} = \alpha + \beta_1 Local\ NDR_{cit} + \beta_2 Non\text{-}Local\ NDR_{ct} + FE + \varepsilon_{cit} \quad (1)$$

The dependent variable is *Total Trading* in columns 1 and 2 and *Total Net Trading* in columns 3 and 4. The independent variable of interest is *Local NDR*. *Non-Local NDR* is also included, which captures if a firm participates in a NDR in quarter *t,* but does not visit city *c*. All regressions include city fixed effects and either include firm and quarter fixed effects or firm-quarter fixed effects. Standard errors are clustered by quarter.

Panel B of Table 3 presents these results. In model 1, the coefficient on *Local NDR* is 0.41% and highly statistically significant (*t*-stat=20.79). Economically, this point estimate implies an increase of over 111% (0.41%/0.37%) in local institutional trading. Interestingly, when an NDR occurs in a non-local city, trading in the institution's locality is reduced by a significant 5.4% (-0.02%/0.37%). Specification 2 confirms that the increase in local institutional trading is very similar if we include firm-quarter fixed effects, which helps rule out that other omitted factors are driving both the firm's decision to attend an NDR in a given quarter and local institutional trading. Specifications 3 and 4 show that local NDRs are also strongly correlated with *Total Net Trading,* suggesting that local institutional investors are often on the same side of trade (either buying or selling) during a local NDR quarter.

Bushee, Gerakos and Lee (2018) also examine local institutional trading around private meetings and find results that are directionally consistent, but economically weaker. For example, they find that when a firm's corporate jet visits a money center city, *Total Net Trading* for local institutions increases by 0.054%, which is less than one fourth of our estimated effect of 0.24%. Our larger economic magnitudes are not surprising; while the approach employed by Bushee, Gerakos, and Lee (2018) is a clever proxy for NDRs, it likely suffers from considerable measurement error.

4.1.2. The informativeness of institutional trading around local NDRs

We next examine whether local institutional trading is more informative. Specifically, we construct a sample where the unit of observation is a firm-city-month, and each month, from April 2013 to December 2018, we first estimate the following panel regression:

$$Ret_{it} = \alpha + \beta_1 Inst.\ OIB_{cit-1} + \beta_2 Inst.\ OIB_{cit-1} * Local\ NDR_{cit-1} + \beta_3 Inst.\ OIB_{cit-1} * Non\text{-}Local\ NDR_{cit-1} + \beta_4 Local NDR_{cit-1} + \beta_5 Non\text{-}Local\ NDR_{cit-1} + \beta_6 Char_{it-1} + \beta_7 Inst.\ OIB_{cit-1} * Char_{it-1} + City_c + \varepsilon_{cit.} \quad (2)$$

The dependent variable, Ret_{it} is the return of stock *i* in month t. *Inst. Oib*$_{cit}$ is computed as the total shares of firm *i* bought by all institutions local to city *c* in in quarter *t-1* less the total shares sold by all institutions local to city *c* in in quarter *t-1*, scaled by total institutional trading volume in quarter *t-1*. Since there is significant heteroscedasticity in the magnitude of *Inst. Oib* across cities (e.g., the variance in *Inst. Oib* is greater in New York City than Cincinnati), we convert *Inst. OIB* to a quintile ranking relative to other firms in the same city-quarter. *NDR* is an indicator variable equal to one if the firm attended an NDR in that city in quarter *t-1*. *Char* is a vector of firm characteristics taken from Boehmer, Jones, Zhang and Zhang (2019) and includes past one-week returns (Ret_{w-1}), past one month returns (Ret_{m-1}), returns over the prior two to seven months ($Ret_{m-7,m-2}$), market capitalization (*Size*), share turnover (*Turnover*), volatility of daily returns (*Vol*), and book-to-market (*BM*). *Inst. OIB * Char* interacts the vector of firm characteristics with the retail order imbalance measure. This controls for the possibility that the informativeness of retail trading can vary with firm characteristics. All continuous independent variables are standardized to have mean zero and unit variance. Finally, *City* is a vector of city fixed effects.

Table 4 reports the time-series average slope coefficients from Equation 2 and the *t*-statistics computed from the time-series standard deviation of the slope coefficients. Specification 1 reports the baseline results. We find the coefficient on *Inst. OIB* is economically small and statistically insignificant, suggesting that institutional order imbalances do not generally forecast returns over the subsequent three months. However, the coefficient on *Inst. OIB *Local NDR* is statistically significant, implying that institutional trading is significantly more informed for the subset of firms that conducted an NDR near the institutions' headquarters. The economic magnitudes of the effects are sizable. For example, the baseline specification implies that the return on a long-short portfolio based on monthly imbalance quintiles is 0.38% per month (0.095% * (5-1)) or roughly 4.56% per year. [13] This estimate ignores any short-term returns that local institutional investors would capture between the date of the

[13] In Table IA.1 of the Internet Appendix, we more directly conduct quintile portfolio sorts and find an annualized spread in raw-returns (four-factor alphas) of 4.56% (4.68%).

trade and the end of the quarter, and therefore likely understates the total benefits of NDRs to local institutions. We also document a significantly negative coefficient on *Inst. OIB *Non-Local NDR*. This is consistent with NDRs placing institutional investors who are not able to meet with management at an NDR at a relative informational disadvantage.

Private meetings with management are perhaps more valuable for harder-to-value firms. To test this prediction, we split the sample into two groups based on the median breakpoint of firm volatility (Specifications 2 and 3) and firm size (Specifications 4 and 5). Consistent with this conjecture, we find that the point estimates are larger among more volatile stocks (0.123% versus 0.066%) and smaller stocks (0.163% versus 0.062%).

In Figure 1, we re-estimate Table 4 separately for each of the three months following the quarter end (i.e. months 1 through 3), as well as the three months in the subsequent quarter (i.e., months 4 through 6), and we plot the cumulative coefficients on *Inst. OIB, Inst. OIB *Local NDR*, and *Inst. OIB *Non-Local NDR*. We find that the coefficient on *Inst. OIB *Local NDR* steadily grows for the first three months after the quarter end, at which point the estimates are essentially flat. The lack of reversal in quarter 2 is inconsistent with the returns following local institutional trading being attributable to uninformed price pressure. Instead, the results support the view that NDRs provide new information to local institutional investors, and this information is subsequently impounded into prices within one quarter.

4.2. NDRs and retail trading

The evidence from the prior section documents that NDRs generate a substantial increase in informed trading by nearby institutions. Our findings also indicate that at least some of the benefits that local institutional investors accrue around NDRs comes at the expense of non-local institutional investors. A second group that might also be harmed by NDRs is retail investors. In this section, we more directly examine the impact of NDRs on retail investors, which should be of particular interest to policy makers.[14]

4.2.1. The informativeness of retail rrading around NDRs

We identify retail trading using the approach of Boehmer, Jones, Zhang, and Zhang (2019), which exploits two key institutional features of retail trading. First, most equity market orders by retail investors do not occur on an exchange. Instead, a broker typically fills retail trades internally from its

[14] See, for example, https://www.sec.gov/news/speech/mjw-speech-032114-protecting-retail-investor.

own inventory or sends the trades to a wholesaler. These types of trades are classified as exchange code "D" in TAQ. Second, retail traders typical receive a small fraction of a one cent price improvement over the National Best Bid or Offer (NBBO) for market orders (ranging from 0.01 to 0.2 cents), while institutional orders tend to be executed at whole or half-cent increments.

Thus, following BJZZ (2019), we classify trades with TAQ exchange code "D" and prices just below a round penny (fraction of a cent between 0.6 and one) as retail purchases, while trades on exchange code "D" and prices just above a round penny (fraction of a cent between zero and 0.4) are classified as retail sales. This classification is conservative in the sense that is has a low type 1 error (i.e., trades classified as retail are very likely to be retail). However, this classification does omit retail trades that occur on exchanges as well as nonmarketable limit orders.[15]

Our objective is to examine how the informativeness of retail trading changes around NDRs. We also examine the informativeness of retail trading around investor conferences. Like NDRs, conferences may confer an informational advantage to large institutional investors that can meet with management during breakout sessions or informal discussions.[16] However, unlike NDRs, conference events are publicly disclosed, so investors might better understand the risk of trading around conferences. Further, conferences provide detailed transcripts of the formal management presentations, and they are increasingly providing transcripts of break-out sessions. To the extent retail investors are skilled at processing public information (e.g., Farrell, Green, Jame, and Markov, 2019; and Akbas and Subasi, 2019), these disclosures could facilitate more informative retail trading. As a result, the net effect of investor conferences on the informativeness of retail trading is more ambiguous.

To investigate the impact of NDRs and conferences on the informativeness of retail trading, we estimate the following daily Fama-MacBeth (1973) regression:

$$Ret_{it} = \alpha + \beta_1 Retail\ OIB_{it-1} + \beta_2\ Retail\ OIB_{it-1} * NDR_{it-1,t-10} + \beta_3 Retail\ OIB_{it-1} * CONF_{it-1,t-10} + \beta_4 NDR_{it-1,t-10} + \beta_5 CONF_{it-1,t-10} + \beta_6 Char_{it-1} + \beta_7\ Retail\ OIB_{it-1} * Char_{it-1} + \varepsilon_{it..} \quad (3)$$

[15] Kelley and Tetlock (2013) find that retail market orders are more informed than limit orders, and Linnainmaa (2010) find that limit orders are more likely to be picked off by informed traders. Thus, excluding limit orders likely understates the adverse consequences of NDRs on retail investor welfare.

[16] We do not examine whether local institutional investors benefit from conferences for two reasons. First, the conference location data is missing for a large fraction of our sample. Second, unlike NDRs, conference location is a poor proxy for the types of firms that would attend a conference. For example, when a brokerage hosts a conference in New York, it tends to invite all of its biggest institutional clients regardless of their location.

Following BJZZ (2019), the dependent variable is the five-day ahead return.[17] Our primary measure of order imbalances is *OIBVOL,* defined as retail buy volume less retail sell volume divided by the sum of retail buy and sell volume. *NDR* is an indicator variable equal to one if an NDR took place at any point from day *t-1* to day *t-10,* and *Conf* is defined analogously. The 10-day window is selected to provide a sufficient amount of time for institutional investor to build up their trading positions following an NDR. *Char* is the same vector of firm characteristics from Equation 2, and *Retail OIB * Char* controls for the possibility that the informativeness of retail trading can vary with firm characteristics. All continuous independent variables are standardized to have mean zero and unit variance.

Table 5 reports the time-series average slope coefficients from 1,509 daily cross-sectional regressions from January 2013 through December 2018. To avoid imprecise estimates on *NDR* and *Conf*, we set the coefficient on *NDR* (*Conf*) equal to missing on days where fewer than 25 firms attended an NDR (Conference) during the event window.[18] Standard errors employ the Newey-West (1987) correction for autocorrelation, where the lag length is set equal to five. Specification 1 reports the baseline results. Consistent with BJZZ (2019), we find that retail order imbalances is a strong positive predictor of five-day ahead returns on non-event days.[19] However, we also find that this relation completely reverses on NDR days. In particular, relative to non-event days, a one-standard deviation increase in ***Retail*** *OIB* is associated with a -0.035% decline in returns. To better gauge the economic magnitude, we convert the estimate into an annualized return on long-short portfolios based on daily imbalance quintiles with midpoints at the 10th and 90th percentile. The difference in OIBVOL for the 90th and 10th percentile is 2.55 standard deviations. Multiplying this spread by the coefficient (-0.035%) and annualizing (i.e., multiplying by 252/5) yields an annual return differential of -4.50%. This estimate suggests that retail investors have an economically meaningful informational disadvantage in the period immediately following NDRs relative to their typical trading. Consistent

[17] The retail trading tests are estimated over much shorter horizons than institutional trading. We would prefer to estimate both results over shorter-horizon windows; however, local institutional trading is only available at a quarterly frequency.
[18] This filter affects roughly 0.5% of NDR observations and 8% of conference observations. We also obtain very similar estimates if we relax this filter and instead estimate Equation 4 as a panel regression with time fixed effects.
[19] The evidence that retail order imbalances positively forecast returns appears at odds with prior work that concludes that retail investor trading tends to be harmful for their wealth (e.g., Barber and Odean, 2000). Transaction costs may help explain this discrepancy, particularly when retail investors engage in significant amount of offsetting transactions. For example, suppose retail investors both bought and sold 1000 shares of a stock that earned zero abnormal returns. In aggregate, we would conclude that retail investors order imbalance (0) was a good predictor of future abnormal returns (0), but each individual investor would have lost money due to transaction costs (e.g., bid-ask spreads and trading commissions).

with the local institutional trading results, we also find that these effects are amplified among harder-to-value stocks, such as more volatile stocks (Specification 2) and smaller stocks (Specification 4).

Interestingly, we find that the coefficient on ***Retail*** *OIB * Conf* is positive, albeit statistically insignificant, indicating that retail investor trades are no less informative in the ten days following an investor conference. This finding could be consistent with the structure of NDRs (e.g., longer visits and more private meetings) creating larger informational advantages for institutions that meet with management. Alternatively, it is possible that the greater disclosure surrounding investor conferences (e.g., publishing the date/time of the conference and providing detailed transcripts) minimizes the informational disadvantage of retail investors.

In the Internet Appendix, we confirm that the findings in Table 5 are robust to several methods. First, Table IA.2 confirms that we reach very similar conclusions if we replace the Fama-Macbeth regressions with simple portfolio sorts. In Table IA.3, we repeat Table 5 after replacing *OIBVOL* with *OIBTRADE*. The results are qualitatively similar, but the magnitude on *Retail OIB * NDR* in Specification 1 increases by roughly 50% (from −0.035% to −0.054%). Since *OIBTRADES* gives more weight to smaller, and presumably less-sophisticated retail investors, this finding is consistent with *NDRs* being particularly harmful to smaller retail investors. Finally, in Table IA.4 we re-define *NDR* (and *Conf*) using a one-week (i.e., 5-day), one-month (i.e., 21-day), or one-quarter (i.e., 63-day) event window. We find the estimate on *Retail OIB * NDR* is significantly negative for all of the horizons. However, the coefficient on *Retail OIB * NDR* tends to decline (in absolute value) as the horizon increases. For example, the coefficients for the 5-day, 10-day, 21-day, and 63-day windows are: -0.034%, -0.035%, -0.020%, and -0.013%, respectively. The generally declining point estimates suggest that most informed institutional trades occur within a two-week window after the NDR. However, the significantly negative estimates for horizons of up to one-quarter are consistent with at least some institutions obtaining a relatively long-lived informational advantage following the NDR.

Finally, we re-estimate Equation 3 where the dependent variable ranges from the one-week ahead to the 12-week ahead return. Figure 2 plots the cumulative coefficients on ***Retail*** *OIB,* ***Retail*** *OIB * NDR*, and ***Retail*** *OIB * Conf.* We find that the coefficient on ***Retail*** *OIB * NDR* grows, in absolute value, from -0.035% after the first week to -0.086% after three weeks. After the first three weeks, the estimate is essentially flat, suggesting that retail investors' relative underperformance around NDRs is fairly short-lived, but permanent. Collectively, the results from this section suggest that NDRs are detrimental to the welfare of retail investors who directly invest in equities.

5. NDRs and trading commissions

The prior section documents that NDRs generate a substantial increase in trading for nearby institutions, and such trading is particularly informative. We expect institutional investors to reward brokers for arranging these face-to-face meetings with firm management through increased commission revenue (Goldstein et al., 2009). Specifically, we expect an increase in commission revenue for the organizing brokers surrounding the NDRs. As a benchmark, we also examine the impact of broker-hosted conferences on commissions.

We measure brokerage commissions using transaction data from Abel Noser (formerly known as Ancerno), a consulting firm that helps institutional investors monitor their transaction costs.[20] Each observation in Abel Noser corresponds to an executed trade. For each trade, Abel Noser provides information on the date of the trade, the firm traded, the commission paid, and the broker who executed the trade.[21] The data stop in June of 2014, so the analysis of trading commissions is limited to broker-sponsored NDRs between January 2013 and June of 2014. We merge the Abel Noser dataset with I/B/E/S by broker name, resulting in a merged sample of 42 I/B/E/S brokers for 6,843 broker-sponsored NDRs.

To examine whether the broker received increased commission during the week of the NDR (or broker-hosted conference) we estimate the following panel regression:

$$Com_{jit} = \beta_1 NDR_{jit} + \beta_2 Conf_{jit} + Broker\text{-}Firm_{ji} + \varepsilon_{jit} \quad (4)$$

The dependent variable, *Com,* is a measure of commissions for brokerage firm *j*, in stock *i*, in week *t*. We consider two measures of commissions: *$Commissions*, defined as the natural log of 1 plus the total dollar commissions for broker *j* in stock *i* during week *t*, and *Commission Share*, defined as the total commissions for broker *j* in stock *i* during week *t* scaled by total Abel Noser commissions across all I/B/E/S-Abel Noser matched brokers for stock *i* in week *t*. Thus, *$Commissions* allows us to examine whether NDR brokers generate an increase in commission revenue, either due to increased aggregate commissions or a higher percentage of total commissions, while *Commission Share* focuses exclusively on the percentage of total commissions.

Our independent variables of interest are *NDR*, an indicator equal to one if a brokerage firm *j* organized an NDR for firm *i*, in week *t*, and *Conf*, an indicator equal to one if a brokerage firm *j*

[20] See Hu, Jo, Wang, and Xie (2018) for a more detailed description of the Abel Noser dataset.

[21] Prior vintages of the Abel Noser data included information on the identity of the institutional investor making the trade, allowing for tests of institutional trading skill (see, e.g., Jame, 2018). However more recent versions that overlap with our NDR sample time period are anonymous.

hosted firm *i* at an investor conference in week *t*. All regressions also include broker-firm fixed effects to control for the fact that some brokers tend to have persistently higher levels of commissions in certain stocks. We limit the sample to broker-firm pairs with at least one *NDR* or *Conf* event, and we cluster standard errors by firm and week.[22]

Specifications 1 and 2 of Table 6 report the results for $*Commissions* and *Commission Share*, respectively. We find that *$Commissions* increases by roughly 24% and *Commission Share* increases by 1.23% during the week of the NDR. Both estimates are economically large and statistically significant at the 1% level. The magnitudes are also very similar to the estimates for *Conf* (20% and 1.32%, respectively). The comparable magnitudes are perhaps surprising since a much smaller set of investors attend NDRs relative to conferences, and highlight the perceived value of NDRs to institutional clients.

To paint a more complete picture of the dynamics of commissions around NDRs, we re-estimate Equation 4 after including indicator variables for whether there was an NDR over the prior two weeks (*NDR [-1,-2]*), prior three to four weeks (*NDR [-3,-4]*), or prior five to eight weeks (*NDR [-5,-8]*). We also examine whether institutions reward brokers for organizing an NDR in advance of the meeting by adding indicators for whether there will be an NDR in the subsequent two weeks (*NDR [1,2]*), subsequent three to four weeks (*NDR [3,4]*), or subsequent five to eight weeks (*NDR [5,8]*). We also include analogous measures for conferences. Specifications 3 and 4 report the results for $*Commissions* and *Commission Share*, respectively. We find some evidence of elevated $*Commissions* in the two weeks following the NDR, but no other evidence that institutions reward NDR brokers prior to the NDR. The patterns for broker-hosted conferences are very similar. This is consistent with the view that institutions reward brokers for value-added services with realizations only known *ex post*. In other words, if an institution participated in the NDR, but it was not valuable (e.g., poorly organized, uninformative, etc.), it is unlikely that the institution would reward the broker.

6. NDRs and analyst optimism

In the last two sections, we demonstrated that NDRs are valuable to institutions, and, in exchange for valuable access to management, institutions allocate commission dollars as payment to the brokerage houses providing these services. In this section, we examine if NDRs are associated with analyst bias. The broker's analyst that covers the firm is the responsible agent for NDRs—they

[22] Due to the inclusion of broker-firm fixed effects, *NDR* and *Conf* cannot be estimated for broker-firm pairs with zero NDRs or Conferences.

organize the logistics, determine invitation lists, and make sure the meetings run smoothly. As a result, any commission revenue allocated to the broker from institutions is credited to the sponsoring analyst.[23] Because analyst compensation is based upon the revenue they generate for the broker firm (Groysberg, Healy and Maber, 2011), organizing NDRs can be lucrative to the analyst.

The incentives created by NDRs are similar to the misaligned incentives created by investment banking business. That is, banking business (or NDR business) has the potential to cloud analysts' opinions because analysts may use optimistic ratings as a way to curry favor to management in choosing them for their next deal (Michaely and Womack, 1999; Ljungqvist, Marston and Wilhelm, 2006; Corwin, Larocque, and Stegemoller, 2017). Recent reforms such as the Global Research Settlement are intended to mitigate these biases. For example, as part of the Global Settlement, analyst compensation cannot be tied to banking business. No such policies apply to NDRs. Further, in comparison to banking deals or broker-hosted conferences that are well publicized, NDRs are under the radar, making it much more difficult for investors (particularly smaller, less-sophisticated investors) to detect and adjust for this bias.

6.1. Univariate statistics of NDR versus Non-NDR brokers

We begin by reporting univariate statistics of analyst and broker characteristics, including measures of analyst bias. The sample includes all broker-firm-months where the broker is covering a firm. We split the sample into firm-months where a broker will take a firm on an NDR in the subsequent three months (NDR3 =1 or *NDR broker*) versus all other broker-firm months (NDR3 =0 or *Non-NDR brokers*). We emphasize the three-month horizon prior to the NDR because conversations with a CFO indicated that his firm tends to plan NDRs roughly three months in advance. The CFO also confirmed that his firm would never select an analyst that had pessimistic views on the company to sponsor the NDR. As he put it, how could a pessimistic analyst market his company to investors? Thus, the three-month period prior to the NDR is likely a period where brokerages have especially strong incentives to cater to management.

Panel A of Table 7 reports analyst and broker characteristics. The sample includes 2,239,513 broker-firm-month observations of which roughly 2.34% are *NDR broker*s. Detailed definitions of the analyst and broker characteristics are available in Appendix A. We find that NDR brokers are

[23] Our discussions with a buy-side investor confirmed the commission allocation dynamics. He noted that he allocates trades for broker services that he finds valuable. He has the ability to insert "notes" that the Director of Research can observe. For instance, if he was invited to participate in an NDR that he found valuable, he would direct trades to the sponsoring analysts' firm and indicate the reason (i.e., analyst *A's* NDR with firm *X*).

significantly more likely to host the firm at a conference in the subsequent three months (7.02% versus 3.66%). Notably, there is no meaningful difference between *NDR brokers* and *Non-NDR brokers* with respect to banking affiliation status (1.08% versus 1.12%, respectively).

Panel B provides statistics on three measures of analyst optimism: *Rec Level, Target Return*, and *Target Return Bias.*[24] *Rec Level* is the analysts' current recommendation, converted to a numeric value using the following scale: 1=strong buy, 2=buy, 3=hold, 4=sell/underperform, and 5=strong sell. *Target Return* is the 12-month expected return (excluding dividends) implied from broker *j*'s most recent 12-month price forecast of firm *i* as of month *t*, computed as (Forecast $\text{Price}_{jit}/\text{Price}_{it-1}$)-1.[25] Lastly, *Target Return Bias* is the difference between the *Target Return* and the 12-month realized return (excluding dividends).

Across all three measures, we find that *NDR brokers* are significantly more optimistic than *Non-NDR brokers*. For instance, the mean average recommendation level for *NDR brokers* is 1.96 compared to 2.38 for *Non-NDR brokers*. This difference is economically large, particularly relative to the cross-sectional standard deviation of *Rec Level* of 0.89. Similarly, *NDR brokers'* price targets imply an expected return of 27.66% compared to only 18.71% for *Non-NDR Broker*, a spread of 8.95%. The spread in *Target Return Bias* is slightly smaller but still very large (7.20%), suggesting that differences in realized return cannot explain the majority of the difference in target price optimism.

To offer a richer description of the dynamic relation between analyst optimism and NDRs, we also examine differences in *Rec Level* of *NDR brokers* relative to *Non-NDR brokers* covering the same firm at the same time in event time (hereafter *Abnormal Rec Level*). Figure 3A plots the *Abnormal Rec Level* of *NDR brokers* from months – 36 to +36, when month 0 is the month of the NDR. Across all months, we find that *NDR brokers* issue more optimistic recommendations. However, we find that the optimism steadily increases in the three years prior to the NDR and then gradually declines in the three years following the NDR. Figure 3B documents a very similar pattern for *Target Returns.*[26] The event-time patterns are consistent with *NDR brokers* attempting to curry favor with management in the period immediately prior to the NDR by issuing even more optimistic research.

6.2. Multivariate regressions of analyst optimism

[24] We also examine measures of optimism based on quarterly earnings forecasts in Section 6.3.
[25] The exclusion of dividends from estimated target returns follows recent literature (e.g., Loudis, 2018; and Bali, Hu, and Murray, 2019).
[26] Because we compare bias across brokers for the same firm and month (i.e., firm-month fixed effects), the results for *Target Return* and *Target Return Bias* are identical.

To more thoroughly examine the univariate results from the previous section, we consider a multivariate regression that controls for other determinants that are likely to influence analyst research optimism. The formal model is below:

$$\textit{Analyst Optimism}_{jit} = \beta_1 \textit{NDR3}_{jit} + \beta_2 \textit{Conf3}_{jit} + \beta_3 \textit{Affiliated3}_{jit} + \text{Controls} + \text{FE} + \varepsilon_{jit} \quad (5)$$

where $\textit{Analyst Optimism}_{jit}$ is either *Rec Level* (Specifications 1 and 2) or *Target Return* (Specification 3 and 4). Specifications include either month or paired firm-month fixed effects with standard errors clustered by firm and month.

The main variable of interest is *NDR3*. We also include other brokerage activities that have the potential to impact analyst bias. *Conf3* (*Affiliated3*) is an indicator variable equal to one if the firm will participate in the broker's conference (will become a banking client) in the next three months, and zero otherwise. Not only are *Conf3* and *Affiliated3* important controls, but they also provide a useful benchmark for gauging the magnitude of the bias associated with NDRs.

The remaining variables in the specification (Controls) are common broker and analyst-specific controls. *Log (Broker Size)* is the natural log of the number of analysts that a broker employs and is used as a measure of broker prestige and reputation. *Log (Firm experience)* and *Log (Experience)* are the natural logs of the analysts' firm-specific forecasting experience and overall analyst experience, respectively. Both are designed to capture expertise and accuracy. *Log (Firms Followed)* is the natural log of the analysts' coverage portfolio. Analysts with larger coverage portfolios, i.e., busy analysts, have less time to allocate to each individual firm in their portfolio and therefore their accuracy may be hindered. Finally, *All-Star* is an indicator variable equal to one if the analyst was chosen for *Individual Investor's* annual all-star poll, zero otherwise. All-stars have reputational capital to protect and generally are thought to be less inclined to issue biased forecasts (Stickel, 1992, Fang and Yasuda, 2009).

Table 8 reports the estimates. In specification 1, *NDR3* has a coefficient value of -0.40 with a t-statistic of -36.63. This implies that analysts are close to a one-half recommendation–level more optimistic about firms that they will take on an NDR in the next three months. The coefficients on *Conf3* and *Affiliated3* are also highly significant. However, the magnitude is less than half of the estimated effect for *NDR Brokers*. The coefficients on the remaining controls are largely consistent with prior research. For example, more reputable analysts, as proxied by broker size or all-star status, issue less optimistic ratings, while more experienced analysts tend to issue more optimistic recommendations.

In Specification 2, we include firm-month paired fixed effects. This specification compares *NDR brokers'* research to *Non-NDR brokers'* research for the same firm at the same time, thereby

controlling for a number of important differences that could potentially justify different levels of optimism, including future realized performance. However, if other brokers also issue optimistic research in hopes of winning the firms' NDR business, the inclusion of firm-month fixed effects could understate the extent to which NDRs induce bias. We find that the estimate on *NDR3* declines, but remains economically large at -0.26 and highly statistically significant (*t*-stat=27.70). The inclusion of firm-month fixed effects has a more severe impact on the coefficients *Conf3* and *Affiliated3*. The point estimates now suggest that the excess optimism for *NDR brokers* is nearly four times as large as the excess optimism for brokers with a conference-hosting relation, and more than six times as large as brokers with an investment banking affiliation.

Specifications 3 and 4 present analogous results where *Target Return* is the dependent variable. Similar to recommendation levels, *NDR Brokers* issue significantly more optimistic target prices. For example, in Specification 4, the coefficient estimate implies that NDR analysts issue 12-month target prices that are 4.36% more optimistic than non-NDR analysts. The economic magnitudes continue to be substantially larger than the optimism associated with hosting a firm at a conference (1.66%) or being the lead underwriter for an investment banking deal (1.01%).

In Table IA.5 of the Internet Appendix, we provide a descriptive analysis of how the level of analyst optimism varies with firm, analyst, and broker characteristics. The most robust findings are that analyst optimism increases in sell-side coverage and share turnover. The coverage results are consistent with greater competition for NDR business contributing to higher levels of optimism. The share turnover results are consistent with analysts competing more aggressively for NDR business among firms that are more heavily traded, where the trading commission benefits are likely to be larger.[27] We also find modest evidence that the results are weaker among all-star analysts, which is consistent with analysts with greater reputational capital being more reluctant to issue biased research (Fang and Yasuda, 2009).

The previous tests have focused on the levels of NDR Broker optimism. However, the evidence from Figure 3 suggests that analyst optimism is also increasing in the period immediately prior to the NDR. To more formally examine changes in bias around the NDR, we re-estimate Equation 5 after replacing the dependent variable with either *Upgrade,* an indicator variable equal to one if the analyst revises his recommendation level upward (e.g., from a buy to a strong buy) for a firm in that month, or *Downgrade*, defined analogously. We also add an additional control variable, *Lag*

[27] Consistent with this conjecture, we find that the increase in abnormal dollar commission for the brokerage firm in the week they sponsor the NDR is roughly 70% larger for firms in the top half of share turnover.

Rec, defined as the recommendation level of the analyst in the prior month. This variable controls for the fact that upgrades (downgrades) are far more common when the existing recommendation level is more pessimistic (optimistic). Specifications 1 of Table 9 show that NDR brokers are 0.88 percentage points more likely to issue an upgrade in the three months prior to the NDR. This estimate reflects a 53% increase relative to the base probability of issuing an upgrade (1.35%). Specification 3 reports even more dramatic results for downgrades. Specifically, *NDR brokers* are 1.61 percentage points less likely to issue a downgrade, an 81% decrease relative to the base probability. The inclusion of firm-month fixed effects yield similar, albeit slightly weaker, estimates.

6.3. NDR broker optimism: Strategic or sincere?

The evidence from the previous section suggests that *NDR Brokers* issue significantly more optimistic research than other brokers covering the same firm at the same time, and this optimism is amplified in the period immediately prior to the NDR. These findings are consistent with NDR Brokers strategically issuing optimistically biased research in order to gain favor with management and increase the likelihood that they take the firm on an NDR (hereafter *Strategic Optimism*). However, an alternative explanation is that some analysts are sincerely optimistic about a firm's prospect, and firms simply select these optimistic firms to organize their NDRs (hereafter *Sincere Optimism* or *Selection*).[28]

To disentangle strategic versus sincere optimism, we follow Malmendier and Shantikumar (2014), who argue that sincerely optimistic brokers will issue both optimistic recommendations and optimistic earnings forecasts, while strategically optimistic brokers will issue optimistic recommendations coupled with more negative (or "beatable") earnings forecasts. Intuitively, since earnings forecasts are a critical input into recommendation levels (see, e.g., Brown et al., 2015), a broker with a sincerely optimistic recommendation will tend to have more optimistic earnings projections as well. On the other hand, since managers generally like both optimistic recommendations and beatable earnings targets (Richardson, Teoh, and Wysocki, 2004), brokers attempting to curry favor with management have incentives to issue optimistic recommendations coupled with more pessimistic quarterly earnings forecasts.

We examine NDR brokers' short-term earnings forecast bias by re-estimating Equation 5 after replacing the dependent variable with two measures of pessimism from quarterly earnings forecasts. The first, *MBE*, is an indicator variable equal to one if the firm's realized earnings meets or

[28] We note that even the more innocuous *Sincere Optimism* explanation implies that brokers face strong incentives to issue optimistic research to win NDRs, but that brokers (for whatever reason) do not respond to these incentives.

beats the analyst's estimated earnings. The second, *Relative Earnings Pessimism*, is computed as: [(*Rank* – 1)/ (*Number of Analysts* -1)].[29] *Rank* is the rank of the analysts' forecasted earnings estimate, where the highest estimate is given a rank of 1, the second highest estimate is given a rank of 2, etc., and *Number of Analysts* is the number of analysts issuing a forecast in the firm-quarter. Thus, higher values of *MBE* and *Relative Earnings Pessimism* indicate greater pessimism.

Table 10 reports the results. Specifications 1 and 2 document a significant positive relation between *NDR3* and *MBE*. Similarly, Specifications 3 and 4 document a positive relation between *NDR3* and *Relative Earnings Pessimism*. Both results suggest that *NDR Brokers* tend to issue overly pessimistic quarterly earnings forecasts. This finding is consistent with *Strategic Optimism* and inconsistent with *Sincere Optimism*.

6.4. Market reactions to recommendation changes

Our final set of tests examines the market reaction to the recommendation changes (and target price revisions) of *NDR brokers*. If *NDR brokers* are issuing more optimistic research in the period prior to the NDR primarily to secure NDR business, rather than to convey new information to the market, then these upgrades should be less informative, and should earn less positive returns relative to a typical upgrade. Conversely, if *NDR brokers* are generally avoiding issuing more pessimistic research in the period prior to the NDR, then downgrades, when issued, are likely a very negative signal and should be associated with particularly poor subsequent returns.[30]

To test these predictions, we examine the market reaction to upgrades and downgrades by *NDR brokers*. Since analysts often change their recommendations in response to publicly announced information, it is important to purge observations that overlap with important confounding events. Accordingly, we follow Loh and Stulz (2011) and Bradley et al. (2014) and delete observations that occur within +/- 1 day of earnings announcements and earnings guidance, and we also delete observations when multiple analysts change their recommendation on the same firm-day. We then estimate the market response to *NDR Brokers'* downgrades (or upgrades) using the following model:

$$Ret_{it} = \beta_1 NDR3_{jit} + \beta_2 Conf3_{jit} + \beta_3 Affiliated3_{jit} + \beta Controls + FE + \varepsilon_{jit} \quad (6)$$

[29] In untabulated analysis, we also consider a third measure of pessimism, Bias/Prc, defined as the difference between realized earnings and an analyst's forecasted earnings, scaled by price in the prior year. Results are qualitatively similar.

[30] This intuition is similar in spirit to the large literature beginning with Michaely and Womack (1999) that examines the price reaction following recommendation changes by affiliated brokers. Other related work includes Bradley, Jordan, and Ritter (2008), Barber, Lehavy, and Trueman (2007), and Kadan, Madureira, Wang, and Zach (2009).

The dependent variable is the buy-and-hold DGTW-adjusted return estimated over a 63-day (i.e., one-quarter) window [0, 63].[31] We also decompose the quarterly return into an announcement effect [0,1] and a subsequent drift [2,63]. We consider both a short and longer window, because it is unclear if the market will immediately detect potential biases associated with NDR recommendations. As discussed previously, unlike banking affiliations where participating underwriters are easily verifiable through many sources (including now required explicit disclosure), NDRs are not well publicized so most market participants are likely unaware of the relationship, suggesting a possible drift following the recommendation changes.[32]

NDR3, Conf3, and *Affiliated3* are defined as in Equation 5. *Controls* is a vector of controls similar to those in Equation 5 with a few exceptions. We include the absolute value of the recommendation change, *Abs (Rec Change)* (i.e., upgrade from hold to strong buy equals 2 notches on the 5-point scale), and we also control for the previous recommendation level (*Lag Rec Level*). Additionally, we include a series of firm-specific characteristics that may help explain the market reaction. These are short-term and long-term momentum (Ret_{m-1} and $Ret_{m-12,m-2}$, respectively), the natural logs of book-to-market (*Log BM*), turnover (*Log Turnover*), total analyst coverage (*Log Coverage*), firm age (*Log Age*) and idiosyncratic volatility (*IVOL*). Finally, we include two additional NDR-related controls: *NDR Ever*, an indicator variable equal to one if the recommendation change is for a firm that participated in an NDR sponsored by the brokerage firm at any point over the sample period; and *Non-Sponsor NDR3*, an indicator variable equal to one if the recommendation change is for a firm that will participate in an NDR, but the NDR is not sponsored by the brokerage firm. The inclusion of *NDR Ever* helps control for the fact that having an NDR relationship with the firm likely signals greater management access, which could result in more informative recommendation changes, and the inclusion of *Non-Sponsor NDR3* helps control for the fact that firms that are about to attend NDRs may be systematically different from other firms. We also include analogous measures for investor conferences and investment banking activities. More detailed definitions of all the control variables are provided in Appendix A. Year and analyst fixed effects are included and standard errors are clustered by firm.

Panel A of Table 11 reports the results. Overall, the evidence provides mixed support for our predictions. In particular, the coefficient on *NDR3* for upgrades (Specifications 1-3) is always

[31] See Daniel, Grinblattt, Titman, and Wermers (1997) for a detailed discussion of the construction of DGTW-adjusted returns.

[32] In our interview with the senior buy-side analyst, he reported that he is generally unaware of NDRs that he is not invited to participate in. However, he did note that he has at times asked analysts if they were organizing an NDR as his intuition questioned the analyst's optimism about a particular firm.

statistically insignificant. Thus, there is little evidence that upgrades issued by *NDR brokers* in the quarter before the NDR are any less informative relative to other upgrades. However, the coefficient on *NDR3* for downgrades is significantly negative over the 63-day window (Specification 4), and the economic magnitude (-2.65%) is sizeable. The fact that we find stronger results for downgrades than upgrades is consistent with our findings from Table 9 which show that while NDR3 Brokers are both more likely to issue upgrades and less likely to issue downgrades, the magnitude of the results is substantially stronger among downgrades.[33]

Specifications 5 and 6 decompose the quarterly return following downgrades into an immediate market reaction (0,1) and a subsequent drift (2,63). We find that more than 95% of the quarterly return is attributable to the drift component. This finding suggests that market participants are largely unaware of NDR brokers' reluctance to issue downgrades in the period prior to the NDR. This is perhaps not surprising since many market participants are unlikely to even be aware that the firm will be going on an NDR in the subsequent quarter.

We also conduct similar tests around target price revisions. We measure the target price revision as the change in the target price, scaled by the previous target price, and we define a target price revision as an upgrade (downgrade) if the target price revisions is in the top (bottom) 25% of the distribution. We continue to exclude observations that occur within +/- 1 day of earnings announcements and earnings guidance, and we delete observations that coincide with any recommendation change, including recommendation changes made by the analyst issuing the target price revision. We re-estimate Equation 6 by dropping recommendation-change specific controls (i.e., *Abs (Dif Rec)* and *Lag Rec Level*) and adding a control for the magnitude of the target price revision (*Target Revision)*.

The results of this analysis, reported in Panel B of Table 11, are similar to the results for recommendation changes. In particular, the coefficient on *NDR3* is insignificant for upgrades but significantly negative for downgrades. In addition, the negative point estimates for downgrades are concentrated over the (2,63) window. Collectively, the results from these tests suggest that optimistic research (i.e., recommendation upgrades and upward price revisions) issued by NDR brokers in the period preceding the NDR is not meaningfully different from other optimistic research. However,

[33] The stronger results for downgrades could also be consistent with NDR brokers being both more biased and also more informed (Allen and Faulhaber, 1989). Under this view, the effect for upgrades is directionally ambiguous since greater bias predicts more negative returns, while greater information implies more positive returns. In contrast, the prediction for downgrades is unambiguously negative, since both greater bias and greater information imply more negative returns.

pessimistic research issued by NDR brokerage are very negative signals that the market does not fully understand.

7. Conclusion

We examine the capital market consequences of NDRs for investor welfare and analyst conflicts of interest. Our evidence suggests that NDRs benefit local institutional investors that are able to meet with management, while smaller retail investors are harmed. Specifically, we show that institutional investors located close to a city where a firm attends an NDR substantially increase their trading in the firm, and this trading becomes significantly more informative, while retail investor trading becomes significantly less informative in the weeks following an NDR.

We also document that institutions reward the analysts that organizes the NDR for providing valuable management access through increased commission revenues. The commission revenue result suggests that NDRs can be lucrative for analysts and thus create conflicts of interest in the same fashion as banking business. Our remaining tests provide evidence consistent with this view. Specifically, we show that brokerages that are about to take a firm on an NDR have significantly more optimistic recommendations and target price forecasts, and the optimism peaks in the NDR event month. In addition, we document that while NDR brokers issue *more* optimistic recommendations and target price, they issue *less* optimistic short-term earnings forecasts. This seemingly incongruent pattern is consistent with *NDR Brokers'* research suffering from strategic distortions aimed at currying favor with management (Malmendier and Shanthikumar, 2014). Finally, we document that NDR brokers' (rare) downgrades in the period immediately prior to an NDR are associated with very negative returns over the subsequent quarter, consistent with NDR brokers being generally reluctant to issue negative research in the period prior to an NDR.

Our findings have direct implications regarding two of the most important regulatory reforms pertaining to sell-side analysts in the past several decades: Regulation Fair Disclosure (Reg FD) and the Global Research Settlement. In the interest of providing more equal access to information across investors, Reg FD prohibits the selective disclosure of material information. However, it does continue to allow for private meetings between investors and management provided that material, non-public information is not disclosed. Our results suggest that NDRs are providing an informational advantage to local institutional investors at the expense of retail investors. We acknowledge that this

information advantage need not relate to material information. For example, private meetings may allow institutional investors to benefit by combining public information with nonmaterial nonpublic information (i.e., the "mosaic theory"). Nevertheless, at a minimum, our results suggests that NDRs run counter to Reg FD's stated objective of creating a more level playing field.

The Global Research Settlement (and other related regulations including NYSE Rule 472 and NASD Rule 2711) aims to minimize analyst conflicts of interest by severing the ties between the corporate finance and research divisions of investment banks, including analyst compensation tied to generating banking business. The regulations also mandate improved disclosure, including disclosing whether the brokerage house has an investment banking affiliation with the firm. Importantly, NDRs do not fall under the Global Research Settlement or related regulations, yet our evidence suggests the potential conflicts are just as economically large. Further, in comparison to banking deals where the organizing broker is already publicly available, NDRs are generally not publicly disclosed, making it much more difficult for investors to recognize this bias. This raises the important question of whether brokers should also be required to disclose their NDR affiliations with firms.

Appendix A: Variable Definitions

A.1 Firm Characteristics

- *Recognized Intangibles*: recognized intangibles (33) divided by total assets (6) Winsorized at the 99th percentile. (Source: Compustat).
- *(R&D + ADV)/OE*: R&D expense (46) plus advertising expense (45) divided by total operating expenses. Missing values of R&D and Advertisting are set equal to zero. Winsorized at the 99th percentile. (Source: Compustat).
- *Market-to-Book* (*MB*)*:* the market-to-book ratio computed as the market capitalization at the end of the calendar year scaled by book value of equity during year *t-1*. Negative values are deleted and positive values are winsorized at the 99th percentile. (Source: CRSP/Compustat).
- *Idiosyncratic Risk:* the square root of the mean squared residual from an annual regression of a firm's daily returns on the market (value-weighted CRSP index) returns. (Source: CRSP).
- *Institutional Ownership*: the percentage of the firm's shares held by institutions at year end. Winsorized at 100%. (Source: Thomson Reuters S34).
- *Firm Age*: the number of years since the firm first appeared on CRSP. (Source: CRSP).
- *Net Shares*: the natural log of the ratio of the split-adjusted shares outstanding at the fiscal year end in *t-1* divided by the split adjusted shares outstanding at the fiscal year end in *t-2*. (Source: Compustat).
- *SEO*: a dummy variable equal to one if a firm will issue a Seasoned Equity Offering in the next two years. (Source: SDC).
- *M&A Acquirer*: a dummy variable equal to one if a firm will acquire another firm in the next two years (Source: SDC).
- *Coverage:* the number of analysts covering firm *i* at time *t* relative to the NDR.
- *Number of Institutions*: the number of institutions holding firm shares at year end. (Source: Thomson Reuters S34).
- *Size*: the market capitalization computed as share price times total shares outstanding at the end of June (Source: CRSP).
- *Turnover*: the average daily turnover (i.e., share volume scaled by shares outstanding) over all trading days in the year. Winsorized at 99th percentile. (Source: CRSP).
- *R-squared*: the r-squared from an annual regression of a firm's daily returns on the market (value-weighted CRSP index) returns. Winsorized at the 99th percentile. (Source: CRSP).
- *Ret (m-1):* the return in the prior month. (Source: CRSP).
- *Ret (m-12, m-2):* the return in the prior two to twelve months. (Source: CRSP).
- *Ret (m-7, m-2):* the return in the prior two to seven months. (Source: CRSP).
- *Ret (w-1):* the return in the prior week (Source: CRSP).
- *Vol:* the standard deviation of daily returns over the prior calendar year (Source: CRSP).
- *Book-to-Market (BM):* the book-to-market ratio computed as the book value of equity during year *t-1* scaled by the market capitalization at the end of the calendar year. Negative values are deleted and positive values are winsorized at the 99th percentile. (Source: CRSP/Compustat).

A.2 Institutional Trading Measures (Tables 3 and 4)

Note: in all tests, institutional trading measures are computed at the firm-quarter-city level. In computing institutional trading measures, local institutional investors are defined as institutional investors that are headquartered within 100 kilometers of the city's downtown.

- *Total Trading*: institutional share trading volume, scaled by shares outstanding. (Source: Thomson Reuters S34).
- *Total Net Trading*: The absolute value of institutional buy volume less institutional sell volume, scaled by shares outstanding. (Source: Thomson Reuters S34).
- *Inst OIB:* Local institutional buy volume less local institutional sell volume, scaled by total institutional volume. This measure is converted to a quintile ranking at the city-quarter level. (Source: Thomson Reuters S34).
- *Local NDR:* A dummy variable equal to one if firm i participated in a NDR in city c during the previous quarter, and zero otherwise.
- *Non-Local NDR:* A dummy variable equal to one if firm i participated in a NDR during the previous quarter, but not in city c, and zero otherwise.

A.3 Retail Trading Measures (Table 5)

Note: All retail trading measures are estimated using the approach outlines in Boehmer, Jones, Zhang, and Zhang (2019).

- *Retail OIB (OIBVOL):* Daily retail buy volume less retail sell volume, scaled by total retail volume. (Source: TAQ).
- *Retail OIB (OIBTRADE):* Daily return buy trades less retail sell trades, scaled by total number of retail trades. (Source: TAQ).

A.4 Commission Measures (Table 6)

- *$Commissions:* the natural log of 1 plus the total dollar commissions for broker *j* in stock *i* during week *t*. (Source: Abel Noser).
- *Commission Share:* the total commissions for broker *j* in stock *i* during week *t* scaled by total Abel Noser commissions across all I/B/E/S-Abel Noser matched brokers for stock *i* in week *t*. (Source: Abel Noser).

A.5 Analyst and Broker Characteristics (Tables 7-11)

- *NDR3:* An indicator variable equal to one if broker *j* will take stock *i* on an NDR in the subsequent three months (i.e., t through t+2), and zero otherwise. (Source: FLY).
- *Conf3:* An indicator variable equal to one if broker *j* will host stock *i* at one of its investor conferences over the next three months (i.e., t through t+2), and zero otherwise. (Source: Bloomberg Corporate Events Database).

- *Affiliated3:* A dummy variable equal to one if broker *j* will be a lead underwriter for firm *i* for an equity (i.e., SEO) offering or debt offering, or will be lead advisor on an M&A in the next three months, and zero otherwise. (Source: SDC).
- *Non-Sponsor NDR3*: an indicator variable equal to one if the recommendation change is for a firm that will participate in an NDR in the subsequent three months, but the NDR is not sponsored by the brokerage firm. (Source: FLY).
    - *Non*-Sponsor *Conf3* and *Non-Sponsor Affiliated3* are defined analogously.
- *NDR Ever*: an indicator variable equal to one if the recommendation change is for a firm that participated in an NDR sponsored by the brokerage firm at any point over the sample period. (Source: FLY).
    - *Conf Ever* and *Affiliated Ever* are defined analogously.
- *Broker Size:* the total number of analysts issuing an earnings forecast for brokerage firm *j* during year *t*. (Source I/B/E/S).
- *Firm Experience:* the number of years since analyst *j* first issued an earnings forecast for firm *i*. (Source I/B/E/S).
- *Total Experience:* the number of years since analyst *j* first issued an earnings forecast for any firm. (Source I/B/E/S).
- *Firms Followed*: the number of firms followed by analyst *j* in year *t*. (Source I/B/E/S).
- *All-Star:* a dummy variable equal to one if analyst *j* is ranked as an All-American (first, second, third, or runner-up) in the annual polls. (Source: *Institutional Investor Magazine*).

A.6 Research Characteristics (Tables 7-11)

- *Rec Level:* The most recent outstanding recommendation of broker *j* for firm *i* in month *t*. If the brokerage firm *j* has not issued a recommendation for firm *i* in the previous 24 months, we set the value to missing. Recommendations are converted to numeric values using the following scale: 1 for strong buy, 2 for buy, 3 for hold, 4 for sell/underperform, and 5 for strong sell. (Source I/B/E/S).
    - *Lag (Rec Level):* the *Rec Level* of broker j for firm *i* in month *t-1*.
- *Upgrade*: an indicator variable equal to one if the recommendation change is favorable (e.g., moving from a hold to a buy). (Source I/B/E/S).
- *Downgrade*: an indicator variable equal to one if the recommendation change is unfavorable (e.g., moving from a buy to a hold). (Source I/B/E/S).
- *Abs (Dif. Rec):* The absolute value of the recommendation change. For instance, a downgrade from strong buy (level=1) to buy (level=2) equals 1 whereas a downgrade from strong buy to hold (level=3) equals 2. (Source I/B/E/S).
- *Target Return:* the 12 month expected return (excluding dividends) implied from broker *j*'s most recent price forecast of firm *i* as of month *t*, computed as (Forecast $\text{Price}_{jit}/\text{Price}_{it-1}$) -1. The sample is limited to 12-month ahead forecasts. If the brokerage firm *j* has not issued a target price for firm *i* in the previous 24 months, we set the value to missing. We winsorize at the 1st and 99th percentile. (Source I/B/E/S).

- *Target Return Bias:* the difference between the *Target Return* and the 12-month realized return (excluding dividends). We winsorize at the 1st and 99th percentile. (Source I/B/E/S).
- *Target Revision:* The difference between the new target price and the previous target price of the same analyst, scaled by the previous target price. Winsorized at the 1st and 99th percentile. (Source I/B/E/S).
    - *Target Revision Upgrade* – target revisions in the top quartile of the distribution
    - *Target Revision Downgrade* – target revisions in the bottom quartile of the distribution
- *Meet or Beat* (*MBE)*: A dummy variable equal to one if firm *i's* realized quarterly earnings are greater than analyst *j's* most recent quarterly earnings forecast for firm *i* as of month *t*. (Source I/B/E/S).
- *Relative Earnings Pessimism:* [(*Rank* – 1)/ (*Number of Analysts* -1)]. *Rank* is the rank of the analyst's forecasted earnings estimate, with the highest estimate value being given a ranking of 1, the second highest estimate is given a rank of 2, etc., and *Number of Analysts* is the number of analysts issuing a forecast in the firm-quarter. (Source I/B/E/S).

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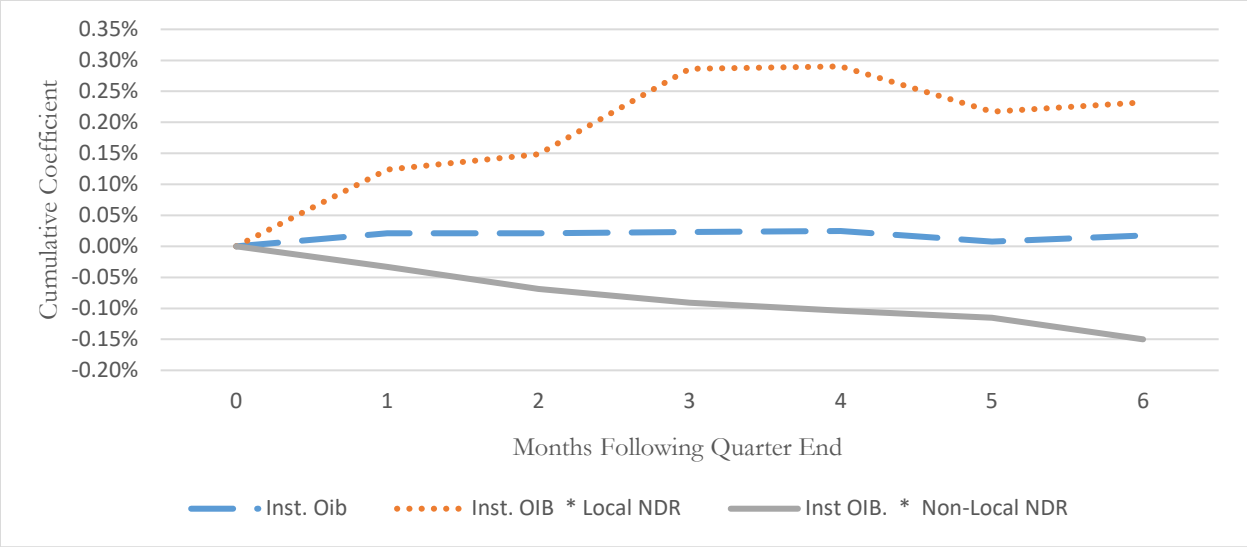


Figure 1: NDRs and the Informativeness of Institutional Trading in Event Time
This figure plots the results from regressions of future returns on institutional order imbalances. The regression estimates Specification 1 of Table 4, but instead of reporting the average coefficients on *Inst. Oib, Inst. Oib * Local NDR,* and *Inst. Oib * Non-Local NDR* over the subsequent quarter, it reports the estimates for each month in the following quarter (i.e., months 1- 3) as well as the three months in the subsequent quarter (i.e., months 4 through 6). The reported estimates are cumulative coefficients.

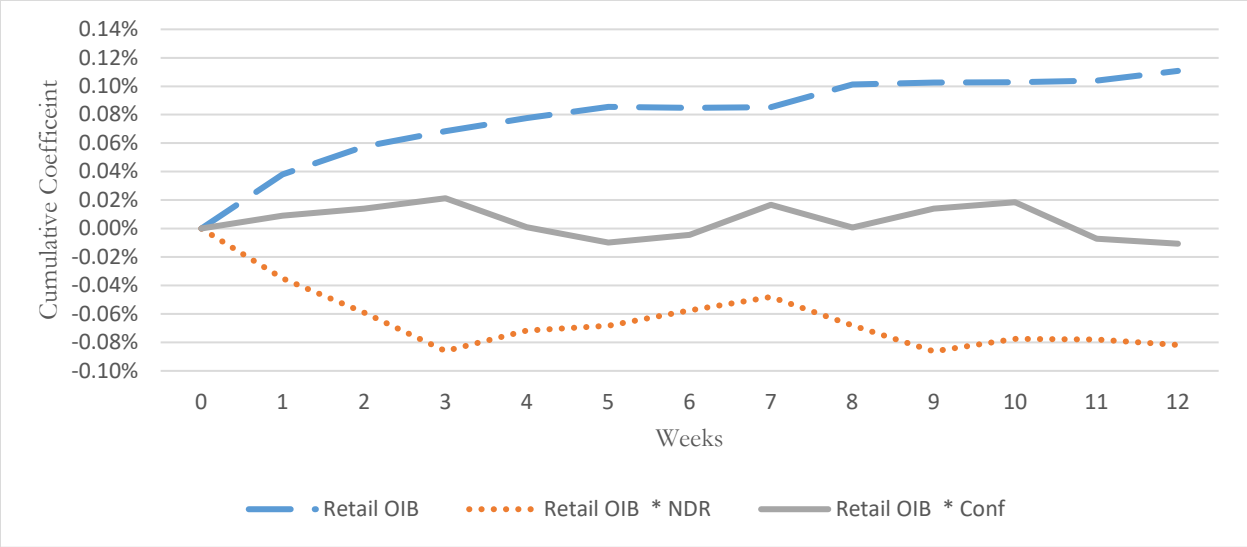
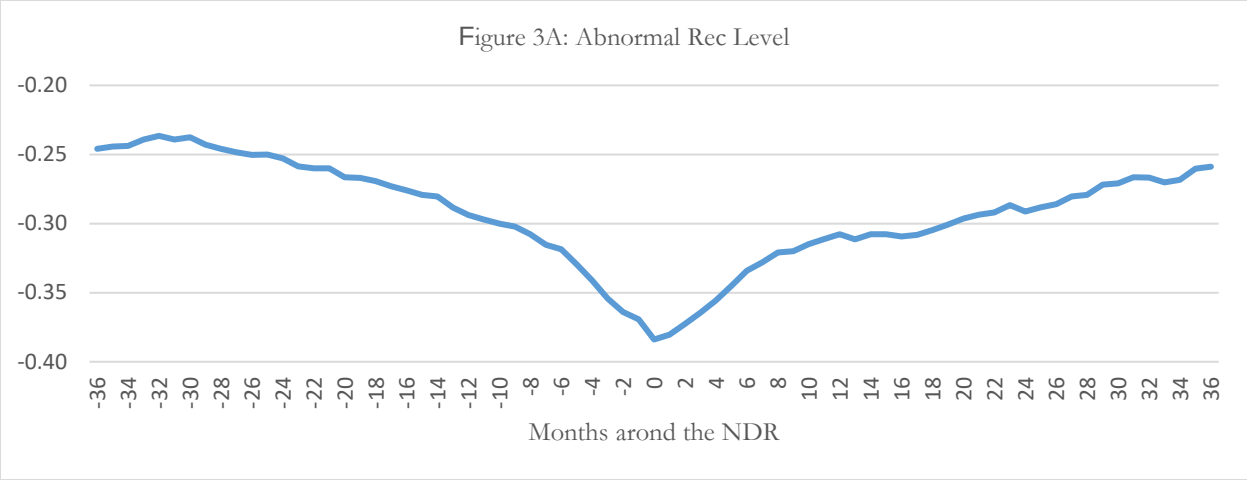


Figure 2: NDRs and the Informativeness of Retail Trading in Event Time
This figure plots the results from regressions of future returns on retail order imbalances. The regression estimates Specification 1 of Table 5, but instead of reporting the average coefficients on *Retail Oib, Retail Oib * NDR,* and *Inst. Oib * Conf* over the subsequent one-week, it reports the estimates for each of the subsequent 12 weeks. The reported estimates are cumulative coefficients.



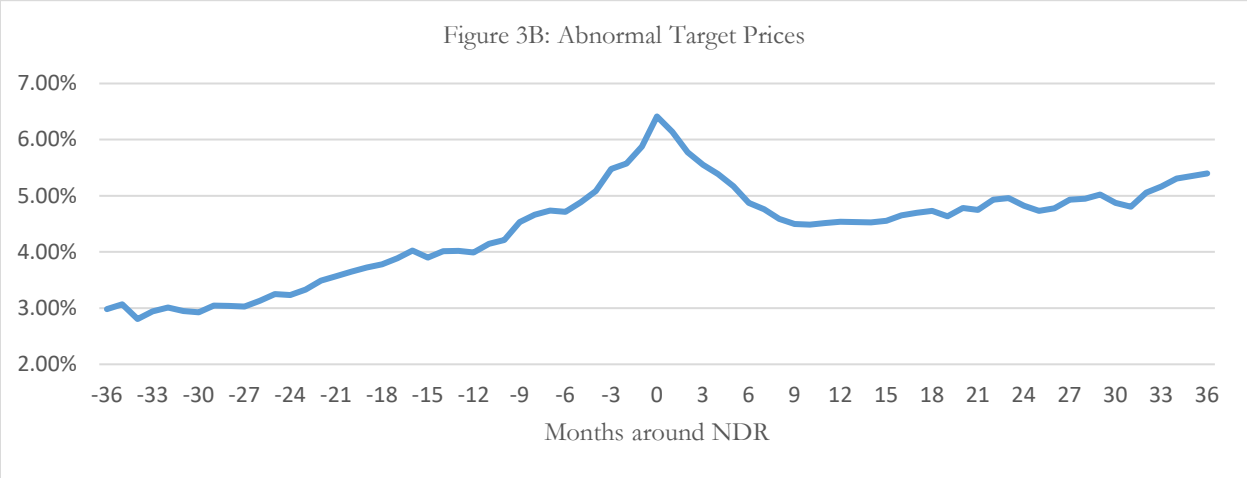


Figure 3: Relative Optimism of NDR Broker around Non-Deal Roadshows
For each NDR, we report the optimism of the brokerage firm that takes the firm on the NDR (*NDR Broker)* relative to all other brokerage firms covering the same firm during the same month (*Abnormal Optimism)*. We plot *Abnormal Optimism* from three years prior to the NDR (-36) to three years after the NDR (+36). Panel A plots the results where the optimism measure is computed using recommendation levels (*Abnormal Rec Level*), and Panel B plots the results where the optimism measure is computed using target prices (*Abnormal Target Price*).

Table 1: Non-Deal Roadshow (NDR) Summary Statistics

This table reports summary statistics for the sample of non-deal roadshows and investor conferences from January 2013 to December 2018. In Panel A, NDR-Locations reports the total number of unique firm-date-location NDRs (i.e., Apple, 1/3/2013, New York City), *NDRs* reports the number of firm-date NDRs (i.e., Apple 1/3/2013), *Firms* is the number of firms that went on an NDR, and *Brokers* is the number of brokerage firms that organized an NDR. We report summary statistics for the full NDR data that could be merged with CRSP, the sample of NDRs organized by a brokerage firm (*Broker Sponsored*), and by brokers with coverage of the firm in I/B/E/S (*Broker Sponsored & I/B/E/S*). In Panel B, *Conf. Presentations* reports the number of firm presentations at investor conferences, *Conferences* reports the number of unique conferences, *Firms* is the number of unique firms that attended a conference, and *Brokers* is the number of brokerage firms that organized a conference. Panel C reports the frequency of NDRs for the top 30 NDR destinations for broker and company-sponsored NDRs and reports the percentage of total institutional trading that is driven by institutional investors that are located within 100 kilometers of the city (*Inst. Trading*), averaged across all stocks.

Panel A: NDRs

	NDR-Locations	*NDRs*	*Firms*	*Brokers*
Full Sample	69,458	62,684	6,116	112
Broker Sponsored	45,799	39,332	4,382	112
Broker Sponsored & I/B/E/S	44,466	38,489	4,352	89

Panel B: Investor Conferences

	Conf. Presentations	*Conferences*	*Firms*	*Brokers*
Full Sample	75,144	6,793	4,144	123
Broker Sponsored	56,838	3,451	3,941	123
Broker Sponsored & I/B/E/S	53,151	3,329	3,932	121

Panel C: Frequency of NDRs (Top 30 Destinations)

	Total NDRs	*Broker Sponsored*	*Company Sponsored*	*Inst. Trading*
New York	13,920	10,083	3,837	34.39
Boston	6,385	5,890	495	11.94
San Francisco	3,517	3,138	379	3.63
Chicago	3,416	2,938	478	7.34
Los Angeles	2,079	1,845	234	4.11
Denver	1,461	1,244	217	1.52
Minneapolis	1,221	1,106	115	1.06
Dallas	1,196	882	314	1.42
Houston	1,151	495	656	1.42
Milwaukee	1,063	957	106	1.03
Kansas City	1,037	993	44	1.18
Philadelphia	930	721	209	2.08
San Diego	833	522	311	0.58
Baltimore	765	723	42	4.27
Atlanta	740	424	316	1.71
Portland	474	392	82	0.28
Seattle	431	289	142	1.32
Austin	407	252	155	0.77
St. Louis	355	277	78	1.51
Las Vegas	280	117	163	0.03
Detroit	265	235	30	0.50
San Jose	252	23	229	3.69
Salt Lake City	235	148	87	0.57
Orlando	230	136	94	0.65
Charlotte	225	90	135	0.65
Cleveland	196	100	96	0.13
Washington DC	176	34	142	4.07
Wilmington	157	86	71	1.88
Columbus	153	66	87	0.16
Cincinnati	152	55	97	0.63

Table 2: Determinants of Non-Deal Roadshows (NDRs)

This table reports estimates from linear probability models. In Specification 1, the dependent variable is an indicator variable equal to one if the firm attends any Non-Deal Roadshows (NDRs) in the firm-month and zero otherwise. In Specifications 2 and 3, the dependent variable is an indicator variable equal to one if the firm attends any Broker-Sponsored NDRs or Company-Sponsored NDRs, respectively. All independent variables are defined in Appendix A. All continuous variables are standardized to have mean zero and unit variance. All specifications include time fixed effects and standard errors are clustered by firm, with *t*-statistics reported in parentheses below the corresponding coefficient estimate. The sample includes the universe of CRSP-Compustat firms with non-missing data for all the independent variables. The sample spans from 2013-2018 and includes 214,720 firm-month observations.

	ALL NDRs	Broker NDRs	Company NDRs
	[1]	[2]	[3]
Recognized Intangibles	1.03%	0.70%	0.43%
	(7.05)	(5.02)	(6.96)
(R&D + ADV)/OE	1.28%	1.20%	0.21%
	(9.11)	(8.79)	(3.84)
Log (MB)	0.98%	0.95%	0.09%
	(7.25)	(7.40)	(1.60)
Idiosyncratic Risk	0.22%	0.17%	0.10%
	(1.55)	(1.37)	(1.25)
Institutional Ownership	1.08%	1.45%	-0.26%
	(5.18)	(7.19)	(-2.97)
Log (Firm Age)	0.18%	-0.04%	0.23%
	(1.41)	(-0.35)	(4.26)
Net Shares	0.13%	0.09%	0.01%
	(1.49)	(1.06)	(0.12)
SEO	0.39%	0.33%	0.10%
	(2.25)	(1.99)	(1.22)
M&A Acquirer	0.92%	0.76%	0.21%
	(3.75)	(3.25)	(2.17)
Log (Coverage)	2.08%	1.87%	0.39%
	(8.79)	(8.76)	(3.72)
Log (Number of Institutions)	-0.27%	-0.61%	0.21%
	(-0.82)	(-2.09)	(1.33)
Log (Size)	1.73%	1.07%	0.97%
	(4.92)	(3.42)	(5.84)
Log (Turnover)	0.69%	0.21%	0.50%
	(4.05)	(1.41)	(6.02)
R-squared	0.31%	0.21%	0.08%
	(1.84)	(1.35)	(0.97)
Ret (m-1)	0.55%	0.40%	0.20%
	(7.80)	(7.67)	(3.82)
Ret (m-12, m-2)	1.24%	1.21%	0.15%
	(13.82)	(14.28)	(3.33)
Fixed Effects	Time	Time	Time
Observations	214,720	214,720	214,720
R-squared	8.39%	4.46%	9.32%
Mean of Dependent Variable	14.60%	8.03%	7.31%

Table 3: Intensity of Institutional Trading around NDRs

This table examines the intensity of institutional trading around local NDRs. The unit of observation is a firm-city-quarter, where the sample of cities include the 30 cities reported in Panel C of Table 1. For each firm-city-quarter, we compute *Total Trading* as the total volume traded by institutions located within 100 kilometers of the city (*Local Institutions*), scaled by shares outstanding, and we compute *Total Net Trading* as Abs(Total Buying – Total Selling), where *Total Buying (Total Selling)* is the total volume purchased (sold) by local institutions, scaled by shares outstanding. Panel A presents a univariate comparison of *Total Trading* and *Total Net Trading* when the firm went on an NDR to that city in that quarter (i.e., Local NDR =1) versus all other firm-quarters (i.e., Local NDR =0). Panel B reports results from the following panel regression:

$$Trading_{cit} = \alpha + \beta_1 Local\ NDR_{cit} + \beta_2 Non\text{-}Local\ NDR_{cit} + FE + \varepsilon_{cit.}$$

The dependent variable is either *Total Trading* or *Total Net Trading,* Local NDR is defined as above, and N*on-Local NDR*$_{cit}$ an indicator variable equal to one if firm *i* attended an NDR in quarter *t* but did not visit city *c*. *FE* includes City fixed effects and either firm and quarter fixed effects (Specifications 1 and 3) or firm-quarter fixed effects (Specifications 2 and 4). Standard errors are clustered by quarter, with *t*-statistics reported in parentheses below the corresponding coefficient estimate. The sample includes 2,754,862 firm-city-quarter observations. The sample spans from January 2013 through December 2018.

Panel A: Univariate Comparison

	Local NDR = 1 (N = 27,305)		Local NDR = 0 (N = 2,727,557)	
	Mean	Median	Mean	Median
Total Trading	2.09	0.42	0.37	0.00
Total Net Trading	1.28	0.24	0.27	0.00

Panel B: Regression Results

	Total Trading		*Total Net Trading*	
	[1]	[2]	[3]	[4]
Local NDR	0.41	0.44	0.22	0.24
	(20.73)	(21.18)	(15.26)	(15.88)
Non-Local NDR	-0.02		-0.01	
	(-13.49)		(-10.53)	
City Fixed Effects	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	No	Yes	No
Firm Fixed Effects	Yes	No	Yes	No
Firm-Quarter Fixed Effects	No	Yes	No	Yes

Table 4: NDRs and the Informativeness of Local Institutional Trading

This table reports average slopes and *t*-statistics from the following monthly regressions:

$$Ret_{it} = \alpha + \beta_1 Inst.\ OIB_{cit-1} + \beta_2\ Inst.\ OIB_{it-1} * Local\ NDR_{cit-1} + \beta_3\ Inst.\ OIB_{it-1} * Non\text{-}Local\ NDR_{cit-1} + \beta_4 Local NDR_{cit-1} + \beta_5 Non\text{-}Local\ NDR_{cit-1} + B_6 Char_{it-1} + \beta_7\ Inst.\ OIB_{cit-1} * Char_{it-1} + City_c + \varepsilon_{cit.}$$

The dependent variable is the one-month ahead stock return. The unit of observation is a firm-city-month, and the sample of cities includes the 30 cities reported in Panel C of Table 1. *Inst. OIB* is defined as (*Local Inst. Buying - Local Inst. Selling*)/*Total Inst. Trading* in the previous quarter, and converted to a within city-quarter quintile ranking. *Local Inst. Buying (Local Inst. Selling)* is computed as the aggregate buying (selling) volume of all institutional investors located within 100 kilometers of city *c*. *Local NDR* is an indicator variable equal to one if firm *i* attended an NDR in city *c* in the previous quarter and zero otherwise, and Non-*Local NDR* is an indicator variable equal to one if firm *i* attended an NDR in the previous quarter but did not attend an NDR in city *c*. *Char* is a vector of firm characteristics that includes: *Turn, Vol, Size, BM, Ret (m-1), and Ret (m-7, m-2)*. Detailed variable definitions are provided in Appendix A. Specification 1 reports the results for the full sample, Specifications 2 (3) report the estimates for the subsample of firms above (below) the median breakpoint for volatility, and Specifications 4 (5) reports the estimates for the subsample of firms below (above) the median breakpoint of market capitalization. The *t*-statistics are computed from the time-series standard deviation of the monthly slope estimates. The sample spans from April 2013 through December 2018.

	All Firms	High-Vol Firms	Low Vol Firms	Small Firms	Large Firms
	[1]	[2]	[3]	[4]	[5]
Inst. OIB	0.008%	0.015%	-0.001%	0.002%	0.009%
	(0.79)	(0.96)	(-0.09)	(0.15)	(0.83)
*Inst. OIB * Local NDR*	0.095%	0.123%	0.066%	0.163%	0.062%
	(3.02)	(2.34)	(2.51)	(3.36)	(1.79)
*Inst. OIB * Non-Local NDR*	-0.030%	-0.070%	-0.001%	-0.053%	-0.008%
	(-2.37)	(-2.72)	(-0.07)	(-1.99)	(-0.68)
Local NDR	-0.095%	-0.218%	0.011%	-0.230%	-0.051%
	(-0.95)	(-1.41)	(0.14)	(-1.59)	(-0.51)
Non-Local NDR	0.132%	0.153%	0.117%	0.217%	0.038%
	(2.08)	(1.30)	(1.74)	(2.02)	(0.64)
Log (Turnover)	-0.184%	-0.225%	-0.125%	-0.246%	-0.060%
	(-2.68)	(-2.20)	(-2.63)	(-2.46)	(-0.93)
Log (Vol)	-0.116%	-0.113%	-0.114%	-0.025%	0.027%
	(-1.01)	(-0.90)	(-1.11)	(-0.19)	(0.33)
Log (Size)	-0.171%	-0.208%	-0.124%	-0.216%	-0.097%
	(-1.78)	(-1.50)	(-1.75)	(-1.94)	(-1.17)
Log (BM)	-0.179%	-0.130%	-0.065%	-0.153%	-0.197%
	(-1.09)	(-0.84)	(-0.58)	(-0.93)	(-1.26)
Ret (m-1)	-0.133%	-0.140%	-0.151%	-0.190%	0.057%
	(-1.48)	(-1.22)	(-2.01)	(-1.85)	(0.53)
Ret (m-7, m-2)	0.086%	0.144%	-0.001%	0.086%	0.162%
	(0.59)	(0.80)	(-0.01)	(0.53)	(1.09)
*Inst. OIB * Log (Turnover)*	0.011%	0.017%	-0.002%	0.013%	0.006%
	(1.18)	(1.01)	(-0.36)	(0.74)	(0.66)
*Inst. OIB * Log (Vol)*	0.007%	0.023%	-0.002%	0.004%	-0.003%
	(0.69)	(1.21)	(-0.35)	(0.25)	(-0.49)
*Inst. OIB * Log (Size)*	-0.012%	-0.017%	-0.004%	-0.025%	0.005%
	(-0.90)	(-1.00)	(-0.57)	(-1.66)	(0.29)
*Inst. OIB * Log (BM)*	0.001%	0.002%	-0.001%	0.013%	-0.018%
	(0.13)	(0.15)	(-0.20)	(0.96)	(-2.86)
*Inst. OIB * Ret (m-1)*	0.018%	0.022%	0.007%	0.025%	-0.004%
	(1.51)	(1.36)	(0.72)	(1.73)	(-0.32)
*Inst. OIB * Ret (m-7, m-2)*	0.003%	0.003%	0.003%	0.006%	-0.004%
	(0.19)	(0.15)	(0.38)	(0.32)	(-0.41)

Table 5: NDRs and the Informativeness of Retail Trading

This table reports average slopes and *t*-statistics from the following daily regressions:

$$Ret_{it} = \alpha + \beta_1 Retail\ OIB_{it-1} + \beta_2\ Retail\ OIB_{it-1} * NDR_{it-1,t-10} + \beta_3\ Retail\ OIB_{it-1} * Conf_{it-1,t-10} + \beta_4 NDR_{it-1,t-10} + \beta_5 Conf_{it-1,t-10} + B_6 Char_{it-1} + \beta_7 Retail\ OIB_{it-1} * Char_{it-1} + \varepsilon_{it}.$$

The dependent variable is the five-day ahead stock return. *Retail OIB* is defined as (Retail Buy Volume - Retail Sell Volume)/Total Retail Volume, estimated each day. *NDR* is an indictor variable equal to one if the firm attended an NDR in the previous 10 days and zero otherwise, and *Conf* is an indicator variable equal to one if the firm attended an investor conference in the previous 10 days. *Char* is a vector of firm characteristics that includes: *Turn, Vol, Size, BM, Ret (m-1), and Ret (m-7, m-2)*. Detailed variable definitions are provided in Appendix A. Specification 1 reports the results for the full sample, Specifications 2 (3) report the estimates for the subsample of firms above (below) the median breakpoint for volatility, and Specifications 4 (5) reports the estimates for the subsample of firms below (above) the median breakpoint of market capitalization. The *t*-statistics are computed from the time-series standard deviation of the daily slope estimates with a Newey-West correction of five lags. The sample spans from January 2013 through December 2018.

	All-Firms	High-Vol Firms	Low-Vol Firms	Small Firms	Large Firms
	[1]	[2]	[3]	[4]	[5]
Retail OIB	0.038%	0.051%	0.014%	0.059%	0.014%
	(8.20)	(3.58)	(2.18)	(3.82)	(2.16)
*Retail OIB * NDR*	-0.035%	-0.071%	-0.005%	-0.048%	-0.012%
	(-3.36)	(-3.73)	(-0.60)	(-2.68)	(-1.24)
*Retail OIB * Conf.*	0.009%	-0.008%	0.011%	-0.008%	0.011%
	(0.69)	(-0.37)	(0.93)	(-0.38)	(1.05)
NDR	0.002%	0.022%	0.002%	0.026%	0.005%
	(0.07)	(0.59)	(0.14)	(0.71)	(0.26)
Conf.	0.019%	0.046%	0.012%	0.031%	0.017%
	(0.57)	(0.89)	(0.50)	(0.54)	(0.64)
Log (Turnover)	-0.056%	-0.046%	-0.036%	-0.037%	-0.052%
	(-2.69)	(-1.72)	(-2.10)	(-1.51)	(-2.41)
Log (Vol)	-0.036%	-0.047%	-0.034%	-0.021%	-0.067%
	(-0.85)	(-0.78)	(-0.83)	(-0.48)	(-1.35)
Log (Size)	-0.047%	-0.113%	-0.034%	-0.103%	-0.042%
	(-2.05)	(-3.02)	(-1.44)	(-1.60)	(-1.37)
Log (BM)	-0.023%	-0.011%	-0.004%	0.004%	-0.015%
	(-1.04)	(-0.33)	(-0.27)	(0.16)	(-0.65)
Ret (w-1)	-0.052%	-0.045%	-0.071%	-0.060%	-0.020%
	(-2.55)	(-1.88)	(-2.86)	(-2.41)	(-0.77)
Ret (m-1)	-0.066%	-0.079%	-0.025%	-0.073%	-0.069%
	(-2.55)	(-2.58)	(-0.80)	(-2.32)	(-2.01)
Ret (m-7, m-2)	-0.019%	-0.038%	-0.022%	-0.051%	0.013%
	(-0.73)	(-1.43)	(-0.54)	(-2.00)	(0.32)
*Retail OIB * Log (Turnover)*	0.015%	0.016%	0.006%	0.020%	-0.004%
	(3.28)	(2.19)	(1.36)	(2.73)	(-0.68)
*Retail OIB * Log (Vol)*	0.019%	0.025%	-0.004%	0.039%	-0.003%
	(2.96)	(1.42)	(-0.64)	(4.01)	(-0.46)
*Retail OIB * Log (Size)*	-0.026%	-0.022%	-0.019%	-0.022%	-0.007%
	(-3.86)	(-1.49)	(-3.90)	(-1.17)	(-1.00)
*Retail OIB * Log (BM)*	-0.005%	-0.002%	-0.009%	-0.006%	-0.004%
	(-1.32)	(-0.25)	(-2.19)	(-0.81)	(-1.21)
*Retail OIB * Ret (w-1)*	0.008%	0.010%	0.000%	0.009%	-0.009%
	(0.80)	(0.75)	(0.01)	(0.60)	(-1.04)
*Retail OIB * Ret (m-1)*	-0.003%	-0.002%	-0.012%	0.005%	-0.005%
	(-0.38)	(-0.14)	(-1.57)	(0.33)	(-0.61)
*Retail OIB * Ret (m-7, m-2)*	-0.009%	-0.009%	-0.005%	-0.012%	0.006%
	(-1.34)	(-1.05)	(-0.65)	(-1.21)	(0.77)

Table 6: Weekly Commissions around NDRs

This table presents the estimates from the following weekly panel regression:

$$Com_{jit} = \beta_1 NDR_{jit} + \beta_2 Conf_{jit} + Broker*Firm_{ji} + \varepsilon_{jit}$$

In Specifications 1 and 3 the dependent variable is $\$Commissions_{jit}$, defined as the log (1 + Commissions) of broker *j* in firm *i* during week *t*, and in Specifications 2 and 4 the dependent variable is $Commission\ Share_{jit}$, computed as the total commission of broker *j* in firm *i* during week *t* scaled by total Abel Noser commissions (across all I/B/E/S-Abel Noser matched broker) for stock *i* in period *t*. The independent variables are indicators equal to one if broker *j* took (or will take) firm *i* on an NDR or a conference during week t+x, and zero otherwise. For example, *NDR [0]* equals one if broker *j* took firm *i* on an NDR in week *t,* NDR [-1,-2] equals to one if broker *j* took firm *i* on an NDR in week *t-1* or *t-2,* and NDR [1,2] equals to one if broker *j* will take firm *i* on an NDR in weeks *t+1* or *t+2*. All specifications include broker-firm fixed effects and standard errors are clustered by firm and week, with *t*-statistics reported in parentheses below the corresponding coefficient estimate. The sample spans from January 2013 to June 2014 and includes all broker*firm pairs that went on at least one NDR or conference during the sample period (380,511 broker-firm-weeks).

	$Commissions	*Commission Share*	*$Commissions*	*Commission Share*
	[1]	*[2]*	*[3]*	*[4]*
NDR [0]	0.24	1.23%	0.23	1.19%
	(4.40)	(3.43)	(4.29)	(3.16)
Conf. [0]	0.20	1.32%	0.19	1.36%
	(3.50)	(6.10)	(3.25)	(5.27)
NDR [-1,-2]			0.16	0.53%
			(2.88)	(1.29)
NDR [-3,-4]			0.05	-0.09%
			(0.88)	(-0.22)
NDR [-5,-8]			0.03	0.33%
			(0.92)	(1.57)
NDR [1, 2]			-0.05	0.03%
			(-0.72)	(0.07)
NDR [3, 4]			0.02	0.01%
			(0.45)	(0.03)
NDR [5, 8]			-0.03	0.08%
			(-1.13)	(0.38)
Conf. [-1,-2]			0.17	0.43%
			(2.50)	(1.25)
Conf. [-3,-4]			0.04	0.22%
			(0.76)	(0.66)
Conf. [-5,-8]			0.00	-0.11%
			(-0.11)	(-0.58)
Conf. [1, 2]			-0.04	0.21%
			(-0.47)	(0.50)
Conf. [3, 4]			-0.05	-0.43%
			(-0.69)	(-1.31)
Conf. [5, 8]			-0.04	-0.32%
			(-1.19)	(-1.93)
Fixed Effects	Broker-Firm	Broker-Firm	Broker-Firm	Broker-Firm
R-squared	49.30%	15.47%	49.92%	15.72%
Mean of Dep. Variable	1.92	6.84	1.92	6.84%

Table 7: Characteristics of NDR and Non-NDR Brokers

This table compares analyst/broker characteristics and measures of research optimism for *NDR* and *Non-NDR Brokers*. The full sample includes all broker-firm-months from 2013-2018 where broker *j* covers firm *i* in year *t*. We split this sample into broker-firm-months where broker *j* will take firm *i* on an NDR in the subsequent three months (i.e., t, t+2) [*NDR3 =1*], and all other broker-firm-months [*NDR3 =0*]. The *NDR3* =1 (*NDR3* =0) sample includes 52,407 (2,187,106) observations. For each sample, we report the mean of analyst and broker characteristics (Panel A) and measures of research optimism (Panel B). All variables are defined in Appendix A. We also report the difference between the two means (Column 3), the standard deviation of the variable across the combined sample (Column 4), and the differences in the means scaled by the standard deviation (Column 5).

	NDR3 =1	NDR3 =0	Difference	Std. Dev	Scaled Difference
	[1]	[2]	[3]	[4]	[5]
Panel A: Analyst/Broker Characteristics					
Broker Size	50.97	67.58	-16.61	65.52	-25.34%
Firm Experience	4.33	4.21	0.12	5.13	2.36%
Total Experience	13.51	12.26	1.25	9.76	12.80%
Firms Followed	19.95	19.47	0.48	8.79	5.46%
All-Star	8.98%	10.06%	-1.08%	30.05%	-3.61%
Conf3	7.02%	3.66%	3.36%	26.23%	12.80%
Affiliated3	1.08%	1.12%	-0.04%	14.65%	-0.26%
Panel B: Research Optimism					
Rec Level	1.96	2.38	-0.42	0.89	-47.19%
Target Return	27.66%	18.71%	8.95%	34.29%	26.10%
Target Return Bias	17.18%	9.98%	7.20%	50.92%	14.14%

Table 8: NDRs and the Level of Analyst Optimism

This table reports estimates from the following panel regression:

$$Analyst\ Optimism_{jit} = \beta_1 NDR3_{jit} + \beta_2 Conf3_{jit} + \beta_3 Affiliated3_{jit} + Controls + FE + \varepsilon_{jit}.$$

The dependent variable is a measure of optimism for analyst *j* for firm *i* in month *t*. In specifications 1 and 2 the optimism measure is *Rec Level,* a rating from 1 to 5 using the following scale: 1=strong buy, 2=buy, 3=hold, 4=sell/underperform, and 5=strong sell. In Specifications 3 and 4 the optimism measure is *Target Return,* the 12-month expected return implied from the most recent 12-month price forecast of the firm, computed as (Forecast $Price_{jit}$/$Price_{it-1}$)-1. *NDR3* is an indicator variable equal to one if broker will take the firm on an NDR over the subsequent three months. *Conf3* and *Affiliated3* are indicator variables equal to one if the broker will host the firm at a conference or will have an investment banking relation with the firm in the subsequent three months. *Controls* include the following broker/analyst related controls: Log *(Broker Size)*, Log (*Firm Experience*), Log (*Firms Followed*), and *All-Star*. Detailed variable definitions are provided in Appendix A. The regressions include either time fixed effects or firm-time fixed effects. Standard errors are clustered by firm and time and *t*-statistics are reported in parentheses below the corresponding coefficient estimate. The sample spans from January 2013 through December 2018.

	Rec Level		Target Return	
	[1]	[2]	[3]	[4]
NDR3	-0.40	-0.26	7.95%	4.36%
	(-36.63)	(-27.70)	(16.46)	(21.40)
Conf3	-0.18	-0.07	6.80%	1.66%
	(-15.20)	(-7.11)	(12.68)	(9.68)
Affiliated3	-0.09	-0.04	2.89%	1.01%
	(-4.96)	(-2.37)	(4.11)	(3.86)
Log (Broker Size)	0.06	0.04	-4.40%	-1.54%
	(16.42)	(11.85)	(-21.40)	(-18.80)
Log (Firm Experience)	0.01	0.00	1.86%	0.39%
	(0.83)	(-0.13)	(4.24)	(2.71)
Log (Experience)	-0.04	-0.01	1.74%	0.31%
	(-8.16)	(-3.15)	(5.78)	(4.04)
Log (Firms Followed)	0.10	0.01	-5.03%	0.40%
	(19.77)	(1.39)	(-16.39)	(4.19)
All-Star	0.09	0.09	-2.73%	-0.77%
	(7.34)	(8.16)	(-6.04)	(-3.68)
Fixed Effects	Time	Firm-Time	Time	Firm-Time
R-squared	3.07%	31.61%	5.41%	74.58%
Observations	1,334,874	1,334,874	1,705,922	1,705,922
Mean of Dep. Variable	2.36	2.36	20.13%	20.13%

Table 9: NDRs and Changes in Analyst Optimism

This table reports estimates from the following panel regression:

$$\Delta Analyst\ Optimism_{jit} = \beta_1 NDR3_{jit} + \beta_2 Conf3_{jit} + \beta_3 Affiliated3_{jit} + Controls + FE + \varepsilon_{jit}.$$

The dependent variable is a measure of the change in optimism for analyst *j* for firm *i* in month *t*. The dependent variable is either *Upgrade* (Specifications 1 and 2), an indicator variable equal to one if the analysts' recommendation level is revised upward for a firm in that month, or *Downgrade* (Specifications 3 and 4), an indicator equal to one if the analysts' recommendation level is revised downward for a firm in that month. *NDR3* is an indicator variable equal to one if broker will take the firm on an NDR over the subsequent three months. *Conf3* and *Affiliated3* are indicator variables equal to one if the broker will host the firm at a conference or will have an investment banking relation with the firm in the subsequent three months. *Controls* include the following broker/analyst related controls: Log *(Broker Size)*, Log (*Firm Experience*), Log (*Firms Followed*), and *All-Star*. Detailed variable definitions are provided in Appendix A. The regressions include either time fixed effects or firm-time fixed effects. Standard errors are clustered by firm and time and *t*-statistics are reported in parentheses below the corresponding coefficient estimate. The sample spans from January 2013 to December 2018.

	Upgrade		Downgrade	
	[1]	[2]	[3]	[4]
NDR3	0.88%	0.76%	-1.61%	-1.27%
	(11.64)	(10.86)	(-21.44)	(-14.85)
Conf3	0.24%	0.09%	-0.54%	-0.26%
	(3.87)	(1.50)	(-7.33)	(-3.48)
Affiliated3	0.43%	0.11%	-0.48%	-0.44%
	(3.60)	(0.84)	(-4.67)	(-3.91)
Log (Broker Size)	-0.18%	-0.18%	0.02%	0.03%
	(-8.27)	(-7.71)	(0.71)	(1.16)
Firm Experience	0.02%	0.07%	0.14%	0.15%
	(0.60)	(2.36)	(3.24)	(3.78)
Experience	-0.03%	-0.04%	-0.12%	-0.08%
	(-1.93)	(-2.49)	(-5.31)	(-3.97)
Firms Followed	0.13%	0.15%	0.28%	0.15%
	(5.94)	(7.25)	(9.19)	(6.92)
All-Star	0.01%	-0.07%	0.28%	0.34%
	(0.24)	(-1.39)	(3.96)	(4.85)
Lag (Rec Level)	1.76%	1.99%	-1.50%	-1.81%
	(30.14)	(30.37)	(-25.14)	(-23.95)
Fixed Effects	Time	Firm-Time	Time	Firm-Time
R-squared	1.35%	17.30%	0.84%	20.75%
Observations	1,303,031	1,303,031	1,303,031	1,303,031
Mean of Dep. Variable	1.65%	1.65%	1.99%	1.99%

Table 10: NDRs and Quarterly Earnings Forecast Pessimism

This table reports estimates from the following panel regression:

$$Analyst\ Qtr.\ Forecast\ Pessimism_{jit} = \beta_1 NDR3_{jit} + \beta_2 Conf3_{jit} + \beta_3 Affiliated3_{jit} + Controls + FE + \varepsilon_{jit}.$$

The dependent variable is a measure of pessimism in quarterly forecasts of analyst *j* for firm *i* in month *t*. In Specifications 1 and 2 the dependent variable is *MBE,* an indicator variable equal to one if the firm's realized earnings meets or beats the analyst's estimated earnings. In Specifications 3 and 4 the dependent variable is *Relative Earnings Pessimism*, computed as: [(*Rank* – 1)/ (*Number of Analysts* -1)], where *Rank* is the rank of the analysts' forecasted earnings estimate, where the highest estimate is given a rank of 1, the second highest estimate is given a rank of 2, etc., and *Number of Analysts* is the number of analysts issuing a forecast in the firm-quarter. *NDR3* is an indicator variable equal to one if broker will take the firm on an NDR over the subsequent three months. *Conf3* and *Affiliated3* are indicator variables equal to one if the broker will host the firm at a conference or will have an investment banking relation with the firm in the subsequent three months. *Controls* include the following broker/analyst related controls: Log *(Broker Size)*, Log (*Firm Experience*), Log (Firms Followed), and *All-Star*. Detailed variable definitions are provided in Appendix A. The regressions include either time fixed effects or firm-time fixed effects. Standard errors are clustered by firm and time and *t*-statistics are reported in parentheses below the corresponding coefficient estimate. The sample spans from January 2013 to December 2018.

	MBE		Relative Earnings Pessimism	
	[1]	[2]	[3]	[4]
NDR3	2.47%	1.34%	1.19	1.43
	(5.18)	(5.82)	(6.11)	(6.23)
Conf3	1.94%	0.46%	0.15	0.19
	(4.76)	(2.15)	(1.02)	(1.11)
Affiliated3	-0.18%	-0.15%	-0.23	-0.29
	(-0.21)	(-0.42)	(-0.94)	(-0.95)
Log (Broker Size)	1.13%	0.08%	0.25	0.27
	(8.54)	(1.25)	(4.17)	(3.88)
Firm Experience	-1.15%	0.18%	0.42	0.47
	(-3.80)	(1.43)	(3.98)	(3.77)
Experience	0.69%	0.25%	0.35	0.39
	(3.76)	(3.74)	(6.34)	(6.00)
Firms Followed	1.21%	0.17%	-0.03	-0.05
	(5.16)	(2.36)	(-0.56)	(-0.63)
All-Star	0.80%	0.26%	-0.33	-0.38
	(2.17)	(1.43)	(-1.75)	(-1.80)
Fixed Effects	Time	Firm-Time	Time	Firm-Time
R-squared	0.50%	59.55%	0.05%	0.12%
Observations	1,393,328	1,393,328	1,393,328	1,393,328
Mean of Dep, Variable	68.10%	68.10%	49.63%	49.63%

Table 11: Market Reaction to NDR Brokers Research

This table reports the results from the panel regression:

$$Ret_{it} = \beta_1 NDR3_{jit} + \beta_2 Conf3_{jit} + \beta_3 Affiliated3_{jit} + \beta Controls + FE + \varepsilon_{jit.}$$

Ret_{it} is the buy-and-hold DGTW-adjusted return following a recommendation change (Panel A) or target price revisions (Panel B). We compute returns over the [0,63] day window (Specifications 1 and 4), the [0,1] window (Specifications 2 and 5], and the [2,63] window (Specifications 3 and 6). Upgrades and downgrades are examined separately in Specifications 1-3, and 4-6, respectively. *NDR3* is an indicator variable equal to one if broker will take the firm on an NDR over the subsequent three months. *Conf3* and *Affiliated3* are indicator variables equal to one if the broker will host the firm at a conference or will have an investment banking relation with the firm in the subsequent three months. *Controls* include analyst, broker, recommendation, and firm characteristics. The coefficients on the firm characteristics (*Log (Size)*, *Log (Turn)*, *Log (Vol)*, *Log (BM)*, Ret (m-1), and Ret (m-12, m-2)) are omitted for brevity. All specifications include analyst and year fixed effects. Detailed variable definitions are provided in Appendix A. Standard errors are clustered by firm, with t-statistics reported in parentheses below the corresponding coefficient estimates. The sample spans from January 2013 to December 2018.

Panel A: Recommendation Changes

	Upgrades			Downgrades		
	[0,63]	[0,1]	[2,63]	[0,63]	[0,1]	[2,63]
NDR3	-0.66%	0.30%	-0.58%	-2.79%	-0.14%	-2.69%
	(-0.62)	(0.68)	(-0.66)	(-2.58)	(-0.32)	(-2.60)
Non-Sponsor NDR3	0.39%	0.07%	0.33%	0.80%	-0.32%	1.18%
	(1.09)	(0.77)	(0.97)	(2.19)	(-3.26)	(3.18)
NDR Ever	0.85%	0.38%	0.40%	-0.31%	-0.64%	0.31%
	(1.73)	(2.88)	(0.89)	(-0.71)	(-3.67)	(0.70)
Conf3	1.24%	0.22%	1.05%	0.25%	-0.11%	0.42%
	(1.59)	(0.92)	(1.49)	(0.35)	(-0.43)	(0.60)
Non-Sponsor Conf3	0.06%	-0.28%	0.30%	1.19%	-0.11%	1.35%
	(0.16)	(-3.05)	(0.91)	(3.44)	(-1.17)	(3.99)
Conf. Ever	0.29%	0.05%	0.21%	-0.25%	-0.26%	-0.01%
	(0.78)	(0.42)	(0.60)	(-0.72)	(-1.96)	(-0.03)
Affiliated3	1.36%	-0.31%	1.59%	2.63%	-0.20%	2.92%
	(1.28)	(-0.99)	(1.60)	(1.97)	(-0.78)	(2.16)
Non-Sponsor Affiliated3	0.06%	0.44%	-0.32%	-0.83%	-0.02%	-0.82%
	(0.04)	(0.92)	(-0.28)	(-0.78)	(-0.06)	(-0.75)
Affiliated Ever	0.00%	-0.04%	-0.03%	-0.18%	-0.13%	-0.16%
	(0.01)	(-0.31)	(-0.07)	(-0.39)	(-0.86)	(-0.35)
Abs (Dif. Rec)	0.19%	0.50%	-0.31%	-1.77%	-0.62%	-1.22%
	(0.44)	(4.17)	(-0.73)	(-3.91)	(-3.57)	(-2.82)
Lag (Rec Level)	-0.51%	-0.53%	0.02%	-1.13%	-0.53%	-0.63%
	(-2.01)	(-7.75)	(0.10)	(-4.72)	(-6.41)	(-2.68)
All-Star	0.94%	0.19%	0.81%	0.88%	0.10%	0.90%
	(1.48)	(1.24)	(1.36)	(1.49)	(0.54)	(1.50)
Log (Broker Size)	0.25%	0.02%	0.24%	-0.90%	-0.13%	-0.86%
	(0.74)	(0.28)	(0.73)	(-2.42)	(-1.04)	(-2.33)
Log (Firms Followed)	-0.56%	0.29%	-0.89%	-0.63%	-0.03%	-0.61%
	(-1.02)	(2.16)	(-1.67)	(-1.06)	(-0.18)	(-1.03)
Log (Experience)	-0.28%	-0.01%	-0.22%	0.33%	-0.17%	0.49%
	(-0.75)	(-0.08)	(-0.62)	(0.92)	(-1.14)	(1.44)
Log (Firm Experience)	0.30%	0.11%	0.23%	-0.14%	-0.02%	-0.14%
	(1.58)	(2.14)	(1.27)	(-0.81)	(-0.25)	(-0.80)
Year & Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,400	19,400	19,400	21,970	21,970	21,970
NDR3 Obs.	456	456	456	200	200	200
Mean Ret	1.97%	2.11%	-0.14%	-2.89%	-1.85%	-1.06%

Panel B: Target Price Revisions

	Upgrades			Downgrades		
	[0,63]	[0,1]	[2,63]	[0,63]	[0,1]	[2,63]
NDR3	0.28%	-0.25%	0.50%	-2.21%	-0.32%	-1.81%
	(0.45)	(-1.32)	(0.84)	(-2.55)	(-1.40)	(-2.08)
Non-Sponsor NDR3	1.04%	-0.07%	1.11%	1.42%	-0.01%	1.43%
	(3.18)	(-0.67)	(3.55)	(3.06)	(-0.08)	(3.12)
NDR Ever	0.31%	0.19%	0.08%	1.22%	0.05%	1.18%
	(0.97)	(1.71)	(0.25)	(2.81)	(0.51)	(2.76)
CONF3	0.67%	0.15%	0.46%	0.80%	0.61%	0.22%
	(1.15)	(0.81)	(0.86)	(1.15)	(3.52)	(0.32)
Non-Sponsor Conf3	1.46%	-0.06%	1.53%	1.11%	0.12%	1.00%
	(4.45)	(-0.94)	(4.87)	(2.37)	(1.96)	(2.15)
Conf Ever	0.05%	0.06%	0.00%	0.38%	-0.02%	0.42%
	(0.15)	(0.74)	(-0.01)	(0.85)	(-0.31)	(0.96)
Affiliated3	-0.58%	-0.29%	-0.37%	-0.80%	0.02%	-0.84%
	(-0.63)	(-1.14)	(-0.44)	(-0.78)	(0.09)	(-0.85)
Non-Sponsor Affiliated3	2.30%	0.48%	1.84%	2.64%	0.07%	2.57%
	(5.19)	(4.81)	(4.37)	(3.66)	(0.64)	(3.73)
Affiliated Ever	0.01%	0.02%	0.01%	-0.68%	-0.09%	-0.61%
	(0.04)	(0.19)	(0.02)	(-1.42)	(-0.97)	(-1.31)
Target Revision	2.06%	3.00%	-0.40%	1.12%	2.58%	-1.55%
	(1.59)	(3.08)	(-0.37)	(0.51)	(5.08)	(-0.71)
All-Star	-0.59%	-0.10%	-0.52%	-0.23%	-0.22%	0.01%
	(-1.81)	(-1.01)	(-1.66)	(-0.65)	(-2.66)	(0.04)
Log (Broker Size)	-0.26%	-0.12%	-0.14%	0.46%	0.08%	0.40%
	(-0.57)	(-1.05)	(-0.31)	(0.78)	(0.58)	(0.67)
Log (Firms Followed)	-0.68%	0.09%	-0.70%	-0.38%	-0.05%	-0.47%
	(-1.25)	(0.56)	(-1.36)	(-0.60)	(-0.30)	(-0.75)
Log (Experience)	0.09%	0.11%	-0.05%	0.32%	0.16%	0.17%
	(0.19)	(0.94)	(-0.11)	(0.63)	(1.40)	(0.34)
Log (Firm Experience)	-0.07%	-0.02%	-0.06%	0.14%	-0.06%	0.18%
	(-0.45)	(-0.56)	(-0.42)	(0.68)	(-1.39)	(0.91)
Year & Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,107	35,107	35,107	35,166	35,166	35,166
NDR3 Obs.	1081	1081	1081	633	633	633
Mean Ret	-0.34%	0.64%	-0.95%	-2.13%	-0.48%	-1.63%

Non-Deal Roadshows: Investor Welfare, and Analyst Conflicts of Interest

Daniel Bradley, Russell Jame, and Jared Williams

INTERNET APPENDIX

This internet appendix reports on and tabulates a number of robustness tests reported in the main body of the paper.

IA.1 *The informativeness of institutional trading around Local NDRs – Portfolio Sorts*

In this section, we examine the informativeness of local institutional trading around NDRs using a portfolio sort approach. Specifically, at the end of each quarter from March 2013 to September 2018, we form five portfolios by sorting stocks based on city-level institutional order imbalance, defined as (*Local Inst. Buying - Local Inst. Selling*)/*Total Inst. Trading*. The sample of cities include the 30 cities reported in Panel C of Table 1. We rank institutional order imbalances into quintiles for two separate groups: *Local NDR*, an indicator variable equal to one if firm *i* attended a non-deal roadshow in city *c* in the previous quarter, and *No Local NDR*, defined as all other observations. We rebalance the portfolio every quarter.

We compute the equally-weighted average monthly raw return to each portfolio across all firm-cities in the month. We then report the average estimate across the 69 months in the sample from April 2013 through December 2018. Table IA.1 reports the results. We find that institutional trading is significantly more informed for the subset of firms located near the NDR location. The stocks most heavily bought by local institutions outperform the stocks most heavily sold by local institutions by roughly 0.40% per month in the three months following the NDR. In contrast, typical institutional trading that takes place where there is not an NDR (i.e., *No Local NDR*) is not significantly related to future returns, and the difference between NDR and *No Local NDR* (0.38%) is highly significant. Panel B repeats the analysis after replacing raw returns with Carhart (1997) four-factor alphas and finds nearly identical results. Overall, the portfolio sort results in Table IA.1 yield virtually identical conclusions to the regression results reported in Table 4 of the paper.

IA.2 *The informativeness of retail trading around NDRs – Portfolio Sorts*

We next examine the informativeness of retail trading around NDRs using a portfolio approach. At the end of each day from January 2013 to December 2018, we form five portfolios by sorting stocks based on retail order imbalance, defined as (*Retail Buy Volume – Retail Sale Volume*)/*Total Retail Trading Volume*. We rank retail order imbalances into quintiles for two separate groups: *NDR*, an indicator variable equal to one if firm *i* attended a non-deal roadshow in the past 10 trading days, and *No NDR*, defined as all other observations. The portfolio is rebalanced every day.

We compute the equally-weighted average five-day raw return to each portfolio. As in Table 5, we continue to set the coefficient on *NDR* equal to missing on days where less than 25 firms attended an NDR during the event window (roughly 0.5% of all days). Table IA.2 reports the time-series average of the five-day ahead portfolio returns. Consistent with Table 5, we find that retail order imbalances are typically positively related to future returns, however this relation is eliminated around NDRs. In particular, the profitably of the long-short portfolio is 0.11% lower around NDR days, which corresponds to annualized loss of roughly 5.54% (0.11% * 252/2). Using Carhart (1997) four-factor alphas leads to very similar results (Panel B).

IA.3 *The informativeness of retail trading around NDRs – An alternative order imbalance measure*

Our primary measure of retail order imbalance is *OIBVOL*, defined as retail buy volume less retail sell volume divided by the sum of retail buy and sell volume. Here, we consider an alternative measure, *OIBTRADE*, defined as the number of retail buy trades less the number of retail sell trades divided by the total number of retail trades. Table IA.3 reports the results after estimating Equation 3 after replacing *OIBVOL* with *OIBTRADE*. We find that the magnitude on *Retail OIB * NDR* in Specification 1 increases in absolute value by roughly 50% (from −0.035% to −0.054%) and remain highly significant. Since *OIBTRADES* gives more weight to smaller, and presumably less-sophisticated retail investors, this finding is consistent with *NDRs* being particularly harmful to smaller retail investors.

IA.4 *The informativeness of retail trading around NDRs – Alternative Event Windows*

In Table 5, we define NDR as an indicator variable equal to one if the firm has attended an NDR over the past 10 trading days. In this section, we explore the sensitivity of our findings to alternative event windows. Specifically, we estimate Equation 3 after defining *NDR* (and *Conf*) using a one-week (i.e., 5-day), one-month (i.e., 21-day), or one-quarter (i.e., 63-day) event windows. The results are reported in Table IA.4. We find the estimate on *Retail OIB * NDR* is significantly negative for all of the horizons. However, the coefficient on *Retail OIB * NDR* tends to decline (in absolute value) as the horizon increases. For example, the coefficients for the 5-day, 10-day, 21-day, and 63-day windows are: -0.034%, -0.035%, -0.020%, and -0.013%, respectively. The generally declining point estimates suggest that most informed institutional trades occur within a two-week window after the NDR. However, the significantly negative estimates for horizons of up to one-quarter after are consistent with at least some institutions obtaining a relatively long-lived informational advantage following the NDR.

IA.5 *NDRs and Analyst Optimism – Cross Sectional Patterns*

The results from Table 7 show that brokers that will take a firm on an NDR in the next three months issue substantially more optimistic recommendations and target prices. In this section, we explore how the level

of NDR broker optimism varies with firm and analyst characteristics. Specifically, we estimate the following panel regression:

$$\textit{Analyst Optimism}_{jit} = \alpha + \beta_1 \textit{NDR3}_{jit} + \beta_1 \textit{NDR3}_{jit} * \text{CV} + \beta_3 \textit{Conf3}_{jit} + \beta_4 \textit{Conf3}_{jit} * \text{CV} + \beta_5 \textit{Affiliated3}_{jit} + \beta_5 \textit{Affiliated3}_{jit} * \textit{CV} + \textit{Controls} + \textit{Time-Firm}_{it} + \varepsilon_{it,} \quad \text{(IA.1)}$$

Analyst Optimism, NDR3, Conf3, Affiliated3, Controls, and *Time-Firm* are defined as in Equation 5. *CV* is a one of the following conditioning variables: Log (*Coverage*), Log (*Turnover*), *All-Star*, Log (*Size*), and Log (*Volatility*). Detailed variable definitions are provided in the Appendix.

Panels A and B of Table IA.5 reports the results where the measure of optimism is *Rec Level* and *Target Return*, respectively. We find robust evidence that target level optimism is greater among stocks with greater sell-side coverage. For example, Specification 1 indicates that a one-standard deviation increase in coverage is associated with recommendations that are -0.07 lower (i.e. more optimistic) and target returns that are 0.63% higher, and Specification 4 documents even larger magnitudes after we control for other related firm characteristics (i.e., *Turnover, Size*, and *Volatility).* This pattern is consistent with greater competition for NDR business contributing to higher levels of optimism. We also find that optimism is greater among stocks with greater share turnover. This finding is consistent with analysts competing more aggressively for NDR business among firms that are more heavily traded, where the trading commission benefits are likely to be larger. Finally, we find weak evidence that optimism is less pervasive among all-star analysts, consistent with analysts with greater reputational capital being more reluctant to issue biased research (Fang and Yasuda, 2009).

Table IA.1: NDRs and the Informativeness of Local Institutional Trading - Portfolio Sorts

At the end of each quarter from March 2013 to September 2018, we form five portfolios by sorting stocks based on city-level institutional order imbalance, defined as (*Local Inst. Buying - Local Inst. Selling*)/*Total Inst. Trading*. The sample of cities include the 30 cities reported in Panel C of Table 1. We report the sorting for two separate groups: *Local NDR*, an indicator variable equal to one if firm *i* attended a non-deal roadshow in city *c* in the previous quarter, and *No Local NDR*, defined as all other observations. All stocks remain in the portfolio for three months. Each month, the portfolio return is computed as the equally-weighted average return across all firm-city observations. We then report the average returns across all the months in the sample. We report estimates using raw returns (Panel A) and Carhart (1997) four-factor alphas (Panel B). The last row reports the difference in the returns between quintile 5 and quintile 1, and the t-statistic of the difference, computed from the time-series standard deviation of the monthly estimates.

Panel A: Raw Returns

Inst. OIB Quintile	*Local NDR*	*No Local NDR*	*Difference*
1 (Heavy Sells)	0.62%	0.83%	-0.21%
2	0.74%	0.83%	-0.09%
3	0.93%	0.83%	0.10%
4	0.89%	0.84%	0.06%
5 (Heavy Buys)	1.02%	0.85%	0.17%
5-1	0.40%	0.01%	0.38%
	(2.76)	(0.25)	(2.78)

Panel B: Four-Factor Alphas

Inst. OIB Quintile	*Local NDR*	*No Local NDR*	*Difference*
1 (Heavy Sells)	-0.15%	0.08%	-0.24%
2	-0.18%	0.04%	-0.22%
3	0.09%	0.03%	0.07%
4	0.00%	0.03%	-0.03%
5 (Heavy Buys)	0.23%	0.08%	0.15%
5-1	0.39%	0.00%	0.39%
	(2.67)	(-0.04)	(2.76)

Table IA.2: NDRs and the Informativeness of Retail Trading - Portfolio Sorts

At the end of each day from January 2013 to December 2018, we form five portfolios by sorting stocks based on retail order imbalance, defined as (*Retail Buy Volume – Retail Sale Volume*)/*Total Retail Trading Volume*. We report the sorting for two separate groups: *NDR*, an indicator variable equal to one if firm *i* attended a non-deal roadshow in the past 10 trading days, and *No Local NDR*, defined as all other observations. All stocks remain in the portfolio for five trading days. Each day, the portfolio return is computed as the equally-weighted average return across firms in the portfolio. We then report the average five-day return across all the days in the sample. We report returns using Raw Returns (Panel A) or Carhart (1997) four-factor alphas (Panel B). The last row reports the difference in the returns between quintile 5 and quintile 1, and the t-statistic of the difference, computed from the time-series standard deviation of the daily estimates, with a Newey-West correction of five lags.

Panel A: Raw Returns

Retail OIB. Quintile	*NDR*	*No NDR*	*Difference*
1 (Heavy Sells)	0.23%	0.20%	0.04%
2	0.20%	0.21%	-0.01%
3	0.16%	0.21%	-0.06%
4	0.20%	0.26%	-0.06%
5 (Heavy Buys)	0.27%	0.34%	-0.07%
5-1	0.04%	0.14%	-0.11%
	(1.18)	(12.09)	(-3.34)

Panel B: Four-Factor Alphas

Retail OIB. Quintile	*NDR*	*No NDR*	*Difference*
1	0.04%	0.03%	0.01%
2	-0.03%	0.00%	-0.02%
3	-0.08%	-0.01%	-0.07%
4	-0.03%	0.04%	-0.07%
5	0.07%	0.16%	-0.09%
5-1	0.04%	0.14%	-0.10%
	(1.21)	(11.79)	(-3.06)

Table IA.3: NDRs and the Informativeness of Retail Trading – *Alternative OIB Measure*

This table repeats Table 5 of the paper using an alternative measure of retail order imbalance. Specifically, we replace *OIBVOL*, defined as defined as retail buy volume less retail sell volume divided by total retail volume with *OIBTRADE*, defined as the number of retail buy trades less the number of retail sell trades divided by total retail trades.

	All-Firms	High-Vol Firms	Low-Vol Firms	Small Firms	Large Firms
	[1]	[2]	[3]	[4]	[5]
Retail OIB	0.037%	0.057%	0.020%	0.044%	0.023%
	(6.10)	(3.27)	(2.91)	(2.63)	(3.42)
*Retail OIB * NDR Dummy*	-0.054%	-0.088%	-0.006%	-0.070%	-0.003%
	(-4.75)	(-4.42)	(-0.59)	(-3.85)	(-0.28)
*Retail OIB * Conf Dummy*	0.013%	0.007%	0.020%	0.026%	0.001%
	(0.83)	(0.28)	(1.60)	(1.13)	(0.08)
NDR Dummy	0.014%	0.019%	0.004%	0.024%	0.006%
	(0.62)	(0.51)	(0.22)	(0.65)	(0.28)
Conf Dummy	0.021%	0.048%	0.012%	0.033%	0.019%
	(0.64)	(0.94)	(0.51)	(0.57)	(0.69)
Log (Turn)	-0.054%	-0.045%	-0.037%	-0.036%	-0.053%
	(-2.47)	(-1.68)	(-2.15)	(-1.47)	(-2.46)
Log (Vol)	-0.052%	-0.047%	-0.033%	-0.021%	-0.066%
	(-1.19)	(-0.78)	(-0.82)	(-0.47)	(-1.34)
Log (Size)	-0.060%	-0.113%	-0.033%	-0.103%	-0.042%
	(-2.60)	(-3.01)	(-1.41)	(-1.61)	(-1.39)
Log (BM)	-0.013%	-0.010%	-0.005%	0.005%	-0.015%
	(-0.57)	(-0.31)	(-0.30)	(0.17)	(-0.66)
Ret (w-1)	-0.051%	-0.046%	-0.068%	-0.062%	-0.020%
	(-2.39)	(-1.91)	(-2.77)	(-2.45)	(-0.77)
Ret (m-1)	-0.068%	-0.080%	-0.028%	-0.073%	-0.070%
	(-2.48)	(-2.59)	(-0.89)	(-2.34)	(-2.02)
Ret (m-7, m-2)	-0.032%	-0.038%	-0.022%	-0.052%	0.013%
	(-1.19)	(-1.45)	(-0.56)	(-2.06)	(0.31)
*Retail OIB * Log (Turn)*	0.007%	0.008%	0.005%	0.011%	-0.006%
	(1.42)	(1.07)	(1.21)	(1.46)	(-0.94)
*Retail OIB * Log (Vol)*	0.015%	0.013%	0.003%	0.026%	0.006%
	(2.17)	(0.71)	(0.50)	(2.71)	(0.82)
*Retail OIB * Log (Size)*	-0.011%	-0.005%	-0.018%	-0.018%	-0.008%
	(-1.33)	(-0.28)	(-3.05)	(-0.89)	(-0.95)
*Retail OIB * Log (BM)*	-0.007%	-0.002%	-0.018%	-0.006%	-0.007%
	(-1.42)	(-0.22)	(-3.77)	(-0.71)	(-1.59)
*Retail OIB * Ret (w-1)*	0.006%	0.007%	0.005%	0.007%	-0.014%
	(0.58)	(0.57)	(0.57)	(0.47)	(-1.35)
*Retail OIB * Ret (m-1)*	-0.012%	-0.015%	-0.015%	-0.011%	-0.006%
	(-1.40)	(-1.36)	(-1.52)	(-0.92)	(-0.54)
*Retail OIB * Ret (m-7, m-2)*	-0.001%	-0.003%	0.003%	0.004%	0.001%
	(-0.16)	(-0.27)	(0.33)	(0.31)	(0.15)

Table IA.4: NDRs and the Informativeness of Retail Trading - *Alternative Event Windows*

This table repeats Specification 1 of Table 5 of the paper using an alternative event window when defining *NDR* and *Conf*. Specification 1 repeats the analysis after redefining NDR (Conf) equal to one if the firm attended an NDR (Conference) over the past five trading days. Specifications 2, 3, and 4 report analogous results using event windows of 10 days, 21 days, and 63 days, respectively.

	5-days	10-days	21-days	63-days
	[1]	[2]	[3]	[4]
Retail OIB	0.038%	0.038%	0.040%	0.048%
	(8.48)	(8.20)	(7.94)	(7.26)
*Retail OIB * NDR Dummy*	-0.034%	-0.035%	-0.020%	-0.014%
	(-2.34)	(-3.36)	(-2.40)	(-2.16)
*Retail OIB * Conf Dummy*	-0.006%	0.009%	-0.011%	-0.010%
	(-0.36)	(0.69)	(-1.13)	(-1.39)
NDR Dummy	0.037%	0.002%	0.008%	0.029%
	(1.32)	(0.07)	(0.49)	(1.99)
Conf Dummy	0.064%	0.019%	0.003%	0.023%
	(1.66)	(0.57)	(0.12)	(1.04)
Log (Turn)	-0.056%	-0.056%	-0.056%	-0.056%
	(-2.67)	(-2.69)	(-2.70)	(-2.68)
Log (Vol)	-0.036%	-0.036%	-0.034%	-0.036%
	(-0.85)	(-0.85)	(-0.81)	(-0.86)
Log (Size)	-0.047%	-0.047%	-0.044%	-0.051%
	(-2.07)	(-2.05)	(-1.95)	(-2.26)
Log (BM)	-0.023%	-0.023%	-0.023%	-0.022%
	(-1.05)	(-1.04)	(-1.05)	(-1.04)
Ret (w-1)	-0.051%	-0.052%	-0.052%	-0.051%
	(-2.53)	(-2.55)	(-2.55)	(-2.52)
Ret (m-1)	-0.066%	-0.066%	-0.066%	-0.067%
	(-2.55)	(-2.55)	(-2.52)	(-2.58)
Ret (m-7, m-2)	-0.019%	-0.019%	-0.019%	-0.019%
	(-0.74)	(-0.73)	(-0.73)	(-0.74)
*Retail OIB * Log (Turn)*	0.015%	0.015%	0.014%	0.015%
	(3.28)	(3.28)	(3.14)	(3.11)
*Retail OIB * Log (Vol)*	0.019%	0.019%	0.019%	0.019%
	(2.90)	(2.96)	(2.96)	(2.77)
*Retail OIB * Log (Size)*	-0.027%	-0.026%	-0.026%	-0.025%
	(-3.85)	(-3.86)	(-3.84)	(-3.94)
*Retail OIB * Log (BM)*	-0.006%	-0.005%	-0.006%	-0.005%
	(-1.58)	(-1.32)	(-1.39)	(-1.27)
*Retail OIB * Ret (w-1)*	0.008%	0.008%	0.005%	0.005%
	(0.79)	(0.80)	(0.47)	(0.60)
*Retail OIB * Ret (m-1)*	-0.002%	-0.003%	-0.001%	-0.002%
	(-0.17)	(-0.38)	(-0.12)	(-0.29)
*Retail OIB * Ret (m-7, m-2)*	-0.008%	-0.009%	-0.010%	-0.010%
	(-1.26)	(-1.34)	(-1.49)	(-1.69)

Table IA.5: NDRs and the Level of Analyst Optimism - Cross Sectional Patterns

This table repeats the analysis in Table 7 after interacting *NDR3, Conf3,* and *Affiliated3* with several conditioning variables (CV). For brevity, we only report the coefficients on NDR and *NDR * CV*. The conditioning variables include: Log (*Coverage*), Log (*Turnover*), *All-Star*, Log (*Size*), and Log (*Volatility*). All the conditioning variables exact *All-Star* are standardized to have mean zero and unit variance. Detailed variable definitions are provided in Appendix A.

Panel A: Rec Level

	[1]	[2]	[3]	[4]
NDR3	-0.28	-0.27	-0.27	-0.29
	(-27.58)	(-27.79)	(-26.13)	(-25.21)
*NDR3 * Log* (*Coverage*)	-0.07			-0.10
	(-5.55)			(-4.71)
*NDR3 * Log* (*Turnover*)		-0.07		-0.05
		(-6.59)		(-4.26)
*NDR3 * All Star*			0.06	0.08
			(2.16)	(2.98)
*NDR3 * Log* (*Size*)				0.03
				(3.65)
*NDR3 * Log* (*Volatility*)				0.05
				(2.05)
Fixed Effects	Time-Firm	Time-Firm	Time-Firm	Time-Firm

Panel B: Target Return

	[1]	[2]	[3]	[4]
NDR3	4.49%	4.48%	4.41%	4.39%
	(22.89)	(21.92)	(20.14)	(22.58)
*NDR3 * Log* (*Coverage*)	0.63%			1.90%
	(2.17)			(3.93)
NDR3 Log* (*Turnover*)		2.18%		0.98%
		(7.01)		(2.91)
*NDRR3 * All Star*			-0.42%	-0.01%
			(-0.79)	(-0.09)
*NDR3 * Log* (*Size*)				-0.28%
				(-1.29)
*NDR3 * Log* (*Volatility)*				4.45%
				(5.94)
Fixed Effects	Time-Firm	Time-Firm	Time-Firm	Time-Firm