An Examination of the Listing of Analyst Coverage on Corporate Websites

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Abstract

This study examines voluntary disclosure by firms on corporate investor relations websites of sell-side analysts covering the firm. We find that such listings are more likely for larger firms and those with greater investor demand for information. For firms with such listings, we find incomplete disclosures of analyst coverage. Approximately 12 percent of analysts are omitted from analyst listings on corporate websites, but such omissions appear systematic. An analyst's experience increases the likelihood of being listed, but analysts with less favorable recommendations and less beatable forecasts are more likely to be omitted. Taken together, the results are consistent with strategic disclosure of analyst coverage. We examine market reactions to forecast revisions and find stronger market reactions to research by excluded analysts, suggesting that if firms are actually attempting to conceal negative analyst research, such window dressing does not appear successful.

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1. Introduction

Research has convincingly established that sell-side analysts enhance the information environment of firms (e.g., Bhushan 1989, Brennan and Hughes 1991, Lang and Lundholm 1996, Healy and Palepu 2001, Ayers and Freeman 2003, Lang, Lins and Miller 2003, Beyer, Cohen, Lys and Walther 2010, etc.). Increased visibility from analysts leads to higher stock prices (Gleason and Lee, 2003 and Lang, Lins and Miller 2003), greater institutional ownership (O'Brien and Bhushan 1990), greater liquidity (Roulstone 2003, Irvine 2003), and lower cost of equity capital (Bowen, Chen and Cheng 2008). Accordingly, firms have incentives to be followed by analysts.

Additionally, research shows that firms invest in investor relations program to achieve specific goals including increasing institutional investment, which seems to lead increases in analyst coverage (Bushee and Miller 2012, Kirk and Vincent 2014) and actively responding to decreases in analyst coverage (Anantharaman and Zhang 2011). These findings suggest that firms care about analyst coverage and likely know the identities of analysts following their stocks. Furthermore, because analyst coverage helps to increase firm visibility (O'Brien and Bhushan 1990), firms likely have incentives to increase investors' awareness of the analysts following their stocks by providing their identities as a way for investors to learn more about an analyst and her research.

In this study, we investigate the role of firms in highlighting analysts' research by providing a listing of analysts following their company on the firm's investor relations (IR) website. IR websites are a valuable channel of distribution for information about a firm and have become "an obvious place for investors to find information about the company" (SEC 2008, p.9). Thus, such websites are now widespread. One part of many IR websites is a listing of analysts

following their company. Most firms include these within sections devoted to "stock price," but there is variation in both the disclosure of analyst listings and the categorization. We examine determinants of a firm providing analyst listings, whether there is bias in such disclosures, and whether such listings are associated with differential investor responses to firm-specific analyst research. We investigate a firm's decision to provide analyst listings on their IR websites as a two-part process. First, we examine determinants of firms providing analyst listings on their corporate websites, and then, for the subsample of firms with analyst listings, we examine determinants of an individual analyst being included in an IR website listing.

In addition to firms benefitting from visibility associated with analyst following, analysts also benefit from increased visibility, as it affects investor responses to their research (Bonner, Hugon and Walther 2007) and influences their own career outcomes (Hong and Kubik 2003; Groysberg, Healy and Maber 2011). Although it is clear that analysts facilitate visibility for firms, less is known about whether and how firms can directly influence analysts' visibility. Some studies examine how third parties, such as institutional investors (Hong and Kubik 2003; Groysberg, Healy and Maber 2011) or the media (Bonner, Hugon and Walther 2007) increase investors' awareness of analysts through rankings or media mentions. Our interest is not necessarily on analyst visibility, but rather on the determinants of firms providing such listings and, more interesting, whether firms are strategic in such disclosures.

We conjecture that providing analyst listings could be one way that firms respond to demand for information from investors. Because analysts are sophisticated information intermediaries who can provide investors with research analyses and investment opinions, firms are able to direct investors to other sources of information. Using a sample of 1,847 firms with and 1,388 firms without analyst listings on their IR websites, we examine the voluntary

disclosure of analyst following. Not surprisingly, larger firms that have more resources, exhibit a stronger commitment to a high quality information environment (e.g., management guidance), and have more analysts following them are more likely to provide a listing of analysts on their websites. Also, we find that firms with more intangible assets are more likely to provide a listing of analysts presumably because investors rely more on analyst research for these firms given the difficulty of understanding and valuing intangibles (Barth, Kasznik and McNichols 2001).

For the 1,847 firms that provide analyst listings on their corporate websites, we track monthly changes to these listings from June 2015 to August 2016. We compare the analysts on the IR website to those included on Thomson Reuters I/B/E/S. Given the preliminary evidence that IR listings of analyst coverage appears consistent with a desire for a richer information environment, a firm's IR listing should be an unbiased listing of all analysts following its stock. However, because analysts provide commentary on the firm and its management and summarize them through a buy/sell recommendation, the firm might have incentives to be selective about which analysts are included on the IR website. Research suggests that analysts have incentives to curry favor with management, as this facilitates information flow and other benefits (e.g., Chen and Matsumoto 2006, Mayew 2008). This evidence might also manifest as analysts being strategically included on or excluded from IR website listings.

First, an analyst's reputation and ability are likely to influence the probability of being included on the corporate website listing. From the investors' perspective, research shows that investors value research by more reputable and higher ability analysts (e.g. Stickel 1992; Park and Stice 2000; Gleason and Lee 2003; Chen, Francis and Jiang 2005; Lee and Lo 2016). From the firm's perspective, if the analyst listing is meant for investors, it would likely reflect investors' preferences. Furthermore, like investors, firms are also likely to value more reputable

and higher ability analysts who are better able to correctly assess the firm's fundamentals, less likely to provide misinformation, and more likely to increase visibility of the firm. Consequently, we predict reputable and higher ability analysts are more likely to be included on IR websites.

We also consider whether an analyst whose research puts the firm in a more positive light has a higher probability of being listed. We contend that firms have incentives to attract potential investors and higher capital market valuations, so will prefer to list analysts with favorable opinions. Additionally, we examine whether firm incentives to meet or beat analysts' earnings forecasts extend to this setting. Building on research showing that meeting or beating individual analyst forecasts can matter (Kirk, Reppenhagen and Tucker 2014), we argue that firms might strategically utilize analyst listings on IR websites to manage investors' ability to consume the research of select analysts.

Results indicate that about 12% of analyst-firm pairings are excluded from the listings on corporate websites. To examine the association between analyst ability and reputation, we use several proxies such as experience, forecast accuracy, industry specialization, ranking on the All-Star ranking, and the size of the analyst's brokerage. Not surprisingly, analysts with more firm-specific experience are more likely to be included on the website listing. On the other hand, we find no reliable evidence that analysts who are more accurate, All-Stars, industry specialists, or who work at larger brokerage firms are more likely to be included on IR websites, and analysts with greater industry specialization are actually less likely to be included.

In light of the lack of compelling evidence that more visible and capable analysts are more likely to be included on IR websites to support a richer information environment, we examine the more ominous prediction that analysts with more (less) favorable views are more likely to be included in (excluded from) the IR website. Our results indicate analysts with more

optimistic earnings forecasts and favorable stock recommendations are more likely to be listed. Also, analysts whose forecasts have been consistently met or beat by the firm are more likely to be included. Taken together with the results above on analyst ability and reputation, our results appear more consistent with a strategic selection of analysts by firms. However, to the extent that firms form their lists entirely based on communication with analysts, we cannot rule out the possibility that some analysts operate without interacting with managers, and may be excluded based on a lack of knowledge by the firms. Perhaps analysts with negative views prefer to not communicate with management (ever), so remain anonymous, but this strikes us as unlikely.

To strengthen the above inference that firms strategically select analysts to be included on IR websites, we conduct two additional changes analyses. In the first set of tests, we compare analysts who were previously included and subsequently dropped from the listings to analysts who were always included in the listings over the same time period. We also compare analysts who were previously excluded and subsequently added to the listings to analysts who were excluded over the same time period. In the second set of tests, we focus on a subsample of firms *without* analyst listings on their corporate websites. We sent an email to each firm requesting a list of analysts covering the firm's stock. For the firms who responded with a list of analysts, we compare the research by analysts on the list to research by analysts not on the list. Our results from these additional tests are generally consistent with those in the main findings. Analysts with more favorable opinions are more likely to be listed. Firms are also more likely to include analysts on the IR website when they have been covering the firm for a longer period of time, but their tenure in the profession and other proxies for analyst ability and reputation do not increase their likelihood of being included.

Finally, we examine whether analyst listings are effective in increasing investors' awareness of the analysts and their research. If listed analysts gain visibility among investors as an important source of information, investors would react more strongly to their forecast revisions. However, because listed analysts are on average more optimistic than non-listed analysts, investors could perceive listed analysts as a source of information for primarily optimistic opinions and rely on non-listed analysts when they are seeking alternative opinions that are on average less optimistic (or more negative). If so, investors' reaction to forecast revisions by non-listed analysts would be stronger, especially for negative forecast revisions (i.e. bad news). We find that investors, on average, react more strongly to forecast revisions by non-listed analysts. Further analysis indicates investors do not react differently to positive forecast revisions by listed and non-listed analysts, but they do react more strongly to negative forecast revisions by non-listed analysts than negative forecast revisions by listed analysts. This finding is particularly interesting because it suggests that while firms may try to conceal analysts with negative opinions by excluding them from IR websites, investors nevertheless respond to negative research from those analysts.

To the best of our knowledge, this paper is the first to examine analyst listings on corporate websites as a mechanism by which investors learn about analysts. In light of prior studies documenting benefits to firms of analyst following (e.g. O'Brien and Bhushan 1990), our findings highlight a two-sided characterization. The benefits of analyst following from the firm's perspective may primarily be through visibility restricted to optimistic analysts, rather than a richer information environment that includes analysts with more negative views. Moreover, our findings on the factors that influence an analyst's likelihood of being included on the listing provide insights into the dynamics of the relationship among managers, analysts and investors.

These findings complement and extend our understanding of managers' preferential treatment to analysts with favorable opinions (e.g. Chen and Matsumoto 2006; Mayew 2008) as well as the literature on analyst reputation and status (e.g. Stickel 1992). Finally, our study contributes to the emerging literature on investor relations (e.g. Bushee and Miller 2012; Kirk and Vincent 2014) by shedding light on one component of a firm's IR strategy.

2. Background, Prior Literature and Hypotheses

2.1. Investors' awareness of analyst coverage

On their own, analysts have opportunities to raise investors' awareness of the portfolio of firms that they cover and their research on the firms. However, an investor's awareness of analyst coverage for a particular firm is limited to analysts who are aggressive in marketing their research. Third party vendors such as Thomson Reuters, Bloomberg and Capital IQ provide listings of analyst coverage for firms and data on their research outputs in their databases. While these databases are accessible to institutional investors, they are not widely available to individual investors. Other third party websites such as Google Finance and Yahoo Finance are easily accessible by investors but include limited detail. For example, Google Finance provides aggregate data but does not separately list the individual analysts. Yahoo Finance provides summary statistics and list brokers who revise their stock recommendations.[1]

Some firms provide listings of analysts covering their stocks on corporate websites. These listings are generally found under the investor relations section. Appendix A shows an example of a listing by Zillow Group. While corporate websites have been long thought of as a marketing tool meant for customers, an increasing emphasis is on tailoring the website to investors well. For example, Bowen Craggs' annual index of corporate web effectiveness

[1] The data is provided by Thomson Reuters.

includes a separate category rating companies on how well the websites serve investors in addition to the usual suspects such as customers and media.[2] We are not aware of any formal academic study documenting the benefits and costs of maintaining IR websites for communication with investors, but IR professionals have issued guidelines emphasizing the importance of using websites to communicate with investors. Moreover, recent research shows that at least some investors' information gathering includes searches on the internet for available financial information (Da, Engelberg, and Gao 2011; Drake, Roulstone and Thornock 2012) and investors are likely to search on corporate websites because they are "a significant vehicle for the dissemination to investors of important company information" (SEC 2008, p.4).[3]

2.2. Decision to provide analyst listings on corporate websites

Our first question is what factors influence the decision of companies to list analyst coverage on their corporate websites. We expect the decision to be a function of investors' demand for such information and firms' willingness and ability to supply the information. On the demand side, prior research shows that analysts are important information intermediaries who generate valuable information for investors and play a useful role in improving market efficiency (see Healy and Palepu 2001). The role of analysts, thus, becomes more prominent when there is a greater demand for information from investors. In response to the increased demand from

[2] The metrics are divided into two categories – overall and specific. The overall metrics focus on the construction of the website (e.g. navigation), visual quality, ease of contacting someone in the company, etc. The specific metrics measure how well the site serves different groups such as investors, consumers, media, etc. The assessment here is more specific and suited to the needs of each group.

[3] We are not aware of any regulation that is specific to disclosure of analyst coverage. Nevertheless, on the page listing the analysts, most firms include disclaimers indicating that the list analysts' opinions do not represent those of the firm, the firm does not endorse any analyst's research, and that the list may not complete (e.g., Delta Air Lines states, "This list is provided for your convenience. Any information or report provided by the analyst is theirs alone, and is not endorsed or approved by Delta Air Lines or its management. The list includes all analysts known by Delta to follow Delta, but may not be complete and may change as firms or analysts add or delete coverage of Delta."

investors, one way that firms could cater to their information needs is to provide a listing of analysts who are following the firm on its corporate website. This allows the firm to provide investors with a starting point to gain useful information either in the form of summarized outputs such as forecasts and recommendations or detailed research reports from analysts who have already laid the ground work of collecting and analyzing information from both private and public sources of information. Accordingly, we predict that firms are more likely to provide listings of analysts when there is greater demand for information from investors.

We examine investors' demand for information using several empirical measures. First, we expect growth firms are more likely to provide an analyst listing, given their knowledge in how to value firm growth. Second, Barth, Kasnick, and McNichols (2001) find that analysts are more likely to cover firms with more intangible assets and suggest analysts fill an important information role these difficult to value assets. Thus, we expect firms with more intangibles to provide analyst listings. Second, investors might find it more challenging to value firms with higher growth prospects, because prices are more sensitive to expectations for these firms. Third, we also explore whether investors' demand for information stems primarily from demands from institutional or retail investors. On one hand, we expect firms with greater institutional ownership to provide analyst listings on their websites since institutions are more likely to consume analyst research (Bhushan 1989). On the other hand, non-professional retail investors are less sophisticated and might benefit more from analyst research. Thus, it is possible that institutional ownership is negatively associated with the likelihood of providing analyst listings.

In addition to investors' demand for information, we also consider the firm's ability and willingness to supply information that caters to investors' information needs. We predict a firm with more resources and a stronger commitment to improving the information environment is

more likely to provide a listing of analysts. We proxy for these supply side effects using firm size, firm profitability and whether management provides earnings guidance (e.g. Waymire 1985; Lang and Lundholm 1993). However, smaller firms have more incentives to promote their analysts (Bushee and Miller 2012), so investors in smaller firms may demand more information given uncertainty. Finally, firms that issue forecasts demonstrate a stronger commitment to better information environments, so are more likely to provide analyst listings.[4]

2.3. Selection of analysts listed on corporate websites

Our second research question relates to the decision to include or exclude a particular analyst from the listing of analysts on the IR website. Research documents that firms improve disclosure (Lang and Lundholm 1996, Anantharaman and Zhang 2011) and invest in IR (Bushee and Miller 2012, Kirk and Vincent 2014) to increase analyst coverage. These findings suggest firms are aware of the identities of analysts following them and are likely in contact with them.[5]

However, firms may strategically choose analysts listed on IR websites. First, an analyst's reputation and ability may affect the probability of being included by IR. Using the Institutional Investor All-American rankings (All-Star) as a measure of reputation, Stickel (1992) finds that the market reacts more strongly to large upward revisions by ranked analysts compared to non-ranked analysts. Gleason and Lee (2003) also find that forecasts by All-Star analysts elicit a stronger immediate price response, but trigger less pronounced subsequent price drifts. Branson, Guffy and Pagach (1998) document that investors react more positively to initiation of coverage by All-Star analysts than to initiation by non-All-Stars. Park and Stice (2000) uses

[4] Furthermore, it is possible that when managers provide guidance they are more likely to promote analysts because analysts tend to follow management guidance leading to beatable third party estimates (see Cotter, Tuna and Wysocki 2006, Feng and McVay 2010, Filzen and Peterson 2015, Bradshaw, Lee and Peterson 2016). This provides managers more confidence that analysts will provide information that aligns with the managers' views.

[5] In communications with IR professional at two companies, they indicated they are in frequent contact with analysts covering the firm (and are on their research distribution lists).

analysts' earnings forecasting history as a measure of reputation and documents that investors react more strongly to forecast revisions by analysts who have a track record of more accurate forecasts. Lee and Lo (2016) provide evidence that investors view bearish analysts' opinions on misstatement firms as a signal of their high ability and consequently, react more strongly to their forecasts for non-misstatement firms after the misstatement revelation. We conjecture such investors preference may influence the firm's decision to include reputable and competent analysts would be most likely to be included on IR websites.

Similarly, firms are also likely to value more reputable and high ability analysts. For example, in the context of IPOs, research suggests that firms prefer All-Star analysts. Krigman, Shaw and Womack (2001) find that firms switch underwriters to gain coverage from All-Star analysts, and Dunbar (2000) finds that the All-Star ranking for an investment bank is positively associated with the bank's market share in the IPO market. While our context is different, the same argument applies, whereby firms prefer analysts who are able to appropriately assess and communicate the value of the firm.

Another factor that could affect whether an analyst is listed is the analyst's outlook for the firm. Chen and Matsumoto (2006) suggest firms give analysts private information when their recommendations are favorable and cite more accurate forecasts from these analysts as evidence of this private information transfer. Mayew (2008) shows that such behavior exists post-Regulation FD, and firms are biased against calling analysts with unfavorable recommendations during the question and answer part of conference calls. We predict that firms are more (less) likely to list analysts with favorable (unfavorable) research.

Research finds that investors react positively to earnings that meet or beat analysts' earnings forecasts even after controlling for the magnitude of earnings surprise (Bartov, Givoly

and Hayn 2002, Kasznik and McNichols 2002). The importance of meeting analysts' expectations is echoed by executives in surveys (Graham, Harvey, and Rajgopal 2005). Kirk, Reppenhagen and Tucker (2014) argue that investors use individual analyst forecasts as additional benchmarks to evaluate a firm's performance. They find results consistent with their prediction when they use the percentage of individual forecasts met and whether the key analyst forecast is met as proxies for individual analyst forecast benchmarks. In our context, if firms also have incentives to influence investors' perception of individual analysts, they could potentially use analyst listings on their websites as a channel to manage perceptions. Consequently, we expect firms are more likely to list analysts with consistently achievable forecasts.

2.4. Investor reaction to research by listed analysts

Finally, we examine the effectiveness of analyst listings IR websites in increasing investors' awareness of analysts and their research, as proxied by market reactions to analysts' revisions. Our focus is on whether, as a result of the listing, investors react more strongly to research by analysts listed by IR. However, if biased, strategic disclosure of optimistic analysts exists and investors are aware of it, market reactions might be no different or more strong for analysts not included in the listing.

3. Data and Sample Selection

We started with a sample of 3,561 firms on *Compustat* with recommendations or forecasts based on I/B/E/S as of November 2014. We obtained the general corporate website url (e.g. http://www.zillowgroup.com/) from *Compustat* and proceeded in two stages. First, we develop a web crawler to search for and obtain the correct url of the corporate website page that lists analyst following. For the remaining firms that the web crawler failed to identify a specific

url, research assistants helped to either confirm that the firm did not list analyst following or obtained the correct url for the analyst following list that could not be obtained by the crawler. In the second step, we extracted the analyst names and the brokerage houses where each analyst works from the listing page using a computer algorithm. Because we are using I/B/E/S to determine the identities of analysts following a firm, we then match these to the I/B/E/S detail analyst recommendation database that lists the analyst last name and first initial.[6] This two-step procedure generated a sample of 1,862 firms with a valid url listing analysts as of June 2015. We then conducted monthly runs to extract the listings of analysts from firms' corporate websites at different points in time from June 2015 to September 2016.

For our analyses, we require additional financial data from Compustat, management guidance data from I/B/E/S and institutional investor ownership data from Thomson Reuters Form 13-F. We also require the firm to have both an outstanding recommendation and forecast available on I/B/E/S. Our first set of tests, which are estimated at the firm-level, have a sample size of 3,067 firms. For our second set of tests, our sample includes I/B/E/S analysts following the 1,421 firms that provide analyst listings on their websites over the 16-month time period resulting in a sample of 193,447 analyst-firm-run observations. For each observation, we then determine if the firm listed the analyst on its website at that point in time. In doing so, we are comparing the corporate website listing to I/B/E/S listing. However, we do not assume that all the analysts following a firm will be listed on I/B/E/S, but rather use the information on I/B/E/S

[6] Because of data requirements, an analyst on I/B/E/S is identified as covering a firm if he or she has an outstanding recommendation and forecast on the I/B/E/S recommendation and forecast files respectively. Since we do not have a listing of all analysts that are following the firm (we only have the I/B/E/S listing), this could understate the number of analysts following the firm and understate the number of analysts excluded from the company's listing. However, it would not lead to misclassification of whether an I/B/E/S analyst is listed on the firm's corporate website (i.e. our variable of interest). Nevertheless, our research cannot make statements about analysts that are both excluded from I/B/E/S and the corporate listing.

as a reasonable proxy for an alternative source of information available to investors.[7] Our third set of tests compares the market reaction to forecast revisions by analysts who are listed versus those who are not. Stock returns and price data are from CRSP. These tests are conducted on a sample of 73,026 analyst-firm observations.

4. Research Design and Empirical Results

4.1. Why do firms provide analyst listings on their corporate websites?

We begin with an analysis of a firm's decision to list analyst following on their websites. Table 1 Panel A presents descriptive statistics for the sample of firms used in this analysis. The definitions and measurement of these variables can be found in Appendix B. The average firm in our sample has a stock market value of $1.47 billion, negative profits (although the median firm is profitable) and about eight analysts following the firm. In untabulated results we compared our sample firms to the population of firms with both Compustat and I/B/E/S data and found that our firms are not significantly different from these firms for any of the variables listed in Table 1 Panel A except for institutional ownership. Our sample of firms has on average 52% institutional ownership while in the full population of firms institutional ownership is 46%. This indicates that while our sample may be missing some firms with lower institutional ownership, overall the sample is generally representative of all firms in the Compustat and I/B/E/S intersection. Table 1 Panel B presents Pearson and Spearman rank correlations for the same variables in Panel A. The correlations indicate that larger firms, growth firms, firms with intangibles (measured using both intangible assets and firm spending on intangibles such as research and development and advertising), and greater analyst following and institutional ownership are more likely to have a

[7] We believe the analyst listing on I/B/E/S is a reasonable proxy because of the widespread coverage on I/B/E/S which spans 22,000 companies and more than 850 brokers (Source: http://financial.thomsonreuters.com).

listing of their analyst following.[8] The Spearman correlation for *Earn* and *Listing* is negative, while the Pearson rank correlation is insignificant, which may be the result of skewness in the *Earn* variable (see Panel A).

In Table 2, we split firms into groups based on whether they have a listing of analysts on their corporate website (*Listing*) and compare the differences in characteristics for these two groups. Consistent with the correlations presented in Table 1, firms with listings of analysts have higher intangibles (*Intan* and *R&D and Advertising*), lower book-to-market ratios (*BM*) and higher institutional ownership. The univariate results suggests that investors' demand for information, especially institutional investors' demand, is a factor that firms consider in deciding to provide a listing of analysts on their websites. In terms of firm's ability and willingness to respond to investors' information needs, firms that are larger, issue guidance more frequently and have higher analyst following are more likely to provide listings. The univariate results again provide some preliminary indication that firms that provide analyst listings on their corporate websites have more resources and are presumably better able and willing to commit to improving their information environments.

Table 3 presents the results from estimating a logistic regression of the following form:

$$P(Listing) = f(\beta_0 + \beta_1 Intan + \beta_2 R\&D\ and\ Advertising + \beta_3 BM + \beta_4 Institutional\ Ownership + \beta_5 Earn + \beta_6 Size + \beta_7 Guidance + \beta_8 Analyst\ Following + \varepsilon_i) \quad (1)$$

Our dependent variable is the indicator *Listing* set to 1 if the firm provides a listing of analysts on its website and 0 otherwise. In addition to the variables of interest, we control for the number of analysts following the firm. As discussed earlier, since analysts help increase firm

[8] The correlations are all significant at the 5% level.

visibility, firms are more likely to broadcast the list of analysts following them if they have a large following. As expected, the coefficient on *Analyst Following* is 0.0187 (p-value = 0.007).

Table 3 shows that firms with more R&D and advertising expense are more likely to provide analyst listings on IR websites. However, we find no evidence that high growth firms or firms with more recognized intangible assets are more likely to provide analyst listings. Several of the univariate results do not carry through to the multivariate estimation. The coefficient on *Institutional Ownership* is also insignificant, suggesting there is no difference in the demand for analyst information from retail and institutional investors. We also find no relation between firm size and the likelihood of providing analyst listing. The coefficient on *Guidance* is 1.1555 and significant (p-value < 0.001), consistent with a commitment to a stronger information environment. Overall, we provide some evidence that on the demand side firms that are more difficult to value respond to investors' information needs by providing a list of analysts following their stock. On the supply side, firms that are committed to voluntary disclosures are more likely to provide analyst listings.

4.2. Who are the analysts listed on corporate websites?

4.2.1. Research design

We first compare the listing of analysts on corporate websites to that on I/B/E/S and find that about 12% of I/B/E/S analysts are excluded from the website listings. To examine which factors influence an analyst's likelihood of being included on or excluded from the listing we estimate the following logistic regression:

$$\begin{aligned} P(Alisted) = f(&\beta_0 + \beta_1 General\ Experience + \beta_2 Firm\ Experience \\ &+ \beta_3 Industry\ Specialization + \beta_4 Broker\ Size + \beta_5 AllStar \\ &+ \beta_6 Accuracy + \beta_7 Initial\ Optimism + \beta_8 Beatable\ Forecasts \\ &+ \beta_9 Recommendation + \beta_{10} NFirm + \varepsilon_i) \end{aligned} \quad (2)$$

AListed is an indicator equal to one if a firm has listed an analyst following the firm on their corporate website and zero if an analyst following the firm is not listed on its corporate website.

Because analyst ability and reputation are not directly observable, the firm is likely to use various indicators in making the decision to include an analyst. One indicator is the analyst's tenure in the profession. Clement (1999) argues that if the analyst labor market is relatively efficient, an analyst who is able to survive longer in the profession has, on average, higher ability. In addition, analysts with more experience have accumulated knowledge and skills which would enable them to be superior at their jobs. We measure an analyst's experience both in the profession (*General Experience*) and following the firm (*Firm Experience*). While they are likely to be positively correlated, analyst experience at the firm level allows us to capture the analyst's skills and ability that are specific to the firm. From the firm's perspective, it is easier to communicate with and anticipate the behavior of an analyst who has been following the firm for a longer period of time, suggesting that an analyst's firm experience could also capture the firm's familiarity with a specific analyst. We expect analysts who have more experience at both the general and firm levels to be included on the website listings.

Prior studies often use the All-American rankings by *Institutional Investor* (e.g., Stickel 1992; Leone and Wu 2007) to capture analyst reputation (*AllStar*). Firms would perceive the award as an indicator of the analyst's ability and status in the profession, and are more likely to include these All-Star analysts on their listings. *AllStar* is an indicator variable indicating whether the analyst is a top ranked analyst based on the rankings. Every year, investors responding to the *Institutional Investor* survey consistently rank industry knowledge as the most important analyst skill (Bradshaw 2013; Brown, Call, Clement and Sharp 2015), which suggests that the ability to analyze firms within an industry context is an important determinant of an

analyst's All-Star status.[9] We include an indicator variable *Industry Specialization* to indicate if an analyst specializes in the industry which the firm is in, and measure industry specialization based on Gilson, Noe, Healy and Palepu (2001). In addition to industry specialization, other studies suggest that analysts can build their reputation by forecasting earnings accurately (Park and Stice 2000; Chen, Francis and Jiang 2005). We measure an analyst's forecasting ability by averaging his forecast accuracy in the prior four fiscal periods (*Accuracy*). In addition to analyst characteristics, research has shown that the analysts employed by larger brokerage firms are able to generate superior research presumably because larger brokerage firms have more resources (Clement 1999; Jacob, Lys and Neale 1999). We use the number of employees in the brokerage firm (*Broker Size*) as a measure of brokerage firm size.

We use stock recommendations to capture the favorability of analyst opinions about the firm (Womack 1996). *Recommendation* is a numerical ranking of an analyst's stock recommendation ranging from 1 to 5 where 1 equates to a strong sell and 5 equates to a strong buy, which means that the variable is increasing in favorability of analyst opinion. We also consider the optimism in earnings forecasts because prior research suggests that analyst earnings forecasts and recommendations are linked and correlated but the information in one is unlikely to subsume the other (Brav and Lehavy 2003, Bradshaw 2004). Following prior research which shows that analyst forecast optimism is more pronounced at the beginning of the period (e.g. Richardson, Teoh and Wysocki 2004; Cotter, Tuna and Wysocki 2006; Feng and McVay 2010; Bradshaw, Lee and Peterson 2016), we measure an analyst's forecast optimism by averaging the forecast bias over the prior four fiscal periods (*Initial Optimism*).

[9] We note that it is possible that managers do not necessarily value analysts who are industry specialists because analysts do not appear to have an advantage over managers in terms of using industry level knowledge and information to forecast earnings (Hutton, Lee and Shu 2012).

To capture meet or beat incentives, we construct a score that measures how consistently a firm has met or exceeded an analyst's earnings forecasts (*Beatable Forecasts*). Specifically, for each fiscal period, we assign a point if the firm's actual earnings is greater than or equal to the analyst's forecast and zero otherwise. We then sum the points from each period over the prior four fiscal periods resulting in a score that ranges from 0 to 4. A higher score means that the firm has been more consistent in meeting or beating the analyst's forecasts. We control for the number of firms an analyst is following (*NFirm*) because covering more firms may make it more likely that any one particular firm will include the analyst.

4.2.2. Descriptive statistics and results

Table 4 Panel A provides descriptive statistics for some analyst characteristics. All variable definitions are in Appendix B. The average analyst has approximately 13 years of analyst experience and has been covering a particular firm for about four years. In our sample, about 76 percent of analysts specialize. Only 3 percent of analysts are All-Stars. The average initial forecast is ex post optimistic. For more than half of firm-quarters, firms meet or beat analysts' forecasts. About 52% of recommendations are buy or strong buy, 42% are neutral and only 6% of the recommendations are sell or strong sell, consistent with stock recommendation distributions documented in prior research (e.g. Brav and Lehavy 2003). Table 4 Panel B presents univariate correlations for the variables included in Panel A. We note that the correlations between *AListed* and our variables of interest are generally modest but are all statistically significant at the 1% level.

Table 5 presents univariate tests on the differences in characteristics of analysts included in versus excluded from IR websites. Listed analysts have more experience both in the profession (13 years versus 11 years) and following the firm (5 years versus 3 years), and work

at larger brokerages. A slightly greater proportion of listed analysts specialize in an industry (76% versus 72%) and are All-Stars (3% versus 2%). Interestingly, listed analysts produce less accurate forecasts than unlisted analysts; listed analysts also issue more optimistic forecasts and more favorable recommendations than unlisted analysts. Additionally, listed analysts' forecasts are more consistently met or beaten by firms. Thus, the univariate results provide mixed evidence on whether higher ability analysts being more likely to be included on IR websites.

In Table 6, we report the results from estimating equation (2), which examines characteristics of listed analysts. Although predictions for some explanatory variables are directional, we calculate coefficient statistical significance for all variables using two-tailed tests with clustered standard errors based on firm–analyst pairing.[10] The coefficient on *Firm Experience* is positive (p-value < 0.001), indicating analysts with long ties to the firm are more likely to be listed. A one standard deviation increase in *Firm Experience* increases an analyst's odds of being included on the listing by about 43%.[11] Consistent with the univariate results, other characteristics measuring analyst ability and reputation are not significant. For example, the *AllStar* (coefficient = -0.1310, p-value = 0.411) and *Broker Size* (coefficient = 0.0096, p-value = 0.665) are not associated with the likelihood of being listed on or excluded from IR websites. Forecast accuracy also is insignificant (coefficient on *Accuracy* = 0.0085, p-value = 0.750). Contrary to prediction, analysts who specialize in the firm's industry are less likely to be included (coefficient on *Industry Specialization* = -0.1603, p-value = 0.003).[12]

[10] We cluster on firm-analyst pairings because we predict the decision to list an analyst is specific to that analyst, and to the extent the model has correlated standard errors across our data extraction runs, clustering alleviates concerns about deflated standard errors. Results are similar if we use two-way clustering on analyst and firm.
[11] Marginal effects are evaluated at the mean values of the covariates if they are continuous variables and zero if they are indicator variables.
[12] The coefficient is positive but still not significant if we exclude the number of firms covered by the analysts (*Nfirm*) from the regression.

Overall, the results are not consistent with firms being more likely to include reputable and high ability analysts in the listings. The only support is that for an analyst's experience following the firm. It is possible that our proxies are noisy measure of analyst reputation and ability, but this is unlikely given extensive research on these constructs. An alternative is that the decision to include an analyst on an IR website, or more accurately, the decision to exclude an analyst from an IR website is associated with other characteristics, such as the favorability of the analysts' research for the firm. For example, in column (1), the coefficient on *Initial Optimism* is positive (p-value = 0.006), indicating that analysts who issued more optimistic initial forecasts are more likely to be included in the listing. A one standard deviation increase in *Initial Optimism* increases the analyst's odds of being included on the listing by approximately 9%. The coefficient on *Recommendation* is also positive (p-value = 0.028), suggesting analysts with more (less) favorable recommendations are more (less) likely to be listed. An increase in recommendation from one category to the next increases the odds of being included on the listing by approximately 6%. In column (2), we split out individual recommendations into discrete categories - Strong Sell, Sell, Buy, and Strong Buy. Firms are most likely to include analysts when they have *Strong Buy* recommendations (p-value = 0.022). In terms of economic significance, firms are 14% more likely to include analysts who have strong buy recommendations than neutral analysts. The coefficient on *Strong Sell* is negative but not significant at conventional levels using a two-tailed test (p-value = 0.222); similarly, coefficients on *Buy* and *Sell* are insignificant. Overall, these results suggest that analysts are included or excluded based on the favorability of their forecasts and recommendations. Further, the coefficient on *Beatable Forecasts* is positive (p-value < 0.001). A one point increase in the score

measuring how consistently firms are able to meet or beat the analyst's forecasts increases the odds of being included by about 31%.

In summary, the results in Table 6 suggest analyst ability and reputation have only a limited association with an analyst being listed on IR websites. What appears to matter are familiarity between the firm and analyst, how favorable the analyst's opinions about the firm are and whether firms were able to consistently meet the analyst's expectations in the prior periods. This suggests strategic selection of analysts by firms, rather than an unbiased effort to enhance the overall information environment.[13]

4.2.3. Additional tests on firm selection of analysts

We conduct two additional sets of tests to better understand firm selection of analysts. The first set of tests is restricted to firms with analyst listings on IR websites and examines analysts who were dropped and added to the listings while the second set of test focuses on firms *without* analyst listings. We focus on analysts who were included in one period but excluded in the next, and compare them to analysts who were consistently included on IR lists over the same time period. We estimate the following logistic regression:

$$\begin{aligned} P(Drop) = f(&\beta_0 + \beta_1 General\ Experience + \beta_2 Firm\ Experience \\ &+ \beta_3 Industry\ Specialization + \beta_4 Broker\ Size + \beta_5 AllStar \\ &+ \beta_6 Accuracy + \beta_7 Initial\ Optimism + \beta_8 Beatable\ Forecasts \\ &+ \beta_9 Recommendation\ or\ \Delta Recommendation + \beta_{10} NFirm + \varepsilon_i) \end{aligned} \quad (3)$$

Drop is an indicator variable equal to one for an analyst who was included on a firm's listing in the prior period but excluded this period and zero for an analyst who was included on a firm's

[13] As discussed in the introduction, we cannot rule out the possibility that some analysts operate without interacting with managers and may be excluded based on a lack of knowledge by the firms.

list in both the prior and current periods. First, we use the level of recommendation (*Recommendation*) as defined earlier in equation (2); second, we use the change in an analyst's recommendation (*ΔRecommendation*). To account for the possibility that firms may have some delay in updating their lists for analysts who change their recommendations, *ΔRecommendation* is the change between the previous period and the one preceding that. A positive (negative) *ΔRecommendation* reflects an upgrade (downgrade).

Table 7 Panel A presents the results. In both columns (1) and (2), the results indicate that firms are more likely to drop analysts who issued prior forecasts which they could not consistently meet or beat (coefficient on *Beatable Forecasts* = -0.0925 in column (1), $p = 0.008$). While analysts' earnings forecast optimism does not seem to affect their likelihood of being dropped, their recommendations do. Column (1) indicates a negative coefficient on *Recommendation* ($p = 0.006$) suggesting analysts are more likely to be dropped if the level of their recommendations is more negative. In Column (2), the coefficient on *ΔRecommendation* is also negative ($p = 0.001$), indicating that analysts who downgrade the firm are more likely to be dropped from IR listings.

We also examine a subsample of analysts who were originally excluded on the listings but were subsequently included, and compare them to a group of analysts who were excluded on the listings over the same time period. We estimate the following logistic regression:

$$\begin{aligned} P(Add) = f(&\beta_0 + \beta_1 General\ Experience + \beta_2 Firm\ Experience \\ &+ \beta_3 Industry\ Specialization + \beta_4 Broker\ Size + \beta_5 AllStar \\ &+ \beta_6 Accuracy + \beta_7 Initial\ Optimism + \beta_8 Beatable\ Forecasts \\ &+ \beta_9 Recommendation\ or\ \Delta Recommendation + \beta_{10} NFirm + \varepsilon_i) \end{aligned} \quad (4)$$

where *Add* is an indicator variable equal to one for an analyst who was excluded from a firm's list in the prior period but included this period and zero for an analyst who was excluded on a firm's list in both the prior and current periods.

In Table 7 Panel B, the results in both columns (1) and (2) show that firms are more likely to add analysts on their listings after the analysts have covered the firm for a longer period of time (coefficient on *Firm Experience* in column (1) = 0.0644, $p < 0.001$) while an analyst's experience in the profession does not affect the likelihood that he is included. In addition, analysts with prior forecasts that were consistently met by the firms are more likely to be added (coefficient on *Beatable Forecasts* in column (1) = 0.0579, $p = 0.011$). In this analysis examining analysts who are added to the listings, the results on the favorability of analyst opinions are considerably weaker than those in the earlier analysis examining analysts who were dropped. While firms are more likely to add analysts with more positive recommendations (*Recommendation* coefficient in column (1) = 0.0583, $p = 0.071$), the analyst's change in recommendation does not seem to influence the firm's decision to add the analyst to its listing (*ΔRecommendation* in column (2) = -0.0669, $p = 0.525$). Compared to the finding in Panel A that analysts who issue recommendation downgrades are more likely to be dropped from the listing, there appears to be some asymmetry in the decision to adding versus dropping analysts.

In the second analysis, we examine a subsample of firms without analyst listings on their corporate websites. We randomly select 100 firms from different industries such that the industry representation in this subsample is similar to that in the Compustat population. For this subsample, we sent each firm an email requesting a list of analysts covering the firm. As in the analysis in Table 6, we compared the research by analysts who were included on the list in the firm's email response to research by analysts who were excluded.

We received a total of 39 firm responses, but only 34 provided a listing of analysts. From the 34 firms that provided listings, 181 out of 229 analysts covering these firms were listed in the email responses.[14] Comparing the 181 listed analysts to the 48 unlisted analysts, we find that listed analysts issued more favorable recommendations than non-listed analysts (p-value using one-tailed test = 0.069). There is also weak evidence that listed analysts issue more optimistic forecasts than non-listed analysts (p-value using one-tailed test = 0.116). Overall, the results from this subsample analysis echo the large sample results that firms are more likely to highlight analysts who have more favorable opinions about the firm, which is consistent with the inference from our main analysis. These results also suggest that the strategic exclusion of less favorable analysts also exists among firms that do *not* publish list analyst on IR websites.

4.3. Investor awareness of listed analysts' research

To examine whether corporate website listings increase investors' awareness of the listed analysts' research, we compare investor reactions to forecasts issued by listed analysts with those issued by non-listed analysts. Following prior research (e.g. Stickel 1992; Park and Stice 2000; Gleason and Lee 2003; Bonner, Hugon and Walther 2007), we examine the market reactions to analyst forecast revisions. We estimate the following model where subscript *i* is the firm and *j* is the analyst:

$$CAR_{ij} = \beta_0 + \beta_1 FRev_{ij} + \beta_2 AListed_{ij} + \beta_3 FRev_{ij} \times AListed_{ij} + \varepsilon_{ij} \quad (5)$$

CAR is the cumulative abnormal return in the three-day trading window around the analyst's earnings forecast revision for the firm. *FRev* is the forecast revision scaled by the firm's stock

[14] Four of the five firms that responded but did not provide a listing wrote that they do not provide a list of analysts for external users. The last firm responded that they had just delisted and no longer had any analysts following the firm. The delisting occurred subsequent to our initial download of IR websites.

price two trading days before the revision. For each time period when we download the firm's analyst listing, we obtain each analyst's revised forecast immediately after the download and define the revision relative to the analyst's own prior forecast for the same fiscal period. We expect a positive coefficient on *FRev* since an increase in the estimate should lead to a positive return and a decrease in the estimate should generate a negative return. *AListed* is an indicator equal to one if the analyst is included in the listing of analysts on the corporate website and zero otherwise. We interact *AListed* with *FRev* to test for differential reactions to revisions by listed analysts. We include analyst-firm fixed effects to control for time-invariant factors such as an analyst's ability to forecast earnings for a particular firm that could affect investors' reactions. Because of the relatively short time series of our sample (i.e. 16-month period), potential time-varying firm and analyst characteristics such as firm size and analyst experience are unlikely to vary substantially. Our fixed effects structure allows us to compare how the market reaction to an analyst's forecast revision for a firm varies with whether the analyst is listed on the firm's IR website. To control for macroeconomic factors correlated with investor reaction to analyst forecast revisions and the selection of analysts included in the listings, we also include time fixed effects for the month of the revision.

Table 8 reports the results. In Panel A, our variable of interest is the interaction term *FRev* × *AListed* and the estimated coefficient is negative in both columns (1) and (2), suggesting that investors react more strongly to forecast revisions by analysts who are not on the listings.[15] Our earlier findings suggest that analysts who are included in the listings have more favorable opinions about the firm. If investors perceive the listed analysts as a source of information for only good news and rely instead on non-listed analysts for bad news, their reaction to forecast

[15] Our inferences remain unchanged when we use two-way clustered standard errors based on firm and analyst.

revisions by non-listed analysts would be stronger, especially for bad news. In Panel B, we split *FRev* into *Pos_FRev* and *Neg_FRev* and interact *AListed* with *Pos_FRev* and *Neg_FRev*. Results indicate that the stronger market reaction to forecast revisions by non-listed analysts is concentrated in downward forecast revisions (i.e. bad news). Building on the results of our second set of tests, these results suggest that while firms may attempt to conceal analysts with negative opinions, this does not deter investors from responding strongly to research produced by these analysts.

5. Conclusion

We identify analyst listings on IR websites as a channel through which firms increase investors' awareness of analysts following their stocks. We find some evidence that firms are more likely to provide a listing of analysts on their corporate websites when there is higher investor demand for information. Also, firms with more resources and a stronger commitment to a high quality information environment are more likely to provide analyst listings.

However, we demonstrate that analyst listings are incomplete and biased. Firms are more likely to include analysts who have more experience, but there is no relation with other proxies for analyst ability and reputation such as All-Star status, brokerage size and forecasting accuracy. Taken together, the results suggest that a firm's familiarity with the analyst, and not necessarily the analyst's ability or reputation, is a determinant of being listed on an IR website. More (less) favorable analysts are more (less) likely to be included in IR listings. The overall takeaway is that IR websites indicate strategic disclosure by firms.

Finally, we find that, while investors do not react differently to *positive* forecast revisions by analysts who are not, they react more strongly to *negative* earnings forecast revisions by analysts not listed. This suggests some investors pay more attention to negative opinions by

analysts not listed perhaps because of awareness that the list of analysts by IR is biased. Overall, our findings are the first to provide insights on the choices a firm makes in providing analyst listings on IR websites, and the role these listings have on investors' market responses to analyst research. The findings should be of interest to IR professionals as well as investors. The findings should also be of interest to analysts given the indirect effect these listings might have on their visibility.

References

Anantharaman, D. and Zhang, Y., 2011. Cover me: Managers' responses to changes in analyst coverage in the post-Regulation FD period. *The Accounting Review*, *86*(6), pp.1851-1885.

Bartov, E., Givoly, D. and Hayn, C., 2002. The rewards to meeting or beating earnings expectations. *Journal of accounting and economics*, *33*(2), pp.173-204.

Bradley, D., Clarke, J., Lee, S. and Ornthanalai, C., 2014. Are analysts' recommendations informative? Intraday evidence on the impact of time stamp delays. *The Journal of Finance*, *69*(2), pp.645-673.

Bradshaw, M.T., 2004. How do analysts use their earnings forecasts in generating stock recommendations? *The Accounting Review*, *79*(1), pp.25-50.

Bradshaw, M.T., 2013. Analysts' forecasts: What do we know after decades of work? Working paper. Boston College.

Bradshaw, M.T., Lee, L.F. and Peterson, K., 2016. The interactive role of difficulty and incentives in explaining the annual earnings forecast walkdown. *The Accounting Review*, 91(4), pp. 995-1021.

Branson, B.C., Guffey, D.M. and Pagach, D.P., 1998. Information conveyed in announcements of analyst coverage. *Contemporary Accounting Research*, *15*(2), pp.119-143.

Brennan, M.J. and Hughes, P.J., 1991. Stock prices and the supply of information. *The Journal of Finance*, *46*(5), pp.1665-1691

Bushee, B.J. and Miller, G.S., 2012. Investor relations, firm visibility, and investor following. *The Accounting Review*, *87*(3), pp.867-897.

Chen, X., Cheng, Q. and Lo, K., 2010. On the relationship between analyst reports and corporate disclosures: Exploring the roles of information discovery and interpretation. *Journal of Accounting and Economics*, *49*(3), pp.206-226.

Chen, Q., Francis, J. and Jiang, W., 2005. Investor learning about analyst predictive ability. *Journal of Accounting and Economics*, *39*(1), pp.3-24.

Chen, S. and Matsumoto, D.A., 2006. Favorable versus unfavorable recommendations: The impact on analyst access to management-provided information. *Journal of Accounting Research*, *44*(4), pp.657-689.

Cotter, J., Tuna, I. and Wysocki, P.D., 2006. Expectations management and beatable targets: How do analysts react to explicit earnings guidance? *Contemporary Accounting Research*, *23*(3), pp.593-624.

Da, Z., Engelberg, J. and Gao, P., 2011. In search of attention. *The Journal of Finance*, *66*(5), pp.1461-1499.

Drake, M.S., Roulstone, D.T. and Thornock, J.R., 2012. Investor information demand: Evidence from Google searches around earnings announcements. *Journal of Accounting Research*, *50*(4), pp.1001-1040.

Dunbar, C.G., 2000. Factors affecting investment bank initial public offering market share. *Journal of Financial Economics*, *55*(1), pp.3-41.

Feng, M. and McVay, S., 2010. Analysts' incentives to overweight management guidance when revising their short-term earnings forecasts. *The Accounting Review*, *85*(5), pp.1617-1646.

Filzen, J.J. and Peterson, K., 2015. Financial statement complexity and meeting analysts' expectations. *Contemporary Accounting Research*, *32*(4), pp.1560-1594.

Gilson, S.C., Healy, P.M., Noe, C.F. and Palepu, K.G., 2001. Analyst specialization and conglomerate stock breakups. *Journal of Accounting Research*, *39*(3), pp.565-582.

Givoly, D. and Lakonishok, J., 1979. The information content of financial analysts' forecasts of earnings: Some evidence on semi-strong inefficiency.*Journal of Accounting and Economics*, *1*(3), pp.165-185.

Gleason, C.A. and Lee, C.M., 2003. Analyst forecast revisions and market price discovery. *The Accounting Review*, *78*(1), pp.193-225.

Gordon, S. 2002. Deutsche Bank to Slash Brokerage Relationships. *Institutional Investor*, obtained 4 August, 2016: http://www.institutionalinvestor.com/article/1037872/deutsche-bank-to-slash-brokerage-relationships.html#.V6PgTEaANBc.

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

Hong, H. and Kubik, J.D., 2003. Analyzing the analysts: Career concerns and biased earnings forecasts. *The Journal of Finance*, *58*(1), pp.313-351.

Hutton, A.P., Lee, L.F., and Shu, S. 2012. Do managers always know better? Relative accuracy of management and analyst forecasts. Journal of Accounting Research 50(5): 1217-1244.

Jacob, J., Lys, T.Z. and Neale, M.A., 1999. Expertise in forecasting performance of security analysts. *Journal of Accounting and Economics*, *28*(1), pp.51-82.

Kasznik, R. and McNichols, M.F., 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting research*, *40*(3), pp.727-759.

Kirk, M.P., Reppenhagen, D.A. and Tucker, J.W., 2014. Meeting individual analyst expectations. *The Accounting Review*, *89*(6), pp.2203-2231.

Kirk, M.P. and Vincent, J.D., 2014. Professional investor relations within the firm. *The Accounting Review*, *89*(4), pp.1421-1452.

Krigman, L., Shaw, W.H. and Womack, K.L., 2001. Why do firms switch underwriters?. *Journal of Financial Economics*, *60*(2), pp.245-284.

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

Lee, L.F. and Lo, A.K., 2016. Do opinions on financial misstatement firms affect analysts' reputation with investors? Evidence from reputational spillovers. *Journal of Accounting Research*, 54(4), pp.1111-1148.

Leone, A.J. and Wu, J.S., 2007. What does it take to become a superstar? Evidence from institutional investor rankings of financial analysts. *Simon School of Business Working Paper No. FR*, pp.02-12.

Li, E.X., Ramesh, K., Shen, M. and Wu, J.S., 2015. Do Analyst Stock Recommendations Piggyback on Recent Corporate News? An Analysis of Regular-Hour and After-Hours Revisions. *Journal of Accounting Research*, *53*(4), pp.821-861.

Lin, H.W. and McNichols, M.F., 1998. Underwriting relationships, analysts' earnings forecasts and investment recommendations. *Journal of Accounting and Economics*, *25*(1), pp.101-127.

Mayew, W.J., 2008. Evidence of management discrimination among analysts during earnings conference calls. *Journal of Accounting Research*, *46*(3), pp.627-659.

Michaely, R. and Womack, K.L., 1999. Conflict of interest and the credibility of underwriter analyst recommendations. *Review of financial studies*, *12*(4), pp.653-686.

O'Brien, P.C. and Bhushan, R., 1990. Analyst following and institutional ownership. *Journal of Accounting Research*, pp.55-76.

Park, C.W. and Stice, E.K., 2000. Analyst forecasting ability and the stock price reaction to forecast revisions. *Review of Accounting Studies*, *5*(3), pp.259-272.

Stickel, S.E., 1992. Reputation and performance among security analysts. *The Journal of Finance*, *47*(5), pp.1811-1836.

APPENDIX A
Example of Listing of Analyst Coverage
(Zillow Corporation)

Analyst Coverage

Firm	Analyst
Barclays	Chris Merwin chris.merwin@barclays.com Phone: 212-526-7778
Benchmark Company	Daniel Kurnos dkurnos@benchmarkcompany.com Phone: 561-961-5113
Canaccord Genuity	Michael Graham mgraham@canaccordgenuity.com Phone: 212-849-3924
Citi	Mark May mark.may@citi.com Phone: 212-816-5564
Cowen	Thomas Champion thomas.champion@cowen.com Phone: 646-562-1365
Deutsche Bank	Lloyd Walmsley lloyd.walmsley@db.com Phone: 212-250-7063
Goldman Sachs & Co.	Heath Terry heath.terry@gs.com Phone: 212-357-1849
Guggenheim Partners	Jake Fuller jake.fuller@guggenheimpartners.com Phone: 212-518-9013
JMP Securities	Ronald Josey rjosey@jmpsecurities.com Phone: 212-906-3528
Macquarie Capital	Tom White tom.white@macquarie.com Phone: 212-231-0643
Mizuho Securities USA, Inc.	Neil Doshi neil.doshi@us.mizuho-sc.com Phone: 415-268-5519
Morgan Stanley & Co. LLC	Brian Nowak brian.nowak@morganstanley.com Phone: 212-761-3365
Needham & Company, LLC	Kerry Rice krice@needhamco.com Phone: 415-262-4890
Oppenheimer & Co.	Jason Helfstein Jason.Helfstein@opco.com Phone: 212-667-6433
Raymond James	Aaron Kessler aaron.kessler@RaymondJames.com Phone: 415-616-8959
RBC Capital Markets	Mark Mahaney mark.mahaney@rbccm.com Phone: 415-633-8608
Stephens, Inc.	John Campbell john.campbell@stephens.com Phone: 501-377-6362
SunTrust Robinson Humphrey	Robert Peck robert.peck@suntrust.com Phone: 212-319-3917
Susquehanna Financial Group	Shyam Patil shyam.patil@sig.com Phone: 212-510-4417

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APPENDIX B
Variable definitions

Listing	=	1 if the firm has a listing of analysts covering its stock on its corporate website and 0 otherwise.
Size	=	log (MVE) where MVE is the firm's market value of equity measured at year t.
BM	=	ratio of the firm's book value to market value of assets at the end of year t.
Analyst Following	=	log of number of analysts following the firm based on EPS forecasts for the year
Guidance	=	1 if the firm provides management forecast and 0 otherwise.
Institutional Ownership	=	Percentage of shares outstanding held by institutional investors at the end of the most recent quarter.
AListed	=	1 if the analyst covering a firm is listed by the firm on its corporate website and 0 otherwise.
Drop	=	1 for an analyst who was included on a firm's list in the prior period but excluded this period and 0 for an analyst who was included on a firm's list in both the prior and current periods.
Add	=	1 for an analyst who was excluded from a firm's list in the prior period but included this period and 0 for an analyst who was excluded on a firm's list in both the prior and current periods.
General Experience	=	length of time (in calendar days) which the analyst has been in this job.
Firm Experience	=	length of time (in calendar days) which the analyst has been following the firm.
Industry Specialization	=	1 if the analyst specializes in the industry which the firm is in and 0 otherwise. We define an industry as the analyst's specialization if he covers more than five firms in that industry (Gilson et al. 2001). Industry classification is based on the Global Industry Classification Standard (GICS) system (i.e., GIND) (Bhojraj et al. 2003).
Broker Size	=	log of the number of analysts employed by the analyst's brokerage
NFirm	=	log of the number of firms in the analyst's portfolio
AllStar	=	1 if the analyst is selected into the All-American team by *Institutional Investor*
Intan	=	Intangible assets scaled by total assets
R&D and Advertising	=	The sum of research and development and advertising expense, scaled by total assets
Initial Optimism	=	bias calculated as I/B/E/S analyst's forecast minus actual earnings, scaled by the absolute value of actual earnings. We measure the average bias over the prior four quarters and use the analyst's initial forecast for each quarter.
Accuracy	=	absolute value of the difference between I/B/E/S actual earnings and the analyst's forecast, scaled by the absolute value of the actual earnings. We measure the average accuracy over the prior four quarters and use the analyst's most recent forecast prior to the earnings announcement for each quarter.
Beatable Forecasts	=	a score that measures how consistently a firm has met or beet an analyst's earnings forecasts. For each fiscal period, we assign a point if I/B/E/S actual quarterly earnings is greater than or equal to the analyst's forecast and zero otherwise. We then sum the points over the prior four fiscal quarters resulting in a score that ranges from 0 to 4. A higher score means that the firm has been more consistent in meeting or beating the analyst's forecasts.

Recommendation	=	numerical ranking of analyst stock recommendation where a strong-buy recommendation has a numerical value of 5, buy has a value of 4, neutral has a value of 3, sell has a value of 2, and strong sell has a value of 1.
ΔRecommendation	=	the change in Recommendation in the prior period. A higher value indicates an upward revision in recommendation.
Strong Sell	=	1 if the analyst's outstanding recommendation is a strong sell and 0 otherwise.
Sell	=	1 if the analyst's outstanding recommendation is a sell and 0 otherwise.
Strong Buy	=	1 if the analyst's outstanding recommendation is a strong buy and 0 otherwise.
Buy	=	1 if the analyst's outstanding recommendation is a buy and 0 otherwise.
CAR	=	cumulative abnormal return in the three-trading-day window around the annual earnings forecast revision. Abnormal return is calculated as the firm's return less the CRSP value-weighted market return.
FRev	=	annual earnings forecast revision scaled by the firm's stock price two trading days before the revision. A revision is defined relative to the analyst's own prior forecast for the fiscal year.

TABLE 1
Descriptive statistics – Firm level analysis

Panel A: Firm characteristics

Variables	Mean	Std Dev	25%	Median	75%
Size	6.760	1.986	5.349	6.778	8.113
BM	0.545	0.483	0.235	0.456	0.761
Earn	-0.046	0.324	-0.016	0.020	0.066
Intan	0.163	0.226	0.002	0.048	0.244
R&D and Advertising	0.080	0.191	0	0.003	0.067
Analyst Following	6.736	6.996	1	4	10
Guidance	0.260	0.439	0	0	1
Institutional Ownership	0.505	0.353	0.155	0.550	0.819

N = 3,067

Panel B: Correlation between having a listing of analysts on corporate websites and firm characteristics

Variables	*Listing*	*Size*	*BM*	*Earn*	*Intan*	*R&D and Advertising*	*Analyst Following*	*Guidance*	*Institutional Ownership*
Listing	1	0.271	-0.230	-0.040	0.146	0.146	0.299	0.235	0.238
Size	0.278	1	-0.289	0.267	0.212	-0.156	0.719	0.305	0.442
BM	-0.235	-0.256	1	0.132	-0.216	-0.243	-0.232	-0.145	-0.192
Earn	0.034	0.409	-0.096	1	0.053	-0.756	0.153	0.154	0.184
Intan	0.174	0.284	-0.229	0.192	1	-0.022	0.192	0.268	0.171
R&D and Advertising	0.192	-0.114	-0.384	-0.181	0.197	1	-0.057	-0.050	-0.087
Analyst Following	0.407	0.750	-0.275	0.258	0.283	0.060	1	0.364	0.374
Guidance	0.235	0.315	-0.146	0.232	0.325	0.134	0.407	1	0.310
Institutional Ownership	0.228	0.444	-0.133	0.213	0.214	-0.013	0.451	0.303	1

Note: The sample consists of firms with and without analyst listings on their corporate websites. All continuous variables are winsorized at the extreme 1%. The variables are defined in Appendix A. In Panel B, Pearson (Spearman) correlations are in the upper (lower) diagonal.

TABLE 2
Comparing firm characteristics splitting on whether the firm has a listing of analysts on its corporate website

	(1) Firms with a listing of analysts (*Listing* = 1) N = 1,421		(2) Firms without a listing of analysts (*Listing* = 0) N = 1,646		Differences in Means
Variables	Mean	Median	Mean	Median	(1) - (2)
Intan	0.198	0.111	0.132	0.024	0.066***
R&D and Advertising	0.110	0.017	0.054	0.001	0.056***
BM	0.425	0.357	0.648	0.564	-0.223***
Institutional Ownership	0.595	0.691	0.427	0.407	0.168***
Earn	-0.060	0.028	-0.034	0.014	-0.026**
Size	7.338	7.305	6.260	6.147	1.078***
Guidance	0.371	0.000	0.164	0.000	0.207***
Analyst Following	8.988	7.000	4.792	2.000	4.196***

Notes: Column (1) presents the descriptive statistics for characteristics of firms that provide a list of analysts covering their stock on their corporate websites and Column (2) presents the descriptive statistics for firms that do not. The final column tests the differences in means between the two groups. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. ***and ** represent significance at the 1% and 5% levels using two-tailed tests.

TABLE 3
What determines whether a firm has a listing of analysts on its corporate website?

Variable	Expected Sign	Coefficient	Standard Error	p-value
Intercept		-1.497***	0.207	<0.001
Intan	+	0.353*	0.184	0.055
R&D and Advertising	+	2.178***	0.350	<0.001
BM	-	-0.550***	0.106	<0.001
Institutional Ownership	+/-	0.674***	0.126	<0.001
Earn	+/-	0.218	0.199	0.272
Size	+	0.091***	0.032	0.004
Guidance	+/-	0.533***	0.099	<0.001
Analyst Following	+	0.046***	0.009	<0.001
N	3,067			
Pseudo R^2	0.163			

Notes: The table presents the results of a logistic regression modeling the outcome that a firm provides a listing of analysts covering its stock on its corporate website. The sample consists of firms with and without analyst listings on their corporate websites. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. ***and * represent significance at the 1% and 10% levels using two-tailed tests.

TABLE 4
Descriptive statistics – Analyst-Firm level analysis for sample of firms that provide listings of analysts on their websites

Panel A: Analyst characteristics

	Mean	Std Dev	25%	Median	75%
Alisted	0.884	0.320	1	1	1
General Experience	12.885	9.986	4.279	10.321	21.077
Firm Experience	4.981	4.692	1.641	3.471	6.975
Industry Specialization	0.757	0.429	1	1	1
Broker Size	3.743	1.075	2.944	3.871	4.615
AllStar	0.031	0.173	0.000	0.000	0.000
Accuracy	0.466	0.851	0.068	0.157	0.455
Initial Optimism	0.633	1.995	-0.060	0.065	0.469
Beatable Forecasts	2.481	1.229	2	3	4
Recommendation	3.661	0.898	3	4	4
Strong Buy	0.211	0.408	0	0	0
Buy	0.309	0.462	0	0	1
Sell	0.050	0.218	0	0	0
Strong Sell	0.010	0.099	0	0	0
NFirm	2.881	0.505	2.639	2.944	3.178
N = 193,447					

Notes: The sample consists of analyst-firm-run observations during our sample period for all analysts following firms that provide a listing of analysts covering its stock on its corporate website. The variables are defined in Appendix B.

TABLE 4 (CONTINUED)

Panel B: Correlation between whether an analyst is listed by a firm and analyst characteristics

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Alisted	(1)	1	0.079	0.146	0.028	0.013	0.017	-0.019	0.092	0.017	0.122	0.006
General Experience	(2)	0.065	1	0.442	0.065	-0.019	0.114	-0.067	0.267	-0.018	0.082	-0.021
Firm Experience	(3)	0.109	0.448	1	0.108	0.034	0.093	-0.114	0.156	0.057	0.144	-0.131
Industry Specialization	(4)	0.028	0.053	0.096	1	0.082	0.037	-0.011	0.258	0.046	0.048	-0.031
Broker Size	(5)	0.016	-0.028	0.019	0.093	1	0.160	-0.078	0.200	-0.019	0.035	-0.138
AllStar	(6)	0.017	0.112	0.100	0.037	0.148	1	-0.023	0.156	-0.001	0.027	-0.034
Accuracy	(7)	-0.010	-0.042	-0.058	0.004	-0.026	-0.013	1	0.017	0.307	-0.239	-0.016
NFirm	(8)	0.108	0.248	0.122	0.333	0.150	0.166	0.004	1	0.051	0.072	-0.047
Initial Optimism	(9)	0.013	-0.026	0.010	0.072	-0.025	0.001	0.482	0.055	1	-0.327	-0.053
Beatable Forecasts	(10)	0.124	0.069	0.115	0.049	0.042	0.026	-0.177	0.085	-0.166	1	0.044
Recommendation	(11)	0.007	-0.021	-0.080	-0.031	-0.120	-0.034	-0.002	-0.040	-0.014	0.043	1

Notes: The sample consists of analyst-firm-run observations during our sample period for all analysts following firms that provide a listing of analysts covering its stock on its corporate website. The variables are defined in Appendix B. All continuous variables are winsorized at the extreme 1%. Pearson (Spearman) correlations are in the upper (lower) diagonal.

TABLE 5
Comparing firm characteristics splitting on whether the firm has a listing of analysts on its corporate website

	(1) Listed Analysts (*AListing* = 1) N = 171,062		(2) Unlisted Analyst (*AListing* = 0) N = 22,385		Difference in Means	
Variables	Mean	Median	Mean	Median	(1) - (2)	
General Experience	13.120	10.625	11.089	7.630	2.031	***
Firm Experience	5.214	3.699	3.298	1.838	1.915	***
Industry Specialization	0.761	1.000	0.724	1.000	0.037	***
Broker Size	3.749	3.871	3.697	3.829	0.052	***
AllStar	0.032	0.000	0.023	0.000	0.009	***
Accuracy	0.463	0.156	0.490	0.169	-0.027	***
Initial Optimism	0.642	0.066	0.564	0.054	0.078	***
Beatable Forecasts	2.537	3.000	2.060	2.000	0.477	***
Recommendation	3.664	4.000	3.645	4.000	0.019	***
NFirm	2.900	2.944	2.729	2.833	0.171	***

Notes: Column (1) presents the descriptive statistics for characteristics analysts that are listed by the company on their corporate websites and Column (2) presents the descriptive statistics for analysts that are not listed. The final column tests the differences in means between the two groups. The variables are defined in Appendix B. All continuous variables are winsorized at the extreme 1%. *** represents significance at the 1% level using two-tailed tests.

TABLE 6
What determines whether an analyst is listed?

	Expected Sign	(1) Coefficient	p-value	(2) Coefficient	p-value
Analyst Ability					
General Experience	+	-0.0016	[0.542]	-0.0016	[0.539]
Firm Experience	+	0.0827***	[0.000]	0.0827***	[0.000]
Industry Specialization	+	-0.1603***	[0.003]	-0.1598***	[0.003]
Broker Size	+	0.0096	[0.665]	0.0054	[0.809]
AllStar	+	-0.1310	[0.411]	-0.1314	[0.410]
Accuracy	+	0.0085	[0.750]	0.0084	[0.752]
Firm Incentives					
Initial Optimism	+	0.0426***	[0.006]	0.0427***	[0.005]
Beatable Forecasts		0.2698***	[0.000]	0.2701***	[0.000]
Recommendation	+	0.0533**	[0.028]		
Strong Buy	+			0.1335**	[0.022]
Buy	+			0.0382	[0.443]
Sell	-			0.0776	[0.440]
Strong Sell	-			-0.2591	[0.222]
Controls					
Nfirm		0.5137***	[0.000]	0.5141***	[0.000]
Intercept		-0.4115**	[0.016]	-0.2437*	[0.085]
N		193,447		193,447	
Psuedo R-squared		0.047		0.047	
Chi-square		600.07		605.96	

Notes: The table reports the results of logistic regressions modeling a firm's decision to list an analyst on its corporate website. The sample consists of analyst-firm-run observations for all analysts following firms that provide a listing of analysts covering its stock on its corporate website. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. Standard errors are clustered based on firm. ***, **, and * represent significance at the 1%, 5%, and 10% levels using two-tailed tests.

TABLE 7
What determines whether an analyst is dropped or added to a listing?

Panel A: Tests comparing analysts dropped from the listing to analysts kept on the listing

		(1)		(2)	
	Expected Sign	Coefficient	p-value	Coefficient	p-value
Analyst Ability					
General Experience	-	-0.0136***	[0.009]	-0.0137***	[0.008]
Firm Experience	-	-0.0218*	[0.089]	-0.0197	[0.119]
Industry Specialization	-	0.2222**	[0.047]	0.2259**	[0.044]
Broker Size	-	-0.0558	[0.174]	-0.0428	[0.293]
AllStar	-	-0.0307	[0.915]	-0.0277	[0.923]
Accuracy	-	0.0382	[0.472]	0.0382	[0.471]
Firm Incentives					
Initial Optimism	-	-0.0217	[0.386]	-0.0213	[0.394]
Beatable Forecasts	-	-0.0925***	[0.008]	-0.0962***	[0.005]
Recommendation	-	-0.1221***	[0.006]		
ΔRecommendation	-			-0.4224***	[0.002]
Controls					
Nfirm		-0.3755***	[0.000]	-0.3739***	[0.000]
Intercept		-3.4901***	[0.000]	-3.9930***	[0.000]
N		142,693		142,693	
Psuedo R-squared		0.009		0.009	
Chi-square		63.3248		64.3606	

Notes: The table reports the results of logistic regressions modeling a firm's decision to drop or keep an analyst on its corporate website. The dependent variable is an indicator variable equal to one for an analyst who was included on a firm's list in the prior period but excluded this period and zero for an analyst who was included on a firm's list in both the prior and current periods. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. Standard errors are clustered based on firm. ***, **, and * represent significance at the 1%, 5%, and 10% levels using two-tailed tests.

TABLE 7 (CONTINUED)

Panel B: Tests comparing analysts added to the listing to analysts left off the listing

		(1)		(2)	
	Expected Sign	Coefficient	p-value	Coefficient	p-value
Analyst Ability					
General Experience	+	-0.0031	[0.345]	-0.0028	[0.392]
Firm Experience	+	0.0607***	[0.000]	0.0596***	[0.000]
Industry Specialization	+	-0.1437**	[0.043]	-0.1426**	[0.044]
Broker Size	+	-0.0006	[0.981]	-0.0058	[0.831]
AllStar	+	-0.2058	[0.309]	-0.2139	[0.292]
Accuracy	+	0.0392	[0.270]	0.0383	[0.284]
Firm Incentives					
Initial Optimism	+	-0.0363**	[0.029]	-0.0361**	[0.030]
Beatable Forecasts	+	0.0579**	[0.011]	0.0595***	[0.009]
Recommendation	+	0.0602*	[0.058]		
ΔRecommendation	+			-0.0899	[0.371]
Controls					
Nfirm		0.2224***	[0.000]	0.2199***	[0.000]
Intercept		-2.8666***	[0.000]	-2.6246***	[0.000]
N		19,580		19,580	
Psuedo R-squared		0.015		0.014	
Chi-square		99.7467		97.3868	

Notes: The table reports the results of logistic regressions modeling a firm's decision to add or keep off an analyst on its listing of analysts on the corporate website. The dependent variable is an indicator variable equal to one for an analyst who was excluded from a firm's list in the prior period but included this period and zero for an analyst who was excluded on a firm's list in both the prior and current periods. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. Standard errors are clustered based on firm. ***, **, and * represent significance at the 1%, 5%, and 10% levels using two-tailed tests.

TABLE 8
Is the market reaction to forecast revisions affected by whether an analyst is listed?

Panel A: Tests comparing the market reaction to revisions for listed vs. unlisted analysts

	(1)		(2)	
	Coefficient	p-value	Coefficient	p-value
FRev	0.3387***	[0.000]	0.3387***	[0.000]
AListed	-0.0035	[0.140]	-0.0035	[0.166]
FRev × Alisted	-0.1205***	[0.006]	-0.1205*	[0.091]
Firm-Analyst Fixed Effect	YES		YES	
Time Fixed Effect	YES		YES	
Clustered Standard Errors	NO		YES	
N	73,026		73,026	
Adj R^2	0.075		0.075	

Notes: The sample consists of analyst-firm observations for all analysts following firms that provide a listing of analysts covering its stock on its corporate website. The dependent variable is the cumulative abnormal return in the three-trading-day window around the annual earnings forecast revision. Abnormal return is calculated as the firm's return less the CRSP value-weighted market return. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. Firm-analyst fixed effects and time (monthly) fixed effects are included in the model but not presented. Standard errors are clustered by analyst. ***, **, and * represent significance at the 1%, 5%, and 10% levels using two-tailed tests.

TABLE 8 (CONTINUED)

Panel B: Tests comparing the market reaction conditional on positive or negative revisions

	(1)		(2)	
	Coefficient	p-value	Coefficient	p-value
Pos_FRev	0.3425***	[0.000]	0.3425***	[0.010]
Neg_FRev	0.3361***	[0.000]	0.3361***	[0.001]
AListed	-0.0040*	[0.092]	-0.0040	[0.106]
Pos_FRev* × *Alisted	-0.0276	[0.770]	-0.0276	[0.846]
Neg_FRev* × *Alisted	-0.1835**	[0.011]	-0.1835*	[0.091]
Firm-Analyst Fixed Effect	YES		YES	
Time Fixed Effect	YES		YES	
Clustered Standard Errors	NO		YES	
N	73,026		73,026	
Adj R^2	0.075		0.075	

Notes: The sample consists of analyst-firm observations for all analysts following firms that provide a listing of analysts covering its stock on its corporate website. The dependent variable is the cumulative abnormal return in the three-trading-day window around the annual earnings forecast revision. Abnormal return is calculated as the firm's return less the CRSP value-weighted market return. The variables are defined in Appendix A. All continuous variables are winsorized at the extreme 1%. Firm-analyst fixed effects and time (monthly) fixed effects are included in the model but not presented. Standard errors are clustered by analyst. ***, **, and * represent significance at the 1%, 5%, and 10% levels using two-tailed tests.