Risk Factor Disclosures: Do Managers and Markets Speak the Same Language?

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Abstract
Prior research has documented that the market responds to risk factor updates at the time of release, suggesting there is informational value to investors in these updates. In this study, we examine whether future returns are associated with risk factor updates. We find that firms with risk factor updates experience lower future returns, relative to firms without updates. Further, we find that firms that shy away from language indicating risk to firm fundamentals in a risk factor update have the strongest predictability in future returns. This result suggests that the content of the update is related to the completeness of the market reaction at the update's filing. This research is of direct interest to investors and regulators who are currently considering how to improve risk factor disclosure requirements.

Keywords risk factor disclosure, regulation, market efficiency, abnormal stock returns

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1 Introduction

In 2005, the Securities and Exchange Commission (SEC) began requiring risk factors to be disclosed in annual reports and updated in quarterly reports. Since then, investors have expressed concern that the information being presented may be too generic and lack insightful information (Johnson 2010; IRRC Institute 2016). In addition, the SEC has continued to express interest in improving the disclosure requirement (Johnson 2010; Tysiac 2016). Given the concern over the current information being provided, it's not surprising that some have suggested information in risk factors may be overlooked (KPMG 2011; Greenberg 2007; Greenberg 2008). Despite the potential shortcomings of the disclosures, researchers have provided evidence confirming informational value in annual and quarterly risk factor disclosures (Campbell et al. 2014; Israelsen 2014; Filzen 2015; Dyer et al. 2016), especially when the disclosure is more specific (Hope et al. 2016). Therefore, in this paper, our focus is on whether the market fully incorporates the information in the risk factor update at the time of disclosure. Specifically, we examine returns subsequent to quarterly risk factor updates to better understand whether investors react appropriately to the information contained therein.

Theory and empirical evidence suggest that information that leads to uncertainty as to the future payoff structure of the firm generates market underreaction (Francis et al. 2007; You and Zhang 2009). Further, the underreaction induced by information uncertainty does not require an assumption of investor irrationality as its underlying cause (Brav and Heaton 2002).[1] In this setting, the information being presented in risk factor disclosures creates additional uncertainty about future cash flows to the firm. Specifically, under current regulation, firms are required to

[1] Our tests cannot rule out the possibility of other explanations playing a role in incomplete reactions to risk factor disclosures, and doing so is beyond the scope of this study.

disclose possible material events that could adversely affect the firm (Robbins and Rothenberg 2006; Filzen 2015). Due to the uncertainty inherent in the information being disclosed and consistent with prior theory, we predict that investors will not fully incorporate the information content of risk factor disclosures at the time of release.

We are interested in the market reaction to risk factor information that is previously undisclosed. Because the underlying disclosure requirements differ between annual and quarterly filings, quarterly filings are our focus. For annual reports, firms are required to disclose all risks currently facing the firm, regardless of when the firm first became exposed to that risk. However, in quarterly filings, firms are only required to "update" the risk factors section with new information, if necessary. Thus, we focus on the reaction to quarterly updates to risk factors to ensure that we are examining the market reaction to new information.[2]

Following the methodology outlined in Filzen (2015), we utilize the Go Programming Language to process 10-Q filings to determine whether a given firm-quarter contains an update. Using this process on an updated sample period, we are able to replicate the findings in Filzen (2015) that there is a negative market reaction for firms with risk factor updates around the filing of the 10-Q. Controlling for this reaction, post-earnings announcement drift, and other factors, we document a negative association between firms with risk factor updates and returns in the three months following the 10-Q filing. We then create a risk factor update trading strategy that is long in firms without a risk factor update, and short in firms with a risk factor update. This strategy yields positive annualized alpha's of 3.53%. Overall, this evidence suggests there is

[2] In theory, a firm could include a deletion of a risk factor as an update. However, prior research suggests a deletion without adding a corresponding new risk factor is rare (Filzen 2015), especially given firms tendency to not delete risk factors (Beatty et al. 2015). Additionally, to the extent this occurs, our findings will be biased towards not finding a result.

significant information in risk factor updates that is not being impounded into prices at the time of the 10-Q filing.

The strategy discussed so far is based purely on the presence of a risk factor update, and doesn't incorporate the content of the disclosure. Filzen (2015) finds that the market response to risk factor updates at the time of the filing is stronger for updates that use more language related to firm fundamentals. Specifically, Filzen (2015) utilizes the word list generated in Balakrishnan and Bartov (2011) to capture the risks to firm fundamentals in risk factor disclosures, and categorizes firms as "strong" updaters if they fall in the top quartile of the key word count, which attempts to capture the focus of the disclosure.[3] In our setting, it isn't clear ex ante how partitioning the sample based on key word counts will affect the predictability of future returns. On the one hand, a more negative market reaction for "strong" updaters at the time of the 10-Q filing might indicate a more complete market reaction at the time of filing, with less predictability of future returns. On the other hand, "weak" updates that generate a smaller market reaction at the time of the 10-Q filing may truly be less meaningful updates and therefore may not be associated with future returns. Our findings support the former explanation. We find that our results are strongest for firms that contain less language related to firm fundamentals (i.e., "weak" updaters). The alpha's from a trading strategy that is long in firms without a risk factor update, and short in firms with a *weak* risk factor update are 5.28%, considerably higher than before. This result suggests that the efficiency of the market reaction to a risk factor update is related to the language used in the disclosure. From a policy perspective, regulators may be able

[3] Balakrishnan and Bartov (2011) examine whether risk factor information in IPO prospectus's is incorporated by analysts in their forecasts in the period prior to the SEC's requirement of risk factor disclosure in quarterly and annual reports.

to better understand the types of disclosures that generate more complete market reactions in their efforts to improve the usefulness of risk factor disclosure.

Our study contributes to the literature on incomplete reactions to accounting information (e.g., Sloan 1996; You and Zhang 2009; Li 2011; among others). The results show that a trading strategy based on risk factor updates can generate positive abnormal returns post-disclosure. Further, we find that this trading strategy is most effective when including only firms with a risk factor update, but that fail to use words that convey the risk is related to firm fundamentals. These findings are of direct interest to regulators who are currently interested in improving risk factor disclosures (SEC 2016; Brav and Heaton 2002). Predictability in post-disclosure returns suggests that the market is not fully reacting to the information contained in risk factor updates at the time of disclosure. To the extent this is due to information uncertainty, improved mandatory disclosure requirements could help mitigate this inefficiency. Our study finds that one potential solution to this may be to study (and ultimately encourage emulation of) firms that generate a stronger (and more complete) market response at the time of the filing.

In the next section we provide background information and motivate our study. In section three we discuss our research design and sample selection, followed by a discussion of our empirical results in section four. Finally, in section five we conclude.

2 Literature review and hypothesis development

2.1 Risk factor disclosure

Historically, the disclosure of risk factors has been required of managers during the IPO process. The SEC extended this requirement to annual reports for fiscal years ending after December 1,

2005 (SEC 2005), with smaller reporting companies excluded from the requirements. The rule requires firms to disclose material factors that may adversely affect the issuers business, operations, industry or financial position, or its future firm performance under "Item 1A" in the 10-K (Robbins and Rothenberg 2006; Filzen 2015).[4] The requirement for quarterly reports is different in its scope. Disclosures in quarterly reports are reserved for updates to risk factors only, assuming that the risk factors facing the firm have changed. The requirement to update risk factors in quarterly reports began for all firms in the first quarter after its initial annual disclosure was made, which corresponds to quarters ending during fiscal years subsequent to December 1, 2006.

Market participants, as well as the SEC, have been critical of the disclosures that have been made to date. Johnson (2010) reports that the disclosures may be too broad and generic and, as a result, that the SEC was interested in reviewing the disclosure requirement for possible revision. Additionally, the SEC has been putting pressure on firms to produce better disclosures by issuing comment letters (Johnson 2010; Beatty et al. 2015). In 2011, The Institute of Chartered Accountants in England and Wales and the Global Accounting Alliance summarized the global demand for risk reporting and offered suggestions for improvements (Singleton-Green and Hodgkinson 2011). In 2016, the Investor Responsibility Research Center (IRRC) Institute echoed concerns that the annual disclosures "often are generic and do not provide clear, concise and insightful information." In April of 2016, the SEC opened a three month comment period on ways to improve current disclosure requirements, including Item 1A (SEC 2016).

[4] Materiality is not specifically defined in terms of dollar impact or probability of occurrence.

Academic research has also been interested in the informational value of risk factor disclosures, especially in light of concerns from market participants about the disclosures. In the context of annual disclosures, many studies have concluded that there is informational value in the disclosures. Campbell et al. (2014) find that there is predictable variation in the amount of disclosure based on factors that affect firm risk, and that the disclosures are correlated with future measures of risk. Israelsen (2014) also finds that information in risk factor disclosures is correlated with traditional asset pricing risk factors, suggesting the information being disclosed is informative about risk in general. In addition, studies have found that the market reacts negatively to longer risk factor disclosures around the 10-K filing date (Campbell et al. 2014; Dyer et al. 2016), and that more specific annual disclosures generate stronger reactions (Hope et al. 2016). Studying annual risk disclosure across the entire 10-K, mostly before the requirement of a separate risk factor disclosure section, Kravet and Muslu (2013) find that investors risk perceptions are affected by changes in annual amounts of risk disclosures. Overall, these studies suggest that there is informational value in annual risk factor disclosures and that investors react to this information at the time of filing.

Other studies have looked beyond the informational value of annual risk factor disclosures. Dyer et al. (2016) and Beatty et al. (2015) find that annual risk factor disclosures are increasing over time. Beatty et al. (2015) find that this increase in length may be decreasing informativeness of risk factors over time, specifically in the context of disclosures about financial constraints. Bailey and Filzen (2016) find that the expertise of those charged with risk management in a firm is positively associated with the level of risk factor disclosure, and that the market doesn't react as strongly to longer disclosures when there is a more experienced Chief Risk Officer. Additional studies have begun to focus on how to extract qualitative information (beyond total

word counts and word counts from dictionary lists) from risk factor disclosures (Bao and Datta 2014; Huang and Li 2011).

Examining quarterly risk factor disclosures, Filzen (2015) finds that quarterly updates to risk factor disclosures are associated with negative market reactions at the time of the 10-Q filing, and that these updates are able to predict future negative earnings shocks. These findings suggest that there is also informational value that investors respond to in quarterly risk factor updates. Overall, academic research studying risk factor disclosures concludes that the market responds to information in risk factor disclosures at the time of disclosure. What has yet to be studied is whether the market fully incorporates the information being disclosed, which is the focus of our research.

2.2 Hypotheses

Investors use risk factor disclosures to infer future changes in the business and financial risks faced by the disclosing firm. But, uncertainties regarding the probability distribution pertinent to the updated risk factor, or pertinent to its effects, makes accurate assessments difficult and can contribute to market underreaction (Francis et al. 2007; You and Zhang 2009). Overall, the complexity of the risk factor section creates uncertainty regarding the future cash flows to the firm. Interestingly, the underreaction exhibited following an information event need not rely on market inefficiency as it source. Brav and Heaton (2002) develop a model wherein underreaction is a rational structural response to uncertain or incomplete information. This results arises due to the potential for mistakes in estimating future cash flows or risk premiums that result from a rational application of uncertain or incomplete information.

Quarterly updates to risk factor disclosures present new information about events that are uncertain in likelihood and in magnitude of impact if realized. This creates difficulty in predicting the future state of the firm, especially since amounts and assessments of probabilities are not required to be disclosed (other than the disclosure threshold of "material"). This results in uncertainty as to the future payoff structure of the firm. Empirical evidence supports the idea of market underreaction when information creates uncertainty. Francis et al. (2007) find that lower earnings quality (i.e., more uncertainty about future earnings) is associated with more delay in the reaction to earnings announcements. Similarly, You and Zhang (2009) find that 10-Ks with higher levels of complexity are associated with more delayed market reactions. Based on these findings, we hypothesize (stated in alternative form):

H1: Risk factor updates will be negatively associated with future stock market returns.

Further, the content of risk factor disclosure may affect the predictability of future returns. However, broadly speaking, utilizing the content of the disclosure could enhance or deteriorate the analysis. On the one hand, longer disclosures and/or key work counts may indicate a more likely, more imminent, or more material risk factor update. On the other hand, managerial discretion in writing style and repetition of previously disclosed information may not be relevant. In addition, the number of updates being disclosed may confound this relationship. For example, a firm with one very meaningful update to a single risk factor may be more important than multiple risk factors being updated in a very minor way.

Prior research has incorporated content in the context of concentrating on how much of the disclosure focuses on firm fundamentals (Balakrishnan and Bartov 2011). Because risk factor disclosures contain information about potential adverse outcomes, the intuition is that more of a focus on firm fundamentals would suggest that firm fundamentals are more likely to be affected

by the risk. Filzen (2015) applied this concept to quarterly risk factor updates by separating updates into two categories based on the level of these key words that focus on firm fundamentals. He found that strong updaters (firms with a risk factor update that were in the top quartile of key fundamentals word counts) drove the negative market reactions at the time of filing, suggesting these updates were more important to the market.[5]

In our context, it isn't necessarily clear how verbiage related to firm fundamentals should impact the predictability of future returns. Because strong updaters have a stronger initial market reaction, those updates may be the most meaningful updates. Under this view, weak updaters may be effectively meaningless updates and may be creating noise in the analysis. In other words, both the initial reaction as well as predictability of future returns may be driven by the most important risk factor updates: the strong updaters.

An alternative view would be that both strong and weak updates are important, on average, but that the market reaction is more incomplete for one group. Consistent with this view, Filzen (2015) found that firms with weak updates were capable of predicting future negative earnings shocks, suggesting the weak updaters may be important as well. Under this view, and as a result of the prior findings related to the initial market reaction, the market reaction to weak updaters (i.e., firms who don't use as many words relating to firm fundamentals) may be incomplete. In other words, the market reaction is more negative at the time of filing for strong updaters because the reaction is more complete, rather than that the disclosure is necessarily more

[5] Similarly, Hope et al. (2016) find that there is a stronger (unsigned) market reaction at the time of the 10-K filing to *annual* risk factor disclosures that are more specific, where specificity is based on whether the disclosure utilizes proper names, locations, organizations, and use of percentages, dollar amounts, times, and dates. However, Hope et al. (2016) does not examine predictability of future returns.

important. Based on the limited evidence discussed above, our second hypothesis is as follows (stated in alternative form):

H2: The negative association between risk factor updates and future stock market returns will be strongest for firms that use less language related to firm fundamentals.

3 Research Design and Sample Selection

We identify our sample of 10-Q filings from the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database. The SEC requirement that firms update their risk factors in their quarterly reports began for quarters with fiscal *years* ending subsequent to December 1, 2006. As such, our initial sample covers 10-Q filings with quarters ending in the period 2006 through 2014 for firms covered by Compustat. Consistent with Filzen (2015), we restrict our initial sample to firms with a market capitalization of at least $100 million to exclude "Smaller Reporting Companies" and to avoid the problems documented by Nondorf et al. (2012).[6] Additionally, we require: 1) that the 10-Q filing be in HTML format;[7] 2) that Compustat contain data on relevant control variables for filing firms; 3) the filer be tracked by CRSP's daily stock return database; and, 4) that sufficient data be available, post-filing, to compute post-filing abnormal returns. The result of our sample identification and restrictions yields a sample of 64,711 filings. Additional requirements pertinent to the identification of risk updates (discussed in more detail below)

[6] Small business filers (firms with a public float equal to or less than $25 million) were initially excluded from the requirement. In February of 2008, the SEC classified firms with a public float equal to or less than $75 million as "Smaller Reporting Companies" and granted them exclusion from the requirement (SEC 2005). Nondorf et al. (2012) show that firms opportunistically manage their float to retain their "Smaller Reporting Company" status.

[7] Filzen (2015) uses the Python programming language, and converts all filings to plain text before using regular expressions to identify and extract risk factor updates. We utilize the Go programming language (a similar open source programming language) and instead rely on both HTML tagging and regular expressions to attempt to further mitigate potential misclassifications, which is an inherent limitation of using any algorithm to process filings.

further restrict the sample to 52,955 filings by 4,353 unique firms. Table 1 provides a detailed account of the sample selection process.

[Insert Table 1 here]

For each filing we extract the disclosure's Item 1A using the Go Programming Language. The methodology for identifying filings containing a risk factor update follows Filzen (2015) wherein a firm is assumed to have an update if three conditions are satisfied: 1) the filing must contain a risk factor section; 2) the section must contain at least 200 words; and, 3) for the second and third quarters of the fiscal year, the section must be at least 100 words longer than the previously disclosed risk factor section. The logic underpinning the first of these conditions is self-explanatory. By definition, a filing cannot be determined to include a risk factor update if it did not also contain a corresponding risk factor section. The second condition is necessary as many firms include a risk factor section, but simply use the section to restate the disclosure requirement and state that there have been no material updates. The third condition accounts for the fact that the SEC requires that once a firm discloses an update that the same update remain in the Item 1A section until the firm's next 10-K filing. If all three conditions are met, then our primary variable of interest, $Update_{it}$, an indicator variable, takes a value of 1.

Filings which fail to meet the criteria to be classified as a firm-quarter containing an update are not unilaterally classified as not containing an update, i.e., $Update_{it}$=0. Again following Filzen (2015), we classify firm-quarters as not having an update if the filing: 1) does not contain a risk factor section; or, 2) contains a risk factor section with less than 100 words. If these conditions are met, then the firm is said to not have a risk update (i.e., $Update_{it}$=0) in that quarter. We exclude firm-quarters with risk factor section word counts between 100 and 200

words to avoid ambiguity of whether there has been an update.[8] The identification of filings containing (and not containing) an update limit the sample to the 52,955 filings used in our analysis.

To evaluate the post-announcement returns of 10-Q filers, we compute the filer's three month buy-and-hold abnormal return, i.e., $BHAR3mo_{it}$. More specifically, for each firm we calculate the continuously compounded buy-and-hold return over the three months following the filing date and subtract the value-weighted, three month buy-and-hold return of a corresponding size and book-to-market matched portfolio over the same period.[9] We utilize three month returns because the results in Filzen (2015) suggest the risk factors being disclosed are relatively imminent on average, and so that we do not contaminate the returns period when an additional quarterly report is filed. Filing firms are matched to their corresponding size and book-to-market portfolios based on their quintile ranking from the fiscal year end preceding the filing date. Following You and Zhang (2009), we use buy-and-hold abnormal returns to measure abnormal returns subsequent to 10-Q filings as they reflect the compounding in returns and facilitate cross-sectional analysis of the variation in abnormal returns.[10]

Table 2 provides descriptive statistics for the 52,955 filings covered in our sample. All continuous variables are winsorized at 1 and 99 percentiles to reduce the effect of outliers, consistent with prior research. Panel A presents descriptive statistics for our primary variable of interest (*Update*), for the three-month buy-and-hold returns to filing firms (*BHAR3mo*), as well

[8] In unreported results, we use a strict cutoff of 150 words to identify firm-quarters with/without risk factor updates and repeat our analysis. Our results are qualitatively unchanged regardless of the criteria used to identify risk factor updates.

[9] We thank Kenneth French for making the data on the value-weighted, buy-and-hold returns to size and book-to-market portfolios publicly available: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

[10] For a more detailed discussion the statistical properties of buy-and-hold returns relative to cumulative abnormal returns, see Barber and Lyon (1997) or Fama and French (1998).

as for the other variables used in our analysis. Across the 52,955 filings in the sample, roughly 26.3% (13,932 filings) contain a risk factor update; this result is consistent with Filzen (2015) who finds that 28% of firms have a risk update over the period 2006-2010. We take this as evidence that our identification of risk updates is consistent with that of prior literature. The mean (median) *BHAR3mo* is -0.54% (-0.89%) over the sample period and is statistically different from zero.

[Insert Table 2 here]

Additionally, the mean announcement abnormal return (*CAR[-1,1]*) is statistically indistinguishable from zero. The average filing firm has beta of 1.14 in the six months preceding the filing, a six month cumulative return preceding the filing of 6.02%, a log market value of equity of 7.032 (equivalent to $1.132 billion), an average book-to-market ratio of 0.554, and an average log 10-Q filing word count (*Ln*(QLength)) of 10.882 (equivalent to 53,210 words). A detailed description of variable calculations is provided in Appendix A.

Panels B and C of Table 2 present summary statistics of *BHAR3mo* by fiscal year and Fama-French (1997) 17-industry classification, respectively. The average *BHAR3mo* depicted in Panel B suggests that *BHAR3mo* exhibits time variability. The fiscal years ending during the financial crisis (i.e., 2007-2010) exhibit, on average, the most negative three-month buy-and-hold returns subsequent to the 10-Q filing (the *BHAR3mo*s to filings in fiscal year 2013 are an exception). Panel C displays the heterogeneity in *BHAR3mo* by industry over the sample period. The mean *BHAR3mo* ranges from -2.98% for mining firms to 1.38% for firms in the fabrication industry.

4 Empirical Results

4.1 Investor Underreaction to Risk Factor Updates

Table 3 presents a pairwise correlation matrix of the measures used in our analysis. Pearson (Spearman) correlations are presented below (above) the diagonal. Risk updates are inversely correlated with *BHAR3mo* over the sample period. For both Pearson and Spearman correlations, this relation is statistically significant at better than the 1% level. Firm-quarters with risk updates are likely to have lower buy-and-hold abnormal returns subsequent to the risk update, consistent with hypothesis 1. Consistent with the results of prior studies, *Update* is negatively correlated with *CAR[-1,1]* and this association is statistically significant at better than the 1% level. Risk update filings are associated with lower abnormal returns at announcement. Remaining correlations are consistent with prior literature.

[Insert Table 3 here]

We split the sample of 52,955 firm-quarters into subsamples by *Update* and analyze the differences in means (medians) over our entire sample. Table 4 presents the results of this testing. The mean and median *BHAR3mo* for filings with a risk update (i.e., *Update*=1) is less than that for filings without an update by 0.75% at the mean and 1.11% at the median. When annualized, this equates to a 3.03% or a 4.47% decline in equity values for risk updating filers relative to their non-updating peers during the three months following the 10-Q filing.

[Insert Table 4 here]

The abnormal announcement return (*CAR[-1,1]*) to risk updating filers exhibits a similar result. 10-Q filings containing a risk factor update have statistically-significant, lower announcement abnormal returns relative to filings without a risk update. Filers with a risk factor update also tend to have marginally higher exposure to systematic risk and lower returns in the six-months

preceding the filing, consistent with the findings in Campbell et al. (2014). Additionally, updating filers tend to be smaller, have more growth opportunities, and have shorter 10-Q's overall (excluding the risk factor section).

4.2 Controlling for Confounding Risk Factors

The results of Table 4 suggest differences in the financial characteristics of the two subsamples, i.e., firm-quarters with an update and those without. To control for the variation in the financial characteristics of firms at the time of their filing, we conduct a set of cross-sectional time-series regressions. Following the extensive literature on post-earnings announcement drift, we include the announcement abnormal return, i.e., *CAR[-1,1]*, as a covariate. The results of prior literature suggest that the announcement abnormal return will be positively related to post-announcement returns. To control for the risk characteristics and recent stock performance of the filing firms, we include *Beta* and *Momentum*. Prior research finds that the size and growth opportunities of the firm helps to explain the cross-sectional variation in returns (Fama and French 1993). As such, we include *Ln(Market Cap.)* and *Book-to-Market* as explanatory variables. Finally, to account for the complexity of the 10-Q, we include *Ln(Qlength)*. The regression specifications include fixed effects for year and Fama-French (1997) 17-industry and compute robust standard errors clustered by firm. The dependent variable in these tests is the three-month buy-and-hold abnormal return subsequent to the filing (i.e., *BHAR3mo*). The results of this analysis is presented in Table 5.

[Insert Table 5 here]

The results in the left column of Table 5 include, as the only covariate in addition to the fixed effects, *Update*. Controlling only for year and industry effects, firm-quarters containing an

update are associated with an abnormal return of -0.85% in the time period subsequent to the filing. The second and third columns of Table 5 add the announcement abnormal return (i.e., *CAR[-1,1]*) and *Beta* and *Momentum* as covariates, respectively. In both specifications, firm-quarters containing a risk factor update are associated with lower abnormal return following the filing relative to firm-quarters without an update. Column (4) of Table 5 presents the results from our fully specified model. Controlling for the variation in the financial characteristics between the two subsamples, i.e., firm-quarters with and without an update, filings containing a risk factor update are associated with negative abnormal returns subsequent to the disclosure.

Using the buy-and-hold method to calculate abnormal returns may exaggerate short-term abnormal returns due to compounding (Mitchell and Stafford 2000). We address this issue using a calendar time analysis. Specifically, for each month we compute the value-weighted returns to two portfolios based on whether or not a firm had a risk factor update in the preceding three months. If a firm has not had a risk factor update in the preceding three months, it enters into our long portfolio. If a firm has had a risk factor update in the preceding three months, it enters into our short portfolio. The returns to the hedged portfolio, then, are the difference between the long and short portfolios. We examine the intercepts to the portfolios using three asset-pricing models: the market model, the Fama and French (1993) three-factor model, and the Carhart (1997) four-factor model. The results of these tests are reported in Table 6.

[Insert Table 6 here]

The monthly intercepts to the hedged portfolios (i.e., Long-Short) remain relatively constant regardless of the asset-pricing model used, ranging from 0.28% to 0.29%. The hedged, no-investment portfolio generates 3.53%% when compounded on an annualized basis. In all specifications, the intercepts to the Long portfolio, the portfolio containing firms without a risk

factor update in the preceding three month, are indistinguishable from zero. The positive intercepts present in the hedged portfolios are driven by the negative intercepts to the short portfolios, the portfolio containing firms with a risk factor update in the preceding three months. The monthly intercepts for the short portfolios range from -0.23% to -0.29%.

4.3 The Content of Risk Factor Updates and Future Returns

The evidence above suggests that markets underreact to risk factor updates at the date of the filing, on average. Implementing a no-investment trading strategy long in firms without a risk factor update and short in firms with a risk factor update yields a positive and significant alpha. This result stems from the simple presence of an update while remaining naïve to the update's content. The questions becomes, then, to what extent does the content of the update affect our findings? Filzen (2015) finds that the market reaction to "strong" updates (updates using more language that relates to the risk to firm fundamentals) is larger at the time of filing. On the one hand, a more negative market reaction for "strong" updaters might indicate a more complete market reaction at the time of filing. On the other hand, "weak" updates may truly be less meaningful updates and therefore generate a smaller market response.

In this section, we explore the extent to which the content of the risk factor disclosure contributes to the observed drift subsequent to the risk update. Specifically, we examine the extent to which risk factor verbiage that is more descriptive of potential impacts to firm fundamentals affects the underreaction subsequent to the filing of the update. To evaluate the content of the disclosure, we construct a variable (*Strong Updat*e) which captures the content of the disclosure. Utilizing the list generated in Balakrishnan and Bartov (2011) and following Filzen (2015), we categorize firms with a risk factor update as "strong" updaters (*Strong*

Update=1) if they fall in the top quartile of the key word count.[11] We create a second indicator variable (*Weak Update*) which take a value of 1 if the firm-quarter contains an update and is in the bottom three quartiles of all filings containing an update. When counting words in the list, we used a snowball porter stemmer to capture inflections and variations of the root word.[12]

We repeat the regression analyses presented in Table 5, now including our two measures of update type, i.e., *Strong Update* and *Weak Update*. The results are presented in Table 7. Across all four regression specifications presented in Table 7, coefficient estimates on *Strong Update* are near zero and are statistically insignificant. In contrast, estimates on *Weak Update* are all negative and statistically significant. Firm-quarters with "weak updates" are most predictive of post-filing abnormal returns. We test for coefficient equality in all four specifications using F-tests. With the exception of the base model, the null hypothesis of coefficient equality is rejected at better than the 10% level (5% in the fully specified model). The difference between *Strong Update* and *Weak Update* is economically meaningful as well. In the fully specified model, i.e., column (4), the difference between the estimate on *Strong Update* and *Weak Update* results in a compounded annualized return of 3.36%.

[Insert Table 7 here]

We repeat the calendar time analysis presented above using only those filings containing a "weak" risk update. For each month we compute the value-weighted returns to two portfolios based on whether or not a firm had a "weak" risk factor update in the preceding three months. If a firm had a "weak" risk factor update (*Weak Update*=1) in the preceding three months, it enters

[11] The complete word list is as follows: bankrupt, business, cash, charge, competition, competitive, competitor, conditions, cost, customer, cyclical, demand, division, earnings, economy, environment, expense, financial, income, lawsuit, legal, liquidity, litigation, market, operations, product, profit, revenue, sales, seasonal, services, settlement, solvency, spending, and sue.

[12] For example, expense becomes "expens."

into our short portfolio. If a firm has not had a risk factor update (*Update*=0) in the preceding three months, it enters into our long portfolio. The return to the hedged portfolio is computed as the difference between the long and short portfolios. We examine the intercepts to the portfolios using three asset-pricing models: the market model, the Fama and French (1993) three-factor model, and the Carhart (1997) four-factor model. The results of these tests are reported in Table 8.

[Insert Table 8 here]

The monthly intercept to the hedged portfolio (i.e., Long-Short) is between 0.43% and 0.44% for all asset pricing models and is statistically significant at better than the 5% level. Going long in firms without a risk factor update and shorting firms with a "weak" risk factor update generates a positive alpha for the no-investment portfolio. In economic terms, this strategy yields 5.28% when compounded on an annualized basis. This result is largely driven by the "weak" update filers. The intercepts to the portfolios containing "weak" update filers are negative and statistically significant over the sample period. Overall, these results suggest that risk factor updates employing language less related to firm fundamentals contributes to investor underreaction at the announcement of the risk update.

5 Conclusion

We examine whether the market reaction to quarterly risk factor updates is complete at the time of the 10-Q filing. We find quarterly risk factor updates are negatively associated with future returns. Further, we explore how the content of the disclosure interacts with this relationship. Specifically, we use the classification structure in Filzen (2015) to classify risk factor updates as either strong or weak risk factor updates based on the amount of words used in the disclosure that focus on firm fundamentals. Our results suggest that weak updates (i.e. risk factor updates

that shy away from using words related to firm fundamentals) are strongly negatively associated with future returns. In other words, there appears to be a more complete reaction to the information contained in an average risk factor update when the update better describes the risk's potential effects on firm fundamentals. These results are important for investors and regulators who are interested in improving the disclosure requirement. Our results indicate not only that risk factors are negatively associated with future returns, but also that the content of the disclosure affects this relationship. This suggests that regulators may be able to encourage better disclosure by examining characteristics of disclosures the market finds most useful.

There are some limitations to our research and opportunities for future research. First, our analysis uses a computer algorithm to help classify observations. There are many advantages to this methodology, including the ability to process many filings relatively quickly. However, as with all studies that use computer assisted data collection techniques, there is bound to be some error in the process – which we expect to be random in nature. Second, we find strong evidence that content is associated with the return predictability documented in this study. We believe there is a great deal of opportunity for future research (both using computer assisted techniques as well as manual classification) to improve our understanding of the impact that content has on this relationship.

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Table 1: Sample Construction

This table details the sample selection procedure. The universe of potential observations consists of all quarterly reports from SEC Edgar ftp server for the period January 1st, 2006 through December 31st, 2014. To be included in the initial sample, firms must be tracked by Compustat with fiscal *year* ends subsequent to December 1, 2006 and have a market capitalization of at least $100 million.

10-Q data on *Compustat* between 2006-2014 with Market Cap. ≥ $100 *mil*	78,546
Less	
Error with Item-1A pull	-3,790
Regular and late filing in the same month	-446
Missing data for control variables	-162
Missing CRSP Permno	-8,558
Not enough info for 3-month return	-879
Ambiguous length of risk update section (between 100 and 200 words)	-11,756
Final Sample Firm-Quarters	52,955

Table 2: Descriptive Statistics of Risk Updates

Table 2 presents descriptive statistics for the sample of firm-quarters covered in the sample period. Firms are classified as having a risk update (*Update*=1) if their Item 1A word count exceeds 200 words and is greater than the prior period's word count by at least 100 words during the same fiscal year, and 0 otherwise. Panel A presents the results for the entire sample. Panels B and C present summary results of the three-month buy-and-hold abnormal returns (*BHAR3mo*) for the firms in our sample by year and Fama-French 17-industry (1997), respectively. Variable definitions are provided in Appendix A. Statistical tests on the difference from zero in the mean (median) abnormal returns are conducted using t-tests (Wilcoxon rank-sum tests). [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Firm-Quarters/ Updates	Mean	Median	Standard Deviation	5th Percentile	25th Percentile	75th Percentile	95th Percentile
Panel A: All Firms								
Update	52955/13932	0.2631	0.0000	0.4403	0.0000	0.0000	1.0000	1.0000
BHAR3mo	52955/13932	-0.0054 [c]	-0.0089 [c]	0.1738	-0.2896	-0.1030	0.0844	0.2889
CAR[-1,1]	52955/13932	0.0002	-0.0004	0.0656	-0.0953	-0.0243	0.0248	0.0986
Beta	52955/13932	1.1441	1.1064	0.5556	0.2637	0.7764	1.4734	2.1407
Momentum	52955/13932	0.0602	0.0417	0.2592	-0.3343	-0.0797	0.1730	0.5062
Ln (Market Cap.)	52955/13932	7.0315	6.8287	1.5546	4.8798	5.7800	8.0420	9.9869
Book-to-Market	52955/13932	0.5544	0.4888	0.4988	0.0567	0.2758	0.7680	1.3053
Ln(Qlength)	52955/13932	10.8824	10.6192	1.2075	9.2909	9.8172	11.9264	12.9010
Panel B: BHAR3mo by Year								
2006	5667/1434	0.0018	-0.0022	0.1544	-0.2486	-0.0883	0.0871	0.2545
2007	6824/1681	-0.0054 [c]	-0.0094 [c]	0.1727	-0.2854	-0.1083	0.0912	0.2892
2008	6723/2246	-0.0143 [c]	-0.0156 [c]	0.2237	-0.3951	-0.1633	0.1233	0.3761
2009	5467/1610	-0.0014	-0.0169 [c]	0.2061	-0.3218	-0.1268	0.1026	0.3942
2010	5759/1675	-0.0080 [c]	-0.0141 [c]	0.1610	-0.2497	-0.1043	0.0756	0.2697
2011	4340/1190	-0.0024	-0.0046 [b]	0.1549	-0.2546	-0.0842	0.0746	0.2525
2012	6348/1508	0.0002	-0.0038	0.1589	-0.2604	-0.0884	0.0832	0.2625
2013	6150/1388	-0.0101 [c]	-0.0164 [c]	0.1556	-0.2435	-0.0981	0.0668	0.2467
2014	5677/1200	-0.0065 [c]	-0.0022 [b]	0.1499	-0.2637	-0.0811	0.0725	0.2222

Table 2: Descriptive Statistics of Risk Updates (Cont.)

Panel C: BHAR3mo by FF17								
Food	1214/195	-0.0039	-0.0079 [a]	0.1578	-0.2538	-0.0932	0.0759	0.2679
Mining	710/188	-0.0298 [c]	-0.0462 [c]	0.2243	-0.4101	-0.1690	0.1004	0.3929
Oil	2952/641	-0.0178 [c]	-0.0178 [c]	0.1933	-0.3437	-0.1354	0.0945	0.3105
Clths	568/131	-0.0170 [b]	-0.0106 [b]	0.1727	-0.3266	-0.1163	0.0808	0.2680
Durbl	766/139	-0.0145 [b]	-0.0206 [c]	0.1724	-0.2873	-0.1227	0.0891	0.2842
Chem	1109/212	0.0138 [b]	0.0021	0.1823	-0.2700	-0.0885	0.0982	0.3528
Cnsum	2038/949	0.0069	-0.0004	0.2036	-0.3295	-0.1054	0.1079	0.3868
Cnstr	1594/220	-0.0090 [b]	-0.0144 [c]	0.1753	-0.2891	-0.1205	0.0919	0.2796
Steel	650/101	-0.0149 [b]	-0.0195 [b]	0.1838	-0.3192	-0.1287	0.0907	0.2888
Fabpr	434/38	0.0070	-0.0132	0.1819	-0.2645	-0.0995	0.0956	0.3485
Machn	5291/2104	-0.0085 [c]	-0.0140 [c]	0.1824	-0.2994	-0.1140	0.0856	0.3047
Cars	805/151	-0.0078	-0.0070 [a]	0.1753	-0.3033	-0.1082	0.0856	0.2911
Trans	2225/388	0.0008	-0.0026	0.1663	-0.2636	-0.0972	0.0875	0.2700
Utils	1876/442	0.0052 [b]	-0.0050	0.1111	-0.1566	-0.0678	0.0734	0.1872
Rtail	1949/350	-0.0036	-0.0086 [b]	0.1778	-0.2879	-0.1100	0.0867	0.3083
Finan	12891/2430	-0.0089 [c]	-0.0090 [c]	0.1498	-0.2485	-0.0873	0.0681	0.2302
Other	15883/5253	-0.0021	-0.0069 [c]	0.1840	-0.3048	-0.1098	0.0981	0.3145

Table 3: Correlation Matrix

This table presents a correlation matrix of the variables used in our analysis. Pearson (Spearman) correlations are presented below (above) the diagonal. Variable definitions are provided in Appendix A. Statistical tests on relation between variables are performed for both measurements of correlation. Results are presented to the right of each correlation statistic where [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Update	BHAR3mo	CAR[-1,1]	Beta	Momentum	*Ln* (Mkt. Cap.)	Bk.-to-Mkt.	Ln(Qlength)
Update	**1.000**	-0.029 [c]	-0.032 [c]	0.042 [c]	-0.048 [c]	-0.019 [c]	-0.060 [c]	0.006
BHAR3mo	-0.019 [c]	**1.000**	0.293 [c]	-0.018 [c]	0.010 [b]	0.027 [c]	0.003	0.011 [b]
CAR[-1,1]	-0.034 [c]	0.335 [c]	**1.000**	0.003	-0.011 [c]	0.021 [c]	0.015 [c]	-0.004
Beta	0.044 [c]	-0.004	0.011 [c]	**1.000**	0.000	-0.024 [c]	0.035 [c]	0.035 [c]
Momentum	-0.038 [c]	0.018 [c]	0.003	0.045 [c]	**1.000**	0.085 [c]	-0.147 [c]	0.053 [c]
Ln (Market Cap.)	-0.024 [c]	0.008 [a]	0.011 [b]	-0.035 [c]	0.026 [c]	**1.000**	-0.226 [c]	0.339 [c]
Book-to-Market	-0.026 [c]	0.010 [b]	0.023 [c]	0.077 [c]	-0.115 [c]	-0.175 [c]	**1.000**	0.089 [c]
Ln(Qlength)	-0.010 [b]	0.002	-0.002	0.026 [c]	0.021 [c]	0.331 [c]	0.062 [c]	**1.000**

Table 4: Descriptive Statistics by Risk Update Subsamples

This table reports descriptive statistics for the sample of firm-quarters covered in the sample period by subsample. Firm-quarters are separated into subsamples by our risk factor update variable. Firms are classified as having a risk update (*Update*=1) if their Item 1A word count exceeds 200 words and is greater than the prior period's word count by at least 100 words during the same fiscal year, and 0 otherwise.. Results of comparisons across subsamples are provided below. Statistical significance on differences in means and medians is computed using t-tests for mean values and Wilcoxon rank-sum tests for median values. Variable definitions are provided in Appendix A. [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Update			No Update			Difference	
	N	Mean	Median	N	Mean	Median	Mean	Median
BHAR3mo	13,932	-0.0109	-0.0176	39,023	-0.0034	-0.0065	-0.0075 [c]	-0.0111 [c]
CAR[-1,1]	13,932	-0.0035	-0.0021	39,023	0.0015	0.0001	-0.0050 [c]	-0.0021 [c]
Beta	13,932	1.1845	1.1444	39,023	1.1297	1.0922	0.0548 [c]	0.0522 [c]
Momentum	13,932	0.0438	0.0292	39,023	0.0660	0.0456	-0.0222 [c]	-0.0164 [c]
Ln (Market Cap.)	13,932	6.9691	6.7843	39,023	7.0538	6.8499	-0.0847 [c]	-0.0655 [c]
Book-to-Market	13,932	0.5328	0.4425	39,023	0.5621	0.5034	-0.0292 [c]	-0.0609 [c]
Ln(Qlength)	13,932	10.8617	10.5338	39,023	10.8898	10.6645	-0.0282 [b]	-0.1308

Table 5: Multivariate Analysis of Risk Updates and Future Returns

This table reports coefficient estimates from ordinary-least-squares regression estimation on the relation between three-month buy-and-hold returns (*BHAR3mo*), risk updates (*Update*), and a vector of control variables. *BHAR3mo* is computed as the three-month buy-and-hold return of a given firm less the value-weighted, three-month buy-and-hold return of a size and book-to-market matched portfolio of firms. Firms are classified as having a risk update (*Update*=1) if their Item 1A word count exceeds 200 words and is greater than the prior period's word count by at least 100 words during the same fiscal year, and 0 otherwise. All specifications include fixed effects for year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by firm. *t*-statistics are presented in parentheses. Remaining variable definitions are provided in Appendix A. [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Dependent Variable = BHAR3mo			
	(1)	**(2)**	**(3)**	**(4)**
Update (1 if yes)	-0.0085 [c]	-0.0040 [b]	-0.0037 [b]	-0.0038 [b]
	(-4.258)	(-2.164)	(-2.008)	(-2.027)
CAR[-1,1]		0.8864 [c]	0.8866 [c]	0.8859 [c]
		(59.776)	(59.767)	(59.624)
Beta			-0.0015	-0.0018
			(-0.965)	(-1.137)
Momentum			0.0098 [b]	0.0111 [c]
			(2.529)	(2.831)
Ln (Market Cap.)				0.0005
				(0.958)
Book-to-Market				0.0049 [a]
				(1.935)
Ln (Qlength)				0.0006
				(0.561)
Constant	-0.0008	-0.0016	-0.0002	-0.0125
	(-0.289)	(-0.631)	(-0.072)	(-1.066)
Observations	52,955	52,955	52,955	52,955
Adj. R^2	0.003	0.114	0.115	0.115

Table 6: Average Monthly Returns to Risk Update Portfolios

This table reports the results from asset pricing regressions of a risk-update strategy, long in the firms without a risk update and short in the firms with a risk update, for the years 2006-2014. For each month in our sample period we construct a value-weighted portfolio for the firms with a risk update in the preceding month (*Update*=1) and a second for the firms without a risk update in the preceding month (*Update*=0). The abnormal return to this long-short strategy is the intercept from a calendar-time portfolio regression of the long-short monthly portfolio return. The results from three asset pricing models are presented: the market model, the Fama-French 3-factor model (1993), and the Carhart 4-factor model (1997). Remaining variable definitions are provided in Appendix A. *t-statistics* are presented in parentheses. [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

		Alpha	Rm-Rf	SMB	HML	UMD	Adj. R^2
Market Model							
Long: Update=0	Coeff.	-0.0001	1.1599 [c]				0.9130
	t-Stat.	(-0.067)	(33.199)				
Short: Update=1	Coeff.	-0.0029	1.1912 [c]				0.8620
	t-Stat.	(-1.378)	(25.629)				
Long - Short	Coeff.	0.0028 [b]	-0.0313				0.0090
	t-Stat.	(1.979)	(-1.003)				
Fama-French 3-Factor							
Long: Update=0	Coeff.	0.0005	1.0134 [c]	0.6229 [c]	0.1217 [c]		0.9720
	t-Stat.	(0.588)	(44.408)	(14.456)	(3.125)		
Short: Update=1	Coeff.	-0.0023 [a]	1.0322 [c]	0.7970 [c]	0.0140		0.9440
	t-Stat.	(-1.741)	(30.069)	(12.296)	(0.239)		
Long - Short	Coeff.	0.0029 [b]	-0.0188	-0.1741 [c]	0.1077 [a]		0.0980
	t-Stat.	(2.115)	(-0.543)	(-2.666)	(1.825)		
Carhart 4-Factor							
Long: Update=0	Coeff.	0.0005	0.9795 [c]	0.6328 [c]	0.0475	-0.1131 [c]	0.9810
	t-Stat.	(0.658)	(49.975)	(17.657)	(1.393)	(-6.865)	
Short: Update=1	Coeff.	-0.0024 [a]	0.9996 [c]	0.8066 [c]	-0.0573	-0.1087 [c]	0.9510
	t-Stat.	(-1.884)	(30.045)	(13.257)	(-0.989)	(-3.887)	
Long - Short	Coeff.	0.0029 [b]	-0.0201	-0.1737 [c]	0.1048 [a]	-0.0044	0.0980
	t-Stat.	(2.104)	(-0.56)	(-2.645)	(1.677)	(-0.145)	

Table 7: Strong vs. Weak Updates and Future Returns

This table reports coefficient estimates from ordinary-least-squares regression testing on the relation between three-month buy-and-hold returns (*BHAR3mo*), strong risk updates (*Strong Update*), and weak risk updates (*Weak Update*). *BHAR3mo* is computed as the three-month buy-and-hold return of a given firm less the value-weighted, three-month buy-and-hold return of a size and book-to-market matched portfolio of firms. Firms are classified as having a strong risk update (*Strong Update*=1) if their filing contains a risk update and their Item 1A keyword count is in the top quartile of all filings containing a risk update. Firms are classified as having a weak risk update (*Weak Update*=1) if their filing contains a risk update and their Item 1A keyword count is in the bottom three quartiles of all filings containing a risk update. All specifications include fixed effects for year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by firm. *t*-statistics are presented in parentheses, and *F*-statistics are presented in brackets. Remaining variable definitions are provided in Appendix A. [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Dependent Variable = BHAR3mo			
	(1)	**(2)**	**(3)**	**(4)**
Strong Update (1 if yes)	-0.0035	0.0018	0.0022	0.0026
	(-0.857)	(0.474)	(0.557)	(0.675)
Weak Update (1 if yes)	-0.0100 [c]	-0.0058 [c]	-0.0055 [c]	-0.0057 [c]
	(-4.625)	(-2.903)	(-2.768)	(-2.870)
CAR[-1,1]		0.8865 [c]	0.8868 [c]	0.8860 [c]
		(59.800)	(59.791)	(59.649)
Beta			-0.0016	-0.0019
			(-1.018)	(-1.201)
Momentum			0.0097 [b]	0.0111 [c]
			(2.521)	(2.835)
Ln (Market Cap.)				0.0005
				(1.016)
Book-to-Market				0.0051 [b]
				(2.021)
Ln (Qlength)				0.0006
				(0.577)
Constant	-0.0011	-0.0020	-0.0006	-0.0134
	(-0.428)	(-0.802)	(-0.188)	(-1.139)
Strong Update = Weak Update	[2.212]	[3.339] [a]	[3.389] [a]	[3.988] [b]
Observations	52,955	52,955	52,955	52,955
Adj. R^2	0.003	0.115	0.115	0.115

Table 8: Average Monthly Returns to Weak Risk Update Portfolios

This table reports the results from asset pricing regressions of a risk-update strategy, long in the firms without a risk update and short in the firms with a weak risk update, for the years 2006-2014. For each month in our sample period we construct a value-weighted portfolio for the firms with a weak risk update in the preceding month (*Weak Update*=1) and a second for the firms without a risk update in the preceding month (*Update*=0). The abnormal return to this long-short strategy is the intercept from a calendar-time portfolio regression of the long-short monthly portfolio return. The results from three asset pricing models are presented: the market model, the Fama-French 3-factor model (1993), and the Carhart 4-factor model (1997). Remaining variable definitions are provided in Appendix A. *t-statistics* are presented in parentheses. [a], [b], and [c] indicate statistical significance at the 10%, 5%, and 1%, respectively.

		Alpha	Rm-Rf	SMB	HML	UMD	Adj. R^2
Market Model							
Long: Update=0	Coeff.	-0.0002	1.1642 [c]				0.9120
	t-Stat.	(-0.097)	(32.961)				
Short: Weak Update=1	Coeff.	-0.0046 [b]	1.1567 [c]				0.8270
	t-Stat.	(-1.973)	(22.431)				
Long - Short	Coeff.	0.0044 [b]	0.0075				0.0210
	t-Stat.	(2.531)	(0.193)				
Fama-French 3-Factor							
Long: Update=0	Coeff.	0.0004	1.0187 [c]	0.6382 [c]	0.1016 [c]		0.9730
	t-Stat.	(0.501)	(44.592)	(14.795)	(2.606)		
Short: Weak Update=1	Coeff.	-0.0039 [b]	0.9786 [c]	0.8168 [c]	0.0896		0.9170
	t-Stat.	(-2.382)	(23.574)	(10.419)	(1.265)		
Long - Short	Coeff.	0.0043 [b]	0.0401	-0.1785 [b]	0.0120		0.0430
	t-Stat.	(2.498)	(0.908)	(-2.141)	(0.159)		
Carhart 4-Factor							
Long: Update=0	Coeff.	0.0004	0.9840 [c]	0.6484 [c]	0.0256	-0.1158 [c]	0.9820
	t-Stat.	(0.558)	(50.693)	(18.266)	(0.759)	(-7.097)	
Short: Weak Update=1	Coeff.	-0.0039 [b]	0.9723 [c]	0.8186 [c]	0.0757	-0.0212	0.9170
	t-Stat.	(-2.379)	(22.591)	(10.401)	(1.011)	(-0.586)	
Long - Short	Coeff.	0.0043 [b]	0.0117	-0.1702 [b]	-0.0500	-0.0946 [b]	0.0990
	t-Stat.	(2.545)	(0.263)	(-2.092)	(-0.646)	(-2.532)	

Appendix A: Variable Definitions

This appendix defines all variables used in analysis. All continuous variables are winsorized at 1 and 99 percentiles to reduce the influence of outliers. Variable names identified in the definition column correspond to the Compustat Xpressfeed dataset.

Variable	Definition
Update	Firms are classified as having a risk update (*Update*=1) if their Item 1A word count exceeds 200 words and is greater than the prior period's word count by at least 100 words during the same fiscal year. Firms are classified as not having an update (*Update*=0) if there is no Item 1A section, if their Item 1A word count is less than 100 words, or if the word count does not exceed the prior period's count by at least 100 words during the same fiscal year.
Strong Update	Firms are classified as having a strong risk update (*Strong Update*=1) if their filing contains a risk update and their Item 1A keyword count is in the top quartile of all filings containing a risk update.
Weak Update	Firms are classified as having a weak risk update (*Weak Update*=1) if their filing contains a risk update and their Item 1A keyword count is in the bottom three quartiles of all filings containing a risk update.
BHAR3mo	The three-month buy-and-hold return of a given firm less the value-weighted, three-month buy-and-hold return of a size and book-to-market matched portfolio of firms, beginning two days following the 10-Q filing.
CAR[-1,1]	The three-day cumulative abnormal return beginning on the day preceding and ending one day following the announcement. Abnormal returns are computed as the raw firm return less the CRSP value-weighted market returns.
Beta	The firm's market model beta computed using daily returns in the six months preceding the announcement starting 30 days before the announcement date.
Momentum	The buy-and-hold return to the firm in the six months preceding the announcement ending 30 days prior to the announcement date.
***Ln*(Market Cap.)**	The natural log of the firm's market value of equity (i.e., *Ln*(*prccq***cshoq*)).
Book-to-Market	The ratio of the firm's book value of equity to its market value of equity.
***Ln*(Qlength)**	The natural log of total words contained in the 10-Q filing less the words contained in the risk factor section of the 10-Q (i.e., *Ln*(total words - item 1A words)).
Rm-Rf	The excess return on the market where the market return is computed as the value-weighted return of all CRSP firms incorporated in the U.S. and listed on the NYSE.
SMB	The average return on the three small portfolios minus the average return on the three big portfolios (Fama and French 1993).
HML	The average return on the two value portfolios minus the average return on the two growth portfolios (Fama and French 1993).
UMD	The average return on the two high prior return portfolios minus the average return on the two low prior return portfolios (Carhart 1997).