**Reaction to Non-Earnings News and Analysts' Skill**

Amir Rubin

Interdisciplinary Center, Herzliya, Israel, and

Simon Fraser University, Canada

arubin@sfu.ca

Benjamin Segal

Accounting and Control Group

INSEAD

1 Ayer Rajah Ave., Singapore

Benjamin.Segal@insead.edu

Dan Segal

Interdisciplinary Center, Herzliya, Israel, and

Singapore Management University, Singapore

dsegal@idc.ac.il

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**Abstract:**

This study analyzes corporate 8-K releases and finds that while approximately 70% of analysts revise their forecasts following 8-K earning releases, the portion of analysts revising their forecasts after non-earnings 8-K is only 15%. We compare between forecasts that are revised and forecasts that remain unchanged following non-earnings 8-K releases and find that revised forecasts are associated with lower forecast error. We also find that analysts who revise their forecasts after non-earning 8-K releases have more accurate and timelier forecasts in subsequent periods. Overall, our findings indicate that non-earnings 8-Ks are informative about future earnings, and that analysts who revise their forecast after these releases are skillful.

Keywords: Analysts, Corporate disclosure, Forecast, Timeliness, 8-K

**1. Introduction**

Corporate disclosure and financial analysis are critical for a well-functioning and efficient capital market. While the objective of corporate disclosure is to reduce asymmetry between management and shareholders, one of the analyst’s roles is to assist investors in the interpretation of such disclosure. In their interpretation role, analysts routinely receive public information and use their expertise and knowledge to interpret the information and transform it to forecasts and recommendations that are then used by investors in making investment decision (e.g., Ivkovic and Jegadeesh, 2004; Asquith et al., 2005; Chen et al., 2010).[[1]](#footnote-1) In this study we analyze the quality of the analyst’s interpretation role by examining whether analysts react to non-earnings related information by issuing a revised forecast, and whether such reaction is indicative of superior ability. While research shows that analysts do not fully incorporate in their forecast non-earnings information that has direct impact on future earnings (Bartov and Bondar, 1994; Elliott et al., 1995; Abarbanell and Bushee, 1997; Chaney et al., 1999; Bradshaw et al., 2001), we provide large scale evidence on analysts' ability to interpret such information using a comprehensive data of 8-K reports, and show that the ability to react to non-earnings information is indicative of skill.

We focus on the disclosure of Form 8-K (“current report”), which is used to announce major events of interest to security holders. Events that would trigger an obligation to file Form 8-K include those affecting the registrant’s business and operations, financial information, securities and trading markets, accountants and financial statements, or corporate governance and management. Reportable items include the widely studied earnings news, but also the following items: entry into a material agreement or its termination, bankruptcy or receivership, completion of acquisition or disposition of assets, results of operations and financial condition, costs associated with exit or disposal activities, material impairments, departure of directors or certain officers, Regulation FD disclosure, notice of de-listing, and change of auditor, to name a few.

An especially appealing feature of the 8-K form is that it generally conveys economically important information that triggers market reaction in the form of abnormal equity return and trading volume (Livnat and Lerman, 2009). In addition, the format of the reporting enables us to clearly identify whether the form includes earnings or non-earnings related information, thereby allowing us to analyze the analyst’s reaction to non-earnings news. Importantly, 8-K filings that are not related to earnings announcements arrive idiosyncratically as they depend on the occurrence of events which necessitate the reporting of “current” events, which are unscheduled by their nature. Therefore, it is unlikely that analysts predicted the event and adjusted for its impact on future earnings prior to the 8-K filing. Put differently, the reaction of analysts who revise their forecasts provides evidence mostly about the interpretation role of the analyst.

Livnat and Zhang (2012) provide evidence that 9% (48%) of the forecast revisions are preceded by non-earnings (earnings) related information reported in
8-K releases,[[2]](#footnote-2) indicating that non-earnings related information triggers lower reaction by analysts. The lower reaction to non-earnings related information may be attributed to the possibility that some of the items reported in 8-K forms do not affect future earnings. However, our main conjecture is that the low reaction may also be attributed to differences in the ability of analysts to interpret the effect of the non-earnings news on future earnings. Research on the relation between analysts’ characteristics and forecast attributes indicate that analysts differ in their ability and consequently in the quality of their forecasts. Differences in analyst ability can arise from several factors, such as education (De Franco and Zhou, 2009) and experience (Mikhail et al., 1997; Hong et al. 2000). Hence, given that in this study we focus on non-earnings information that is idiosyncratic in nature and harder to interpret, we predict that only skilled analysts are able to interpret such information and react to the 8-K filing.

We test this prediction by examining whether the revised forecast results in lower forecast error compared to forecasts of analysts who did not react. Furthermore, we examine whether reaction to non-earnings related information is positively associated with future analysts' performance. In other words, we use past reaction to non-earnings related information as proxy for skill, and we examine whether it is associated with future analysts' performance. Following DeFranco and Zhou (2009), our two main measures of analysts' performance are accuracy and timeliness, which reflect the ability of the analyst to use and generate information. We also use boldness as a measure of analysts' independence, and degree of optimism which captures the bias in the analyst' forecast.

Consistent with the evidence in Livnat and Zhang (2012) we find that the reaction to non-earnings related information is far smaller than the reaction to earnings related information. Specifically, following an 8-K form reporting earnings, 70% of the analysts on average revise their forecast, and the likelihood of at least one forecast revision is close to 94% on average. In contradistinction, only 15% of the analysts on average react to non-earnings related information, and the likelihood of at least one forecast revision is close to 38%. Additionally, we find that the reaction to non-earnings related information increases with size and profitability, and there is significant variation in the reaction to the various items reported in the 8-K form. Nevertheless, the highest reaction is to Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review (Item 4.02), which is still low at around 24%.

We next document that reaction to 8-K results in lower forecast error. Specifically, we find that forecasts issued following a non-earnings 8-K report have on average a lower forecast error in comparison to all other concurrent forecasts, indicating that analysts who are able to interpret the non-earnings information in the 8-K and infer its impact on future profitability are able to provide more accurate earnings forecast. To examine whether a specific item drives the results, we repeat the analysis for each Item reported on the 8-K form separately. The results are broadly consistent with the pooled regression - we find that reaction to 10 of the 19 items in our sample lead to lower forecast error. Further, reaction to the most frequent items leads to lower forecast error. These results are consistent with our prediction that only skilled analysts who are able to interpret such information react to the 8-K filing. The results also suggest that although the reported items are not directly related to earnings they do have an impact on future profitability.

To further examine whether reaction to non-earnings related information is associated with skill, we construct a measure of skill based on the cumulative reaction ratio (CRR) of the analyst to non-earnings related information reported in 8-K forms by the firm. For each analyst-firm-year we compute the total number of non-earnings related 8-K filings to which the analyst reacted from the beginning of the sample period through the beginning of the year divided by the total number of non-earnings related 8-K reports filed by the company in the same period.[[3]](#footnote-3) We document a significant relation between our measure of skill and analysts' characteristics. Analysts who react to non-earnings related information have greater firm experience, cover more companies, are employed by greater brokerage, cover fewer industries, and issue more forecasts. We also find significant variation in the CRR of the analysts at the firm-year level, and significant variation in CRR of the same analysts across the firms they cover. The former result indicates that CRR is not a firm characteristic (that is, CRR is not determined by the firm's operation and disclosure), and the latter result suggests that CRR is not an overall analyst characteristic, rather it depends on the firm covered. This can be explained by differences in analyst ability across companies for reasons such as experience covering the company and differences in operation complexity and disclosure.

We then examine whether our skill measure can predict future performance. We find that CRR at the beginning of the year is positively associated with forecast accuracy. In addition, CRR is positively associated with timeliness, indicating that high CRR is associated with analysts who provide timelier processing of public information. Furthermore, it also suggests that analysts with low CRR are more likely to follow and use the information in high CRR analysts' forecasts.

Overall, our results suggest that reaction to non-earnings information is indicative of skill; analysts who revise their forecast following non-earnings information have lower forecast error. Moreover, analysts who routinely react to non-earnings information consistently outperform non-reacting analysts in terms of forecast error, and provide timelier forecasts.

This paper contributes to our understanding of disclosure and analysts’ processing of information. First, we provide large-scale evidence on the reaction (or lack thereof) of analysts to non-earnings related information. While existing studies show that analysts do not fully incorporate information which is not directly related to earnings, they typically focus on one aspect of non-earnings news. For example, Bartov and Bondar (1994) show that analysts do not incorporate fluctuations in the exchange rate. We provide additional evidence using comprehensive data of 8-K reports consisting of diverse non-financial information. Second, we contribute to the literature on analysts’ skills. We show that reaction to non-earnings information, which is harder to interpret, is associated with skill. Furthermore, we suggest a new proxy for skill based on the reaction of the analyst to non-earnings information, and show that this proxy is associated with future forecast accuracy and timeliness of the forecast. Third, our study has implications for practitioners who incorporate analysts’ forecast revision in identifying buy or sell signals, as our results suggest that analysts who revise their forecast following non-earnings 8-K are the more skillful analysts.

The rest of the paper proceeds as follows. In Section 2 we provide literature review. Section 3 describes the data and variables. Section 4 provides the empirical results. Section 5 concludes.

**2. Literature review**

*2.1 Form 8-K*

In addition to filing quarterly reports on Form 10-Q and annual reports on Form 10-K, public firms must report on certain material corporate events on a more current basis. These are filed with the SEC on Form 8-K (“current report”) and serve to announce major events of interest to security holders. Events that would trigger an obligation to file Form 8-K include those affecting the registrant’s business and operations, financial information, securities and trading markets, accountants and financial statements, or corporate governance and management.[[4]](#footnote-4)

The importance of Form 8-K filings can be gauged by the fact that between 1996 and 2011 both public and non-public firms filed close to 800,000 such filings (Segal and Segal, 2013), and prior research shows that 8-K filings contain information that has valuation implications. Specifically, Livnat and Lerman (2009) conduct a large sample investigation of 8-K filings and find that disclosed items, both earnings and non-earnings related, are associated with abnormal volume and equity return, indicating that events reported on the 8-K form have economic substance. Segal and Segal (2013) provide evidence consistent with strategic disclosure of 8-K reports. They document evidence consistent with managers engaging in strategic disclosure by delaying or obfuscating negative news in order to mitigate the potential market reaction. Other studies generally investigate individual categories in the filings, such as change of auditor announcements (Schwartz and Soo, 1996), non-reliance on previously issued financial statements (Feldman et al., 2008), Regulation FD (Griffin et al., 2011), changes in external auditors (Ettredge et al., 2011), or director resignations and departures (Bar-Hava et al., 2012). These studies tend to focus on timeliness compliance (whether the events are reported within the required reporting window) and/or market reaction.

*2.2 Analysts Reaction to Non-Earnings Information*

One of the most important roles of analysts is to interpret information that arrives at the market. Analysts routinely receive public information and use their expertise and knowledge to interpret the information and transform it to forecasts and recommendations which are then used by investors in making investment decisions. In this study we focus on this interpretation role and examine whether analysts react to non-earnings related information, and whether such reaction is indicative of superior ability.

While analysts’ recommendations and forecasts are well studied, most studies on the interpretation role focus on earnings announcements as the only significant corporate public information release and implicitly assume that analysts’ interpretation role only applies to the information contained in earnings announcements. Studies that analyze the quality of forecasts and recommendations of analysts related to information other than earnings provide evidence that analysts in general do not fully incorporate public information that is not directly earnings news, although the information has an effect on future earnings, albeit indirectly. Bartov and Bondar (1994) find that analysts' forecast errors are correlated with changes in exchange rates. Elliott et al. (1995) find that analysts systematically underweight new information. Abarbanell and Bushee (1997) find that forecast revisions do not incorporate all of the information in fundamental signals related to future earnings, implying that analysts ignore available non-earnings information. Chaney et al. (1999) find that analysts do not interpret the implications of restructuring charges appropriately. Bradshaw et al. (2001) find that analysts do not fully adjust forecasts for high accruals even though ﬁrms with high accruals are more likely to experience lower earnings in the future.

Livnat and Zhang (2012) provide evidence that only 9% of the forecast revisions are preceded by non-earnings related information reported in 8-K. In contrast, 48% of the revisions are preceded by earnings announcement (which are also reported on 8-K). These statistics indicate that non-earnings related information triggers lower reaction by analysts. This lower reaction can be attributed to two explanations: first, some of the items reported in 8-K forms, such as Material Modification to Rights of Security Holders (Item 3.03), Changes in Control of Registrant (Item 5.01), and Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year (Item 5.03), do not seem to have clear relation to future earnings. Second, analysts differ in their ability to process and interpret non-earnings information and to transform the information into a meaningful forecast. This second explanation seems reasonable because the most frequent non-earnings related items seem to have an impact on future earnings. In our sample, Entry Into Material Definitive Agreement (Item 1.01) and Regulation FD Disclosure (Item 7.01), which are likely to have direct impact on future earnings, account for close to 50% of the non-earnings related items. [[5]](#footnote-5)

Research on the relation between analysts characteristics and forecast attributes provides evidence that analysts differ in their ability and consequently in their quality of their forecasts. Differences in analyst ability can arise from several factors, such as education, experience, and other cognitive attributes. De Franco and Zhou (2009) provide evidence that analysts with a CFA designation perform at modestly higher levels than non-charter holders. Sinha et al. (1997) find systematic differences in forecast accuracy across analysts in a framework that considers analysts’ skills a fixed parameter that does not vary over time. Other studies have considered the evolution of analysts’ characteristics over time. Mikhail et al. (1997) find that experience matters, and that forecast accuracy increases over time. Furthermore, Hong et al. (2000) show that analysts tend to deviate from the consensus as a function of their experience, implying that there is a reduction in herding behavior over time. Overall, the evidence suggests that education and experience matter, and that analysts become more skillful and independent thinkers over time, which enables them to provide more accurate forecasts. Importantly, these findings indicate that there is variation in analysts' ability and skills, both cross-sectionally and over time, which may explain why some analysts react to non-earnings information whereas other analysts do not.

For this study, since we analyze non-earnings 8-K releases, the implication of differences in skills imply that prompt forecast revisions following these releases are informative because only the skillful analysts are able to process the information and understand how it affects future earnings. Hence, according to this view, analysts who revise forecasts following non-earnings 8-K are more skillful than other analysts, who do not revise forecasts following these releases, and consequently reacting analysts are able to provide more accurate forecasts.

 Alternatively, a reaction to non-earnings 8-K may not be related to skill but rather attributed to economic incentives faced by the analyst or to the overconfidence phenomenon. Specifically, if analysts’ forecasts are affected by incentives to bias their forecasts, a non-earnings 8-K release presents an opportunity to revise forecasts, even though these revisions are not informative of future earnings. For instance, when a firm releases news, it prefers that the market will view the news in a favorable manner. Hence, analysts may issue a biased-optimistic revision to either maintain a good stand with the company or, if no current relation exists, to gain future business opportunities from the company. In such cases, one expects that optimism bias will exist for forecasts made promptly after these releases.

A major reason for overconfidence is the bias in information processing, which suggests that analysts search their memories for relevant information and reach a preliminary conclusion. Once a preliminary conclusion is reached, analysts do not publish their conclusion (as they are aware that it is based on selective memory), but rather proceed to search selectively for more evidence confirming this initial conclusion at which time they release their opinion. It is therefore plausible that the arrival of new information (such as a non-earnings 8-K filing) triggers these overconfident analysts to release their preliminary conclusion. A variant of this idea applies to the simultaneous use of private and public information. Bloomfield et al. (2000) report experimental evidence that overconfident individuals are especially overconfident in their ability to interpret new data, and therefore, they tend to underperform when new information arrives in the market. This lends itself to the possibility that the release of non-earnings 8-K may lead overconfident analysts to issue new forecasts.

 Overall, our main conjecture is that analysts who react promptly to non-earnings 8-K release have better skills, and therefore are able to perform better than non-reacting analysts. However, as the preceding paragraphs suggest, if the filing of non-earnings 8-K provides opportunity to intentionally (because of economic incentives) or unintentionally (because of overconfidence) misinform investors then we would not find evidence that reaction to non-earnings information is associated with skill.

**3. Data and Descriptive Statistics**

We download and analyze the entire population of 8-K Forms filed with the SEC via EDGAR between the years 2005 and 2010.[[6]](#footnote-6) For each 8-K filing we identify firm and report identifiers and a list of reported items. The initial sample consists of 390,791 8-K reports with firm identifier, filing and event dates, and items reported. We drop all forms of firms that do not have Compustat or CRSP identifier, reducing the sample to 266,103 forms. We remove amendments to
8-K (5,852 reports), 8-K forms where a firm filed multiple 8-K reports in a single day (11,330 reports), and cases where a firm filed multiple 8-K reports within three subsequent days (21,912 reports). The latter two restrictions were imposed to allow for accurate identification of analysts' reaction to 8-K reports. We also remove 8-K reports that were filed within three days of a quarterly or annual report to mitigate the possibility that the analyst reacted to information not necessarily related to the information in the 8-K (6,019 reports).

Financial data are obtained from Compustat and CRSP. Merging the 8-K data with Compustat and CRSP and requiring non-missing values of share price, profitability, leverage, equity return volatility, and book value of equity at the beginning of the fiscal year further reduces the 8-K sample to 157,429.

Analyst related data is obtained from the detailed IBES file. We merge the 8-K sample with the detailed IBES file and require at least one forecast between the beginning of the fiscal year and three days after the filing date of the 8-K. If no forecast is available during this period, the particular 8-K report is dropped from our analysis as we would not be able to analyze the analysts' reaction (or lack of reaction) to the particular report. This restriction reduces the 8-K sample to 102,083 forms filed by 3,326 (13,622) firms (firm-years).

Table 1 provides firm-year descriptive statistics of the main variables used in the analysis. The sample firms are skewed in terms of size: mean (median) equity value is $4.44 billion ($691 million). Mean book-to-market is 0.53, and mean equity return volatility is 3.2%. Mean return on assets is close to zero but the median is 4.1%. Book leverage is on average 20%. Mean institutional ownership by large block holders 21.8%. Analysts in our sample provide on average 2.78 forecasts (annual fiscal period earnings) in a given year (either new forecast or a revision), and the mean number of analysts following a firm in a given year is 9.78.

**4. Results**

In Section 4.1 we compare the reaction to earnings 8-K form vs. non-earnings 8-K form by analysts as well as examine the determinants of reaction. In Section 4.2 we examine whether the reaction to non-earnings 8-K form leads to lower forecast error, and in Section 4.3 we present the results of the relation between reaction to non-earnings information as proxy for skill and future performance of the analyst.

*4.1 The Reaction to 8-K Report*

Table 2, Panel A shows descriptive statistics of the reaction variables. We use two measures of reaction: one, the Reaction Ratio, and two, the Likelihood of Reaction. The former is computed as the number of analysts who revised their forecast in the period from the event date until three days after the filing date scaled by the number of analysts who follow the firm during the same period.[[7]](#footnote-7) The Likelihood of Reaction is an indicator variable that takes the value of 1if at least one analyst revised her forecast in the period from the event date until three days after the filing date, and 0 otherwise. We label 8-K forms as earnings related form if the 8-K form includes Item 2.02 (Results of Operations and Financial Condition). All other 8-K forms are labeled as non-earnings related forms. Based on our sample of 8-K reports, non-earnings 8-K are approximately twice as common compared to earnings related 8-K (65,390 obs. vs. 36,693 obs.). The panel also shows that analysts are much more likely to react to earnings information; 70% of the analysts on average revise their forecast, and the likelihood of at least one revision is close to 94% on average. In contradistinction, the reaction to non-earnings related information is far smaller. Only 15% of the analysts on average react to non-earnings related information, and the likelihood of reaction is close to 38%. While there is no benchmark of expected reaction to which we can compare the actual reaction, the reaction to non-earnings information appears to be low. Furthermore, given that the 8-K contains value relevant information (Lerman and Livnat 2010), there are two possibilities for the relative low reaction. First, the information does not affect expected cash flows but rather expected returns, and second, that not all analysts are able to process and interpret non-earnings information. However, the fact that some analysts react to non-earnings related information reported in 8-K forms by updating their forecasts suggests that the latter explanation is plausible. This explanation is also consistent with analysts having different skills and abilities to process and interpret information (De Franco and Zhou, 2009).

We further explore analysts' reaction by analyzing the Reaction Ratio and Likelihood of Reaction to each of the items reported in the form. [[8]](#footnote-8) Table 2, Panel B shows the mean of the reaction variables by item.[[9]](#footnote-9) Since many of the 8-K forms include more than one item, thereby making it difficult to ascertain which specific item generated reaction, we also report in the table the mean reaction variables when we restrict the sample to 8-K forms reporting a single item. Although there is variability in the reaction across items, the Reaction Ratio to most non-earnings related items is in the low teens, and the Likelihood of Reaction is predominantly between 30% and 40%. These results indicate that the average low reaction documented above is not driven by few items but rather is consistent across most items. The table shows that Regulation FD Disclosure (Item 7.01), Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review (Item 4.02), and Material Impairments (Item 2.06) generate the highest Reaction Ratio, 24%, 18%, and 17.8% respectively. The latter two are clearly associated with expected earnings, and hence the relatively low reaction is somewhat puzzling. The items with the highest Likelihood of Reaction are those that generate the highest Reaction Ratio. In addition, Costs Associated with Exit or Disposal Activities (Item 2.05) and Completion of Acquisition or Disposition of Assets (Item 2.01) also result in high Likelihood of Reaction.

To better understand the reaction to non-earnings information included in the 8-K form, we regress the reaction variables on firm characteristic and the items reported in the form. We exclude the 8-K forms which include Item 2.02 (Results of Operations), which reduces the sample to 65,390 8-K forms comprising of 79,836 reported items. We control for variables that proxy for the information environment of the firm as well as operating and financial risk. Specifically, we control for the number of analysts following, size (log market value of equity), profitability (return on assets), leverage, book-to-market ratio, and equity return volatility. We include in the regression an indicator variable for each item reported in the form. We use Probit (Tobit) to estimate the Likelihood of Reaction (Reaction Ratio) regressions. The regressions control for firm and year fixed effects and the standard errors correct for firm clustering.

Table 2, Panel C shows the regression results. We find that the reaction is positively associated with size, profitability, and leverage, suggesting that analysts are more likely to react to 8-K forms filed by large and profitable companies. The coefficients on the book-to-market ratio and equity return volatility are positive and significant in the Reaction Ratio regression but not in the Likelihood of Reaction regression. As expected, the Likelihood of Reaction (reaction ratio) is positively (negatively) associated with the number of analysts following. More importantly, we find significant variation in the reaction for the various items reported in the 8-K form and the Reaction Ratio and the Likelihood of Reaction are high for Item 4.02, Item 7.01, Item 2.05 and Item 2.01[[10]](#footnote-10), which is consistent with the univariate analysis.

*4.2 Reaction to Non-Earnings Information and Forecast Error*

 In this section we examine whether forecast revision following an 8-K with non-earnings related information leads to lower earnings forecast error. Finding that reaction to non-earnings information in the 8-K form leads to lower earnings forecast error would suggest that analysts who react to 8-K are the more skilful because they are able to interpret non-earnings information and transform it to a meaningful forecast of future earnings. Furthermore, it would also suggest that the 8-K form includes information related to future profitability.

 We examine whether reaction to 8-K leads to lower forecast error using the following research design. We drop from the 8-K sample all the reports that include earnings information as our study focuses on non-earnings information. For each 8-K report we define the Forecast Period as the period from the beginning of the fiscal year through three days after the 8-K filing date. We restrict the forecast data to include next annual fiscal period earnings only. We merge the 8-K sample with the analyst data using firm-year identifiers, and require at least one forecast during the Forecast Period. This restriction reduces the 8-K sample to 52,440 reports. If an analyst provided more than one forecast during the forecast period, we keep the latest forecast during the Forecast Period. We then define Reaction indicator variable as 1 if the analyst provided a forecast between the 8-K event date and three days after the filing date and 0 otherwise.[[11]](#footnote-11) Untabulated results show that of the 52,440 8-K reports, 27,914 reports did not elicit any reaction, 8,553 reports generated reaction by all analysts following the firm, and 15,973 reports resulted in partial reaction whereby some analysts reacted and others did not react. The total number of forecasts available for the analysis is 613,217, and the mean (median) number of forecasts in the Forecast Period is 9.3 (7).

 Table 3, Panel A shows the mean forecast errors for forecasts that were issued as a reaction to 8-K and all other forecasts during the Forecast Period. We compute the forecast error as the absolute value of the difference between the forecast and actual earnings per share scaled by the beginning of the fiscal year price per share. Since the forecast error decreases over the fiscal year, we present the statistics by months relative to fiscal year-end. For example, we group together all the 8-K reports that were issued during the nth month prior to fiscal year end (*n* =1 through 12) and compare the mean forecast error of all forecast that were issued as a reaction to 8-K forms that were filed during the month with the mean forecast error of all other (no reaction) forecasts that were issued during the Forecast Periods of these 8-K forms.

The table indicates that with the exception of 8-K forms issued 12 months prior to fiscal year-end, the mean forecast error of forecasts that were issued following an 8-K are uniformly lower than the forecast error of other forecasts that were issued during the Forecast Period.The difference is statistically significant at 1% or better, except for months 9 and 11 where the difference is significant at 5%. These results suggest that reaction to non-earnings information reported in 8-K leads to lower forecast error, consistent with our conjecture that skilful analysts are those who are more likely to be able to assess the impact of non-earning information on future profitability. The results also suggest that although the 8-K form does not include information related directly to earnings, the information is useful in predicting future earnings.

Table 3, Panel B shows the regression results. The dependent variable is the forecast error, and the independent variables include firm characteristics that are associated with forecast error – size, profitability, equity return volatility, leverage, growth (proxied by the book-to-market ratio), and institutional ownership. In addition, we include the Reaction indicator – an indicator with 1 if the forecast is issued following an 8-K and 0 otherwise. We include firm, year, and number of months prior to fiscal year-end fixed effects. The standard errors correct for firm clustering. The column labeled ALL 8-K shows the pooled regression results. The Reaction indicator is negative and significant (*p*-value < 0.01) indicating that forecasts issued following a non-earnings 8-K report have on average a lower forecast error in comparison to all other concurrent forecasts. This suggests that analysts who are able to interpret the non-earnings information in the 8-K and infer its impact on future profitability are able to provide more accurate earnings forecast. The coefficients on the other control variables are broadly consistent with the findings in the extant literature. Forecast error is positively associated with leverage and the book-to-market ratio, and is negatively associated with size, profitability, and institutional ownership. To examine whether a specific item drives the results, we estimate the regression separately for each item. The results are broadly consistent with the pooled regression; we find that reaction to 10 of the 19 items leads to lower forecast error. Furthermore, reaction to the most frequent Items (1.01, 5.02, 7.01, and 8.01) leads to lower forecast error.

We conduct various sensitivity analyses to assess the robustness of the results. First, we replicate the analysis using Fama and MacBeth (1973) methodology. We estimate the regressions by months relative to fiscal year-end, both pooled and by item, and find similar results. Second, we restrict the sample to the non-earnings 8-K reports that triggered partial reaction, i.e. at least one analyst reacted and at least one analyst did not react. As reported above, this requirement reduces the sample of 8-K significantly, yet the results are similar to those reported. Third, to eliminate the possibility that the results are driven by stalled forecasts, we include in the Forecast Period forecasts that were issued no more than 30 days prior to the 8-K filing date. Again, the results are consistent with those reported.

Overall, we find that forecasts issued following an 8-K are more accurate than other contemporaneous forecasts, suggesting that analysts who react to 8-K are more skilful because they are able to interpret non-earnings information and transform it to a meaningful forecast of future earnings. In addition, the results indicate that non-earnings information reported in an 8-K is "future earnings" relevant. However, we also find variation in the "future earnings" relevance of the various items reported in the 8-K.

*4.3. Reaction to non-earnings 8-K and Future Analyst Performance*

The results thus far indicate that non-earnings information included in 8-K reports can be useful in predicting future earnings, yet not all analysts react to the release of 8-K reports, and the reaction to the reports appears to be low. One potential explanation for the low reaction is that analysts differ in their ability to process and interpret non-earnings information and to transform the information into a meaningful forecast. While there are several factors that affect analysts' cognitive ability and performance, we conjecture that the reaction to non-earnings information can be used as a proxy for cognitive ability of the analyst and therefore his/her performance. We base this conjecture on our findings that non-earnings information is relevant for future earnings and that not all analysts react to the information. Given that the 8-K is publicly available, non-reaction to the information implies that the analyst does not know how to interpret the information or, alternatively, that the analyst believes that the information is not related to future earnings. Either way, the non-reaction suggests that such analysts potentially have lower skills or ability in comparison to analysts who do react to the information.

We measure analyst's ability using his/her Cumulative Reaction Ratio (CRR). Specifically, we measure CRR at the firm-year-analyst level as the cumulative number of 8-K reports filed by the company to which the analyst reacted scaled by the total number of 8-K reports filed by company. As before, we include only 8-K reports without earnings information (i.e. we exclude all 8-K including Item 2.02). The ratio is computed as of the beginning of the fiscal year. For example, the CRR for analyst *i* with respect to firm *j* in year *t* is computed as the total number of 8-K to which the analyst reacted from the beginning of the sample (2005) through year *t*-1 divided by the total number of 8-K reports filed by firm *j*. We use the cumulative amounts in computing CRR because the filing of 8-K reports is largely idiosyncratic as it depends on the occurrence of events that necessitate 8-K filing;consequently, there are large variations over time in the number and content of 8-K reports filed by the company. In addition, the CRR is analyst-firm specific. In other words, the analyst's CRR can differ across the companies she covers.

There are several advantages for using analyst-firm specific CRR. First, analyst's ability to interpret non-earnings information may differ from company to company due to the experience of the analyst with each company and differences across companies. Second, firms differ in the 8-K reports submitted and therefore aggregation of reaction across firms is less meaningful. Specifically, the distribution of items reported in 8-K can differ across companies (e.g. some firms are more prone to restate or to record impairments), and so does the reaction ratio as we have already seen that certain items are more "future earning relevant".

Similar to De Franco and Zhou (2009), our two main measures of performance are accuracy and timeliness, which reflect the ability of the analyst to use and generate information. We also use boldness as a measure of analysts' independence, and degree of optimism, which captures the bias in the analyst's forecast. We expect positive association between accuracy and CRR. Since we measure accuracy as forecast error, we expect negative relation between CRR and the forecast error. Following Cooper et al. (2001) and De Franco and Zhou (2009), our measure of analyst timeliness is based on the number of days between the analyst forecast and the forecast by other analysts that precede and follow it. Specifically, for each forecast we compute Leading Days as the number of days between the forecast and the two most immediate forecasts by any other analyst preceding the forecast date. Similarly, we compute Following Days as the number of days between the analyst forecast and the two most recent forecasts by any other analysts issued after to the forecast date. We compute Timeliness as the ratio of leading days to following days. A timelier forecast indicates either that the analyst reacts to the new information more quickly, and/or that other analysts react to the news in the analyst's forecast. Hence, we expect positive association between Timeliness and CRR.[[12]](#footnote-12) Boldness measures the analyst's confidence in providing a new forecast that deviates from the consensus, and it is computed as the absolute value of the difference between the forecast and the consensus forecast scaled by the beginning of the year price per share. We compute the consensus forecast as the mean of all analysts’ most recent forecasts issued during the 90-day period prior to the forecast date. Optimism is computed as the difference between the forecast and actual earnings scaled by the beginning of the year price per share.

Prior research (Haw et al., 1994; Mikhail et al., 1997; Maines et al., 1997; Jacob et al., 1999; Duru and Reeb, 2002; Clement, 1999; Clement and Tse, 2003, 2005; Hirst et al., 2004; Malloy, 2005; De Franco and Zhou, 2009) documents that analyst performance can be partially explained by analyst characteristics. We therefore follow these studies and control for:

* Analyst's experience in following the firm (Firm Experience) **–** the number of years the analyst covers the company as of year *t*.
* Analyst's specialization (Number of Companies) **–** the number of companies covered by the analyst in year *t*.
* Analyst's effort (Forecast Frequency) **–** total number of firm forecasts issued by the analyst during year *t*.
* Resources of the brokerage house (Broker Size) **–** number of analysts employed by the brokerage firm employing the analyst in year *t*.
* General Experience (Number of Industries) **–** the number of unique two-digit SICs of all the companies followed by analyst *i* in the 12-month period prior to day *t*.

We examine the relation between analyst performance and CRR using the Detailed History IBES data file for the period from 2005 through 2010. Since we use CRR at the beginning of the year, we are not able to use year 2005 in the regressions. The overall number of firm-year-analysts’ forecasts with non-missing CRR includes 310,498 forecasts.

Table 4, Panel A provides descriptive statistics of the analyst characteristics used in the analysis. We aggregate the statistics by firm-year-analyst, resulting in a sample of 71,541 observations. Mean (Median) CRR is 0.13 (0.1), indicating that analyst on average react to 13% of the non-earnings 8-K filed by the company. The average firm experience is close to 4 years. Analysts cover 15.8 companies across 6.5 industries and issue 4.8 forecasts per year. The average brokerage employs 55 analysts. The mean statistics are somewhat higher than those reported by De Franco and Zhou (2009). One potential explanation for this is a difference in sample size and period. Their sample includes an earlier period, from 1999 through 2005.

Panel B reports the mean of the characteristics by CRR dummy, which takes the value of 1 if CRR is greater than 0 (that is, if the analyst reacted to as little as one non-earnings 8-K prior to year *t*) and 0 otherwise. The number of analyst-years with zero CRR, i.e cases where the analyst never reacted to an 8-K is substantial **–** 25,039, both in absolute terms and relative to the sample population (about 35% of the total analysts-year sample). The panel clearly points to a relation between CRR dummy and analysts characteristics. Reacting analysts have greater firm experience, cover more companies, are employed by greater brokerage, cover fewer industries, and issue more forecasts. Untabulated Tobit regression of CRR on these characteristics provides similar results. CRR is positively associated with firm experience, number of companies covered, forecast frequency, and broker size; and it is negatively associated with the number of industries covered by the analyst. These results suggest that CRR can be used as potential proxy for skill because skill is positively associated with firm experience (Mikhail et al., 1997 and Hong et al., 2000).

One potential argument against using CRR as an analyst characteristic is that CRR is largely determined by the firm's operations. In other words, some firms are more likely to issue non-earnings 8-K reports that are easier to interpret and use in forecasting future earnings, and hence, CRR likely captures variation in firm disclosure rather than analysts' ability. To examine whether CRR is a firm characteristic rather than an analyst characteristic, we compute at the firm-year level the mean, standard deviation, and interquartile range of the CRR of the analysts covering the firm. The results reported in Table 4, Panel C indicate considerable variation across analysts within the firm. Specifically, the mean of the mean CRR at the firm-year level (0.137) is similar to the overall mean CRR in the population. More importantly, CRR exhibits meaningful variation across analysts within each firm year: mean standard deviation is close to 0.1 and the interquartile range is 0.12. While there is no benchmark that we can use to gauge whether the variation is large or not, the extent of the variation suggests that there is variation in the reaction to non-earnings
8-K information among analysts covering the firm, and hence the CRR is not a firm characteristic.

Similarly, we also examine whether the CRR is an analyst characteristic, i.e. similar CRR scores across all companies, or rather depends on the firm of interest. We replicate the univariate analysis in Panel C and compute the descriptive stats of CRR at the analyst-year level (that is, across all companies covered by the analyst). Table 4, Panel D shows that there is also considerable variation of CRR across companies covered by the analyst. Specifically, the mean of mean CRR across companies at the analyst-year level is 0.13, the standard deviation is 0.137, and the interquartile range is 0.179. Hence, these results suggest that CRR is not an overall analyst characteristic but rather depends on the firm covered. Again, this can be explained by differences in analyst ability across companies for reasons related to experience covering the company and complexity of the company's operation. In addition, firms may differ in the distribution of items reported in 8-K in general and in items which are more likely to affect future earnings in particular.

Following De Franco and Zhou (2009), we examine the association between CRR and analyst performance by estimating the following model:

$$Performance\_{ijt}=a\_{0}+a\_{1t}×CRR\_{ijt-1}+B×Analyst Characteristics\_{ijt}+ε\_{it}$$

where the Performance proxies are the Timeliness, Forecast Error, Boldness and Optimism of each forecast of analysts *i* for firm *j* in year *t*. The Analyst Characteristics include firm experience, number of industries, number of companies, forecast frequency, and broker size. To allow for comparisons across observations, we follow De Franco and Zhou (2009) and Clement and Tse (2003, 2005) and standardize each of the performance measures and independent variables. Specifically, we transform each variable as follows: we subtract from each variable its minimum value for firm *j* in year *t* and scale the difference by the difference between the maximum and minimum value of the variable for firm *j* in year *t*. This standardization provides a relative measure for all analysts who follow the same firm in year *t,* and thus controls for systematic firm year differences in the variables.[[13]](#footnote-13) We estimate the regression on a monthly basis controlling for firm fixed effect, and then present mean coefficients as in Fama and MacBeth (1973). The standard errors are corrected for serial dependence using the Newey and West (1987) adjustment, with 12 lags for serial dependence in the coefficients.

Table 4, Panel E presents the regression results. The coefficient on CRR is positive in the Timeliness column, indicating that analysts with greater reaction ratio provide more timely forecasts. This finding is consistent with the conjecture that high CRR is associated with analysts who provide timelier forecast in response to public information. Further, it also suggests that analysts with low CRR (that is, analysts who are considered to be followers) are more likely to follow and use the information in high CRR analysts' forecasts. Consistent with Clement and Tse (2005) and De Franco and Zhou (2009), we also find that timeliness is associated with broker size, firm experience and forecast frequency. The Forecast Error column shows that analysts with high CRR have lower forecast error. This result is consistent with our premise that CRR is a proxy to cognitive ability **–** higher CRR indicates greater ability, and hence more accurate forecasts. Consistent with the findings in the extant literature, we find that forecast error increases with the number of industries and decreases with firm experience. We also find that forecast error is increasing with broker size and forecast frequency, and decreases with the number of companies. The results of the Boldness and Optimism regressions suggest that there is no significant association between these variables and CRR; analysts with high CRR do not provide bolder forecasts, and their forecast is as optimistic as the average forecast optimism. The signs of the control variables indicate that boldness is increasing with broker size and decreasing with number of companies, and optimism decreases with broker size.

**5. Conclusion**

In this paper we analyze whether analysts that react to non-earnings information in 8-K reports are more skilful. Given that non-earnings information reported in 8-K filings is economically important (Lerman and Livnat 2010), arrives idiosyncratically, and is not related directly to earnings, we conjecture that the ability of analysts to interpret the information and assess its impact on future earnings is indicative of skill. Differences in analyst ability can arise from several factors, such as education (De Franco and Zhou, 2009) and experience (Mikhail et al., 1997; Hong et al., 2000).

Our findings show that reaction in the form of forecast revision to non-earnings 8-K is much lower compared to earnings 8-K, and that although there is variation in the average reaction across the various items reported in 8-K, the average reaction across items is in the mid to high teens. However, despite the fact that most analysts do not revise their forecast following non-earnings 8-K releases, we find that forecasts issued following a non-earnings 8-K report have on average a lower forecast error in comparison to all other concurrent forecasts, indicating that analysts who are able to interpret the non-earnings information in the 8-K and infer its impact on future profitability are able to provide more accurate earnings forecast. Further, the results also suggest that although the reported items are not directly related to earnings, they do have an impact on future profitability.

We further explore whether reaction to non-earnings information is related to skill by examining whether reaction to non-earnings 8-K reports is associated with future performance. We find that analysts that revisit their forecasts following non-earnings 8-K releases provide more accurate and timely forecasts in subsequent periods.

Overall, our results suggest that reaction to non-earnings information is indicative of skill; analysts who revise their forecast following non-earnings information have lower forecast error. Moreover, analysts who routinely react to non-earnings information consistently outperform non-reacting analysts in terms of forecast error, and provide timelier forecasts.

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**Appendix I:**

|  |  |  |
| --- | --- | --- |
| Form 8-K Item | Description |  |
| 1.01 | Entry into a Material Definitive Agreement |  |
| 1.02 | Termination of a Material Definitive Agreement |  |
| 1.03 | Bankruptcy or Receivership |  |
| 1.04 | Mine Safety - Reporting of Shutdowns and Patterns of Violations |  |
| 2.01 | Completion of Acquisition or Disposition of Assets |  |
| 2.02 | Results of Operations and Financial Condition |  |
| 2.03 | Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant |  |
| 2.04 | Triggering Events That Accelerate or Increase a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement |  |
| 2.05 | Costs Associated with Exit or Disposal Activities |  |
| 2.06 | Material Impairments |  |
| 3.01 | Notice of Delisting or Failure to Satisfy a Continued Listing Rule or Standard; Transfer of Listing |  |
| 3.02 | Unregistered Sales of Equity Securities |  |
| 3.03 | Material Modification to Rights of Security Holders |  |
| 4.01 | Changes in Registrant's Certifying Accountant |  |
| 4.02 | Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review |  |
| 5.01 | Changes in Control of Registrant |  |
| 5.02 | Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers |  |
| 5.03 | Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year |  |
| 5.04 | Temporary Suspension of Trading Under Registrant's Employee Benefit Plans |  |
| 5.05 | Amendment to Registrant's Code of Ethics, or Waiver of a Provision of the Code of Ethics |  |
| 5.06 | Change in Shell Company Status |  |
| 5.07 | Submission of Matters to a Vote of Security Holders |  |
| 5.08 | Shareholder Director Nominations |  |
| 6.01-6.05 | Asset-Backed Securities  |  |
| 7.01 | Regulation FD Disclosure |  |
| 8.01 | Other Events |  |
| 9.01 | Financial Statements and Exhibits |  |

**Table 1: Descriptive Statistics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Mean** | **Standard Deviation** | **Q1** | **Median**  | **Q3** |
| Market Value of Equity | 4,439 | 17,573 | 240 | 691 | 2,283 |
| Return on Assets | -0.003 | 0.185 | -0.01 | 0.041 | 0.083 |
| Equity Return Volatility | 0.032 | 0.015 | 0.021 | 0.028 | 0.039 |
| Book-to-Market Ratio | 0.527 | 0.48 | 0.243 | 0.417 | 0.669 |
| Leverage | 0.2 | 0.204 | 0.006 | 0.159 | 0.318 |
| Institutional Ownership | 0.218 | 0.154 | 0.092 | 0.197 | 0.313 |
| Number of Analyst Forecasts  | 2.783 | 1.006 | 2 | 2.667 | 3.5 |
| Number of Analysts Following | 9.773 | 7.777 | 4 | 8 | 13 |

Table 1 provides descriptive statistics of firm-year variables. The number of observations is 13,622. Market Value of Equity is computed at fiscal year end. Return on Assets is computed as Income Before Extraordinary (Mnemonic IB) scaled by total assets (AT); Equity Return Volatility is the standard deviation of daily stock return during the year; Book-to-Market is computed as book value of equity (CEQ) scaled by market value of equity; Leverage is the sum of short term and long term debt (DLC+DLTT) scaled by total assets; Institutional Ownership is the proportion of shares held by large block holders (ownership > 5%); Number of Analysts Forecast is the number of next year's annual EPS forecasts (new or revised) made by an analyst in a calendar year. Number of Analysts Following is the number of analysts following the firm.

**Table 2: The Reaction to 8-K forms**

**Panel A: Reaction to 8-K with and without Earnings Related Information**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Variable** | **N** | **Mean** | **Min** | **Q1** | **Median**  | **Q3** | **Max** |
| No earnings Info  | Reaction Ratio | 65,390 | 0.137 | 0 | 0 | 0 | 0.143 | 1 |
| Likelihood of Reaction | 65,390 | 0.376 | 0 | 0 | 0 | 1 | 1 |
| Earnings Release  | Reaction Ratio | 36,693 | 0.703 | 0 | 0.5 | 0.75 | 1 | 1 |
| Likelihood of Reaction | 36,693 | 0.936 | 0 | 1 | 1 | 1 | 1 |

**Panel B: Mean Reaction Ratio and Likelihood of Reaction by 8-K Item**

|  |  |  |
| --- | --- | --- |
|  | Multiple Item 8-K | Single Item 8-K |
| 8-K Item | N | Likelihood of Reaction | Reaction Ratio | N | Likelihood of Reaction | Reaction Ratio |
| 1.01 | 17,777 | 0.398 | 0.162 | 10,446 | 0.360 | 0.145 |
| 1.02 | 1,333 | 0.401 | 0.155 | 324 | 0.315 | 0.091 |
| 2.01 | 1,401 | 0.502 | 0.188 | 571 | 0.441 | 0.154 |
| 2.02 | 36,693 | 0.937 | 0.703 | 31,442 | 0.942 | 0.708 |
| 2.03 | 3,212 | 0.411 | 0.141 | 703 | 0.366 | 0.126 |
| 2.04 | 173 | 0.353 | 0.117 | 89 | 0.360 | 0.112 |
| 2.05 | 923 | 0.576 | 0.296 | 437 | 0.451 | 0.161 |
| 2.06 | 325 | 0.637 | 0.364 | 90 | 0.444 | 0.178 |
| 3.01 | 664 | 0.247 | 0.101 | 451 | 0.195 | 0.065 |
| 3.02 | 1,100 | 0.446 | 0.169 | 270 | 0.315 | 0.124 |
| 3.03 | 515 | 0.338 | 0.139 | 95 | 0.232 | 0.086 |
| 4.01 | 526 | 0.232 | 0.101 | 486 | 0.233 | 0.102 |
| 4.02 | 359 | 0.579 | 0.398 | 156 | 0.417 | 0.242 |
| 5.01 | 53 | 0.321 | 0.147 | 25 | 0.280 | 0.095 |
| 5.02 | 17,523 | 0.364 | 0.151 | 12,591 | 0.328 | 0.121 |
| 5.03 | 2,972 | 0.424 | 0.173 | 1,389 | 0.381 | 0.138 |
| 5.04 | 152 | 0.289 | 0.102 | 135 | 0.244 | 0.073 |
| 5.05 | 189 | 0.376 | 0.188 | 91 | 0.319 | 0.128 |
| 5.07 | 1,626 | 0.335 | 0.103 | 997 | 0.308 | 0.087 |
| 7.01 | 15,593 | 0.525 | 0.252 | 10,559 | 0.451 | 0.180 |
| 8.01 | 19,663 | 0.419 | 0.165 | 14,281 | 0.367 | 0.119 |

**Panel C: Regressions of the Reaction Ratio and Likelihood of Reaction on Firm and Form Characteristics**

|  |  |  |
| --- | --- | --- |
|  | Reaction Ratio | Likelihood of Reaction |
| Constant | -0.666\*\*\* |  |
|  | (0.000) |  |
| Number of Analysts Following | -0.001\* | 0.018\*\*\* |
|  | (0.061) | (0.000) |
| Log Market Value of Equity | 0.056\*\*\* | 0.282\*\*\* |
|  | (0.000) | (0.000) |
| Return on Assets | 0.053\*\*\* | 0.176\* |
|  | (0.008) | (0.088) |
| Leverage | 0.053\*\*\* | 0.202\* |
|  | (0.003) | (0.087) |
| Book-to-Market | 0.014\* | 0.065 |
|  | (0.072) | (0.121) |
| Equity Return Volatility | 1.016\*\*\* | 0.169 |
|  | (0.001) | (0.897) |
| Indicator 1.01 | 0.059\*\*\* | 0.255\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 1.02 | 0.019 | 0.138\*\* |
|  | (0.288) | (0.035) |
| Indicator 2.01 | 0.134\*\*\* | 0.575\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 2.03 | -0.029\*\* | -0.052 |
|  | (0.019) | (0.247) |
| Indicator 2.04 | -0.064 | -0.104 |
|  | (0.220) | (0.576) |
| Indicator 2.05 | 0.162\*\*\* | 0.692\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 2.06 | 0.117\*\*\* | 0.420\*\*\* |
|  | (0.005) | (0.006) |
| Indicator 3.01 | -0.116\*\*\* | -0.168 |
|  | (0.000) | (0.122) |
| Indicator 3.02 | 0.078\*\*\* | 0.361\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 3.03 | -0.049 | -0.253\*\* |
|  | (0.102) | (0.020) |
| Indicator 4.01 | -0.090\*\*\* | -0.243\*\* |
|  | (0.005) | (0.039) |
| Indicator 4.02 | 0.214\*\*\* | 0.641\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 5.01 | -0.055 | -0.234 |
|  | (0.560) | (0.484) |
| Indicator 5.02 | -0.013 | -0.019 |
|  | (0.101) | (0.485) |
| Indicator 5.03 | 0.047\*\*\* | 0.165\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 5.04 | -0.122\*\* | -0.511\*\* |
|  | (0.029) | (0.010) |
| Indicator 5.05 | 0.023 | -0.074 |
|  | (0.642) | (0.672) |
| Indicator 5.07 | -0.059\*\*\* | -0.117\* |
|  | (0.001) | (0.072) |
| Indicator 7.01 | 0.130\*\*\* | 0.439\*\*\* |
|  | (0.000) | (0.000) |
| Indicator 8.01 | 0.016\*\* | 0.165\*\*\* |
|  | (0.032) | (0.000) |
|  |  |  |
| Observations | 65,390 | 63,633 |
| Number of firms | 3,285 | 2,866 |

Panel A shows the mean reaction to 8-K forms which include earnings related information, labeled Earnings Release, and to other 8-K forms, labeled No Earnings Info. We define 8-K as Earnings Release if the form contains Item 2.02. Reaction Ratio is computed as the ratio of the number of analysts who provided a revised forecast in the period from the event date to three days after the filing date scaled by total number of analysts following the firm. Likelihood of Reaction is an indicator with 1 if any analyst following the firm provided a revised forecast in the period from the event date to three days after the filing date and 0 otherwise. Panel B shows the Reaction Ratio and Likelihood of Reaction for each item. Panel C shows the regression results of the Reaction Ratio and Likelihood of Reaction on firm characteristics and Item indicator variables. The regressions include firm and year fixed effects and the standard errors correct for firm clustering. The Reaction Ratio (Likelihood of Reaction) regression is estimated using Tobit(Logit). \*\*\*, \*\*, and \* denote two-tailed significance at the 1%, 5%, and 10% level, respectively.

**Table 3: Reaction to non-earnings Information in 8-K and the Accuracy of Earnings Forecast**

**Panel A: Univariate Analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| Months Prior to Fiscal Year End | No Reaction | Reaction | Difference |
| 1 | 0.026 | 0.014 | 0.012\*\*\* |
| 2 | 0.024 | 0.018 | 0.006\*\*\* |
| 3 | 0.030 | 0.017 | 0.012\*\*\* |
| 4 | 0.034 | 0.023 | 0.011\*\*\* |
| 5 | 0.032 | 0.021 | 0.011\*\*\* |
| 6 | 0.032 | 0.025 | 0.007\*\*\* |
| 7 | 0.037 | 0.025 | 0.012\*\*\* |
| 8 | 0.037 | 0.030 | 0.008\*\*\* |
| 9 | 0.034 | 0.032 | 0.003\*\* |
| 10 | 0.035 | 0.027 | 0.007\*\*\* |
| 11 | 0.038 | 0.036 | 0.002\*\* |
| 12 | 0.029 | 0.030 | -0.001 |
| Overall | 0.033 | 0.026 | 0.007\*\*\* |

**Panel B: Forecast Error Regressions**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ALL\_8-K | Item=1.01 | Item=1.02 | Item=2.01 | Item=2.04 | Item=2.05 | Item=2.06 | Item=3.01 | Item=3.02 | Item=3.03 |
| Constant | 0.140\*\*\* | 0.124\*\*\* | 0.301\*\*\* | 0.007 | 0.014 | 0.062 | -0.068 | 0.035 | 0.339\*\* | 0.229 |
|  | (0.000) | (0.000) | (0.001) | (0.903) | (0.971) | (0.603) | (0.348) | (0.782) | (0.019) | (0.145) |
| Reaction Indicator | -0.002\*\*\* | -0.002\*\*\* | -0.001 | -0.001 | -0.007\*\*\* | -0.006\*\*\* | -0.005\*\*\* | -0.007 | -0.007\*\*\* | -0.006\*\* |
|  | (0.000) | (0.003) | (0.605) | (0.263) | (0.003) | (0.005) | (0.004) | (0.119) | (0.002) | (0.040) |
| Log Market Value of Equity | -0.018\*\*\* | -0.017\*\*\* | -0.035\*\*\* | -0.008 | 0.027 | -0.011 | 0.016\* | -0.012 | -0.043\*\* | -0.031 |
|  | (0.000) | (0.000) | (0.001) | (0.348) | (0.453) | (0.450) | (0.057) | (0.469) | (0.016) | (0.104) |
| Book-to-Market | 0.016\*\*\* | 0.017\*\* | 0.003 | 0.054\*\* | 0.109\*\*\* | 0.057\*\* | -0.018\* | 0.081\*\* | -0.018 | 0.026 |
|  | (0.007) | (0.014) | (0.794) | (0.040) | (0.000) | (0.015) | (0.076) | (0.019) | (0.354) | (0.316) |
| Leverage | 0.014\*\* | 0.020\*\* | -0.026 | 0.114\*\*\* | -0.214 | 0.089 | -0.232\*\*\* | 0.088 | 0.018 | -0.001 |
|  | (0.034) | (0.028) | (0.437) | (0.007) | (0.350) | (0.191) | (0.000) | (0.243) | (0.482) | (0.985) |
| Equity Return Volatility | 0.053 | 0.037 | -0.597 | 0.507 | -2.081\* | -0.606 | 0.386 | -0.091 | -0.667 | 1.915\*\*\* |
|  | (0.509) | (0.700) | (0.173) | (0.297) | (0.074) | (0.329) | (0.597) | (0.929) | (0.206) | (0.001) |
| Return on Assets | -0.027\*\*\* | -0.036\*\*\* | -0.063 | 0.016 | -0.146\*\*\* | -0.065 | -0.047 | 0.045 | -0.023 | -0.083\* |
|  | (0.000) | (0.000) | (0.125) | (0.537) | (0.001) | (0.185) | (0.508) | (0.277) | (0.381) | (0.065) |
| Institutional Ownership | -0.011 | -0.008 | 0.004 | -0.020 | -0.163\*\*\* | 0.010 | 0.034 | 0.191 | 0.014 | -0.044 |
|  | (0.148) | (0.418) | (0.846) | (0.537) | (0.006) | (0.778) | (0.241) | (0.111) | (0.774) | (0.446) |
|  |  |  |  |  |  |  |  |  |  |  |
| Observations | 613,271 | 149,346 | 11,322 | 11,981 | 1,591 | 6,555 | 2,154 | 4,180 | 8,306 | 4,163 |
| R-squared | 0.110 | 0.104 | 0.117 | 0.148 | 0.283 | 0.221 | 0.224 | 0.065 | 0.188 | 0.178 |

**Panel B: Forecast Error Regressions (Cont.)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Item=4.01 | Item=4.02 | Item=5.01 | Item=5.02 | Item=5.03 | Item=5.04 | Item=5.07 | Item=5.05 | Item=7.01 | Item=8.01 |
| Constant | -0.425 | -0.017 | 0.028 | 0.150\*\*\* | 0.093\*\* | 0.016 | -0.004 | -0.053 | 0.140\*\*\* | 0.172\*\*\* |
|  | (0.321) | (0.757) | (0.467) | (0.000) | (0.030) | (0.121) | (0.746) | (0.915) | (0.001) | (0.000) |
| Reaction Indicator | -0.005\*\*\* | 0.002 | 0.002 | -0.002 | -0.003\*\* | 0.000 | -0.000 | -0.001 | -0.002\*\*\* | -0.003\*\*\* |
|  | (0.003) | (0.838) | (0.613) | (0.108) | (0.011) | (0.813) | (0.799) | (0.638) | (0.002) | (0.000) |
| Log Market Value of Equity | 0.046 | -0.003 | -0.003 | -0.019\*\*\* | -0.013\*\* | -0.002\* | -0.002\*\*\* | 0.006 | -0.018\*\*\* | -0.021\*\*\* |
|  | (0.398) | (0.421) | (0.521) | (0.000) | (0.013) | (0.062) | (0.001) | (0.908) | (0.000) | (0.000) |
| Book-to-Market | -0.040 | 0.062\*\* | 0.041\*\* | 0.020\*\*\* | 0.041\*\*\* | -0.004\*\* | 0.005\*\* | 0.155 | 0.012 | 0.009 |
|  | (0.245) | (0.010) | (0.024) | (0.007) | (0.003) | (0.025) | (0.049) | (0.148) | (0.126) | (0.227) |
| Leverage | 0.563\*\*\* | 0.024 | 0.031 | 0.008 | 0.018 | -0.003 | 0.014\*\* | -0.066 | 0.020\*\* | 0.012 |
|  | (0.008) | (0.298) | (0.322) | (0.351) | (0.312) | (0.659) | (0.041) | (0.842) | (0.046) | (0.177) |
| Equity Return Volatility | 0.616 | 1.217\* | 0.928\*\* | 0.001 | -0.079 | 0.351\*\*\* | 0.617\*\*\* | 2.342\*\*\* | 0.028 | 0.125 |
|  | (0.491) | (0.093) | (0.047) | (0.990) | (0.707) | (0.008) | (0.000) | (0.008) | (0.815) | (0.175) |
| Return on Assets | -0.385\*\* | -0.140\*\* | -0.324\*\*\* | -0.019\* | -0.019 | -0.025 | -0.050\*\*\* | 0.041 | -0.026\*\* | -0.024\*\*\* |
|  | (0.011) | (0.023) | (0.000) | (0.051) | (0.216) | (0.144) | (0.000) | (0.866) | (0.034) | (0.004) |
| Institutional Ownership | -0.026 | -0.011 | -0.067\*\* | -0.011 | 0.010 | -0.002 | -0.008 | -0.183\* | -0.020\*\* | -0.018\* |
|  | (0.714) | (0.765) | (0.042) | (0.324) | (0.560) | (0.831) | (0.254) | (0.062) | (0.024) | (0.096) |
|  |  |  |  |  |  |  |  |  |  |  |
| Observations | 3,158 | 1,402 | 459 | 154,129 | 28,936 | 1,769 | 15,912 | 1,684 | 131,413 | 177,777 |
| R-squared | 0.160 | 0.307 | 0.762 | 0.121 | 0.158 | 0.232 | 0.196 | 0.148 | 0.112 | 0.096 |

Panel A shows the mean forecast error of forecasts issued following an 8-K report (Reaction Column) and of all other forecasts issued during the Forecast Period (No Reaction Column). Panel B shows the regression results where the dependent variable is the forecast error. The regressions include firm, year and number of months prior to fiscal year-end fixed effects. The standard errors correct for firm clustering. \*\*\*, \*\*, and \* denote two-tailed significance at the 1%, 5%, and 10% level, respectively.

**Table 4: Cumulative Reaction Ratio and Analyst Performance**

**Panel A: Descriptive Stats**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Mean** | **Standard Deviation** | **Q1** | **Median**  | **Q3** |
| Cumulative Reaction Ratio | 0.134 | 0.161 | 0 | 0.1 | 0.2 |
| Firm-Experience | 3.821 | 2.98 | 2 | 3 | 5 |
| Number of Companies | 15.784 | 7.42 | 11 | 15 | 19 |
| Broker Size (Number of Analysts) | 54.645 | 42.961 | 19 | 40 | 81 |
| Number of Industries | 6.519 | 4.081 | 4 | 6 | 9 |
| Forecast Frequency | 4.794 | 2.675 | 3 | 4 | 6 |

**Panel B: Analysts Characteristics by Reaction Indicator**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CRR Dummy (=1 if CRR > 0) | Observation | Firm-Experience | Number of Companies | Broker Size | Number of Industries | Forecast Frequency |
| 0 | 25,039 | 3.006 | 15.309 | 53.019 | 6.593 | 4.348 |
| 1 | 45,502 | 4.26 | 16.04 | 55.52 | 6.479 | 5.034 |
| Difference |  | 1.254\*\*\* | 0.731\*\*\* | 2.501\*\*\* | -0.114\*\*\* | 0.686\*\*\* |

**Panel C: Descriptive Stats of CRR at the Firm-Year Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mean** | **Q1** | **Median** | **Q3** |
| Mean  | 0.137 | 0.048 | 0.108 | 0.185 |
| Standard Deviation  | 0.097 | 0.049 | 0.082 | 0.126 |
| Interquartile Range | 0.118 | 0 | 0.094 | 0.167 |
| Observations [number of analysts at the firm-year] | 7.698 | 3 | 6 | 10 |

**Panel D: Descriptive Stats of CRR at the Analyst-Year Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mean** | **Q1** | **Median** | **Q3** |
| Mean  | 0.13 | 0.075 | 0.119 | 0.171 |
| Standard Deviation  | 0.137 | 0.082 | 0.12 | 0.172 |
| Interquartile Range | 0.179 | 0.1 | 0.162 | 0.233 |
| Observations [number of companies at the Analyst-year] | 7.853 | 4 | 7 | 11 |

**Panel E: Regressions of Performance Measures on CRR**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Timeliness** | **Forecast Error** | **Boldness** | **Optimism** |
| Constant | 0.104\*\*\* (0.005) | 0.339\*\*\* (0.012) | 0.252\*\*\* (0.003) | 0.519\*\*\* (0.004) |
| CRR | 0.004\*\*\* (0.001) | -0.004\*\*\* (0.001) | 0.001 (0.002) | 0.001 (0.001) |
| Firm-Experience | 0.003\*\* (0.002) | -0.009\*\*\* (0.002) | 0.000 (0.001) | -0.002 (0.003) |
| Number of Companies | -0.003 (0.004) | -0.011\*\*\* (0.001) | -0.009\*\*\* (0.002) | 0.003 (0.004) |
| Broker Size  | 0.063\*\*\* (0.008) | 0.004\*\*\* (0.001) | 0.026\*\*\* (0.004) | -0.02\*\*\* (0.005) |
| Number of Industries | -0.003 (0.004) | 0.008\*\*\* (0.003) | 0 .000 (0.003) | -0.001 (0.002) |
| Forecast Frequency | 0.032\*\*\* (0.004) | 0.013\*\*\* (0.001) | -0.002 (0.002) | 0.005\*\*\* (0.002) |

Panel A shows descriptive statistics of analyst characteristics. Cumulative Reaction Ratio is computed as the cumulative number of 8-K reports filed by the company to which the analyst reacted scaled by the total number of 8-K reports filed by company. Firm Experience is the number of years the analyst covers the company; Number of Companies (Industries) is the number of companies (unique two-digits SIC) covered by the analyst during the year; Broker Size is the number of analysts employed by the brokerage; Forecast Frequency is the number of company-forecasts issued by the analyst during the year. Number of unique Firm-Year-Analysts is 71,541. Panel B shows analyst's characteristic conditioned on positive and zero CRR. Panel C (D) presents mean, standard deviation, and interquartile range of CRR at the firm-year (analyst-year) level. Panel E shows the regression results of the performance measures on analyst characteristics. Timeliness is based on the number of days between the analyst forecast and the forecast by other analysts that precede and follow it. Specifically, for each forecast we compute Leading Days as the number of days between the forecast and the two most immediate forecasts by any other analyst following the forecast date. Similarly, we compute Following Days as the number of days between the analyst forecast and the two most recent forecasts by any other analysts issued prior to the forecast date. We compute Timeliness as the ratio of leading days to following days. Boldness is computed as the absolute value of the difference between the forecast and the consensus forecast scaled by the beginning of the year price per share. We compute the consensus forecast as the mean of all analysts’ most recent forecasts issued during the 90-day period prior to the forecast date. Optimism is computed as the difference between the forecast and actual earnings scaled by the beginning of the year price per share. All variables in the regressions are standardized **–** we subtract from each variable its minimum value for firm *j* in year *t* and scale the difference by the difference between the maximum and minimum value of the variable for firm *j* in year *t*.

1. Analysts have an additional role of information discovery. In this role, analysts obtain private information which allows them to make superior forecasts and even to preempt public disclosure (Chen et al., 2010). [↑](#footnote-ref-1)
2. Livnat and Zhang (2012) focus on whether investors value more the information or discovery role of analysts. Although they provide statistics on analysts' reaction to various disclosures made by the firm, they do not investigate the difference between reaction to earnings news compared to non-earnings news, and they do not focus on the relation between analysts' reaction and skill. [↑](#footnote-ref-2)
3. We use a cumulative measure rather than an annual measure because the reporting of 8-K reports is largely idiosyncratic and varies over time. Hence, a cumulative measure would be a better indicator of the analyst's ability, and is subject to less variability over time (See Section 4.2). [↑](#footnote-ref-3)
4. See *Appendix 1* for a complete list of events reported on current Form 8-K. [↑](#footnote-ref-4)
5. Another potential reason for the low reaction is that analysts predicted the event and incorporated its implications prior to the filing of the 8-K form. Although plausible, this explanation is unlikely because the reporting of 8-K arrival time is idiosyncratic as it depends on the occurrence of firm specific events. For example, it is hard to envision an analyst predicting entry into material agreements while at the same time predicting the terms of the agreement and its impact on future earnings. [↑](#footnote-ref-5)
6. We choose 2005 as the starting year because the SEC mandated significant changes to the 8-K form that became effective on August 23, 2004. These changes expanded significantly the number of items (i.e. scope of material events) that have to be reported via an 8-K form, and hence, resulted in a significantly different form. [↑](#footnote-ref-6)
7. We compute the number of analysts who follow the firm based on the number of analysts who issue at least one forecast during the fiscal year. [↑](#footnote-ref-7)
8. Item 9.01 includes Financial Statements and Exhibits. Companies typically report Item 9.01 together with Item 2.02 (Results of Operations), or when the company enters into an agreement (for example, Item 1.01). Since the informational context of Item 9.01 depends on the other items reported in the form, we do not treat Item 9.01 as a separate item. Finally, some of the events that are to be reported on an 8-K form, such as Item 1.04 (Mine Safety) and Item 1.03 (Bankruptcy and Receivership), do not appear in our sample. [↑](#footnote-ref-8)
9. Note that the number of items is larger by about 20% compared to the number of 8-K (122,772 vs. 102,083). [↑](#footnote-ref-9)
10. The number of observations in the Likelihood of Reaction regression is smaller because there are 419 firms where the Likelihood of Reaction is 0 or 1 across all 8-K, and hence in such instances the dependent variable is fully explained by the firm fixed effect. [↑](#footnote-ref-10)
11. We use three days after the filing date because some 8-K are filed on the last trading day of the week (Segal and Segal 2013). [↑](#footnote-ref-11)
12. We follow Cooper et al. (2001) and De Franco and Zhou (2009) and exclude any additional forecasts by the analyst in computing his/her Timeliness. In addition, if another analyst issued a forecast on the same day, it is excluded from the computation of Timeliness. [↑](#footnote-ref-12)
13. We obtain similar results when we do not standardize the variables. [↑](#footnote-ref-13)