Information Discovery by Analysts[1]

Naveen Daniel
Drexel University
LeBow College of Business
3141 Chestnut Street, Philadelphia, PA 19104
Phone: 215-895-5858
Email: nav@drexel.edu

Sang Mook Lee*
Penn State University
Great Valley School of Graduate Professional Studies
30 E. Swedesford Road, Malvern, PA 19355
Phone: 215-817-2714
Email: sxl65@psu.edu

Lalitha Naveen
Fox School of Business Temple University
1801 Liacouras Walk, Philadelphia, PA 19122
Phone: 215-204-6435
Email: lnaveen@temple.edu

* Corresponding author: Sang Mook Lee

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Abstract

Our contribution is to document that analysts add value by engaging in discovery of private information and this value addition is greater than that due to interpretation of public news or stock timing. The innovation in our paper is to read over 3,700 analyst reports from *Investext* and explicitly identify whether the report contains discovery, interpretation, and/or timing. Analysts discover new information by talking to management sources (personal meetings, investor meetings, and conference calls) or non-management sources (such as channel checks). We find that information discovery is prevalent in 17% of the reports. The cumulative abnormal return (CAR) for reports containing discovery are 6.3% for upgrades and -10.6% for downgrades. The CARs are higher for reports containing discovery relative to those containing interpretation or timing. We find that economic determinants predict whether a report will contain discovery. Discovery from management sources is more likely for reports in the pre-Reg FD period and for reports by optimistic analysts. Discovery from non-management sources is more likely for reports written by All-Star analysts, and for firms that have high information asymmetry and those that are followed by more analysts.

Information Discovery by Analysts

A large literature in finance and accounting documents that sell-side analysts provide value to investors through their research reports.[2] The literature identifies two main ways in which analysts provide value. First, analysts aid in *information discovery*, where they generate new signals regarding firm fundamentals by talking to the management of the firm or its competitors, suppliers etc. Second, analysts aid in *information interpretation*, where they quantify the value implication of information events that affect the firm, such as earnings releases or other firm- and industry-level news. While discovery refers to the analyst generating private or proprietary information, interpretation refers to the analyst reacting to public information. A recent working paper by Daniel, Lee, and Naveen (2014) proposes a third role for analysts, namely *stock timing*. Here, the analyst discerns that recent stock price movement is not due to a change in firm fundamentals and revises his recommendation to make a contrarian call. For example, following a price run-up, analysts may revise their recommendation downward even though they do not change their estimate of the firm's fundamentals. For brevity, we will henceforth refer to the three roles as discovery, interpretation, and timing.

Our contribution is to provide *direct* evidence on the discovery role of analysts. We read over 3,700 research reports and classify what triggers the report. This novel research design allows us to exactly identify whether the report contains discovery, interpretation, and/or timing. In contrast, prior literature makes assumptions about which of the three roles are performed by the analyst in a given report.

[2] See Michealy and Womack (2005), Ramnath et al. (2008) and Bradshaw (2011) for recent reviews of this literature.

The classification schemes adopted by prior research (Ivkovic and Jegadeesh (2004), Asquith, Mikhail, and Au (2005), Chen, Cheng, and Lo (2010), Livnet and Zhang (2012)) all follow a similar pattern. These papers first identify a set of events (such as earnings) and then assume that reports issued within a window surrounding the event date contain analyst interpretation, while all other reports contain discovery. These papers do not consider timing because the concept of timing was introduced in a recent paper. The papers differ in the set of events and the event windows they consider. For example, Ivkovic and Jegadeesh (2004) consider earnings releases as the only event that analysts respond to and assume that all reports issued in weeks (+1, +6) relative to the earnings release date (excluding days 0 and 1) contain interpretation. Thus all reports issued in weeks (-6, -1) are assumed to contain discovery.[3] This is likely to lead to error in classification because (i) discovery is not limited to the weeks prior to the earnings release; it could happen in the 6 weeks after earnings, and (ii) there are many events other than earnings that analysts react to.

Asquith et al. identify 10 other events and consider all reports that are issued within (-4, +4) window surrounding these events to be interpretive in nature. This research design could also lead to misclassification because, by definition, reports issued on days (-4, -1) relative to an event cannot be in response to that event. Further, even though Asquith et al. read reports like we do, their focus is on coding the "strength of arguments" made by analysts to justify their recommendations. Additionally, they consider only reports issued by All-Star analysts, and are thus likely to overstate the pervasiveness of discovery.[4] Given the differences in research design, it is not surprising that there is no conclusive evidence on the importance of these analyst roles.

[3] Chen, Cheng, and Lo (2010) follow a similar classification scheme, though their main results assume that reports in days (+2,+6) contain interpretation, while those in days (-6, -2) contain discovery.

Using our data, we find that the misclassification is severe. For example, using the Ivkovic and Jegadeesh (2004) definition, 80% of the reports assumed by them as containing discovery do not, in fact, contain discovery. On the flip side, 16% of the reports assumed by them as containing interpretation contain discovery and 6% contain timing. Overall, as per our analysis, 17% of the reports contain discovery.

We address two broad questions. (i) How do markets react to reports containing discovery by analysts? A part of what we examine here has been addressed in prior work, though our results could differ from that in prior work given our cleaner identification strategy. (ii) What economic determinants predict whether a report contains discovery? This has not been explored in prior work because, given the classification scheme used in other papers, the only predictor of interpretation (and hence discovery) is the event date. If we find that economic determinants explain the cross-sectional variation, then it provides further proof that analysts who engage in information discovery have a unique skill.

We test several hypotheses regarding the market reaction to reports containing discovery, in other words, the value of discovery. First, if discovery is valuable, then for reports with discovery, we expect that the market reaction to upgrades of recommendations, price targets, or EPS should be positive and the market reaction to downgrades should be negative. Second, if investors value discovery more than interpretation or timing, they will react more strongly to reports containing discovery relative to other reports. That is, for reports that contain discovery, the market reaction to upgrades will be more positive relative to other reports, and that for downgrades will be more negative. This is because investors will have greater confidence in the views expressed by the analyst if these views are backed by new information. Prior literature has

[4] Livnat and Zhang (2012), similar to Asquith et al., consider a large set of events including 10K, 10Q, and 8K filings, but do not read the reports to identify correctly which report contains discovery.

found conflicting evidence on the importance of discovery versus interpretation, possibly because of the limitations in the identification schemes used. Our clean identification will help resolve this conflict. Third, we expect that the market reaction to discovery will be stronger if the discovery is due to information generated by talking to management. This has not been examined in the prior literature.

We also examine how broker, analyst, and firm characteristics affect discovery. We separately examine the determinants of discovery from both management and non-management sources. Section 1 develops our hypotheses.

To test our hypotheses, we assemble our data as follows. Since one of our hypotheses relates to the effect of Reg FD on discovery, we choose 1999 as our pre-Reg FD period (Reg FD was passed in October 2000). We expect that analysts will require some time to establish new non-management sources of information following Reg FD. Additionally, other regulatory events that impacted the analyst industry (such as NASD 2711, NYSE 472, the Sarbanes-Oxley Act, and the Global Research Settlement) were enacted in 2002. We therefore choose 2003 as our post-Reg FD period. We start with all firms on I/B/E/S that are covered by the same broker-analyst pair in both Jan 1999 and Dec 2003. We then group firms into 10 deciles each year based on the level of information asymmetry. We find 229 stocks that fall into the same information asymmetry decile in both years. For this sample of stocks, we download from *Investext* all the reports issued by those analysts who remained with the same broker as of January 1999 and December 2003. By ensuring that the broker-analyst pair and the information asymmetry remain the same across the two time periods, our research design helps isolate the effect of regulatory changes on how analysts discover information. Our final sample consists of 3,757 reports. Section I provides more details on data construction.

We read each report and classify whether the report contains discovery, interpretation, and/or timing. We also identify whether the discovery is based on management or non-management sources. The management sources we identify are personal meetings, conference calls, and investor meetings. Analysts also talk to non-management sources to generate new information. We identify the following non-management sources: survey of customers, discussions with executives in the supply chain (or 'channel checks'), and contacts in the industry.[5] Table I provides several examples of reports that have information generated by the analyst using management as well as non-management sources. We estimate the market reaction to analyst reports using the cumulative abnormal returns (CARs) over the window (-1,+1) relative to the release of the analyst report.

Our main findings are consistent with our hypotheses. First, for reports containing discovery, the mean CAR is +6.3% for recommendation upgrades and –10.6% for recommendation downgrades. Second, for upgrades, the CARs for reports containing discovery are 4.0 percentage points higher than for reports containing interpretation and 3.8 percentage points higher than for reports containing timing. For downgrades, the CARs for reports containing discovery are -3.6 percentage points lower than for reports containing interpretation and -7.8 percentage points lower than for reports containing timing. Thus, reports containing discovery elicit a stronger market reaction compared to reports containing interpretation or timing. Third, we find the market reaction to discovery is stronger if the source of the new information is personal meeting with the management (+3.9% for upgrades and –4.0% for

[5] For example, in an April 2012 report on Apple, Canaccord Genuity noted that "Our monthly channel checks indicated strong sales trends for the iPhone 4S at all three U.S. carriers and strong overall iPhone sales in international markets, with particular strength driven by the iPhone 4S launch at China Telecom (NYSE: CHA) and Unicom (NYSE: CHU)."

downgrades). All our results are robust if we consider revisions to price targets and revisions to EPS forecasts rather than revisions to recommendations.

In terms of the economic determinants of information discovery, we find results generally consistent with our hypotheses. First, we find that information discovery from management sources is more likely in the pre-Reg FD period and if the analyst is more optimistic about the firm than the consensus. Second, we find that information discovery from non-management sources is more likely if the analyst is an All-Star Analyst, covers fewer stocks, has more experience, if the firm has greater information asymmetry, and if the firm is covered by more analysts.

Our contribution is to provide *direct* evidence that analysts add value by engaging in discovery of private information, and that this value addition is greater than that due to analyst interpretation of public news or short term stock timing by the analyst. Our paper answers Bradshaw's (2011) call for academics to perform rigorous "content analysis" of analyst reports to shed light on what analysts actually do in terms of adding value.

I. Hypotheses Development

In this section, we develop our hypotheses.

A. Hypotheses on Market Reaction to Discovery

If information discovery by analysts is important, we would expect this to be reflected in positive market reaction to reports containing discovery. Specifically, we have three predictions regarding the strength of market reaction to reports containing discovery. (i) For reports containing discovery, the market reaction to upgrades should be positive and the market reaction to downgrades should be negative. (ii) If investors value discovery more than interpretation or

timing, we expect that relative to other reports, reports containing discovery will have a more positive market reaction for upgrades and a more negative reaction for downgrades. (iii) We expect that the market reaction to be stronger if the analyst discovery arises out of personal meeting with the management. The Introduction develops the rationale for our hypotheses, and we do not duplicate this here.

B. Hypotheses on Economic Determinants of Discovery

Acquiring information is costly to the analyst in terms of time and resources. There are benefits, however, in terms of obtaining more precise signals regarding firms' financials. We separately examine discovery from management sources and that from non-management sources. We do this because access to management is extremely important to analysts in terms of their ability to make reliable forecasts (Chen and Matsumoto, 2006, Brown et al., 2013). Information generated from management sources—from personal meetings in particular—is presumably more reliable, and therefore, more valuable than information generated from non-management sources.

We expect that discovery from management sources is more likely in the pre-Reg FD period because firms were free to give price-sensitive information to their favored analysts. In terms of broker characteristics, we expect reports from more prestigious brokers to contain discovery. Prestigious brokers may demand higher quality of reports, and hence analysts working for such brokers may have more incentives to engage in information discovery from both management as well as non-management sources. Also, prestigious brokers may have more resources to organize events such as investor conferences, conduct surveys, and do channel checks, thus facilitating discovery. On the other hand, prestigious brokers employ many analysts

who cover a majority of the firms and industries. Thus, these analysts tap into the expertise of their colleagues who themselves engage in discovery in the firms they cover. For example, a steel analyst could use the information obtained by an iron-ore mining analyst at the same brokerage. Thus, we predict that analysts from prestigious brokers will have more discovery from management sources. It is not clear, however, whether these analysts will have more or less discovery from non-management sources.

In terms of analyst characteristics, we expect optimistic analysts, All-Star analysts, and experienced analysts will more likely engage in discovery, while busy analysts will be less likely to engage in discovery. Analysts who are optimistic in their forecasts for a firm will more likely receive favorable treatment from that firm's management (Francis and Philbrick (1993), Chen and Matsumoto (2006)). Hence, reports from such analysts will more likely contain discovery from management sources. Optimism, however, should not have any effect on discovery from non-management sources. We expect All-Star analysts to engage in discovery from non-management sources rather than management sources. This is because while investors value All-Star analysts for their accuracy, firm management values optimism rather than accuracy. Thus, All-Star analysts need not have a comparative advantage over non-All-Star analysts with regard to management sources. Moreover, All-Star analysts are more likely to command greater resources from their employers and hence are able to engage in greater discovery from non-management sources. We expect experienced analysts—those with greater firm-specific and industry-specific knowledge—will have developed the network of contacts necessary to engage in discovery from both management and non-management sources. On the other hand, experienced analysts might believe they know everything there is to know about the firm and hence may not engage in costly discovery. Thus, it is not clear what the net impact would be.

We expect busy analysts will not have the time required to engage in time-consuming surveys and channel checks and hence will be less likely to discover new information from non-management sources. Regardless of busyness, however, we expect that analysts will be willing to talk to management every chance they get due to the high quality of information they can get from the management.

In terms of firm characteristics, we expect analysts to engage in discovery in firms with greater information asymmetry and in firms covered by more analysts. In firms with greater information asymmetry, an analyst could step in and provide better signals of firm fundamentals to the investors by engaging in discovery. Similarly, when there are more analysts covering a firm, an analyst may be more likely to engage in discovery to differentiate his report from that of other analysts to attract more brokerage business.

II. Data and Methodology

A. Sample selection

We first identify the set of stocks covered by at least one analyst who covered it in the 1st quarter of 1999 and in the 4th quarter of 2003. We remove analysts coded as anonymous by I/B/E/S since it is not possible to track their forecast revisions. We identify 3,616 unique firm-analyst pairs, which exist in both periods using the unique stock and analyst identifiers. There are 1,511 unique firms and 749 unique analysts. Each year, we sort these 1,511 unique firms into 10 deciles, based on their level of information asymmetry, measured using dispersion of EPS forecasts.[6] We then choose firms which belong to the same decile in both years. This

[6] Dispersion of EPS for a firm is obtained by dividing the standard deviation of EPS forecasts by the absolute value of the mean EPS forecast of all analysts following that firm. I/B/E/S provides mean and standard deviation of annual EPS forecasts for multiple fiscal years as well as quarterly and semi-annual EPS forecasts. As in Garfinkel

leaves us with 582 unique firm-analyst pairs, consisting of 229 unique firms and 357 unique analysts. For these firm-analyst pairs identified using I/B/E/S, we download from *Investext* all analyst reports published through the entire year, both in 1999 and in 2003. We download all reports issued by the analyst to ensure that we get an accurate sense for the frequency of discovery, interpretation, and timing for each firm covered.

B. Data Matching between I/B/E/S and *Investext*

There are two differences between *Investext* and I/B/E/S databases: (i) the source of reports and (ii) the reports that are included. According to I/B/E/S representatives, I/B/E/S captures estimate information from *Investext* as well as from direct feeds from brokers. Thus, the coverage of brokers is larger in I/B/E/S compared to *Investext*. Even though *Investext* provides the most recent investment research reports authored by top analysts from more than 800 brokerage houses, investment banks, and consulting firms worldwide, some brokers do not contribute their analyst reports to *Investext* whereas they provide them to I/B/E/S. In such cases, we cannot locate reports written by analysts who belong to such brokers. Because of this difference, the actual number of firm-analyst pairs we can identify from *Investext* (=365) is different from the firm-analysts we initially identify from I/B/E/S (=582).

Both databases also employ different internal policies in terms of keeping data in their database. I/B/E/S kept track of 17 measures (such as EPS, Revenue etc.) in 1999 and 22 measures in 2003. If a report does not contain a revision to any of these measures tracked by I/B/E/S, then that report is not kept as a separate record by I/B/E/S. The original record for that report is retained and only the review date (REVDATS) for all the I/B/E/S measures are updated

(2009), we use annual EPS forecasts for the current fiscal year because these tend to be more accurate than EPS forecasts for later years. Also, I/B/E/S provides mean and standard deviation of EPS forecasts for the current fiscal year at a monthly frequency; we use the annual EPS forecasts as of January for 1999 and October for 2003 to compute the dispersion of EPS.

to make them current. If an analyst report contains at least one change in the I/B/E/S measures, only then a new record is entered in the database with a new announcement date (ANNDATS). In contrast, *Investext* keeps all the reports issued by analysts regardless of whether or not the analysts revised their measures. Thus, for these 365 analyst-firm pairs, we are able to download 3,757 reports from Investext. Overall, we download 3,757 reports from 241 analysts issued on 176 firms from *Investext*.[7]

C. Classification of Reason for Release of New Report

After downloading the reports from *Investext* as described above, we read each report and manually code the main reason behind the release of the report. Then we classify the justifications used by analysts into three categories: Discovery, Interpretation, and Timing. We classify a report as having "Discovery" if it contains private information generated by the the analyst by talking to the firm's management (either in personal meetings or in the context of conference calls or investor meetings) or non-management sources (supply chain or to other industry sources). We classify a report as containing "Interpretation" by the analyst if the report is in response to public corporate events such as earnings release/guidance, press/8-K release, financing through equity or debt issuance, management turnover, macro/industry updates. Last, we classify a report as "Timing" if the analyst explicitly recommends buying the stock citing a recent pull-back in price or selling the stock following a recent surge in price as justification for his or her recommendation.

[7] We do not download analyst reports from *Investext* that are issued in the form of Morning Meeting Notes (MMN) because MMNs are mostly duplicates to full research reports that follow shortly. The MMN collection began as a subset of content from First Call Notes contributors. MMNs were geared toward real-time research users and were meant to provide a quick update of the analyst's opinion, typically followed by estimates changes or a full research report. Back in the early to mid-1990's, MMNs had very high value content. Over time, brokers moved onto full research reports and began to discontinue their MMNs as they were costly and duplicative. By 2007, the volume of MMNs had dwindled so much that *Investext* decided that MMNs were no longer a viable offering.

Table I provides excerpts from the analyst reports as examples for each type of information source. For example, the analyst report may state that "we recently met with top management of HSY." We would classify these as personal meetings. In addition, the analyst may also interact with management during conference calls and investor meetings. For example, the analyst might note that "we attended Progressive's Investor Day in Cleveland yesterday." Similarly, examples for non-management sources are as follows: "our channel checks indicate that unit demand remains strong and customer inventories are low" and "our industry sources indicate that used aircraft values may have stabilized somewhat after large declines." Finally, we provide examples of interpretation ("the recently released annual AF&PA capacity survey points to a solid outlook for uncoated free sheet in the United States") and timing ("we see this recent weakness as a buying opportunity").

III. Results

A. Prevalence of New Information in Analyst Reports

We first document the prevalence of discovery in analyst reports. Table II presents the results. We find that 17% of reports contain new information, 6% contain timing, and the large majority of reports (89%) contain information interpretation. The total of discovery plus timing plus interpretation is more than 100% because these are not mutually exclusive; for example, analyst reports may contain interpretation as well as timing. Discovery is largely from management sources: of the reports containing discovery, 78% (=498/639) are due to management sources.

Examining discovery across the pre- and post-Reg FD periods reveals that analysts issued 889 more reports (=2,323–1,434) in the post-Reg FD period, but this is almost entirely due to

increase in interpretive reports by 823 (=2,083–1,260). The number of timing reports remains roughly the same in both periods (116 vs. 113). The number of discovery reports has gone up from 274 to 365. We compare the number of reports across the two time periods rather than the percentage of reports that constitute discovery, interpretation, and timing because there were far more interpretive reports made in the post-Reg FD period and interpretive reports might require less effort. For example, Amazon announced the launch of a smartphone on the afternoon of 6/19/2014 and analysts issued reports by the same evening in response to this news. Clearly, such interpretive reports would take less time relative to reports containing discovery, which involve surveys and channel checks. Another reason we can focus on the number of reports (rather than the percentage) is because we only examine reports by the same analyst covering the same firm in both years. Thus, we are able to infer that, in the post-Reg FD world, the analyst has more than doubled his efforts to obtain information from non-management sources (94 vs. 47). This may be because preferential information from management might have been curtailed post-Reg FD. We see that the analyst is less dependent on personal meetings with management (64 vs. 88) in the post-Reg FD period. It also seems that management responded to the regulation by participating in investor meeting and hosting conference calls (207 vs. 139). Overall, there seems to be some substitution away from personal meetings towards non-management sources of discovery.

B. Announcement Returns

Table IV presents the OLS regression results of announcement returns to the release of the analyst report. We estimate the market model over the window [-300, -46] using the CRSP equal-weighted market return as the benchmark. The cumulative abnormal return (CAR) over the event window [-1,1] is our proxy for announcement return.

We estimate the following regression to test our first two hypotheses:

$$CAR = b_0 + b_1\ Up + b_2\ Down + b_3\ Up\times Discovery + b_4\ Down\times Discovery + b_5\ Up\times Timing + b_6\ Down\times Timing + b_7\ Discovery + b_8\ Timing + Controls + \varepsilon$$

The *Up* and *Down* indicator variables are defined differently depending on the specification. *Up* dummy takes the value 1 if the report contains an upgrade in recommendation (Column 1), upgrade in Price Target (Column 2), or upgrade in EPS (Column 3). *Down* dummy takes the value 1 if report contains a downgrade in recommendation (Column 1), downgrade in Price Target (Column 2), or downgrade in EPS (Column 3). *Discovery* takes the value 1 if an analyst report contains new information obtained either from management or from non-management sources. *Timing* takes the value 1 if an analyst issues a report in response to stock price movements that have occurred since the release of his previous report.

Our first hypothesis is that for reports containing discovery, CARs will be positive for upgrades and negative for upgrades. For upgrades containing discovery, the CAR is given by ($b_0 + b_1 + b_3 + b_7 + \sum \hat{b}\,\overline{Control}$) and for downgrades containing discovery, the CAR is given by ($b_0 + b_2 + b_4 + b_7 + \sum \hat{b}\,\overline{Control}$). The panel at the bottom of the table gives these results. Column 1 shows that the predicted CARs to upgrades is 6.3% and to downgrades is -10.6%, which are statistically and economically significant.

Our second hypothesis is that if the market views reports containing discovery to be more valuable than reports containing interpretation and timing, then the market reaction to such reports should be stronger. The difference in CAR between discovery and interpretation is given by ($b_3 + b_7$) for upgrades and ($b_4 + b_7$) for downgrades. The difference in CAR between discovery and timing is given by (($b_3 + b_7$) – ($b_5 + b_8$)) for upgrades and (($b_4 + b_7$) – ($b_6 + b_8$)) for downgrades. As can be seen from the Table (bottom panel), the CARs to reports containing discovery are stronger than the CARs to reports containing interpretation: 4.0% more positive for

upgrades and 3.6% points more negative for downgrades. Similarly, the CARs to reports containing discovery are stronger than the CARs to reports containing timing: 3.8% more positive for upgrades and 7.83% points more negative for downgrades. All the differences are statistically and economically significant, consistent with hypothesis 2.

In Column 2, we examine CARs to upgrades and downgrades to Price Targets rather than upgrades and downgrades to recommendations. In Column 3 we examine CARs to upgrades and downgrades to EPS. In both cases, we find qualitatively similar results to those in Column 1.

In Panel B, we replace *Up* and *Down* indicator variables with the continuous variable. That is, depending on the specification, we use change in recommendation levels (Column 1), change in price target (Column 2), and change in EPS (Column 3). The changes are relative to the measures indicated in the prior report by the same analyst. Specifically, we estimate the following regression:

$$\text{CAR} = b_0 + b_1 \text{ Discovery} + b_2 \text{ Timing} + b_3 \text{ Change in Measure} + b_4 \text{ Change in Measure} \times \text{Discovery} + b_5 \text{ Change in Measure} \times \text{Timing} + \text{Controls} + \varepsilon$$

Because the specification includes continuous variables (rather than dummy variables as in the earlier specification), we test our hypotheses for a one standard deviation change in the measure. For reports containing discovery, the predicted CAR for a one standard deviation increase in the measure is given by: $b_0 + b_1 + (b_3 + b_4) \times$Standard Deviation of the Measure$+\sum \hat{b}\,\overline{Control}$. As per hypothesis 1, this should be positive. We find this to be 1.3% (see bottom of Panel B). Moreover, as per hypothesis 2, reports containing discovery will be more valuable than reports containing interpretation (that is, $b_1 + b_4 \times$Standard Deviation of the Measure should be positive) and reports containing discovery will be more valuable than reports containing timing (that is, $(b_1 - b_2) + (b_4 - b_5) \times$Standard Deviation of the Measure should be positive). We find these numbers to be 0.7% and 0.9% respectively (see bottom of Panel B).

Column 2 reports the results for CARs to changes in Price Targets rather than changes to recommendations, and Column 3 reports the results for CARs to changes in EPS. Again, the results are qualitatively similar to those in Column 1.

Overall, the results in Table IV strongly support hypotheses 1 and 2. Investors value discovery both in absolute terms and relative to interpretation or timing.

C. Is Discovery from Personal Meetings with Management More Valued?

As per hypothesis 3, we expect that CARs to reports containing discovery will be higher if the source of discovery is management. Even within management sources, analysts are more likely to discover unique information during their personal meetings with management, rather than during conference calls or analyst days where there are multiple analysts competing for management time. We therefore repeat the regressions in Table IV, but we separate out the Discovery from Personal Meetings and Discovery from all sources other than Personal Meetings. We estimate the following regression:

$$\begin{aligned} CAR = {} & b_0 + b_1\,Up + b_2\,Down + b_3\,Up\times Discovery\ (Personal\ Meetings) \\ & + b_4\,Up\times Discovery\ (Other\ Sources) + b_5\,Down\times Discovery\ (Personal\ Meetings) \\ & + b_6\,Down\times Discovery\ (Other\ Sources) + b_7\,Up\times Timing + b_8\,Down\times Timing \\ & + b_9\,Discovery\ (Personal\ Meetings) + b_{10} Discovery\ (Other\ Sources) + b_{11} Timing \\ & + Controls + \varepsilon \end{aligned}$$

The predicted CAR for an upgrade report containing Discovery from Personal Meetings is given by $b_0 + b_1 + b_3 + b_9 + \sum \hat{b}\,\overline{Control}$. Similarly, the predicted CAR for a downgrade report containing discovery from personal meetings is given by $b_0 + b_2 + b_5 + b_9 + \sum \hat{b}\,\overline{Control}$. For upgrades containing discovery, the difference between CARs for discovery from Personal Meetings and discovery from Other Sources is given by $(b_3 + b_9) - (b_4 + b_{10})$. Finally, for downgrades containing discovery, the difference between CARs for discovery from Personal Meetings and discovery from Other Sources is given by $(b_5 + b_9) - (b_6 + b_{10})$. Table V presents

the results. The bottom panel of the table presents the tests of our hypotheses. Consistent with our hypothesis, we find that the predicted CARs for reports containing an upgrade based on discovery from personal meetings are significantly positive. Similarly the predicted CARs for reports containing downgrades based on discovery from Personal Meetings are significantly negative. Moreover, discovery from personal meetings has a bigger impact on CAR relative to discovery from other sources.

Overall, the results to this point show that Discovery by analysts is valued by investors, and is more valuable than interpretation and timing. Moreover, Discovery from management sources, particularly from personal meetings, is more valued by investors relative to discovery from other sources.

D. Economic Determinants of Information Discovery

Our second line of enquiry examines the characteristics of brokers, analysts, and firms associated with reports that contain discovery. Section II describes our hypotheses, which we test in this section.

D. 1. Dependent Variables

We identify personal meetings with management, investor meetings, and conference calls as potential sources of information from management. Incremental discovery by the analyst, however, is unlikely to be the same across all three sources. Solomon and Soltes (2012) point to survey evidence suggesting that 97% of CEOs of publicly traded firms meet privately with investors. Using data on all personal meetings between top management and investors for one NYSE firm, they find that private meetings with management help investors to make informed trading decisions. Similarly, Brown et al. (2013) find that such one-on-one personal meetings with the management are highly sought after. Participating in investor meetings and conference

calls, on the other hand, confer less advantages to the analyst. For example, Mayew et al. (2012) find that even analysts who ask questions to management during conference calls receive no information advantage. Additionally, Green et al. (2013) argue that only analysts associated with brokers who host the investor meeting get an informational advantage. Thus, for our base-case analysis, we use only personal meetings as a source of information from management. We define an indicator variable *Personal Meetings*, which equals 1 if the report mentions a personal meeting with the management and equals 0 otherwise. We then estimate logistic regressions using *Personal Meetings* as the dependent variable. We also consider an alternative dependent variable, *Management*, which equals 1 if the report mentions any interaction with the management and equals 0 otherwise. We expect all our results to be stronger with *Personal Meetings* rather than with *Management*.

To test our hypothesis regarding information discovery using non-management sources, we define an indicator variable *Non-Management*, which equals 1 if the report mentions discovery through non-management sources (such as surveys, channel checks, industry contacts), and equals 0 otherwise. Finally, we also use the indicator variable *Discovery*, defined earlier.

D. 2. Independent Variables

To test our hypothesis about the impact of Reg FD, we form an indicator variable, *Pre-Reg FD*, which equals 1 if the year is 1999, and equals 0 if the year is 2003. To test our hypothesis relating to broker characteristics, we use an indicator variable, *Prestigious Broker*, which equals 1 if a report is issued by an analyst who works for the top 10 rated brokerage houses by institutional investors (Hong and Kubik, 2003) at the time of report

To test the hypotheses relating to analyst characteristics, we define the following variables. (i) *Firm-specific Optimism*: this captures the distance of the analyst's forecast from

the consensus. First, we assign the value 1 when an analyst's recommendation is above the most recent consensus recommendation and 0 otherwise. We then average this variable across all recommendations made on an individual firm by the analyst in the two years prior to the sample year. (ii) *All Star Analyst*: this equals 1 if the analyst is an All-Star analyst as rated by Institutional Investor, and equals 0 otherwise (see Clarke et al. (2007) for details on this variable) (iii): *Years covering Firm* and *Years covering Industry*: these two variables are meant to capture analyst experience in covering the firm and the industry to which the firm belongs. (iv) *Number of Firms Covered* and *Number of Industries Covered*: these two variables are meant to capture analyst busyness.

To test the hypotheses relating to firm characteristics, we define the following variables. (i) *Information Asymmetry*: this is an indicator variable that equals 1 if the firm covered by the analyst report is above median in terms of dispersion of annual EPS forecasts. (ii) *Analysts Following*: this is the number of annual earnings forecasts used by IBES to calculate monthly earnings consensus.

D. 3. Logistic Results

Table VI presents the logistic results. The table also presents the predicted sign for each of the variables based on our hypotheses. We do not have any unique predictions for the determinants of *Discovery*. Because *Discovery* is the sum of *Management* and *Non-Management*, we give the predicted sign only when the determinants have the same predicted effect on both *Management* and *Non-Management*. For example, the predicted effect of information asymmetry is positive for both *Management* and *Non-Management*, and therefore, the predicted effect on *Discovery* would have to be positive. We, nevertheless, present the results for *Discovery* for the sake of completeness.

For column 1, the dependent variable is *Personal Meetings*. Because our hypotheses are based on whether there will be discovery in a report relative to interpretation and timing, we exclude from the regressions observations where there is discovery from sources other than personal meetings with the management.

The results are generally consistent with our expectations. The coefficient on *Pre-Reg FD* is positive, implying that, pre-Reg FD, analysts were more likely to meet with management to obtain information. Analysts who are optimistic about the prospects of the firms are more likely to engage in discovery through personal meetings with management. This is consistent with several studies that show that management favors analysts who provide more optimistic forecasts (for example: Chen and Matsumoto (2006)). Indeed the Brown et al. (2013) survey of analysts state that a big concern for analysts is being "frozen out" by the management. Analyst experience (number of years covering firm and industry) is not related to information discovery. While experience helps build networks that can aid discovery, it could also mean that the analyst has greater knowledge of the firms he is covering and hence has less need to talk to others to obtain information. Given our results, it appears that these two countervailing effects cancel each other out. Analyst competition (proxied by number of analysts following the firm) and information asymmetry are not significantly related to discovery. Overall, our results are consistent with our hypotheses.

In Column 2, we use *Management* as the dependent variable. Therefore, we exclude from the regressions observations where there is discovery from sources other than management. As expected, results are weaker. We do not find any effect of Reg FD and prestigious broker on discovery from management sources. The analyst's industry experience is negatively related to

discovery, which is consistent with the idea that the analyst expertise attenuates the dependence on management.

In Column 3, we use *Non-Management* as the dependent variable. We, therefore, exclude observations where there is discovery from management sources. We find that analysts associated with prestigious brokers are less likely to engage in discovery from non-management sources. This is consistent with such analysts acquiring information about the firms and industries they cover from their colleagues who follow related firms in the supply chain. These analysts, therefore, do not have to do external surveys or channel checks because they get the relevant information in-house. We find that, consistent with our hypothesis, All-Star analysts are more likely to discover new information by talking to non-management sources. Contrary to our prediction, we do not find that busy analysts (i.e., analysts who follow a large number of firms and industries) are less likely to engage in discovery from non-management sources. Self-selection could explain this counterintuitive result, wherein only analysts who can handle the workload are given the responsibility of covering more firms and industries. We find that experience has both a positive and negative effect. The years covering the firm is positively related to discovery from non-management sources while years covering the industry is negatively related to discovery from non-management sources. Consistent with our expectations, analysts following is positively related to discovery from non-management sources. It seems that analysts try to stay above the competition by generating new information. Lastly, consistent with our expectations, discovery from non-management sources is more likely in firms with greater information asymmetry. Thus, analysts try to bridge the information gap between management and investors by collecting information from non-management sources.

IV. Conclusion

A large literature on the role of equity analysts finds that analyst reports are valued by capital market participants. The vast majority of previous studies document that analysts add value through information discovery and through interpretation of public information. But this result is based on assumptions regarding which reports contain discovery and which reports contain interpretation. For example, most of these studies typically assume that reports within a certain time frame (for example, within a week) following certain events (for example, earnings releases) contain interpretation while all other reports contain discovery. In contrast we make no such assumptions. Instead, we read the contents of over 3,700 analyst reports to classify which reports have discovery, interpretation, and/or stock timing. This unique research design allows us to contribute to the analyst literature by providing direct evidence on the value of the discovery role.

We have three main findings. First, we find that about 17% of reports contain new information generated by the analysts. About 13% of reports contain information discovery from management sources (such as personal meetings or conversations with management, conference calls, and analyst meetings) and about 4% contain information discovery from non-management sources (such as surveys, channel checks, talking to industry contacts).

Second, the market reaction to discovery is strongly positive for upgrades (of recommendation levels, target prices, and EPS) and strongly negative for downgrades. Further, this reaction is stronger than that for reports containing discovery than for reports containing timing and interpretation.

Third, in terms of economic determinants, we find that information discovery from management sources is more likely for reports issued in the pre-Reg FD period and for analysts

that are more optimistic (those that have a record of issuing more favorable recommendations about the firm). Information discovery from non-management sources is less likely for reports in the pre-Reg FD period, for reports by analysts that are employed by more prestigious brokers. It is more likely for reports by All-Star analysts, when the analyst has more years covering the firm, when the firm has higher information asymmetry and when the firm is followed by more analysts.

Our findings have implications for several strands of research that deal with the role of equity analysts: (i) In terms of consequences to investors, we expect that post-revision drift will be higher for reports that contain more information generation. If an analyst includes new information, then other analysts covering the same stock will, in all likelihood, attempt to verify this information, which generates more reports confirming the original analyst's discovery. This in turn will cause a drift in stock price post-revision. (ii) In terms of consequences to analysts, we expect that analysts that engage in more discovery will make bolder, more timely, more accurate, and more influential forecasts. Additionally, we expect that analysts who engage in more discovery are more likely to exhibit persistent skill, more likely to move up the career ladder to a better-reputation broker, and more likely to become an All-Star analyst.

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Table I. Examples of Reports

The table provides examples of contents in analysts' reports used when we define and categorize those reports into each source of value that analysts can generate and further into individual component of each source of value. For example, if analysts indicate in their reports that they met with management, then we classify those reports as "Personal Meetings" within sub-category "Management" of "Information Discovery" source of value. Similarly, analyst reports indicating that analysts performed survey are classified as "Surveys" within sub-category "Non-management" of "Information Discovery" source of value. Analysts' reports which are written based on firms' public announcements of events (e.g., earnings release, financing activities, M&A, management turnover, etc) are categorized to "News Interpretation" source of value..

I. Information Discovery

1. Management

A. Personal Meeting
- We recently met with top management of HSY.
- In meeting with senior management, 1Q03 trends appear to be tracking in-line with our expectations.

B. Investor/Analyst Meetings
- Today we are attending Motorola Analyst Day in Chicago.
- Liberty Media's analyst day reinforced our belief that over the next 6–12 months, Liberty will transform itself from a holding to an operating company.
- We attended Progressive's Investor Day in Cleveland yesterday.

C. Conference Calls
- In a recent conference call with investors and analysts, Aracruz management announced its intention to present a feasibility study to the Board of Directors this August.
- During the conference call, CMS indicated it anticipated 500 MW of peak.
- Post earnings, Motorola held a conference call to discuss its Q1/03 results.

2. Non-Management

A. Surveys
- Based on our internal room rate surveys, we believe that upside in the first quarter can exceed $0.30.
- Based on results of our 2004 Health Benefit Survey, customers do not perceive CIGNA as bad, leading us to revise upward our estimate of enrollment loss in 2004 in late September 2003.
- Our recent survey confirmed the view the service levels have improved, but it may take time for the improvements to translate to membership gains.

B. Channel Checks
- Our channel checks indicate that unit demand remains strong and customer inventories are low.
- Based on our channel checks, we believe that recent demand trends have been solid and we expect Xilinx to at least meet expectations, with the potential for a positive revenue and EPS surprise.
- Channel checks at Sprint PCS stores in three major metropolitan revealed a slightly different launch strategy than that employed just four months ago.

C. Industry Contacts/Sources
- Our industry sources indicate that used aircraft values may have stabilized somewhat after large declines;
- Several manufacturers we've talked to recently have noted that business picked up significantly in March, but while business is still up from the depressed levels of early 1999, it has not continued to accelerate in the second quarter.
- This is inconsistent with feedbacks from brokers and consultants.

II. News Interpretation
- Yesterday's announcement by auto parts maker Gentex outlining its intention to produce automotive lighting products with high-brightness LEDs is further proof of the rapidly expanding demand for white light conversion LEDs.
- Mid-day 11/19 AMC and Loews Cineplex confirmed they are in talks about a potential merger.
- The recently released annual AF&PA capacity survey points to a solid outlook for uncoated free sheet in the United States

Table II. Incidence of Discovery and News Interpretation in Analyst Reports

The table reports the number and frequency of reports that contain information related to each source of value that analysts can generate. Each source of value is also broken down further into individual component within each source. Total number of Investext Reports is not the same as summation of report in each source (I+II) of value because some reports are classified to multiple sources. For example, if analysts indicate in the reports that they had opportunities of having personal meetings with management after firms' M&A announcements, then their reports are classified under both "Information Discovery: Management (Personal Meetings)" and "News Interpretation."

Year	Total		1999	2003
I. Information Discovery	**639**	**17.0%**	**274**	**365**
1. Management	**498**	**13.3%**	**227**	**271**
A. Personal Meetings	152	4.1%	88	64
B. Investor Meetings/Conference Calls	346	9.2%	139	207
2. Non-Management	**141**	**3.8%**	**47**	**94**
II. News Interpretation	**3,343**	**89.0%**	**1,258**	**2,083**
Total	**3,553**		**1,353**	**2,200**

Table III. Descriptive Statistics of Key Variables

Panel A presents descriptive statistics of variables of our interest used in our tests. New Information has a value of 1 if an analyst report contains new information obtained either from management sources (i.e., personal meetings with management, attending in analysts days or conference calls) or from non-management sources (i.e., survey of customer, channel checks or industry contacts/sources). Personal Meetings has a value of 1 if an analyst report contains new information obtained from personal meetings with managements only and Management sources other than Personal Meetings has a value of 1 if an analyst report contains new information obtained from attending analysts day or conference calls. Non-Management has a value of 1 if an analyst report contains new information obtained from non-management sources only. All Star Analyst has values ranging from 0 (for non-All Star) to 4 (first all-star) at the time of reports. When an analyst issued a report between January and October of year *t*, then his rank of previous year *t-1* was assigned while if a report was published in November and December of year *t*, then rank of current year *t* was assigned. Years Covering a Firm represents the number of years since an analyst began covering a firm. Years Covering an Industry represents the number of years since an analyst began covering an industry where a stock the analyst covers at the time of report. Number of Firms (Industries) Covered is the number of firms (industries) an analyst is identified in I/B/E/S to issue earnings forecasts, target prices or recommendations in each sample year. Prestigious Broker has a value of 1 if a report is issued by an analyst who works for the top 10 rated brokerage houses by institutional investors (Hong and Kubik, 2003) at the time of report. Firm-specific Optimism is an average score of indicators (which have a value of 1 when a recommendation revision is above the most recent consensus recommendation) across all recommendation made on a given firm an analyst follows during two (2) years prior to each sample year. Information Asymmetry has a value of 1 if a report was issued to a firm which belongs to upper five (5) dispersion groups in terms of dispersion of annual EPS forecasts. Dispersion of each firm is obtained by dividing standard deviation of annual EPS forecasts by absolute value of mean annual EPS forecasts of all analysts following each firm. Pre Reg-FD has a value of 1 if an analyst report issued in 1999. Analysts Following is the number of annual earnings forecasts used by IBES to calculate monthly earnings consensus. All continuous variables are winsorized at upper and lower 1% to control for extreme values. Panel B reports the correlation of those variables with *** representing for $p<0.01$, ** for $p<0.05$ and * for $p<0.1$.

Panel A. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
New Information	0.17	0.38	0	1.00
Personal Meetings	0.04	0.20	0	1.00
Management sources other than Personal Meetings	0.09	0.29	0	1.00
Non-Management	0.04	0.20	0	1.00
All-Star Analyst	1.08	1.47	0	4.00
Years Covering a Firm	5.91	4.35	0	19.83
Years Covering an Industry	8.99	5.11	0.33	21.58
Number of Firms Covered	19.05	10.05	5.00	66.00
Number of Industries Covered	3.99	2.22	1.00	10.00
Prestigious Broker (Dummy)	0.49	0.50	0	1.00
Firm-specific optimism	0.42	0.41	0	1.00
Information Asymmetry (Dummy)	0.57	0.50	0	1.00
Pre Reg-FD (Dummy)	0.38	0.49	0	1.00
Analysts Following	14.93	7.84	1.00	35.00

Panel B. Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	New Information	1													
(2)	Personal Meetings	0.46***	1												
(3)	Management sources other than Personal Meeting	0.72***	-0.04**	1											
(4)	Non-Management	0.44***	-0.01	-0.02	1										
(5)	All-Star Analyst	0.03**	-0.01	0.02	0.03**	1									
(6)	Years Covering a Firm	-0.03*	-0.06***	-0.00	-0.01	0.19***	1								
(7)	Years Covering an Industry	-0.08***	-0.07***	-0.03*	-0.07***	0.20***	0.65***	1							
(8)	Number of Firms Covered	-0.04**	-0.01	-0.01	-0.06***	0.15***	-0.01	0.08***	1						
(9)	Number of Industries Covered	-0.02	-0.01	-0.01	-0.01	0.05**	0.05***	0.01	0.17***	1					
(10)	Prestigious Broker (Dummy)	0.02	-0.01	0.03**	-0.00	0.54***	0.28***	0.24***	-0.06***	-0.14***	1				
(11)	Firm-specific optimism	0.01	0.04**	-0.03*	0.02	-0.10***	0.03	-0.01	-0.07***	-0.00	-0.12***	1			
(12)	Information Asymmetry (Dummy)	-0.00	-0.03*	0.00	0.05**	-0.07***	-0.10***	0.02	-0.14***	-0.05***	-0.02	0.01	1		
(13)	Pre Reg-FD (Dummy)	0.05**	0.09***	0.01	-0.02	-0.15***	-0.34***	-0.35***	0.09***	0.15***	-0.32***	0.16***	-0.02	1	
(14)	Analysts Following	0.08***	-0.00	0.09***	0.03*	0.01	0.11***	0.03	-0.22***	-0.30***	0.09***	-0.05**	0.07***	0.07***	1

Table IV. Stock Market Reaction to Information Discovery

Panel A reports the OLS regression results where the dependent variable is the announcement return to the release of the analyst report. The announcement return is given by CAR[-1,1], which are obtained from Eventus where we estimate a market model with CRSP equal-weighted market return as the benchmark. We exclude analyst reports released in the [-2,+2] window surrounding the firms' quarterly earnings announcements. The *Up* and *Down* indicator variables are defined differently depending on the specification. *Up* dummy takes the value 1 if the report contains an upgrade in recommendation (Column 1), upgrade in Price Target (Column 2), or upgrade in EPS (Column 3). *Down* dummy takes the value 1 if report contains a downgrade in recommendation (Column 1), downgrade in Price Target (Column 2), or downgrade in EPS (Column 3). *Discovery* takes the value 1 if an analyst report contains new information obtained either from management or from non-management sources. In Panel B, we replace *Up* and *Down* indicator variables with the change in recommendation (or price target or EPS, depending on the specification) compared to those measures indicated in the prior report by the same analyst. b0, b1, etc. are the coefficients of the regressions from the corresponding tables, $\sum \hat{\beta}\ \overline{Control}$ is a summation of the regression coefficients multiplied by mean value of each control variable used in the regressions, and σ_m is the standard deviation of the relevant change in measure (standard deviation of recommendation level, price target, and EPS respectively). For the definitions of variables used here, please refer to table III. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Panel A

		Recommendation	Price Target	EPS
		(1)	(2)	(3)
Intercept	b_0	-0.178	-0.110	0.108
		(-0.5)	(-0.3)	(0.3)
Up (Dummy)	b_1	2.374***	1.272***	0.672**
		(3.1)	(3.2)	(2.1)
Down (Dummy)	b_2	-5.913***	-2.842***	-2.591***
		(-4.1)	(-3.8)	(-6.6)
Up × Discovery	b_3	3.960***	2.826***	2.838***
		(2.6)	(3.3)	(3.2)
Down × Discovery	b_4	-2.187	-3.547*	-1.392*
		(-1.0)	(-1.9)	(-1.7)
Discovery	b_5	-0.026	-0.048	-0.102
		(-0.1)	(-0.2)	(-0.4)
All-Star Analyst		-0.006	0.018	0.011
		(-0.1)	(0.2)	(0.1)
Years Covering a Firm		0.016	0.012	-0.008
		(0.5)	(0.4)	(-0.3)
Years Covering an Industry		-0.014	-0.017	0.003
		(-0.5)	(-0.6)	(0.1)
Number of Firms Covered		-0.011	-0.009	-0.007
		(-1.1)	(-0.9)	(-0.7)
Number of Industries Covered		-0.011	-0.044	-0.028
		(-0.2)	(-0.8)	(-0.5)
Prestigious Broker (Dummy)		0.010	-0.006	0.051
		(0.0)	(-0.0)	(0.2)
Observations		2,257	2,257	2,257
R-square		0.048	0.047	0.061
Tests of Hypothesis 1				
Upgrades: CARs to Discovery ($b_0 + b_1 + b_3 + b_5 + \sum \hat{\beta} \overline{Control}$)		5.9***	3.5***	3.3***
Downgrades: CARs to Discovery ($b_0 + b_2 + b_4 + b_5 + \sum \hat{\beta} \overline{Control}$)		-8.6***	-7.0***	-4.2***
Tests of Hypothesis 2				
Upgrades: CARs to Discovery Minus CARs to Interpretation ($b_3 + b_5$)		3.9***	2.8***	2.7***
Downgrades: CARs to Discovery Minus CARs to Interpretation ($b_4 + b_5$)		-2.2	-3.6**	-1.5*

Panel B

		Measure = Recommendation	Measure = Price Target	Measure = EPS
		(1)	(2)	(3)
Intercept	b_0	-0.253	-0.284	-0.067
		(-0.7)	(-0.8)	(-0.2)
Discovery	b_1	0.054	-0.164	0.258
		(0.2)	(-0.6)	(1.0)
Change in Measure	b_2	4.038***	0.087***	1.650***
		(4.7)	(4.1)	(4.4)
Change in Measure × Discovery	b_3	2.127*	0.235***	1.067
		(1.8)	(4.0)	(1.0)
All-Star Analyst		0.010	0.038	-0.023
		(0.1)	(0.5)	(-0.3)
Years Covering a Firm		0.014	0.009	-0.000
		(0.4)	(0.3)	(-0.0)
Years Covering an Industry		-0.014	-0.014	-0.013
		(-0.5)	(-0.5)	(-0.4)
Number of Firms Covered		-0.012	-0.008	-0.010
		(-1.2)	(-0.9)	(-1.0)
Number of Industries Covered		-0.014	-0.033	-0.018
		(-0.3)	(-0.6)	(-0.4)
Prestigious Broker (Dummy)		-0.007	-0.108	0.039
		(-0.0)	(-0.4)	(0.1)
Observations		2,257	2,257	2,257
R-square		0.052	0.048	0.045
Tests of Hypothesis 1				
CARs to Discovery: $(b_0 + b_1) + (b_2 + b_3)\sigma_m + \sum \hat{\beta}\overline{Control}$		1.1**	1.7***	1.5**
Tests of Hypothesis 2				
CARs to Discovery Minus CARs to Interpretation $b_1 + b_3\ \sigma_m$		0.6*	1.7***	0.9

Table V. Stock Market Reaction to Information Discovery: Personal Meetings versus Other Sources

The table reports the OLS regression results where we replicate table IV, but this time we separate out discovery from personal meetings and discovery from other discovery sources. b0, b1, etc. are the coefficients of the regressions from the corresponding tables, and $\sum \hat{\beta}\overline{Control}$ is a summation of the regression coefficients multiplied by mean value of each control variable used in the regressions. For the definitions of variables used here, please refer to table III. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

		Recommendation	Price Target	EPS
		(1)	(2)	(3)
Intercept	b_0	-0.192	-0.105	0.108
		(-0.5)	(-0.3)	(0.3)
Up (Dummy)	b_1	2.374***	1.272***	0.670**
		(3.1)	(3.2)	(2.1)
Down (Dummy)	b_2	-5.914***	-2.842***	-2.592***
		(-4.1)	(-3.8)	(-6.6)
Up × Discovery (Personal Meetings)	b_3	6.461*	1.373	1.713
		(1.9)	(0.9)	(1.0)
Up × Discovery (Other Sources)	b_4	3.108**	3.112***	3.099***
		(2.1)	(3.3)	(3.1)
Down × Discovery (Personal Meetings)	b_5	-1.564	-2.407	-0.874
		(-1.1)	(-1.2)	(-0.7)
Down × Discovery (Other Sources)	b_6	-2.342	-3.767*	-1.583
		(-1.0)	(-1.8)	(-1.4)
Discovery (Personal Meetings)	b_7	-0.282	0.031	-0.073
		(-0.7)	(0.1)	(-0.1)
Discovery (Other Sources)	b_8	0.079	-0.083	-0.115
		(0.3)	(-0.3)	(-0.4)
Control Variables (as in Table IV)		Yes	Yes	Yes
Observations		2,257	2,257	2,257
R-square		0.049	0.047	0.062
Tests of Hypothesis 3				
Upgrades: CARs to Discovery (Personal Meeting) ($b_0 + b_1 + b_3 + b_7 + \sum \hat{\beta}\overline{Control}$)		8.1**	2.2	2.2
Downgrades: CARs to Discovery (Personal Meeting) ($b_0 + b_2 + b_5 + b_7 + \sum \hat{\beta}\overline{Control}$)		-8.2***	-5.7***	-3.6***
Upgrades: CARs to Discovery (Personal Meetings) – CARs to Discovery (Other Sources) ($b_3 + b_7$) – ($b_4 + b_8$)		3.0	-1.6	-1.3
Downgrades: CARs to Discovery (Personal Meetings) – CARs to Discovery (Other Sources) ($b_5 + b_7$) – ($b_6 + b_8$)		4.2	1.5	0.8

Table VI. Break-up of New Information into Different Sources of Information

The table reports logit regression results where the dependent variable takes various forms of discovery. The dependent variable in column 1 is Personal Meetings, in column 2 is Management sources other than personal meetings, in column 3 is Non-Management, and column 4 is Discovery. For the definitions of variables used here, please refer to table III. Robust z-statistics is in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Predicted Sign	Personal Meetings	Predicted Sign	Other Management	Predicted Sign	Non-Management	Predicted Sign	Discovery
		(1)		(2)		(3)		(4)
Pre Reg-FD	+	0.776***	+	0.008	NA	-0.589*	NA	0.061
		(3.6)		(0.0)		(-1.9)		(0.5)
Prestigious Broker	+	0.448	+	0.074	+/-	-0.604**	NA	0.009
		(1.6)		(0.5)		(-2.4)		(0.1)
Firm-specific Optimism	+	0.403*	+	-0.188	NA	0.306	NA	0.109
		(1.7)		(-1.1)		(1.1)		(0.8)
All Star Analyst	NA	-0.020	NA	0.095*	+	0.272***	NA	0.113***
		(-0.2)		(1.8)		(3.6)		(2.7)
Number of Firms Covered	NA	0.009	NA	-0.000	-	-0.008	NA	0.002
		(0.8)		(-0.0)		(-0.7)		(0.4)
Number of Industries Covered	NA	-0.089*	NA	0.028	-	0.008	NA	-0.002
		(-1.9)		(0.9)		(0.2)		(-0.1)
Years Covering the Firm	+/-	-0.013	+/-	0.025	+/-	0.097**	+/-	0.030*
		(-0.4)		(1.2)		(2.1)		(1.8)
Years Covering the Industry	+/-	-0.021	+/-	-0.035*	+/-	-0.141***	+/-	-0.047***
		(-0.7)		(-1.8)		(-3.8)		(-3.2)
Analysts Following	+	-0.007	+	0.035***	+	0.022*	+	0.024***
		(-0.6)		(4.1)		(1.7)		(3.5)
Information Asymmetry	+	-0.030	+	-0.022	+	0.906***	+	0.095
		(-0.2)		(-0.2)		(3.4)		(0.9)
Constant		-3.273***		-2.779***		-3.453***		-2.104***
		(-8.2)		(-9.3)		(-7.1)		(-8.9)
Observations		2,563		2,724		2,553		2,910
Pseudo R-square		0.0295		0.0164		0.0624		0.0139