THE INFORMATION CONTENT OF RISK FACTOR DISCLOSURES IN QUARTERLY REPORTS

by

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DISSERTATION ABSTRACT

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Title: The Information Content of Risk Factor Disclosures in Quarterly Reports

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I examine whether recently required Risk Factor update disclosures in quarterly reports provide investors with timely information regarding potential future negative outcomes. Specifically, I examine whether Risk Factor updates in 10-Q filings are associated with negative abnormal returns at the time the updates are disclosed and whether quarterly updates are followed by negative earnings shocks. I find that firms presenting updates to their Risk Factor disclosures have lower abnormal returns around the filing date of the 10-Q relative to firms without updates, although I find little evidence to suggest that the strength of this relationship is positively associated with the level of information asymmetry between managers and investors. Using analyst forecasts and a cross-sectional model to forecast earnings as measures of expected earnings prior to the release of Risk Factor updates, I find that firms with updates to their Risk Factors section have lower future unexpected earnings. I also find that firms with Risk Factor updates are more likely to experience future extreme negative earnings forecast errors. These findings suggest that the recent disclosure requirement mandated by the SEC was successful in generating timely disclosure of bad news. However, I also find some evidence that firms with updates to their Risk Factors section have stronger future positive performance shocks relative to

firms without Risk Factor Updates, consistent with firms that disclose Risk Factor updates also having greater upside potential.

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CHAPTER I

INTRODUCTION

Effective December 1, 2005, the U.S. Securities and Exchange Commission (SEC) mandated filers to disclose "Risk Factors" in their annual and quarterly reports. The stated purpose of this new requirement was to "further enhance the contents of Exchange Act reports and their value in informing investors and the markets" (SEC 2005). The SEC states that the Risk Factors disclosed should "describe the most significant factors that may *adversely* affect the issuer's business, operations, industry or financial position, or its future financial performance" (SEC 2004). However, because firms have some latitude in complying with the mandated disclosure requirement, the degree to which the disclosures convey information consistent with the SEC's intent remains uncertain. This is consistent with the SEC's recent concerns that Risk Factor regulation may need to be revised to increase its usefulness (Johnson 2010). Ultimately, whether the mandated disclosure requirement generates more timely disclosure of negative information depends on management's assessment of the trade-off between the expected costs from enforcement against the perceived costs of disclosing information about uncertain, negative outcomes. Thus, it is not clear that the regulation will motivate managers to disclose private information about potential negative outcomes. To provide evidence on this issue, I examine whether updates to Risk Factor disclosures in 10-Q filings are negatively associated with short window stock returns and whether the strength of the market reaction is positively associated with the degree of information asymmetry between managers and investors. In addition, I examine whether updates of Risk Factor disclosures are followed by negative earnings shocks.

Although the SEC regulation applies to both annual and quarterly reports, the reporting requirements differ across the two documents. Annual reports provide investors with a general summary of all Risk Factors facing the firm, while quarterly reports should only contain updates to those Risk Factors (including the addition of new Risk Factors facing the firm). Thus, while disclosures in the 10-K filing should provide information about levels of existing problems facing the firm, quarterly reports should express changes in expected potential negative outcomes. Because I am interested in whether the recent disclosure requirement provides timely reporting of potential adverse outcomes, in this study I focus on quarterly reports. In addition, anecdotal evidence in the popular press suggests that investors may be overlooking information in the Risk Factors section of quarterly reports (Greenberg, 2007; Greenberg, 2008).

In deciding whether to disclose uncertain adverse outcomes, management weighs the costs of disclosure against the potential penalties faced from the SEC's enforcement of the disclosure regulation and the probability of shareholder litigation. Management's withholding of bad news is consistent with disclosure theory (Verrecchia 2001; Dye 2001), survey evidence (Graham, Harvey, and Rajgopal 2005), and empirical evidence (Kothari, Shu, and Wysocki 2009; Green, Hand, and Penn 2011). These studies suggest that managers have incentives to withhold bad news to maximize their personal wealth when there is the possibility that the potential negative outcome will not be realized. The disclosure of possible negative outcomes could reduce stock price, thereby reducing management's wealth and labor market value (Kothari et al. 2009; Hermalin and Weisbach 2007). While managers have incentives to preempt bad news by disclosing realized negative outcomes, (Skinner 1994; Kasznik and Lev 1995; Baginski, Hassell, and Kimbrough 2002), the required disclosure of Risk Factors, by definition, relate to uncertain outcomes. Consistent with this distinction, Graham et al. (2005) find that managers delay disclosing potential bad news. Manager's survey responses in Graham et al. (2005) suggest that they would withhold disclosure of potential negative outcomes due to hope that the firm's position will improve, saving them from ever having to disclose the information.

As a result, managers are likely to withhold disclosing information regarding uncertain negative outcomes. To provide additional incentives to disclose such information on a timely basis, the SEC regulation imposes penalties for failing to disclose a material risk factor. Anecdotal evidence suggests this penalty can be severe. A class action lawsuit filed in 2009 alleges that potential future material deteriorations in Countrywide Financial Corporation's loan portfolio were not appropriately identified in the company's Risk Factors section until the period in which a material impairment charge was announced. The settlement in this case was for $624 million. [1]

However, it is not clear that the potential cost of an enforcement action is sufficient to motivate management to disclose material Risk Factors. The SEC is only likely to impose a penalty on management for the non-disclosure of a material risk factor after a negative outcome is realized and they are able to show that the manager had access to information that was withheld. Although prior research suggests that managers are likely to preemptively disclose realized bad news as the fear of litigation increases (Skinner 1997; Graham et al. 2005), given the uncertainty inherent in Risk Factors, it is

[1] This settlement was approved on March 10, 2011 and released liability of several top Countrywide executives, including the former CEO. $24 million of the settlement will be paid by KPMG. The total amount of the settlement is one of the largest securities fraud settlements in U.S. history. See http://securities.stanford.edu/1038/CFC_01/ for additional information.

not clear that the threat of fines and penalties will be sufficient to overcome the tendency of managers to withhold the disclosure of possible negative outcomes.

Following the discussion above, the impact on the information environment of the SEC requirement to disclose updates to Risk Factors in a 10-Q filing is an empirical question. If the requirement leads to additional disclosure of material risk factors, the market should respond to the disclosure by lowering the expected value of the future cash flows of the firm and incorporate the information into stock price. This should lead to negative returns after the 10-Q filing, and the strength of this association is likely to depend on the extent of information asymmetry between managers and investors. When there is more information in the public domain regarding possible negative future outcomes prior to the filing of the 10-Q, the market reaction at the time of the disclosure should be dampened.

The disclosure of material risk factors in the 10-Q should also be associated with negative earnings shocks when those unfavorable outcomes are realized. I therefore test whether firms that provide Risk Factor updates experience a negative shift in the distribution of future unexpected earnings relative to firms that do not provide updates, as well as whether firms that provide Risk Factor updates are more likely to experience future extreme negative earnings shocks. These tests provide evidence as to whether the disclosures are associated with an increased probability of adverse outcomes and the timing of those negative outcomes.

Two concurrent working papers that study Risk Factor disclosures in *annual* reports conclude that annual Risk Factor disclosures are informative to investors (Campbell, Chen, Dhaliwal, Lu, and Steele 2011; Huang 2010). However, there are a few key differences between their studies and mine. Huang (2010) limits his analysis to a small set of risk factors and finds mixed evidence that some key words are related to changes in risk and financial performance. My study effectively picks up where Huang (2010) leaves off, by focusing on whether Risk Factor updates convey useful information to investors. Second, Campbell et al. (2011) generally focus on whether annual Risk Factor disclosures convey information about general uncertainty/volatility, whereas in this study I focus on whether Risk Factor updates contain information about specific uncertainty surrounding negative outcomes. Finally, it is not clear whether the findings related to disclosure in annual reports are generalizable to disclosure in quarterly reports. Unlike annual reports which must contain a Risk Factors section, the SEC allows managers to omit the Risk Factors section in the 10-Q if there have been no material updates, which may differentiate compliance in quarterly reporting from annual reporting by shifting the perceived costs of withholding an uncertain adverse outcome. In addition, quarterly reports are reviewed rather than audited and must be filed more quickly than annual reports, which may create additional managerial reporting discretion in this setting. Given the SEC is contemplating revising the Risk Factor disclosure standards (Johnson 2010), this study sheds light on whether the requirement for quarterly reporting has incremental value.

I test three hypotheses related to my predictions. First, I examine whether Risk Factor updates in the 10-Q lead to reductions in the market's expectations regarding the firm's future cash flows. Second, I examine whether the changes in market expectations are attenuated by differences in the information environment. Finally, I examine whether Risk Factor updates in the 10-Q are followed by future negative earnings shocks.

I use the Python programming language to collect Risk Factor disclosures and construct two alternative measures to capture the information content of a Risk Factor update.[2] The first is an indicator variable that is set equal to 1 if a firm discloses an update to their annual Risk Factor disclosure in their 10-Q filing. The second is a continuous measure that counts the number of key words included in the Risk Factor disclosure. The key words are defined using the list of 37 terms suggested by Balakrishnan and Bartov (2008) to capture "fundamental risk." The intuition behind the use of this word count is that the more a firm's discussion of potential negative outcomes centers on firm fundamentals (e.g. earnings, cash flows, sales, etc.), the greater the likelihood of a potential impact to these fundamentals. I view these measures as alternative proxies for the information content of a Risk Factor update, however each has advantages. While the indicator variable is easy to interpret, unlike the key word measure, it is unable to capture differences in the size of a Risk Factor update. For example, a firm with multiple updated or new risk factors may be more likely to experience future adverse outcomes than a firm with only one new risk factor. However, longer disclosures may also be due to repetition of some previously disclosed information or variations in length due to managerial discretion, which may not be relevant. Overall, neither measure can fully capture the probability of an adverse outcome occurring or the level of materiality of a possible adverse outcome. Thus, it is not clear that one measure is necessarily better than the other. Therefore, I include results using both measures throughout my analysis.

[2] The Python programming language is an open source language, which is free for public or commercial use. It is comparable to other programming languages such as Perl, Ruby, and Java. See http://www.python.org/about/ for additional information.

I compute the Cumulative Abnormal Return (CAR) around the filing date of the 10-Q as the primary dependent variable of interest to test my first hypothesis. To examine whether the market reaction is greater for firms with a higher degree of information asymmetry, I include the level of information asymmetry and an interaction term between information asymmetry and firms that issue quarterly updates in my regression analysis. I utilize two alternative measures of the degree of information asymmetry that have been used in the prior literature: the percentage of institutional ownership of the firm and the number of analysts following the firm. To examine whether quarterly updates are associated with future adverse outcomes and the presence of extreme future negative earnings shocks, I utilize both analyst forecasts and a cross-sectional earnings prediction model as measures of expected earnings. Because of the uncertainty inherent in Risk Factor disclosures, I utilize three different time periods to test for future performance shocks. First, I examine performance shocks in the quarter following an update. Second, I examine performance shocks for the first fiscal year end following a quarterly update. Finally, I examine performance shocks for the second fiscal year end following a quarterly update. After consideration of the data requirements discussed above, the sample used for testing my first two predictions consists of 7,212 firm-quarters covering the period 2006-2009. For tests related to subsequent negative performance, the sample is reduced, for reasons discussed in more detail below.

I find evidence consistent with Risk Factor updates in quarterly reports providing valuable information to investors. I find a significantly negative association between the issuance of a quarterly Risk Factor update and CAR (-0.0043) (p-value=0.000). I also find a significantly negative association (p-value=0.000) between market returns and the number of key words in the Risk Factor disclosure. However, I find very little evidence that the strength of the association is sensitive to the level of information asymmetry between managers and investors. When I use the decile rank of the percentage of institutional ownership as a measure of information asymmetry, I find that the coefficients on the interaction of the Risk Factor update variables with information asymmetry are not statistically significant (p-value=0.226 or p-value=0.447). When I use the number of analysts following the firm as a measure of information asymmetry, I find that the coefficients on the interaction of the Risk Factor update variables with information asymmetry are only significant at the 10 percent level (p-value=0.098 or p-value=0.108). These results provide only weak support for my hypothesis that the information content of quarterly updates is significantly impacted by the level of information asymmetry between managers and investors.

I find that the variable indicating the presence of a Risk Factor update is associated with more negative unexpected earnings, and with higher propensities to experience extreme negative earnings shocks in the quarter following a Risk Factor update, as well at the first fiscal year end after a quarterly update. However, the number of key words in a Risk Factor update is only statistically significant in tests examining the first fiscal year end after a quarterly update. In addition, I find a positive association between each Risk Factor measure and next quarter losses, as well as the presence of next quarter negative special items reported on the income statement. However, I find no evidence regarding an association between firms with Risk Factor updates and negative earnings shocks in the second fiscal year end following an update. Taken together, these results suggest that quarterly updates to Risk Factors are associated with future negative earnings shocks that appear to be realized within the first fiscal year-end period. However, I also find weak evidence regarding an association between quarterly Risk Factor Updates and future *positive* earnings shocks. Overall, this evidence is consistent with firms providing quarterly updates to Risk Factors having greater downside and upside potential, leading to greater earnings volatility in future periods. Combined with the significant negative market reaction to quarterly Risk Factor updates, downside risk appears to be effectively communicated at the time of the 10-Q filing. However, because the Risk Factor updates in quarterly reports focus on adverse outcomes they do not reveal the increased probability of favorable outcomes.

This study contributes to existing literature in three ways. First, I provide evidence regarding the effectiveness of the SEC's new disclosure requirement in quarterly reports, including whether Risk Factor update disclosures provide information about future negative outcomes. The SEC has stated concerns that the information being presented in Risk Factor sections is "too broad and generic" and that the disclosures need to be "more-targeted" (Johnson 2010). However, my evidence suggests that firms appear to use the disclosure of Risk Factor updates to provide information about potential future adverse events that the market appears to impound into stock price. In addition, Risk Factor updates appear to be followed by the realization of potential negative outcomes. Therefore, this study is of direct interest to regulators who have expressed concern over the current Risk Factor disclosure requirements (Johnson 2010), by providing evidence that Risk Factor disclosures in quarterly reports appear to be achieving the SEC's stated objective on average. Second, this study provides evidence regarding whether findings from Initial Public Offering (IPO) literature on Risk Factor disclosure apply to established firms with richer information environments and a different market structure. Even though the requirement to disclose Risk Factors in 10-K and 10-Q filings is relatively new, Risk Factors have long been required in prospectus statements. Researchers in this area conclude that Risk Factors contain valuable information (Beatty and Welch 1996; Hanley and Hoberg 2008; Balakrishnan and Bartov 2008). However, there are key differences in the information environment as well as the market structure between these two settings. Because firms engaging in an IPO have limited operating results, limited analyst following, limited disclosure in the public domain, and have an underwriter setting the initial price of the transaction, it is not clear that findings from the IPO literature will provide insights outside of that unique setting. Third, prior research has struggled to find overall market reactions to the filings of quarterly reports. Market reactions have generally only been documented when the 10-Q is the first release of earnings information, contains different earnings numbers relative to a prior earnings announcement, or is filed late (Hollie, Livnat, and Segal 2005; Li and Ramesh 2009). I extend prior research on the information content of quarterly reports by exploring an additional context (when Risk Factors are updated) where quarterly reports may be informative to investors.

In the next chapter, I develop the hypotheses and discuss the related literature. In Chapter III, I discuss the data and research design. In Chapter IV, I present the results of the tests. In Chapter V, I present sensitivity analyses. In Chapter VI, I conclude.

CHAPTER II

PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Background

In 2005, the SEC issued Release Nos. 33-8591 and 34-52056 requiring registrants to disclose Risk Factors in quarterly and annual reports to provide the securities market with timely information about potential future outcomes that may adversely affect the company's financial performance (SEC 2005).[3] In their review of recent securities regulation, Robbins and Rothenberg (2006) explain that "Companies and their counsel who are drafting and revising risk factors must anticipate potential problems facing the company and describe them." This mandate is part of the SEC's ongoing commitment to provide investors with useful information as the reporting environment evolves over time. While the disclosure of Risk Factors in prospectus statements associated with IPOs (see the next section for a review of this literature) has been present since the implementation of Regulation S-K, this was the first time it was applied to filings from publicly traded companies in the secondary market.

Disclosure theory suggests that managers tend to withhold bad news and disclose good news (Dye 2001). Verrecchia (2001) notes that the incentive to withhold bad news may result from current rewards based on market capitalization (i.e. due to incomplete contracting) and/or due to the manager's belief that he/she is being evaluated based on a market capitalization benchmark. Hermalin and Weisbach (2007) model the relationship between potential termination of a CEO as well as the CEO's future salary and optimal levels of disclosure and conclude that managers are likely to withhold bad news.

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[3] The SEC does not have a specific threshold for disclosure in terms of probability of occurrence or amount of impact to performance other than requiring only the disclosure of "material" risk factors.

Empirical evidence is also consistent with this theory. Kothari et al. (2009) provide evidence that the average market reaction is stronger for bad news than for good news, which is consistent with firms withholding price-decreasing information and accelerating the release of price-increasing information. Kothari et al. (2009) note that this behavior is consistent with managers being concerned about the stock price reaction to negative information and gambling that the potential negative outcome is never realized. Green et al. (2011) reach a similar conclusion by using a proprietary dataset that analyzes news events to generate a continuous measure capturing the degree of bad news or good news in the news event. Green et al. (2011) find that firm-generated press releases are more likely to reflect good news events than bad news events. Graham et al.'s (2005) survey of executives indicates that executives withhold bad news in hopes that the firm's position will improve.

The incentive to withhold bad news is offset by potential legal penalties or SEC sanctions for failing to disclose negative information. Skinner (1994; 1997) and Baginski et al. (2002) find that litigation risk motivates managers to accelerate the disclosure of bad news. Graham et al. (2005) find that executives' fear of litigation motivates the disclosure of bad news even if the potential for a negative judgment is low. Nelson and Pritchard (2007) find that managers increase their use of cautionary language as litigation risk increases. The evidence from these studies suggests that an increase in litigation risk should increase the perceived cost of nondisclosure to managers. In addition, during my sample period, mangers' perceived litigation risk may be more pronounced due to the high regulatory focus on undertaking significant risk identification practices (SOX 2002; NYSE 2003). Thus, in determining whether to comply with disclosure requirements, I assume that managers assess the expected cost of an enforcement action and weigh that against the perceived costs of disclosure. In addition, ex ante levels of litigation risk may affect a firm's disclosure choices in this setting. However, simple measures of ex ante litigation risk generally do a poor job of differentiating between actual levels of ex ante litigation risk (Kim and Skinner 2010). Thus, in this study I implicitly assume that ex ante litigation risk is constant across my sample, which may reduce the power of my tests.

Overall, the increase in the potential costs of withholding valuable information as a result of the mandate is likely to further incentivize managers to provide additional information regarding an increase in the probability of material adverse events in their Risk Factors disclosures. However, the extent to which this occurs remains an empirical question.

The Disclosure of "Risk Factors" in Prospectuses

Even though Risk Factor disclosures were only recently required in quarterly and annual reports (effective December 1, 2005), they have long been a part of prospectus statements and the filings of certain foreign private issuers (Form 20-F). In studying IPOs, prior research finds that longer Risk Factor disclosures in prospectus statements are related to IPO underpricing (Beatty and Welch 1996; Arnold, Fishe, and North 2007; Deumes 2008, Hanley and Hoberg 2008). These results are consistent with longer Risk Factor sections reflecting greater uncertainty, which leads underwriters to lower the prices of the IPOs. Specifically, Hanley and Hoberg (2008) find a negative association between the relative size of the Risk Factors section and the level of initial underpricing. Arnold et al. (2007) use both counts of the *number* of Risk Factors and the *length* of the

Risk Factors section and find that the Risk Factors section disclosed in prospectus statements is related to both initial underpricing and long-term returns. The latter result could indicate that some risk factors are not being disclosed, or that investors do not correctly price disclosed risk factors. Overall, the authors conclude that the Risk Factors section in prospectus statements is meaningful, but could be incomplete.

Abdou and Dicle (2007) focus on IPO underpricing in the context of retail and high-tech industries during the internet bubble of the late 20th century and find that some, but not all, risk factors appear to be priced. This finding supports the idea that some information may be boilerplate while other information may have direct security price implications.

Finally, Balakrishnan and Bartov (2008) use Risk Factor disclosures in IPO prospectus statements to predict future earnings and future stock returns, and to study whether analysts incorporate this information into their forecasts. The authors develop a list of 37 words that capture the economic fundamentals of the firm and use the number of these words appearing in the Risk Factors section as their primary variable of interest. The authors find that the information in the Risk Factors section in prospectuses is negatively correlated with future earnings and analysts' forecasts of future earnings. However, the authors also find a negative correlation between Risk Factor disclosures and analyst forecast *error*, concluding that analysts may provide overly optimistic forecasts after the disclosure of the risk factors. Overall, these results suggest that Risk Factor disclosures in prospectus statements contain information about future earnings that may only be partially incorporated by analysts.

Overall, the evidence indicates that Risk Factor disclosures in prospectus documents are informative about future firm performance. Risk Factor disclosures in IPOs appear to contain information that is impounded into prices, and are associated with lower future earnings performance. However, it is not clear whether those results would apply to the SEC requirement that firms disclose Risk Factors in filings for publicly traded firms. Balakrishnan and Bartov (2008) motivate their study of prospectus statements by noting that the SEC pays closer attention to the language in the offering prospectus, as opposed to the language in 10-Q and 10-K filings and that therefore the expected costs of non-compliance are greater for prospectus disclosures. In addition, the prospectus disclosures apply to smaller reporting companies (who are generally younger and have a lower number of analysts following the firm) that are exempt from the new disclosure requirement in 10-Qs and 10-Ks. In addition to differences in the information environment, the structure of the market that determines the pricing of IPOs differs from the market that determines the price of securities traded in the secondary market. Because the underwriter in an IPO sets the price and bears the risk of overpricing the IPO, pricing effects may be more likely to occur in an IPO setting. Clearly, the differences in these two settings highlight the fact that it is not clear that the SEC's mandate will provide useful information to investors for firms that have historically been traded on public exchanges.

The Disclosure of "Risk Factors" in 10-Ks

As discussed above, there are two concurrent working papers that investigate Risk Factor disclosures in annual reports. Huang (2010) develops a computer algorithm to identify Risk Factor headings and then uses key word analysis to determine whether one of his target 25 risk factors are identified in the 10-K. This technique is more advanced than the Python routine used in my analysis, which extracts the entire Risk Factors section, but is unable to separately identify headings. Huang (2010) provides mixed evidence regarding whether the 25 risk factors he identifies are associated with future measures of risk and firm performance.

Campbell et al. (2011) find that the length of Risk factor sections in annual reports is negatively related to short window abnormal returns around the filing of the 10-K, and attribute this price reaction to changes in the discount factor used by investors. However, Campbell et al. (2011, Table 9) find that their measures of systematic and idiosyncratic risk contained in Risk Factor disclosures both appear to be priced.[4] This evidence could indicate that there is measurement error in their classification of non-systematic risk, that idiosyncratic risk is priced, or that the disclosure leads to a decrease in future expectations of cash flows as well as increases in general uncertainty.

Overall, concurrent work provides evidence that Risk Factor disclosures in annual reports have informational value. However, the literature does not address whether Risk Factor disclosures are associated with future negative shocks to performance. In addition, the literature raises questions regarding whether the required Risk Factor disclosures in quarterly reports provide incremental information to annual disclosures. It is not clear that results related to annual disclosures are generalizable to disclosures in quarterly reports. While annual reports require a section describing all risk factors currently facing the firm, quarterly reports are only required to disclose material updates

[4] While Risk Factor disclosures may in fact provide some systematic risk information, this was clearly not the SEC's intent. Item 503(c) of Regulation S-K states "Do not present risks that could apply to any issuer or any offering." See 17 CFR 229.503(c) available at http://ecfr.gpoaccess.gov, which describes the original instructions for filing a prospectus statement under the Securities Act of 1933.

and therefore may exclude the Risk Factors section altogether. This difference in disclosure requirements may alter manager's perception of the costs of disclosure in this setting. In addition, quarterly reports are reviewed (rather than audited), and must be filed in a shorter window of time relative to annual reports, potentially providing increased discretion to managers in this scenario.

Information Content of Quarterly Reports

Research on the information content of quarterly reports investigates whether there is broad informational value in quarterly reports. The tension in this issue stems from the fact that 10-Qs are commonly preempted by earnings releases. Studies before the implementation of the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system found limited evidence of market reactions to 10-Qs. Easton and Zmijewski (1993) find market reactions around 10-Q filings when they are likely to be the first release of earnings information; however, they find no market reaction when 10-Qs are preempted by a general earnings announcement. Balsam, Bartov, and Marquardt (2002) find that in limited circumstances where earnings have likely been managed, unexpected discretionary accruals conveyed in quarterly reports generate a price reaction. Griffin (2003) provides evidence that there is a general market reaction to 10-Q filings in a more recent time period. However, Li and Ramesh (2009) show that Griffin's (2003) results do not account for the sequence of public earnings releases. In other words, consistent with early work by Easton and Zmijewski (1993), Li and Ramesh (2009) show that a statistically significant market reaction to the filing of a 10-Q only exists when the 10-Q is likely the first release of quarterly earnings information (i.e. where there was no preceding press release). Overall, the evidence surrounding market reactions to the filing of quarterly reports is context specific.

Hypotheses

This study specifically focuses on the information content of quarterly updates to Risk Factors. While annual reports present a complete summary of existing Risk Factors facing the firm, quarterly reports are required to provide any updates to those Risk Factors (including the addition of new Risk Factors) that may have been identified during the quarter. Asset pricing theory asserts that security prices are determined by expected future cash flows discounted to the present value (Cochrane, 2005). Therefore, updates to Risk Factors in quarterly reports should only affect the value of the underlying stock if they either provide information that changes the timing or amount of expected future cash flows of the firm, or the discount factor that investors apply to those cash flows. According to the mandate, updates to Risk Factors should provide information about uncertain future *negative* outcomes facing the firm. See Appendix A for an example of a Risk Factor update in a quarterly report. Quarterly updates could conceivably provide good news (i.e. a reduction in the probability of a negative event). However, in this study I assume that managers use the 10-Q to disclose bad news, e.g., an increase in the probability of a negative event. Consistent with this assumption, in a random sample of 200 firm-quarters (of which 81 contained an update to their Risk Factor disclosure) I found that only two observations contained a deletion of a risk factor. In addition, both of those observations also contained additional "bad news" risk factors, further mitigating the effect of potential good news.[5]

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[5] In addition, consistent with Kothari et al. (2009) and Green et al. (2011), managers will likely disclose good news at their earliest possible convenience. Therefore, these "good news" events that may be in the

Based on the analysis above, as the possibility of negative future outcomes increases, ceteris paribus, the expected value of future cash flows should decrease. Therefore, I expect Risk Factor updates in quarterly reports to provide information about increased probabilities of negative future outcomes and predict that they will be negatively related to returns.

Therefore, my first hypothesis is as follows (stated in alternative form):

> **H1**: Abnormal returns around the time of the 10-Q filing are lower for firms with Risk Factor updates relative to firms without Risk Factor updates.

A necessary condition for the market reaction predicted in H1 is that the information disclosed in the Risk Factors section of the 10-Q represents new information that had not previously been impounded in price. Thus, the extent of the market reaction to the disclosure of risk factors should depend on the information environment surrounding the firm, i.e., the likelihood that the information has already been priced. Firms with greater symmetry of information should experience a smaller reaction to Risk Factor updates in 10-Q reports because their information is more likely to have already been communicated to investors via some other means (e.g. other management disclosures or private information acquisition). As a result, I expect the effect documented in H1 to be attenuated in settings where information asymmetry is lower. Therefore, my second hypothesis is as follows (stated in alternative form):

> **H2**: The market reaction to Risk Factor updates in 10-Q filings is attenuated as the level of information asymmetry between managers and investors decreases.

sample are likely "no news" events at the time of mandatory disclosure due to preemptive disclosure. This further mitigates the impact of these events in my sample which could potentially weaken my results.

Studies examining Risk Factors in annual reports and prospectus statements suggest that Risk Factor disclosures (at least in those contexts) may provide information about general uncertainty that might impact the discount factor used by investors (Arnold et al. 2007; Deumes 2008; Campbell et al. 2011). As a result, the aforementioned studies focus on general measures of risk, such as Beta and firm-specific return volatility. In contrast, because the Risk Factor update disclosures focus specifically on the probability of adverse outcomes, i.e., downside risk, I expect the stock price reactions to quarterly updates to be primarily driven by changes to estimates of future cash flows. This explanation would be consistent with the SEC's contention that the Risk Factors disclosed should provide investors with information about potential negative outcomes (SEC 2004; Robbins and Rothenburg 2006) and with studies in the IPO literature that find that Risk Factor disclosures in prospectuses are associated with future negative performance (Balakrishnan and Bartov 2008).

If Risk Factor disclosures provide investors with information about potential future negative outcomes, then I expect that firms with Risk Factor updates should be more likely to experience adverse outcomes in future periods.[6] However, because the eventual timing of the resolution of these risks is uncertain, it is unclear as to when realizations of existing risk factors may take place. I expect that, due to conservatism inherent in Generally Accepted Accounting Principles (GAAP), earnings (over cash

[6] For example, in the second quarter of 2009 Capella Education Company disclosed that the IRS was currently conducting a payroll tax audit. As part of the audit, the IRS was apparently questioning the current classification of adjunct faculty as independent contractors rather than employees. Capella disclosed that this matter was not currently resolved, and that they were working with the IRS to determine the correct classification of their workers. However, if it was ruled that the adjunct faculty were employees, this would clearly negatively affect their profitability as they would be assessed payroll taxes on a significant percentage of their workforce (possibly retroactively). See http://www.sec.gov/Archives/edgar/data/1104349/000119312509156372/d10q.htm for a copy of the 10-Q filing.

flows) will more quickly reflect any state realizations of negative outcomes. Therefore, my third hypothesis is as follows (stated in alternative form):

H3A: Firms with Risk Factor updates are more likely to experience future adverse outcomes relative to firms without Risk Factor updates.

Following this hypothesis, if Risk Factor updates provide information about material uncertain negative outcomes, then I expect firms presenting updates to their Risk Factor disclosures are more likely to experience future extreme negative earnings shocks relative to other deviations from expected earnings. In other words, within the distribution of earnings shocks, I expect firms presenting Risk Factor updates to have a higher propensity to end up in the extreme negative side of the distribution relative to firms without Risk Factor updates. Therefore, my fourth hypothesis is as follows (stated in alternative form):

H3B: Firms with Risk Factor updates have a higher propensity for extreme negative earnings shocks relative to firms without Risk Factor updates.

Because of the uncertainty related to the realization of a negative outcome, I utilize various quarterly and annual intervals to test for an association between Risk Factor updates and earnings shocks. This in turn allows H3 to provide insight into the imminence of risk factors disclosed in quarterly reports.

The hypotheses presented above relate to the probability of negative events occurring, due to the nature of the disclosures. However, concurrent research suggests that Risk Factor disclosures in annual reports contain information about volatility in general (Campbell et al. 2011). In other words, even though the disclosure itself does not provide specific information regarding the likelihood of good events occurring, Risk

Factor updates may proxy for both upside and downside potential. Therefore, when examining H3, I include tests related to positive earnings shocks as well as negative earnings shocks.

CHAPTER III

REASEARCH DESIGN

Measuring Risk Factor Updates

I utilize the Python programming language to gather SEC filings (including the date filed with the SEC), to extract the "Item 1A. Risk Factors" section, and to summarize information contained in the extracted section. The requirement to include risk factors in *annual* reports is effective for fiscal years ending after December 1, 2005 (SEC 2005). However, quarterly updates were not required until after a firm had filed their first Risk Factors section in an annual report. Therefore, firms began disclosing quarterly updates for quarters with fiscal *year* ends after December 1, 2006. Small business filers (firms with public float of $25 Million or less) were initially excluded from this requirement (SEC 2005). As of February 4, 2008, all "Smaller Reporting Companies" were officially excluded from this reporting requirement as well (firms with a public float of $75 Million or less) (SEC 2007).

Public float is defined by the SEC as the market value of common equity held by nonaffilitates of the issuer (Gao, Wu, and Zimmerman 2009). Historical public float values are not available on a computerized database, but should (by definition) always be lower than total market value of common equity (Chan, Farrell, and Lee 2008). Nondorf, Singer, and You (2011) find that firms opportunistically manage down their public float temporarily to maintain classification as a Smaller Reporting Company, which may exacerbate the difference between public float and total market value of equity for firms close to the cutoff. Therefore, to exclude Smaller Reporting Companies from my sample I use a conservative benchmark of market values as of the end of the quarter of less than

$100 million to focus on firms that were subject to the reporting requirement. Thus, my initial sample collection includes 10-Q filings from 2006-2009 for firms with a market value of at least $100 million that are available in the EDGAR database.

The data gathering process starts by using the Python programming language to open all 10-Qs filed during the sample period, extract the Risk Factors section, and count the number of words in that section. Since the SEC requires that Risk Factors be disclosed under the heading "Item 1A. Risk Factors", this standardization aids my ability to extract these sections consistently.[7] Additionally, the Python algorithm counts each occurrence of the number of words occurring in the Risk Factor disclosure from the set of words defined in Balakrishnan and Bartov (2008). This generates a cumulative total of the number of times any of these words is mentioned in the Risk Factor section.[8] This word set was developed to capture words relating to the economic fundamentals of the firm. The word set is: {bankrupt, bankruptcy, 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, production, profit, revenue, sales, seasonal, services, settlement, solvency, spending, sue} (Balakrishnan and Bartov 2008).

I make two initial assumptions when classifying firms as having an update to their Risk Factors disclosure. First, because many firms without an update may simply omit this section from their 10-Q, I assume that if a 10-Q exists and my Python algorithm is

[7] There is some variation in the format used to title this section. I accommodate reasonable variations in spacing, use of a colon instead a period, as well as bolding and/or underlining to minimize the chance of either collecting the wrong section or erroneously concluding that the section does not exist.

[8] Python creates a cumulative count any time one of these words appears in the text, including when the word appears as part of another word. For example, "charge" and "charged" would be counted, but "charging" would not.

unable to capture this section that there has been no update to the risk factors that were disclosed in the prior annual report. Second, to be classified as having an update I require the section extracted to have a word count larger than 150 words. This requirement is necessary because many firms include this section, but provide a brief discussion of the reporting requirement, ultimately stating that there have been no material changes to their Risk Factors disclosure since the annual report.[9]

Following the discussion above, I create an indicator variable, $UPDATER_{it}$, that is set equal to 1 for firm-quarters in which an update to the firm's Risk Factors section is identified, and 0 otherwise; and a continuous variable, BB_WORDS_{it}, that is equal to the natural logarithm of one plus the number of words as defined using the list in Balakrishnan and Bartov (2008) that was presented above. This variable is Winsorized at 1% and 99% to reduce the influence of outliers.

I also collect the Risk Factor disclosure from annual reports for fiscal years ending after December 1, 2005 for two reasons. First, this serves as an additional control to ensure that firms in my sample meet the requirements for disclosing Risk Factors. I therefore exclude all observations where I am unable to locate a disclosure in the prior 10-K. I also exclude observations where the disclosure in the 10-K is listed as containing less than 200 words, since an abnormally small section may indicate some form of data error.[10] The second reason I gather this information is that some quarterly disclosures are quite long and thus may be repetitions of the annual disclosure, despite the SEC

[9] The 150-word cutoff was selected based on a review of extractions containing small sections. However, using a rigid cutoff may result in some potential misclassifications. In untabulated tests I exclude all observations with word counts between 100 and 200 words to avoid potential misclassifications and find similar results. This alternative methodology results in 704 fewer firm-quarters being included in the analysis.

[10] There were only 20 observations excluded due to the 10-K Risk Factor section containing less than 200 words.

specifically discouraging this type of behavior. To provide some insight on this issue, I calculated the number of words in the 10-Q update relative to the 10-K disclosure. I then generated a random sample of 200 quarterly disclosures that fall within the range of 95% to 105% of the annual disclosure. There are 578 observations that fall into this category (making up 32 percent of the total number of firms classified as having a quarterly update). For the random sample of 200, I opened each of these disclosures and manually read the opening paragraph(s) before the listing of risk factors begins (if such a paragraph exists). I find that 21.5% of these disclosures either state there has been some form of update, or that the disclosure specifically supersedes the annual disclosure. I find that only 7% of the observations specifically state that there have been no updates. The remaining 71.5% percent of the disclosures either do not provide an introductory paragraph, or do not state whether an update is being presented. Based on this analysis I include all of these firms in my sample as updates for three reasons. First, the SEC specifically states that the rules surrounding quarterly reports "do not otherwise require, and we discourage, unnecessary restatement or repetition of risk factors in quarterly reports" (SEC 2005). Therefore, for firms to comply with the regulation, updates presented in the 10-Q should not be wholesale repetitions. Second, these longer disclosures may actually be the most meaningful updates being presented either due to their sheer size, or because there may be an attempt by managers to bury a new risk factor amongst other previously disclosed information.[11] Finally, of the firms in the random

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[11] Because the SEC specifically states that firms should not re-present their annual disclosures in quarterly reports, managers may be committing a simple error by including previously disclosed risk factors in their quarterly reports. If this is true, I expect to observe this phenomenon to be stronger at the beginning of the sample period. However, inconsistent with this interpretation, I find that the percentage of all firms classified as updaters that are within 95% and 105% of the most recent annual disclosure remains relatively constant throughout each year in my sample.

sample of 200 firms where the existence of an update can be easily identified, approximately three times as many state that there has been a change in the quarterly disclosure as opposed to stating there has been no change.

Clearly, this assumption may have consequences. To the extent that firms with no real updates are classified as having updates, my results should weaken. However, it is also possible that these firms could be driving the results even if there are no updates being presented on average due to some omitted factor that is correlated with a firm's failure to comply exactly with the SEC regulation. Thus, these firms could bias my results. Therefore, in Chapter V, I address these concerns by excluding all observations that are greater than 95 percent of their most recent annual disclosure and find consistent results. See Chapter V for more detail.

Measuring Cumulative Abnormal Returns

Griffin (2003) documents that the response to a 10-Q filing on EDGAR normally occurs over the three-day window of 0 to +2. Therefore, I define $CARf_{it}$ as the cumulative abnormal return for firm *i* around the filing of their 10-Q in quarter *t* using the 0 to +2 window. More specifically:

$$CARf_{it} = \sum_{d=0}^{d=2} (RET_{id} - RET_{md})$$

Where $d = 0$ is the date the 10-Q is filed with the SEC and d=2 is the second trading date following the filing date. RET_{id} is the return for firm *i* on day *d*. RET_{md} is the return for the CRSP value-weighted market index on day *d*. The filing date is obtained from

EDGAR using the Python programming language.[12] *CARf* is Winsorized at 1% and 99% to reduce the influence of outliers.

Proxies for Information Asymmetry

El-Gazzar (1998) finds that higher levels of institutional holdings are associated with lower market reactions around earnings announcements and offers two explanations for these findings. First, El-Gazzar (1998) explains that institutional investors have additional incentives and resources to search for private information. Second, institutional investors may be able to influence the level of voluntary disclosure in the firm (El-Gazzar 1998). This is consistent with institutions being more likely to utilize and incorporate the most accurate publically available information because institutional investors may have superior information processing capabilities (Hand 1990; Walther 1997; Bartov, Radhakrishnan, and Krinsky 2000). Overall, prior literature suggests that the level of institutional ownership of a firm should be highly correlated with the level of information asymmetry between managers and investors. Thus, prior literature focusing on the information content of 10-Q filings has used the level of institutional ownership to proxy for differences in information environments (Balsam et al. 2002; Griffin 2003). Balsam et al. (2002) utilize the percentage of institutional ownership as a proxy for how informed investors are when the authors analyze the effect of accruals on CAR in a specific setting where earnings were likely to be managed. They find that the marginal impact on stock price of news consistent with earnings management behavior is increased

[12] The results presented in Chapter IV are similar for a variety of alternative methodologies. Specifically, similar results are obtained when using a buy-and-hold abnormal return over the three-day window, using the window -1 to +1, and using the market model to generate expected returns. The market model utilizes a 60 day estimation window from day -90 through -31, relative to the SEC filing date for the 10-Q. The following regression is estimated by firm: $RET_{it}=\beta_0+\beta_1 RET_{mt}+\varepsilon_{it}$, where RET_{mt} is the value-weighted market return. Abnormal return is then defined as the actual return for firm *i* minus the predicted return using the coefficients from the regression.

when information asymmetry is low (i.e. institutional ownership is high). Griffin (2003) finds that the absolute value of the market reaction to quarterly filings is greater for firms with lower levels of institutional ownership, consistent with institutional ownership capturing the level of information asymmetry between managers and investors.

Following this line of research I utilize the percentage of institutional ownership to proxy for the level of information asymmetry between managers and investors. Because it is not clear that slight changes in institutional ownership are associated with movements in information asymmetry, past studies have utilized an indicator variable to capture high levels of information asymmetry (Balsam et al. 2002; Griffin 2003). In keeping with this intuition, I measure information asymmetry as the decile rank of institutional ownership. More specifically, the percentage of institutional ownership is calculated using data from the Thomson-Reuters Institutional Holdings (13F) Database, and is defined as the sum of institutional shares held at the end of the quarter divided by the shares outstanding. $INSTPERC_{it}$ is defined as the decile rank of the percentage of institutional ownership.[13]

As an additional proxy for the level of information asymmetry between managers and investors, I utilize the number of analysts following the firm. Prior research has found that analysts primarily interpret existing information, as opposed to conveying new information, and analyst following increases with disclosure quality (Lang and Lundholm, 1996). Therefore, prior work has utilized the number of analysts following a firm as a measure of the quality of the information environment (Lang, Maffett, and Owens 2010; De Franco, Kothari, and Verdi forthcoming; among others). Specifically, I

[13] Using an indicator variable equal to 1 if institutional ownership is above the median, and zero otherwise produces similar results. In addition, using the raw percentage of institutional ownership also produces similar results.

define $NUMEST_{it}$ as the natural logarithm of the number of earnings-per-share estimates used in generating the mean analyst forecast closest to the earnings announcement date from the Institutional Brokers' Estimate System (IBES).

Tests of H1 and H2

To test H1, I run the following regression:

$$CARf_{it} = \beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 NEWS_{it} + \beta_5 CARea_{it} + \varepsilon_{it} \qquad (1)$$

$CARf_{it}$ was defined above. $QRFI_{it}$ (quarterly Risk Factor information) is either $UPDATER_{it}$ or BB_WORDS_{it}, as defined above. For reference, I include Compustat Xpressfeed Data item names in parentheses when defining the following variables. $LMVE_{it}$ is the natural log of the market value of equity for firm *i* for quarter *t* (ln(*prccq***cshoq*)). Prior research has shown that the size of the firm helps to explain the cross-sectional variation in abnormal returns around quarterly filings (Balsam et al. 2002; Griffin 2003). BTM_{it} is a proxy for growth and is included to control for additional sensitivity to common risk factors in stock returns that have been shown in prior literature to explain the cross sectional variation in abnormal returns (*ceqq*/(*prccq***cshoq*)). $NEWS_{it}$ is the earnings announcement news for the quarter, calculated as actual earnings for the quarter as reported by IBES minus the mean analyst forecast closest to (but not after) the earnings announcement date. To calculate $NEWS_{it}$ I use the unadjusted files in IBES and adjust for stock splits with the approach suggested by Robinson and Glushkov (2006), which utilizes the CRSP cumulative adjustment factors from the CRSP daily file. Information in the quarterly report should confirm information released in the initial earnings announcement. The release of confirming information may be related to abnormal returns around the filing date. In addition, other information released at the time of the initial earnings announcement may be correlated with returns around the filing of the 10-Q. To control for other potential factors affecting the firm that may be disclosed prior to the Risk Factor updates being disclosed, I include the three-day cumulative abnormal returns around the earnings announcement date. $CARea_{it}$ is defined in the same way as $CARf_{it}$ described above, with the exception that I use the three-day window spanning one day prior to the earnings announcement date to one day after the earnings announcement date to capture potential information leakage. $LMVE_{it}$, BTM_{it}, $NEWS_{it}$, and $CARea_{it}$ are Winsorized at 1% and 99% to reduce the influence of outliers. H1 predicts a negative association between *QRFI* and *CARf* ($\beta_1 < 0$).

To test H2 I estimate the following equation that modifies equation (1):

$$CARf_{it} = \beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 NEWS_{it} + \beta_5 CARea_{it} + \beta_6 INFOASYM_{it} + \beta_7 INFOASYM{*}QRFI_{it} + \varepsilon_{it} \quad (2)$$

$INFOASYM_{it}$ either takes the value of $INSTPERC_{it}$ or $NUMEST_{it}$, which along with all other variables were defined above. H2 predicts that the effect of *QRFI* is attenuated as the level of information asymmetry decreases (as *INSTPERC* and *NUMEST* increase). Therefore, assuming β_1<0, H2 predicts a positive association of *INFOASYM* and *QRFI* (β_6>0).

Tests of H3

H3A predicts that firms with Risk Factor updates in quarterly reports are more likely to experience future negative outcomes. H3B predicts that firms with Risk Factor updates in quarterly reports have a higher propensity to experience future extreme negative earnings shocks. Because it is unclear when potential negative shocks to earnings may materialize, I utilize three different intervals to test H3A and H3B: the quarter immediately following a Risk Factor update, the first fiscal year end following a Risk Factor update, and the second fiscal year end following a Risk Factor update. The use of annual data in these tests is helpful for two reasons. First, it allows me to use a robust cross-sectional model to make ex ante predictions of future earnings in addition to the use of analyst generated forecasts. Second, the use of annual data allows for the possibility that the potential material shock may occur multiple quarters ahead, because it is not clear ex ante if a negative earnings shock will occur in the quarter immediately following an update. However, two limitations of the use of annual data are that the sample size is significantly reduced, and it is difficult to pinpoint exactly when the negative shock occurs within the year. Consistent with the measurement of the variable $NEWS_{it}$ above, I consider unexpected earnings to be the earnings shock for the period. When utilizing analyst forecasts as the measure of expected earnings, I use the unadjusted files in IBES and adjust for stock splits with the approach suggested by Robinson and Glushkov (2006), which utilizes the CRSP cumulative adjustment factors from the CRSP daily file.

Tests of H3 Using Data on a Quarterly Basis

Quarter *t* is the quarter in which a Risk Factor update may or may not be included in the 10-Q. The earnings announcement and 10-Q for quarter *t* are released during quarter *t+1*. Therefore, I utilize analysts' forecasts measured at the beginning of quarter *t+1* as a benchmark for investors' expectations of earnings for quarter *t+1*. See Figure 1 in Appendix B for a visual depiction of the timeline. This forecast reflects analysts' expectations for quarter *t+1* earnings after the earnings announcement for quarter *t*, but prior to the release of the 10-Q (and thus the current period Risk Factors Section) for quarter t. This provides a measure of earnings expectations for quarter $t+1$ that includes all information from current and previous quarters (including earnings for quarter t) *excluding* information from the 10-Q for quarter t. To test H3A, which predicts that firms with Risk Factor updates are more likely to experience negative outcomes in the quarter following a Risk Factor update, I estimate the following regression:

$$QFCSTERR_{it+1} = \beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORQLOSS_{it} + \beta_7 NUMEST_{it} + \beta_8 PRICE_{it} + \varepsilon_{it} \quad (3)$$

$QRFI_{it}$ was defined above. $QFCSTERR_{it+1}$ is the forecast error for quarter $t+1$ using the first consensus forecast for the period subsequent to the current period earnings announcement. H3A predicts a negative relation between $QRFI_{it}$ and $QFCSTERR_{it+1}$ ($\beta_1<0$). In other words, due to the realization of negative outcomes, unexpected earnings are expected to be negatively related to the issuance of a Risk Factor update.

In addition, I control for various factors that may influence analyst forecast error. The size of the firm, $LMVE_{it}$ (defined above), is included to control for potential differences in the voluntary disclosure environment across firms. BTM_{it} (defined above) is included because varying levels of growth opportunities may affect analysts' forecasts of earnings as well as the disclosure environment among these firms. $STDROE_{it}$ is calculated as the standard deviation of return on equity measured over the five prior fiscal year ends. $STDROE_{it}$ is included because variability in prior performance may indicate that earnings are more difficult to forecast. $CHGEARN_{it}$ is calculated as the seasonal change in earnings (current quarter earnings less earnings from the same quarter in the prior fiscal year, scaled by earnings from the same quarter in the prior fiscal year).

CHGEARN$_{it}$ is included because fluctuations in seasonal earnings may make forecasting earnings more difficult. *PRIORQLOSS*$_{it}$ is an indicator variable equal to one if the firm experienced a loss in the same quarter in the prior fiscal year, and zero otherwise. *PRIORQLOSS*$_{it}$ is included to control for difficulty in the forecasting environment as well as differing incentives for managers of firms experiencing losses. *NUMEST*$_{it}$ is included because the number of analysts following the firm proxies for the information environment of the firm, and therefore should be correlated with the accuracy of the average forecast. *NUMEST*$_{it}$ is measured as the number of analysts following the firm at the time the average earnings per share estimate is formed. Finally, *PRICE*$_{it}$ is the stock price measured at the beginning of the fiscal year and is included to control for variations in forecast error due to scale. Many studies examining analyst forecast error intuitively scale forecast error by stock price to facilitate comparisons across firms. The intuition behind this method is that since forecast error is measured per share, shares trading at higher prices may be associated with higher forecast error. Two notable exceptions in the literature are Degeorge, Patel, and Zeckhauser (1999) and Cheong and Thomas (2011) who argue that scaling by price may introduce bias in coefficient estimates. Specifically, Cheong and Thomas (2011) show that analyst forecast error does not vary with scale. They attribute this surprising lack of variation to earnings smoothing activity by managers. Therefore, I do not scale analyst forecast error by price anywhere in my analysis. However, I include price as an explanatory variable to control for this potential effect, if it exists in my particular sample.[14] *STDROE*$_{it}$, *CHGEARN*$_{it}$, and *PRICE*$_{it}$ are Winsorized at 1% and 99% to reduce the influence of outliers.

[14] Scaling forecast error by stock price throughout the analysis rather than including stock price as a control variable produces somewhat weaker results related to H3. Specifically, results using quarterly data become

H3B predicts that firms with Risk Factor updates in quarterly reports are more likely to experience extreme negative earnings shocks, consistent with the realization of material negative outcomes. To test H3B, I estimate the following logit model:

$$P(QEXTREME_{it+1}) = f(\beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORQLOSS_{it} + \beta_7 NUMEST_{it} + \beta_8 PRICE_{it} + \varepsilon_{it}) \quad (4)$$

$QEXTREME_{it+1}$ is either $QFCSTERR\_10_{it+1}$ or $QFCSTERR\_90_{it+1}$. $QFCSTERR\_10_{it+1}$ is an indicator variable equal to 1 if forecast error falls in the bottom 10 percent of the distribution of $QFCSTERR_{it+1}$, and zero otherwise. H3B predicts a positive relation between $QFCSTERR\_10_{it+1}$ and *QRFI* (β_1>0). In other words, I expect firms with Risk Factor updates in quarterly reports to have a higher propensity to experience extreme negative earnings shocks. $QFCSTERR\_90_{it+1}$ is an indicator variable equal to 1 if forecast error falls in the top 10 percent of the distribution of $QFCSTERR_{it+1}$, and zero otherwise. H3B does not generate a prediction for the coefficient on $QFCSTERR\_90_{it+1}$; however, a positive coefficient on $QRFI_{it}$ would be consistent with firms with Risk Factor updates in quarterly reports having a higher propensity to experience extreme positive earnings shocks. All other variables were defined above. Because it is not clear from the SEC regulation what level of earnings shock should be considered extreme, I utilize an empirically generated cutoff of the bottom ten percent of the sample distribution. However, results are generally consistent defining extreme observations as the top and bottom quartiles of the distribution.

generally insignificant. In addition, the overall results generally become more strongly in favor of firms with quarterly updates to their Risk Factors section experiencing *both* negative and positive shocks to performance, which is consistent with the inferences presented in this paper.

Tests of H3 Using Data on an Annual Basis

As discussed above, because it is not clear when potential negative outcomes disclosed in a Risk Factor update might be realized, I utilize annual data to capture the realization of negative outcomes in future quarters. To facilitate tests based on annual data, I require that each firm have only one observation per year. This is important in order to avoid simultaneously classifying a firm as having a quarterly update and not having a quarterly update. Data restrictions (discussed in more detail in Chapter IV) limit my analysis of *UPDATER*=1 to only the first quarterly update for a firm in a given year. Thus, there already exists a maximum of one "quarterly update" observation per firm-year. Therefore, for firm-years with an update, I keep that observation. For all other firm-years I limit the data set to just one "non-update" observation per firm-year.

I use two different methods to estimate investors' expectations of annual earnings to test H3A and H3B. The first method utilizes the cross-sectional model presented in Hou, van Dijk, and Zhang (2010) to generate a benchmark for investors' expectations of annual earnings. This approach may have advantages over using analyst forecasts as a benchmark for investors' expectations. Specifically, the prior literature documents optimistic bias in analyst forecasts, as well as over-reaction to good news and under-reaction to bad news (see Hou et al. [2010] for a review of this literature). In validity tests, Hou et al. (2010) find that their model is able to outperform mean analyst forecasts in terms of bias and earnings response coefficients, concluding that their model-based earnings forecast is a more reliable proxy for expected earnings than a proxy based on analysts' forecasts. Specifically, following Hou et al. (2010), I estimate the following regression for each year *t* from 2005 to 2009 using pooled cross-sectional regressions:

$$E_{it} = \beta_0 + \beta_1 V_{it-1} + \beta_2 A_{it-1} + \beta_3 D_{it-1} + \beta_4 DD_{it-1} + \beta_5 E_{it-1} + \beta_6 NEGE_{it-1} + \beta_7 AC_{it-1} + \varepsilon_{it} \quad (5)$$

Each regression uses ten years of data, with three years of data being the minimum requirement to stay in the sample. In the following description, I include Compustat variable item names in parentheses following the definition of each variable. E_{it} is earnings for firm *i* in year *t* (*ib*). V_{it-1} is the market value for firm *i* in year *t-1* (*at*+[*prcc_f***csho*]-*ceq*). A_{it-1} is total book assets (*at*). D_{it-1} is the dividend payment for the year (*dvc*). DD_{it-1} is an indicator variable that equals 0 for dividend payers (*dvc*>0) and 1 for non-payers (*dvc*≤0). $NEGE_{it-1}$ is an indicator variable that equals 1 for firms with negative earnings, and zero otherwise. AC_{it-1} is the firm's operating accruals ([Δ*act*-Δ*che*]-[Δ*lct*-Δ*dlc*-Δ*txp*]-*dp*). Consistent with Hou et al. (2010), I Winsorize all continuous variables in equation (5) at the .05% and 99.5% percentiles to reduce the influence of outliers.

Following Hou et al. (2010), for each year *t* I estimate expected earnings for year *t+1* by multiplying the independent variables observed at the end of year *t* (i.e. the beginning of year *t+1*) with the coefficient estimates from equation (5). I then calculate the earnings shock ($ESHOCK_{it}$) in the current fiscal year period as actual earnings less expected earnings, scaled by total assets. $ESHOCK_{it}$ is Winsorized at 1% and 99% to reduce the influence of outliers.

The second method used to estimate investors' expectations of future earnings is analysts' forecasts measured at the beginning of the fiscal year (i.e. before the release of any quarterly Risk Factor updates). Specifically, I use the first mean forecast measured after the prior year's earnings announcement date. $ANNFCSTERR_{it}$ is calculated as actual earnings less expected earnings, and is Winsorized at 1% and 99% to reduce the influence of outliers. Finally, for tests related to H3B, $ANNFCSTERR\_10_{it}$ is an indicator variable equal to 1 if the observation falls in the bottom 10 percent of the distribution of $ANNFCSTERR_{it}$, and zero otherwise. $ANNFCSTERR\_90_{it}$ is an indicator variable equal to 1 if the observation falls in the top 10 percent of the distribution of $ANNFCSTERR_{it}$, and zero otherwise.

To test H3A, whether firms with Risk Factor updates are more likely to experience future negative outcomes as of the current fiscal year end, I estimate the following two regressions:

$$ESHOCK_{it} = \beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORKLOSS_{it} + \varepsilon_{it} \quad (6)$$

$$ANNFCSTERR_{it} = \beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORKLOSS_{it} + \beta_7 NUMEST_{it} + \beta_8 PRICE_{it} + \varepsilon_{it} \quad (7)$$

All variables were defined above, with the exception that all variables are now measured on an annual basis. If firms with quarterly Risk Factor updates are more likely to experience future adverse outcomes in the current fiscal year end, H3A predicts a negative coefficient on $QRFI_{it}$ (β_1<0) in both regressions.

To test H3B, whether firms with Risk Factor updates are more likely to experience extreme negative earnings shocks as of the current fiscal year end, I estimate the following two logit models:

$$P(XCEXTEME_{it}) = f(\beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORKLOSS_{it} + \varepsilon_{it}) \quad (8)$$

$$P(ANNEXTREME_{it}) = f(\beta_0 + \beta_1 QRFI_{it} + \beta_2 LMVE_{it} + \beta_3 BTM_{it} + \beta_4 STDROE_{it} + \beta_5 CHGEARN_{it} + \beta_6 PRIORKLOSS_{it} + \beta_7 NUMEST_{it} + \beta_8 PRICE_{it} + \varepsilon_{it}) \quad (9)$$

$XCEXTREME_{it}$ is either $ESHOCK\_10_{it}$ or $ESHOCK\_90_{it}$. $ESHOCK\_10_{it}$ is an indicator variable equal to 1 if the observation falls in the bottom 10 percent of the distribution of $ESHOCK_{it}$, and zero otherwise. $ESHOCK\_90_{it}$ is an indicator variable equal to 1 if the observation falls in the top 10 percent of the distribution of $ESHOCK_{it}$, and zero otherwise. $ANNEXTREME_{it}$ is either $ANNFCSTERR\_10_{it}$ or $ANNFCSERR\_90_{it}$. All variables were defined above, with the exception that all variables are now measured on an annual basis. If firms with quarterly Risk Factor updates are more likely to experience extreme negative earnings shocks in the current fiscal year end, H3B predicts a positive coefficient on $QRFI_{it}$ (β_1>0) when $ESHOCK\_10_{it}$ or $ANNFCSTERR\_10_{it}$ are included as dependent variables. H3B makes no prediction regarding the coefficient on $QRFI_{it}$ when $ESHOCK\_90_{it}$ or $ANNFCSTERR\_90_{it}$ are included as dependent variables, however β_1>0 would be consistent with firms with Risk Factor updates in quarterly reports being more likely to experience extreme positive earnings shocks relative to firms without updates.

I also examine whether quarterly Risk Factor updates are able to predict earnings shocks for the second fiscal year end following a quarterly update. These regressions have the same design as described in equations (6) through (9). However, all dependent variables ($ESHOCK_{it}$, $ESHOCK\_10_{it}$, $ESHOCK\_90_{it}$, $ANNFCSTERR_{it}$, $ANNFCSTERR\_10_{it}$, and $ANNFCSTERR\_90_{it}$) are substituted with $ESHOCK_{it+1}$, $ESHOCK\_10_{it+1}$, $ESHOCK\_90_{it+1}$, $ANNFCSTERR_{it+1}$, $ANNFCSTERR\_10_{it+1}$, and

$ANNFCSTERR\_90_{it+1}$. The predictions on these variables related to H3A and H3B are the same as their current fiscal year end counterparts.

CHAPTER IV

SAMPLE AND RESULTS

Sample

As discussed in detail in Chapter III, I use the Python programming language to obtain Item 1A: Risk Factor disclosures and determine whether the firm has disclosed an update in the Risk Factors section of the 10-Q filing. Other data sources include COMPUSTAT Xpressfeed annual file, CRSP daily stock return file, IBES unadjusted summary and actual files, and the Thomson-Reuters Institutional Holdings (13F) Database.

In addition to the data requirements discussed above, observations are excluded from the analysis for a number of reasons. First, to eliminate updates that repeat previous 10-Q filings in the same fiscal year, I drop all quarters in the same fiscal year period *after* a quarter in which a quarterly update has been identified.[15] Second, I drop observations where the 10-Q filing date is listed as being on the same date as the fiscal period end date or before the fiscal period end date, as these are likely to be data errors. Finally, to increase the power of my tests, I exclude observations where confounding pricing effects may influence the results. Prior work has shown that the market reacts to quarterly filings that are the first release of earnings news (Easton and Zmijewski 1993; Li and Ramesh 2009). To reduce the potential impact of additional news affecting stock prices, consistent with the design in Balsam et al. (2002), I exclude observations where the

[15] In untabulated analysis I relax this requirement and find similar results. Specifically, I code quarters subsequent to an update as *UPDATER*=0 unless they increased by at least 100 words from the prior quarter in the same fiscal year period. Relaxing this assumption increases my primary sample by 1,382 firm-quarter observations.

earnings announcement date is less than seven days before the filing date.[16] In addition, firms who file late may also confound the price reaction to the quarterly filing (Balsam et al. 2002; Li and Ramesh 2009). Therefore, I exclude all observations where the 10-Q is filed after the filing deadline, which is forty days after the end of quarter for firms in my sample during this period of time.[17] The primary sample in my analysis after considering all these data requirements is 7,212 firm-quarters spanning the years 2006-2009.

Finally, to provide additional confidence in the Python extraction routine used in this study, I verified the classification of 200 randomly selected observations. Of these 200 observations, 81 were initially classified as *UPDATER* equal to 1. I found six observations of the 200 that resulted in an initial misclassification. However, utilizing the alternative cutoffs described above reduces the measurement error in these 200 observations to five misclassifications and produces similar results. Of the five misclassifications, two observations are misclassified due to the 10-Q containing additional risk factors in sections other than under the "Item 1A" heading.[18] A third type of misclassification results from a firm using over 200 words in the Item 1A section to state there had been no updates. The remaining two misclassifications were the result of

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[16] In untabulated analysis I relax this requirement to exclude only observations where the earnings announcement date is less than 4 days before the filing date and obtain similar results with the exception that results related to negative earnings shocks in the quarter following the update become generally less significant. Relaxing this assumption increases my final sample by 1,334 firm-quarter observations.

[17] In untabulated analysis I use an alternate methodology to control for non-timely filers. Specifically, I include all non-timely filers that end up filing within one year of the fiscal quarter end date. I create a separate indicator variable to capture these filers (*NT*=1) and add this variable to the regressions presented in equations (1)-(4) and (6)-(9). Using this alternative methodology obtains similar results, and increases my sample by 1,053 firm-quarter observations.

[18] One simply used the "Item 1A" section to refer to an alternate section containing an update. The other 10-Q did not contain the "Item 1A" section, but instead discussed "Item 1A" in a separate section titled "Forward Looking Statements" which contained an update.

my Python algorithm incorrectly extracting information.[19] Overall, of the five misclassifications, two were incorrectly identified as *UPDATER*=1, and three contained updates but were incorrectly classified as *not* having an update (*UPDATER*=0). Therefore, I have no reason to believe that the potential measurement error in the sample results in some systematic misclassification resulting in a directional bias in the coefficients.

Table 1 gives the frequency of the sample by year (See Appendix C for all tables). Overall the sample size is fairly consistent across years. However, fiscal year 2009 holds a much smaller percentage of the sample. This is likely because data availability for some variables used in the analysis is only through December 31, 2009; leaving many 2009 fiscal year-end reports out of the sample.

Descriptive Statistics and Preliminary Analysis

Table 2 presents statistics examining potential industry-level clustering of updates throughout my sample period. Prior research suggests that Risk Factors (at least at an annual level) may be somewhat broad and generic. Thus, I examine the average number of Risk Factor updates by industry for each quarter. Industry is defined by two-digit SIC code. For an industry group to remain in the table, it must have at least 10 observations in a given quarter. Panel A of Table 2 presents the percentage of firms providing quarterly updates within industry groups by quarter. Specifically, the interpretation of the first entry in Panel A is as follows: For 2006Q1, there were 18 industries with at least 10 firm-quarter observations in each industry grouping. Of that set of 18 industries, the average percentage of firms presenting updates within each industry for that quarter was

[19] One Risk Factor section was not extracted by Python due to the firm's addition of a hyphen in the section heading. The other observation was incorrectly extracted due to the firm using the section heading "Item 1A. Risk Factors" in other areas within the text.

28%. In other words, on average, 28% of the firms within an industry group provide updates simultaneously in the same quarter, whereas 72% of the industry does not provide an update that quarter. Panel B presents the percentage of updates within industry groups by quarter for all quarters in the sample period. Overall, these results suggest that there may be some industry clustering of updates; however, it appears that there is a great deal of firm-specific variation in the updates being presented.

Table 3 presents univariate statistics for all variables included in analyses using quarterly data. As expected, overall average cumulative abnormal returns around the filing date (*CARf*) and the earnings announcement date (*CARea*) are near zero. Average *UPDATER* is 0.25, indicating that 25 percent of the observations are identified as containing a quarterly update in their 10-Q filing. Mean $QFCSTERR_{t+1}$ is slightly negative (-0.02), suggesting that the average firm misses expectations in the quarter following an update, based on an early forecast. By construction $QFCSTERR\_10_{t+1}$ and $QFCSTERR\_90_{t+1}$ have means of 0.10, because they represent an indicator for firms that fall within the bottom and top ten percent of the distribution of $QFCSTERR_{t+1}$, respectively. Descriptive statistics for *LMVE* reveal that the sample is composed primarily of large firms. This is as expected, since smaller reporting companies are excluded from the regulation – and thus from the sample. Average *NEWS* is slightly positive, which is consistent with the average firm beating the most recent measure of analysts' earnings expectations. Average *INSTPERC* is approximately five by construction, since *INSTPERC* is the decile rank of the percentage of institutional ownership. *NUMEST* is 1.78 suggesting that the average firm in the sample is followed by approximately 6 analysts ($e^{1.78}$).

Table 4 presents the pairwise correlation matrix of variables included in Equations (1) – (4). This table also includes two variables that have not been described above. I include $LOSS_{t+1}$, which is an indicator variable set equal to 1 if there is a loss in the quarter following a Risk Factor update. Also included is NEG_SPI_{t+1}, which is an indicator variable set equal to 1 if there is a negative special item reported on the income statement in the quarter following a Risk Factor update. *BB_WORDS* and *UPDATER* are highly positively correlated (0.87), suggesting that these variables capture similar aspects of quarterly Risk Factor updates (p-value=0.00), as expected. Table 4 shows there is a small but statistically significant negative correlation (-0.05) between *CARf* and *UPDATER* (p-value=0.00). In addition, there is a statistically significant negative correlation (-0.05) between *CARf* and *BB_WORDS* (p-value=0.00). This indicates that firms revealing updates in their Risk Factor sections are likely to have lower cumulative abnormal returns around the 10-Q filing, consistent with H1. The correlation between $QFCSTERR_{t+1}$ (next quarter forecast error) and *UPDATER* (-0.03) is statistically significant (p-value=0.01), suggesting that Risk Factor updates in the current quarter may be associated with a negative shift in the distribution of next quarter earnings shocks (however, the correlation between $QFCSTERR_{t+1}$ and *BB_WORDS* is statistically insignificantly different from zero). Surprisingly, correlations between $QFCSTERR\_10_{t+1}$ and both measures of quarterly Risk Factor information are statistically insignificantly different from zero. In terms of specific performance implications, *UPDATER* and *BB_WORDS* are significantly positively correlated with the existence of a loss in the next quarter ($LOSS_{t+1}$) (p-values=0.00). In addition, *UPDATER* and *BB_WORDS* are significantly positively correlated with the existence of a negative special item in the next quarter (*NEG_SPI*$_{t+1}$) (p-values=0.00). Taken together, these results suggest that firms presenting Risk Factor updates may experience declines in performance in the quarter following the update.

Table 5 presents statistics for all variables included in Table 4 by whether a firm-quarter observation contains an update (*UPDATER*=1) or not (*UPDATER*=0). The table reports differences in mean values between the two groups, with significance levels calculated using two-tailed tests, where variances between the two groups are assumed to be unequal for most variables (as confirmed by variance ratio tests that are untabulated).[20] The table also reports differences in the medians with significance levels calculated using a non-parametric equality-of-medians test. Both mean and median differences are statistically different for *CARf* (p-value=0.000 and p-value=0.001, respectively). This evidence is consistent with H1, that firms issuing updates to their Risk Factors in quarterly reports have significantly lower returns relative to firms without changes to their Risk Factors. Both mean and median tests reveal that the two groups are statistically different in regards to *LOSS*$_{t+1}$ and *NEG_SPI*$_{t+1}$. These results are consistent with Table 4, suggesting that firms with Risk Factor updates are more likely to experience negative shocks to performance in the quarter following a Risk Factor Update. *BB_WORDS*, by construction, is different across the two groups. However, for firms classified as not having an update, the mean value of *BB_WORDS* is non-zero. In fact, an average firm not classified as having an update contains approximately one word relating to the economic fundamentals of the firm. This is likely due either to some of these words being used when an update does not exist or to a few misclassifications in the

[20] The variance ratio tests are unable to reject the null that the variances are equal for NEWS, LMVE, and PRICE between the two groups. Accordingly, variances are assumed equal when calculating significance levels for differences in mean values for these variables.

entire sample. The results relating to $QFCSTERR_{t+1}$ are consistent with those discussed in Table 4. The mean difference related to $QFCSTERR\_10_{t+1}$ is in the predicted direction, but is not statistically different from zero. Finally, other differences between the two groups highlight that these variables should be included as control variables throughout the analysis.

<u>Multivariate Tests of H1 and H2</u>

Table 6 presents the coefficient estimates of the regressions in Equations (1) and (2). P-values are listed to the right of the coefficient using heteroskedasticity-robust standard errors clustered by firm. Columns (1) and (2) present the results for the entire sample. Consistent with H1, the coefficient on *UPDATER* (-0.0043) is significantly negative (p-value=0.000). Also consistent with H1, the coefficient on *BB_WORDS* (-0.0011) is significantly negative (p-value=0.000). These results can be interpreted as indicating that firms with Risk Factor updates in 10-Q filings have lower abnormal returns around the filing date of the 10-Q relative to firms without updates to their Risk Factors.

Columns (3) and (4) present results including *INSTPERC* as a proxy for the level of information asymmetry, as well as an interaction between the primary variables of interest and *INSTPERC*. Surprisingly, as information asymmetry increases, the effect of information in the Risk Factor update appears to remain constant. This is evidenced by the lack of statistical significance for coefficients on *INSTPERC**UPDATER* and *INSTPERC**BB_WORDS*. Columns (5) and (6) present results including *NUMEST* as a proxy for the level of information asymmetry. While the coefficients on *NUMEST**UPDATER* and *NUMEST**BB_WORDS* are positive (as predicted), they are only marginally significant at conventional levels (p-value=0.098 and p-value=0.108, respectively). The coefficients on *UPDATER* and *BB_WORDS* remain significantly negative at conventional levels across all specifications.

Taken together, the results presented in Table 6 are consistent with H1. Firms with quarterly updates to their Risk Factor sections are likely to experience lower cumulative abnormal returns around the filing of the 10-Q relative to firms without Risk Factor updates. These results are consistent using a dichotomous independent variable, as well as a continuous variable used to capture variations in the length of an update across firms' Risk Factor disclosures. However, the overall evidence presented in Table 6 provides only weak support for H2. In contrast with other forms of disclosure, it appears that quarterly Risk Factor updates contain useful information regardless of the level of information asymmetry between managers and investors. Untabulated tests assessing the joint significance of the coefficient on the quarterly Risk Factor update information variable combined with the coefficient on the interaction term rejects the null hypothesis that the combined coefficients are equal to zero in all specifications, suggesting that regardless of the level of information asymmetry a Risk Factor update provides material negative information to the market.

In addition to statistical significance, the economic significance of a change in the risk environment for a firm is also meaningful. Based on the coefficient estimate in column (1) of Table 6, the three-day return is 0.0043 (4.3 basis points) lower on average for firms with Risk Factor updates relative to firms without Risk Factor updates . To provide additional perspective, from Table 3 we see that the average market value of a firm in the sample is 1.236 billion dollars ($e^{7.12}$). Therefore, for an average Risk Factor update for an average firm, there is a 5.31 million dollar decrease in the value of the firm over the three days around the filing date relative to a firm without updates.

Overall, the results in Table 6 are consistent with Risk Factor updates in 10-Q reports providing valuable information to investors. The lesser market reaction suggests that the market does view this information negatively, and impounds the information into price accordingly. In addition, the amount of the difference in returns is economically significant.

<u>Multivariate Tests of H3A</u>

Table 7 presents results from equation (3), testing whether firms with Risk Factor updates are more likely to experience negative adverse outcomes. $QFCSTERR_{t+1}$ is the dependent variable in columns (1) and (2), and I predict that firms with Risk Factor updates will have a higher likelihood of adverse outcomes, which will manifest in a negative shift in the distribution of earnings shocks relative to firms without Risk Factor updates. Consistent with H3A, Column (1) presents a negative coefficient (-0.0180) on *UPDATER* (p-value=0.015). This suggests that the presence of a quarterly Risk Factor update is associated with a downward shift in the overall distribution of earnings shocks in the quarter following a Risk Factor update. However, the coefficient on *BB_WORDS*, (-0.0007) in Column (2), is of the predicted sign but is not significantly different from zero.

Table 8 also presents evidence related to H3A, where all variables are now measured at an annual level. Table 8 presents estimates from equations (6) and (7), where the full distribution of annual earnings shocks is included as a dependent variable. As discussed above, there is now only one observation per firm-year. Therefore, along with additional data requirements, the sample size is significantly reduced for these tests. Panel A presents the results for the first fiscal year end following a Risk Factor update. Columns (1) and (2) present results using the cross-sectional model described in Equation (5) to generate the dependent variable *ESHOCK*. The coefficient on *UPDATER* (-0.0211) is statistically significant (p-value=0.000), consistent with H3A. Also consistent with H3A, the coefficient on *BB_WORDS* (-0.0047) is statistically significant (p-value=0.000). Results in columns (3) and (4) using analysts' forecasts as a benchmark for future earnings are also consistent with H3A, however the negative coefficient on *BB_WORDS* becomes statistically indistinguishable from zero (p-value 0.336). Taken together, these results suggest that firms with a quarterly Risk Factor update during the fiscal year are more likely to experience negative outcomes, which negatively shift the distribution of earnings shocks at the current fiscal year end – regardless of the benchmark used. Panel B presents results using the second fiscal year end following a Risk Factor update. Inconsistent with H3A, in the second fiscal year following a quarterly Risk Factor update, none of the coefficients on *UPDATER* or *BB_WORDS* are negative. However, all but one of the coefficients on *UPDATER* and *BB_WORDS* are indistinguishable from zero. Overall, the results in Panel B do not provide support for H3A in the second fiscal year end following a Risk Factor update, but provide weak support that firms presenting Risk Factor updates may experience positive earnings shocks in this time period.

As a whole, the results presented in this section are consistent with H3A. Firms with Risk Factor updates are more likely to experience negative adverse outcomes relative to firms without updates to their Risk Factors section. The evidence suggests this effect occurs in the quarter following a Risk Factor update and in the first annual fiscal year end following a Risk Factor update. Additionally, there is no evidence suggesting this effect persists into the second fiscal year end following a Risk Factor update. In addition, this section provides weak evidence that firms with Risk Factor updates are also more likely to experience stronger future positive earnings shocks. Firms presenting information regarding future negative outcomes in quarterly reports may be more likely to also have positive earnings shocks in the second fiscal year end following a Risk Factor update, consistent with these firms having upside potential that is correlated with downside potential being presented in a Risk Factor update.

Multivariate Tests of H3B

Table 9 Panel A presents results testing H3B using equation (4), concerning whether firms with Risk Factor updates are more likely to experience extreme negative earnings shocks. The coefficient on *UPDATER* (0.1802) in Column (1) is statistically significant (p-value=0.074). Consistent with H3B, this evidence suggests that firms with Risk Factor updates are more likely to experience extreme negative earnings shocks. However, the coefficient on *BB_WORDS* in column (2) is insignificantly different from zero. Together, this provides weak support for H3B in the quarter following a Risk Factor update. Panel B presents evidence regarding whether a firm presenting a Risk Factor update is more likely to experience an extreme positive earnings shock. Neither the coefficient on *UPDATER* or *BB_WORDS* is statistically different from zero. This evidence suggests firms presenting a Risk Factor update are no more likely to experience an extreme positive earnings shock in the quarter following the update than firms without a Risk Factor update.

Table 10 presents estimates from equations (8) and (9), also testing H3B. Columns (1) and (2) in Panel A present results using the cross-sectional model described in Equation (5) to generate the dependent variable *ESHOCK_10*, which is measured as of the first fiscal year end following a quarterly update. The coefficient on *UPDATER* (0.7080) is statistically significant (p-value=0.000), consistent with H3B. Also consistent with H3B, the coefficient on *BB_WORDS* (0.1343) is statistically significant (p-value=0.0000). Results in columns (3) and (4) using analysts' forecasts as a benchmark for future earnings are also consistent with H3B, however the positive coefficient on *BB_WORDS* becomes statistically indistinguishable from zero (p-value=0.440). Taken together, these results suggest that firms with a quarterly Risk Factor update during the fiscal year are more likely to experience extreme negative earnings shocks as of the current fiscal year end – regardless of the benchmark used. Panel B presents results using *ESHOCK_90* as the dependent variable. Consistent with Table 9, none of the coefficients on *UPDATER* or *BB_WORDS* are statistically different from zero. This evidence suggests firms presenting a Risk Factor update are no more likely to experience an extreme positive earnings shock, as of the current fiscal year end, than firms without a Risk Factor update.

Finally, Table 11 presents evidence regarding extreme earnings shocks in the second fiscal year end following a Risk Factor update. Panel A presents evidence using $ESHOCK\_10_{t+1}$ and $ANNFCSTERR\_10_{t+1}$ as dependent variables. Column (4) presents the only statistically significant coefficient (-0.0645) on either *UPDATER* or *BB_WORDS* (p-value=0.05), providing weak evidence that firms that present a Risk Factor update in their quarterly report are *less* likely to experience extreme negative earnings shocks in the second fiscal year end following the update. In addition, Panel B columns (1) and (2) provide support that firms with Risk Factor updates are more likely to experience extreme positive earnings shocks. However, the coefficients on *UPDATER* and *BB_WORDS* in columns (3) and (4) are not statistically different from zero when using analyst forecasts as the measure of expected earnings.

As a whole, the results presented in this section are consistent with H3B. Firms with Risk Factor updates are more likely to experience extreme negative earnings shocks relative to firms without updates to their Risk Factors section. Consistent with the evidence relating to H3A, the evidence suggests this effect occurs in the quarter following a Risk Factor update and in the first annual fiscal year end following a Risk Factor update. However, there is no evidence suggesting this effect persists into the second fiscal year end following a Risk Factor update. In addition, this section provides some evidence that firms with Risk Factor updates are also more likely to experience stronger future positive earnings shocks, specifically in the second fiscal year end period following the Risk Factor update. This suggests that firms that disclose Risk Factor updates may also have greater upside potential.

CHAPTER V

SENSITIVITY ANALYSIS

As discussed in Chapter III, I assume that relatively long quarterly updates should be included in the sample and classified as updates. However, as noted above, to the extent these relatively long disclosures are not truly updates, my inferences may be biased. To provide further evidence that the results presented in Chapter IV are not caused by an assumption related to extreme values included in the sample, I run the multivariate analyses again, excluding all observations where the length of the quarterly update is greater than 95 percent of the most recent annual presentation of Risk Factors. This Chapter presents the results using this alternative methodology.

Table 12 presents the results related to H1 and H2. Consistent with H1, the coefficient on *UPDATER* (-0.0031) is statistically significant (p-value=0.034), suggesting that firms presenting updates to their Risk Factors in quarterly reports are more likely to have lower abnormal returns around the filing of the 10-Q relative to firms not presenting updates. In addition, the coefficient on *BB_WORDS* (-0.0008) is statistically different from zero (p-value=0.049). The tests of H2, whether the level of information asymmetry attenuates the results, provide no support for H2. Taken together, the results in Table 11 still support H1, and overall inferences related to H2 are consistent with the findings presented in Chapter IV.

Table 13 and Table 14 present results related to tests of H3A. I find stronger support for H3A in the quarter following an update as well as for the first fiscal year end following an update. However, I continue to find no support for H3A in the second fiscal year end following an update. Taken together, these findings are consistent with those presented in Chapter IV, and suggest that firms presenting updates to their Risk Factor disclosures in quarterly reports are more likely to experience adverse outcomes relative to firms without an update to their Risk Factor disclosure in the quarter following a Risk Factor update and as of the first fiscal year end following a Risk Factor update.

Table 15, Table 16, and Table 17 present results related to the relative strength of future earnings shocks. These results are still consistent with H3B, providing support that firms with Risk Factor updates are more likely to experience extreme negative earnings shocks. However, using this alternative methodology, there is no longer any evidence supporting firms with Risk Factor updates having more extreme positive earnings shocks, inconsistent with the results presented earlier.

Overall, the inferences drawn from this chapter are similar to those drawn earlier, suggesting that the results are not sensitive to the inclusion of relatively large Risk Factor updates.

CHAPTER VI

CONCLUSION

In this study I examine whether recently required Risk Factor update disclosures in quarterly reports provide investors with timely information regarding potential future negative outcomes. Specifically, I examine whether the existence of a quarterly update to a firm's Risk Factor disclosure from its 10-K filing generates a lower market reaction to the 10-Q filing relative to firms without updates. Consistent with this prediction I find that there is a negative association between providing an update to the Risk Factors section and Cumulative Abnormal Returns around the filing date. This relationship holds when using a continuous measure that attempts to capture the number of words relating to the economic fundamentals of the firm, using the list of terms described in Balakrishnan and Bartov (2008).

Contrary to expectations, the relationship between quarterly Risk Factor updates and returns does not appear to be materially impacted by the level of information asymmetry facing the firm. This suggests that quarterly updates to Risk Factors are informative to investors across a general set of firms where the regulation is applicable.

Finally, I provide evidence that quarterly Risk Factor updates are associated with future negative outcomes, resulting in a higher propensity to have extreme negative earnings shocks. In addition, I find weak evidence that quarterly Risk Factor updates are associated with future extreme positive earnings shocks. Taken together, these results are consistent with stock price reactions to quarterly updates being at least partially attributable to revisions in expected cash flows estimates. I find that firms with quarterly Risk Factor updates are likely to experience negative earnings shocks in the next quarter, and at the current fiscal year end relative to firms without quarterly Risk Factor updates. This suggests that, on average, there are material imminent threats to performance that are communicated via Risk Factor updates. The weak results related to firms with quarterly Risk Factor updates experiencing positive earnings shocks are indicative of firms with large downside potential also holding upside potential.

Overall these findings contribute to the literature in three ways. First, I provide evidence that the regulation required by the SEC does provide useful information to investors. Second, I show that the Risk Factors section has value outside of an IPO setting, where most prior research has focused. Third, I contribute to existing literature on market reactions to 10-Q filings by documenting a setting where additional valuable information is released at the time of filing. To my knowledge, this is the only study examining the information content of quarterly Risk Factor updates since this information was required to be disclosed by the SEC.

While this study and others like it are able to conclude that there are various types of information in Risk Factor disclosures overall, a remaining unanswered important question is whether the disclosure environment actually changed as a result of the regulation. Based on the findings in this study, Risk Factor disclosures are able to predict short-term future negative earnings shocks. This suggests that on average the risk factors being presented are reasonably certain, material, and are likely to occur sooner rather than later. Therefore, while managers appear to be using this outlet to pre-empt bad news, it is not clear that these managers would not have taken advantage of another outlet to provide similar warnings to investors. Thus, future research examining whether the mandate compels managers to disclose information that otherwise would not have been disclosed would likely add value to the current body of knowledge.

APPENDIX A

RISK FACTOR UPDATE EXAMPLE

Lincoln National Corporation, 2007 Q3

***Item 1A.* Risk Factors.**

Our business faces significant risks. The risks described below update the risk factors described in our 2006 Form 10-K and should be read in conjunction with those risk factors. The risks and uncertainties described below and in the 2006 Form 10-K are not the only ones facing our company. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. If any of these risks actually occur, our business, financial condition and results of operations could be materially affected. In that case, the value of our securities could decline substantially.

Changes in U.S. federal income tax law could make some of our products less attractive to consumers and increase our tax costs.

The Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA") as well as the Jobs and Growth Tax Relief Reconciliation Act of 2003 contain provisions that have and will (in the absence of any further legislation) continue, near term, to significantly lower individual tax rates. These may have the effect of reducing the benefits of deferral on the build-up of value of annuities and life insurance products. EGTRRA also includes provisions that will eliminate, over time, the estate, gift and generation-skipping taxes and partially eliminate the step-up in basis rule applicable to property held in a decedent's estate. Many of these provisions expire in 2010, unless extended. The Bush Administration continues to propose that many of the foregoing rate reductions, as well as elimination of the estate tax, be made permanent, and continues to propose several tax-favored savings initiatives, that, if enacted by Congress, could also adversely affect the sale of our annuity, life and tax-qualified retirement products and increase the surrender of such products. Although we cannot predict the overall effect on the sales of our products of the tax law changes included in these Acts, some of these changes might hinder our sales and result in the increased surrender of insurance products.

In addition, changes to the Internal Revenue Code, administrative rulings or court decisions could increase our effective tax rate. In this regard, on August 16, 2007, the Internal Revenue Service issued a revenue ruling which purports, among other things, to modify the calculation of separate account deduction for dividends received by life insurance companies. Subsequently, the IRS issued another revenue ruling that suspended the August 16 ruling and announced a new regulation project on the issue. The current separate account deduction for dividends calculation lowered the effective tax rate by approximately 4% for the nine months ended September 30, 2007.

We face a risk of non-collectibility of reinsurance, which could materially affect our results of operations.

We follow the insurance practice of reinsuring with other insurance and reinsurance companies a portion of the risks under the policies written by our insurance subsidiaries (known as ceding). At the end of 2006, we have ceded approximately $334 billion of life insurance in-force to reinsurers for reinsurance protection. Although reinsurance does not discharge our subsidiaries from their primary obligation to pay policyholders for losses insured under the policies we issue, reinsurance does make the assuming reinsurer liable to the insurance subsidiaries for the reinsured portion of the risk. As of September 30, 2007, we had $8.2 billion of reinsurance receivables from reinsurers for paid and unpaid losses, for which they are obligated to reimburse us under our reinsurance contracts. Of this amount, $4.3 billion relates to the sale of our reinsurance business to Swiss Re in 2001 through an indemnity reinsurance agreement. During 2004, Swiss Re funded a trust to support this business. The balance in the trust changes as a result of ongoing reinsurance activity and was $1.8 billion at September 30, 2007. In addition, should Swiss Re's financial strength ratings drop below either S&P AA- or AM Best A or their NAIC risk based capital ratio fall below 250%, assets equal to the reserves supporting business reinsured must be placed into a trust according to pre-established asset quality guidelines. Furthermore, approximately $2.1 billion of the Swiss Re treaties are funds-withheld structures where we have a right of offset on assets backing the reinsurance receivables.

Included in the business sold to Swiss Re through indemnity reinsurance in 2001 was disability income business. Swiss Re is disputing its obligation to pay approximately $80 million of reinsurance recoverables on certain of this income disability business. We have agreed to arbitrate this dispute with Swiss Re. Although the outcome of the arbitration is uncertain, we currently believe that it is probable that we will ultimately collect the full amount of the reinsurance recoverable from Swiss Re and that Swiss Re will ultimately remain at risk on all of its obligations on the disability income business that it acquired from us in 2001.

During the third quarter of 2006 one of LNL's reinsurers, Scottish Re Group Ltd ("Scottish Re"), received rating downgrades from various rating agencies. At September 30, 2007, of the $900 million of fixed annuity business that LNL reinsures with Scottish Re, approximately 70% is reinsured through the use of modified coinsurance treaties, in which LNL possesses the investments that support the reserves ceded to Scottish Re. For its annuity business ceded on a coinsurance basis, Scottish Re had previously established an irrevocable investment trust for the benefit of LNL that supports the reserves. In addition to fixed annuities, LNL has approximately $101 million of policy liabilities on the life insurance business it reinsures with Scottish Re. Scottish Re continues to perform under its contractual responsibilities to LNL.

The balance of the reinsurance is due from a diverse group of reinsurers. The collectibility of reinsurance is largely a function of the solvency of the individual reinsurers. We perform annual credit reviews on our reinsurers, focusing on, among other things, financial capacity, stability, trends and commitment to the reinsurance business. We also require assets in trust, letters of credit or other acceptable collateral to support balances due from reinsurers not authorized to transact business in the applicable jurisdictions. Despite these measures, a reinsurer's insolvency, inability or unwillingness to make payments under the terms of a reinsurance contract, especially Swiss Re, could have a material adverse effect on our results of operations and financial condition.

Changes in accounting standards issued by the Financial Accounting Standards Board or other standard-setting bodies may adversely affect our financial statements.

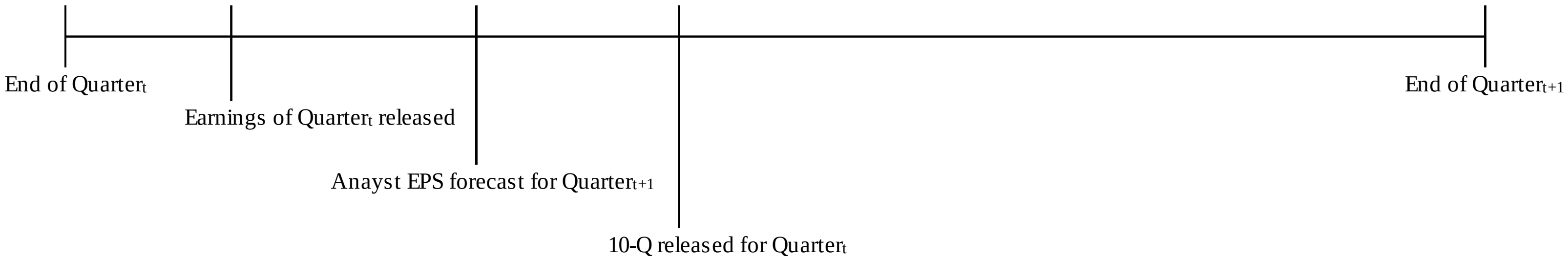
Our financial statements are subject to the application of U.S. GAAP, which is periodically revised and/or expanded. Accordingly, from time to time we are required to adopt new or revised accounting standards or guidance issued by recognized authoritative bodies, including the Financial Accounting Standards Board. It is possible that future accounting standards we are required to adopt could change the current accounting treatment that we apply to our consolidated financial statements and that such changes could have a material adverse effect on our financial condition and results of operations. For example, we are currently examining the impact of Statements of Financial Accounting Standards No. 157 "Fair Value Measurements" and No. 159 "The Fair Value Option for Financial Assets and Financial Liabilities." For more information on Statements of Financial Accounting Standards No. 157 and No. 159 and other accounting pronouncements, see "Part I—Item 1. Financial Statements—Note 2 to the Consolidated Financial Statements."

APPENDIX B

FIGURE

Figure 1. Quarterly Timeline

This figure presents sequence of events relative to Quarter *t*.



APPENDIX C

TABLES

Table 1. Sample Frequency by Fiscal Year

This table presents the sample frequency by fiscal year.

Fiscal Year	Frequency	Percent
2006	1,937	26.9
2007	2,462	34.1
2008	1,776	24.6
2009	1,037	14.4
Total Sample	7,212	100.0

Table 2. Industry Clustering

This table reports the average percentage of firms in the same industry with updates in a given quarter. Industry groups are defined by 2-digit SIC code. Only groups with at least 10 observations in a quarter were summarized below.

Panel A: Percentage of updates within industry groups by quarter

Quarter	N	Mean	StdDev	p25	p50	p75
2006Q1	18	0.28	0.21	0.11	0.20	0.43
2006Q2	19	0.34	0.19	0.18	0.28	0.50
2006Q3	20	0.37	0.18	0.21	0.34	0.55
2007Q1	23	0.28	0.15	0.13	0.28	0.39
2007Q2	21	0.36	0.15	0.27	0.36	0.50
2007Q3	23	0.34	0.18	0.21	0.27	0.52
2008Q1	18	0.24	0.19	0.09	0.18	0.36
2008Q2	19	0.33	0.19	0.17	0.27	0.50
2008Q3	16	0.55	0.14	0.48	0.57	0.66
2009Q1	16	0.36	0.17	0.21	0.33	0.48
2009Q2	14	0.36	0.17	0.21	0.31	0.56
2009Q3	2	0.61	0.02	0.60	0.61	0.63

Panel B: Percentage of updates within industry groups by quarter for all quarters

Quarter	N	Mean	StdDev	p25	p50	p75
All	209	0.34	0.19	0.18	0.30	0.52

Table 3. Univariate Statistics

This table reports destiptive statistics for all variables included in quarterly analyses. Statistics presented include the number of observations (N), mean, standard deviation, and key points in the distribution. *UPDATER* is an indicator variable equal to 1 if the firm included an update to its Risk Factors section in its 10-Q filing. *BB_WORDS* is the natural logarithm of one plus the number of words capturing the economic fundamentals described in the quarterly Risk Factors section in the 10-Q filing. *CARf* is the cumulative abnormal return around the filing date of the 10-Q (specifically spanning the three-day window of 0 to +2). $QFCSTERR_{t+1}$ is forecast error for the next quarter. $QFCSTERR\_10_{t+1}$ is an indicator equal to 1 if an obseravtion falls into the bottom 10 percent of the distribution of $QFCSTERR_{t+1}$, and zero otherwise. $QFCSTERR\_90_{t+1}$ is an indicator variable equal to 1 if an observation falls into the top 10 percent of the distribution of $QFCSTERR_{t+1}$, and zero otherwise. *NEWS* is earnings surprise for the quarter, calculated as the difference between the last mean analyst forecast released before the earnings announcement and actual earnings per share. *CARea* is the cumulative abnormal return around the earnings announcement date (specifically spanning the three-day window of -1 to +1). *LMVE* is the natural logarithm of the market value of equity. *BTM* is the book to market ratio. *INSTPERC* is the decile rank of the percentage of institutional ownership. *STDROE* is the standard deviation of the return on equity measured over the previous five years. *NUMEST* is the natural logarithm of the number of analysts following the firm. *CHGEARN* is the seasonal change in earnings, scaled by earnings from the same quarter in the prior year. *PRIORQLOSS* is an indicator equal to 1 if earnings for the same quarter in the prior fiscal year is less than zero, and zero otherwise. *PRICE* is the stock price at the beginning of the fiscal year.

Variable	N	Mean	StdDev	p25	p50	p75
UPDATER	7,212	0.25	-	-	-	-
BB_WORDS	7,212	1.54	1.90	0.00	0.69	1.95
CARf	7,212	0.002	0.041	-0.019	0.000	0.022
$QFCSTERR_{t+1}$	7,195	-0.02	0.24	-0.04	0.01	0.04
$QFCSTERR\_10_{t+1}$	7,195	0.10	-	-	-	-
$QFCSTERR\_90_{t+1}$	7,195	0.10	-	-	-	-
NEWS	7,212	0.01	0.13	-0.02	0.01	0.04
CARea	7,212	0.003	0.082	-0.038	0.001	0.044
LMVE	7,212	7.12	1.46	5.98	6.99	8.03
BTM	7,212	0.53	0.35	0.29	0.46	0.68
INSTPERC	7,212	5.40	2.73	3.00	5.50	8.00
STDROE	7,212	0.28	1.05	0.02	0.05	0.12
NUMEST[1]	7,212	1.78	0.81	1.39	1.95	2.40
CHGEARN	7,212	-0.08	2.35	-0.36	0.01	0.30
PRIORQLOSS	7,212	0.12	-	-	-	-
PRICE	7,212	30.50	20.09	16.00	26.32	39.84

[1]*NUMEST* is measured at different points in time throughout the analysis. The variable presented here is as described in Equation (2) and Equation (4).

Table 4. Correlation Matrix

This table presents a correlation matrix (p-values presented in parentheses below correlation coefficients). $LOSS_{t+1}$ is an indicator variables for whether there is a loss in the next quarter. NEG_SPI_{t+1} is an indicator for whether there is a negative special item reported in the income statement in the next quarter. All other variables were defined in Table 3.

Table 4 (Continued)

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	UPDATER																	
2	BB_WORDS	0.87																
		(0.00)																
3	CARf	-0.05	-0.05															
		(0.00)	(0.00)															
4	QFCSTERR$_{t+1}$	-0.03	0.00	0.03														
		(0.01)	(0.96)	(0.03)														
5	QFCSTERR_10$_{t+1}$	0.02	-0.02	-0.01	-0.67													
		(0.13)	(0.17)	(0.42)	(0.00)													
6	QFCSTERR_90$_{t+1}$	-0.01	-0.02	0.01	0.41	-0.11												
		(0.26)	(0.13)	(0.30)	(0.00)	(0.00)												
7	LOSS$_{t+1}$	0.19	0.20	-0.01	-0.34	0.31	-0.07											
		(0.00)	(0.00)	(0.25)	(0.00)	(0.00)	(0.00)											
8	NEG_SPI$_{t+1}$	0.09	0.09	-0.02	-0.09	0.09	-0.04	0.18										
		(0.00)	(0.00)	(0.16)	(0.00)	(0.00)	(0.00)	(0.00)										
9	NEWS	-0.02	-0.01	0.00	0.30	-0.20	0.21	-0.19	-0.06									
		(0.08)	(0.52)	(0.70)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)									
10	CARea	0.00	0.00	-0.03	0.09	-0.06	0.06	-0.08	-0.02	0.29								
		(0.95)	(0.97)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.06)	(0.00)								
11	LMVE	-0.03	-0.04	-0.04	0.06	-0.01	0.11	-0.20	0.15	0.13	0.00							
		(0.01)	(0.00)	(0.00)	(0.00)	(0.31)	(0.00)	(0.00)	(0.00)	(0.00)	(0.70)							
12	BTM	-0.01	-0.04	0.11	-0.23	0.25	0.07	0.23	0.07	-0.15	0.00	-0.25						
		(0.22)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.89)	(0.00)						
13	INSTPERC	0.07	0.07	-0.03	0.01	0.01	0.08	0.01	0.16	0.06	0.02	0.26	-0.05					
		(0.00)	(0.00)	(0.02)	(0.24)	(0.35)	(0.00)	(0.23)	(0.00)	(0.00)	(0.20)	(0.00)	(0.00)					
14	STDROE	0.07	0.06	-0.04	0.01	0.00	0.01	0.09	0.03	0.03	0.04	0.00	-0.18	0.07				
		(0.00)	(0.00)	(0.00)	(0.60)	(0.95)	(0.35)	(0.00)	(0.00)	(0.01)	(0.00)	(0.72)	(0.00)	(0.00)				
15	NUMEST[1]	0.10	0.11	-0.02	0.03	-0.03	0.00	-0.05	0.14	0.04	0.01	0.62	-0.15	0.32	0.02			
		(0.00)	(0.00)	(0.04)	(0.01)	(0.01)	(0.70)	(0.00)	(0.00)	(0.00)	(0.33)	(0.00)	(0.00)	(0.00)	(0.06)			
16	CHGEARN	-0.03	-0.04	-0.02	0.07	-0.06	0.01	-0.13	-0.03	0.12	0.03	0.07	-0.13	0.01	-0.01	0.01		
		(0.00)	(0.00)	(0.12)	(0.00)	(0.00)	(0.64)	(0.00)	(0.01)	(0.00)	(0.02)	(0.00)	(0.00)	(0.42)	(0.62)	(0.32)		
17	PRIORQLOSS	0.20	0.23	-0.03	-0.02	0.02	0.01	0.40	0.03	-0.03	0.00	-0.20	-0.02	-0.01	0.14	-0.08	-0.10	
		(0.00)	(0.00)	(0.02)	(0.09)	(0.04)	(0.40)	(0.00)	(0.01)	(0.02)	(0.80)	(0.00)	(0.09)	(0.57)	(0.00)	(0.00)	(0.00)	
18	PRICE	-0.12	-0.15	0.00	0.03	0.05	0.18	-0.26	0.00	0.15	-0.01	0.61	-0.23	0.19	-0.07	0.27	0.08	-0.27
		(0.00)	(0.00)	(0.76)	(0.01)	(0.00)	(0.00)	(0.00)	(0.96)	(0.00)	(0.57)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

[1]*NUMEST* is measured at different points in time throughout the analysis. The variable presented here is as described in Equation (2) and Equation (4).

Table 5. Statistics by *UPDATER*

This table reports destiptive statistics by *UPDATER* as well as tests of differences in mean and median values. Statistics presented include the number of observations (N), mean, and median. P-values for differences in means are calculated using two-tailed tests where variances between the groups are assumed to be unequal for all variables except *NEWS*, *LMVE*, and *PRICE*. This assumption is confirmed via untabulated variance ratio tests. P-values for differences in median are calculated based on a non-parametric equality of median test. All variables were defined in Table 3 and Table 4.

	UPDATER=0			UPDATER=1			DIFFERENCE		DIFFERENCE	
Variable	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	**IN MEANS**	**P-VALUE**	**IN MEDIANS**	**P-VALUE**
CARf	5,401	0.004	0.001	1,811	-0.001	-0.002	-0.004	0.000	-0.003	0.001
BB_WORDS	5,401	0.59	0.69	1,811	4.39	4.41	3.80	0.000	3.71	0.000
$QFCSTERR_{t+1}$	5,386	-0.02	0.01	1,809	-0.04	0.01	-0.02	0.006	0.00	0.484
$QFCSTERR\_10_{t+1}$	5,386	0.10	-	1,809	0.11	-	0.01	0.129	-	-
$QFCSTERR\_90_{t+1}$	5,386	0.10	-	1,809	0.09	-	-0.01	0.261	-	-
$LOSS_{t+1}$	5,401	0.12	-	1,811	0.28	-	0.16	0.000	-	-
NEG_SPI_{t+1}	5,346	0.30	-	1,798	0.40	-	0.10	0.000	-	-
NEWS	5,401	0.01	0.01	1,811	0.01	0.01	-0.01	0.083	0.00	0.489
CARea	5,401	0.003	0.001	1,811	0.003	0.000	0.000	0.953	-0.001	0.807
LMVE	5,401	7.14	7.03	1,811	7.04	6.86	-0.10	0.009	-0.17	0.001
BTM	5,401	0.53	0.47	1,811	0.52	0.43	-0.01	0.256	-0.03	0.003
INSTPERC	5,401	5.30	5.00	1,811	5.71	6.00	0.41	0.000	1.00	0.000
STDROE	5,401	0.24	0.04	1,811	0.41	0.08	0.16	0.000	0.04	0.000
NUMEST[1]	5,401	1.73	1.79	1,811	1.91	1.95	0.18	0.000	0.15	0.000
CHGEARN	5,401	-0.03	0.03	1,811	-0.22	-0.06	-0.18	0.012	-0.08	0.000
PRIORQLOSS	5,401	0.08	-	1,811	0.23	-	0.15	0.000	-	-
PRICE	5,401	31.95	27.64	1,811	26.18	20.86	-5.77	0.000	-6.78	0.000

[1]*NUMEST* is measured at different points in time throughout the analysis. The variable presented here is as described in Equation (2) and Equation (4).

Table 6. Regressions of *CARf* on *UPDATER* or *BB_WORDS*

This table presents coefficient estimates from regressions of *CARf* on *UPDATER* or *BB_WORDS* and other control variables. Columns (1) and (2) present regression results for tests of H1 using Equation (1). Columns (3)-(6) include regression results for tests of H2 using Equation (2). All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Whole Sample		**INSTPERC Interaction**		**NUMEST Interaction**	
Variable	**CARf**	**CARf**	**CARf**	**CARf**	**CARf**	**CARf**
UPDATER	**-0.0043 (0.000)**		**-0.0072 (0.013)**		**-0.0088 (0.004)**	
BB_WORDS		**-0.0011 (0.000)**		**-0.0015 (0.023)**		**-0.0021 (0.002)**
LMVE	-0.0004 (0.195)	-0.0005 (0.170)	-0.0003 (0.373)	-0.0003 (0.325)	-0.0007 (0.138)	-0.0007 (0.096)
BTM	0.0131 (0.000)	0.0130 (0.000)	0.0132 (0.000)	0.0130 (0.000)	0.0131 (0.000)	0.0130 (0.000)
NEWS	0.0104 (0.037)	0.0105 (0.034)	0.0106 (0.033)	0.0107 (0.032)	0.0108 (0.031)	0.0109 (0.029)
CARea	-0.0176 (0.024)	-0.0176 (0.024)	-0.0175 (0.025)	-0.0176 (0.024)	-0.0177 (0.023)	-0.0179 (0.022)
INSTPERC			-0.0004 (0.058)	-0.0004 (0.113)		
INSTPERC*UPDATER			**0.0006 (0.226)**			
INSTPERC*BB_WORDS				**0.0001 (0.447)**		
NUMEST					0.0000 (0.975)	0.0000 (0.984)
NUMEST*UPDATER					**0.0024 (0.098)**	
NUMEST*BB_WORDS						**0.0005 (0.108)**
CONSTANT	-0.0003 (0.923)	0.0006 (0.843)	0.0009 (0.779)	0.0016 (0.599)	0.0012 (0.706)	0.0026 (0.415)
N	7,212	7,212	7,212	7,212	7,212	7,212
Adjusted R-squared	0.02	0.02	0.02	0.02	0.02	0.02

Table 7. Regressions of *$QFCSTERR_{t+1}$* on *UPDATER* or *BB_WORDS*

This table presents coefficient estimates from regressions of *$QFCSTERR_{t+1}$* on *UPDATER* or *BB_WORDS* and other control variables. All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

	(1)	**(2)**
Variable	**$QFCSTERR_{t+1}$**	**$QFCSTERR_{t+1}$**
UPDATER	**-0.0180 (0.015)**	
BB_WORDS		**-0.0007 (0.672)**
LMVE	0.0065 (0.104)	0.0067 (0.098)
BTM	-0.1677 (0.000)	-0.1676 (0.000)
STDROE	-0.0085 (0.004)	-0.0088 (0.004)
CHGEARN	0.0044 (0.007)	0.0044 (0.007)
PRIORQLOSS	-0.0139 (0.274)	-0.0173 (0.181)
NUMEST	-0.0059 (0.392)	-0.0070 (0.311)
PRICE	-0.0007 (0.028)	-0.0007 (0.036)
CONSTANT	0.0601 (0.018)	0.0572 (0.024)
N	7,195	7,195
Adjusted R-squared	0.06	0.06

Table 8. Regressions of *ESHOCK, ANNFCSTERR, ESHOCK$_{t+1}$* and *ANNFCSTERR $_{t+1}$* on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from regressions of *ESHOCK* and *ANNFCSTERR* on *UPDATER* or *BB_WORDS* and other control variables. Panel B presents coefficient estimates from regressions of *ESHOCK $_{t+1}$* and *ANNFCSTERR $_{t+1}$* on *UPDATER* or *BB_WORDS* and other control variables. *ESHOCK* is forecast error for the current year using predicted earnings from a cross-sectional regression model. *ANNFCSTERR* is forecast error for the current year using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Panel A: The first fiscal year end following a quarterly update

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		Current Fiscal Year End Following Quarterly Update	
Variable	**ESHOCK**	**ESHOCK**	**ANNFCSTERR**	**ANNFCSTERR**
UPDATER	**-0.0211 (0.000)**		**-0.0892 (0.003)**	
BB_WORDS		**-0.0047 (0.000)**		**-0.0065 (0.336)**
LMVE	0.0065 (0.000)	0.0064 (0.000)	0.0828 (0.000)	0.0842 (0.000)
BTM	-0.0407 (0.000)	-0.0413 (0.000)	-0.8457 (0.000)	-0.8450 (0.000)
STDROE	-0.0001 (0.952)	-0.0004 (0.865)	-0.0224 (0.156)	-0.0235 (0.138)
CHGEARN	0.0071 (0.000)	0.0071 (0.000)	0.0313 (0.000)	0.0315 (0.000)
PRIORKLOSS	-0.0110 (0.227)	-0.0098 (0.283)	0.0099 (0.850)	-0.0005 (0.992)
NUMEST			-0.1234 (0.000)	-0.1309 (0.000)
PRICE			-0.0045 (0.002)	-0.0044 (0.002)
CONSTANT	-0.0219 (0.152)	-0.0196 (0.202)	0.1106 (0.342)	0.0880 (0.450)
N	2,937	2,937	4,058	4,058
Adjusted R-squared	0.09	0.09	0.19	0.19

Table 8 (Continued)

Panel B: The second fiscal year end following a quarterly update

	(1)	(2)	(3)	(4)
	NEXT Fiscal Year End Following Quarterly Update		**NEXT Fiscal Year End Following Quarterly Update**	
Variable	**$ESHOCK_{t+1}$**	**$ESHOCK_{t+1}$**	**$ANNFCSTERR_{t+1}$**	**$ANNFCSTERR_{t+1}$**
UPDATER	**0.0041 (0.363)**		**0.0458 (0.338)**	
BB_WORDS		**0.0008 (0.443)**		**0.0281 (0.004)**
LMVE	-0.0049 (0.008)	-0.0049 (0.008)	0.0632 (0.006)	0.0651 (0.005)
BTM	-0.0228 (0.011)	-0.0227 (0.011)	-0.7764 (0.000)	-0.7693 (0.000)
STDROE	0.0007 (0.780)	0.0008 (0.766)	-0.0254 (0.166)	-0.0250 (0.176)
CHGEARN	-0.0056 (0.000)	-0.0056 (0.000)	0.0036 (0.634)	0.0037 (0.621)
PRIORKLOSS	-0.0510 (0.000)	-0.0511 (0.000)	0.1235 (0.030)	0.0987 (0.081)
NUMEST			-0.0267 (0.448)	-0.0389 (0.270)
PRICE			-0.0085 (0.000)	-0.0082 (0.000)
CONSTANT	0.0420 (0.011)	0.0417 (0.012)	-0.0980 (0.500)	-0.1399 (0.334)
N	2,248	2,248	3,092	3,092
Adjusted R-squared	0.05	0.05	0.09	0.09

Table 9. Regressions of *QFCSTERR_10*$_{t+1}$ and *QFCSTERR_90*$_{t+1}$ on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of *QFCSTERR_10*$_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables. Panel B presents coefficient estimates from logit regressions of *QFCSTERR_90* $_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables. All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Panel A: Dependent variable is an indicator variable representing the bottom 10 percent of the distribution of $QFCSTERR_{t+1}$

	(1)	(2)
Variable	**$QFCSTERR\_10_{t+1}$**	**$QFCSTERR\_10_{t+1}$**
UPDATER	**0.1802 (0.074)**	
BB_WORDS		**-0.0072 (0.775)**
LMVE	0.0005 (0.994)	-0.0023 (0.969)
BTM	2.1424 (0.000)	2.1422 (0.000)
STDROE	0.1199 (0.023)	0.1211 (0.022)
CHGEARN	-0.0433 (0.027)	-0.0440 (0.026)
PRIORQLOSS	0.4430 (0.007)	0.4828 (0.004)
NUMEST	-0.1627 (0.057)	-0.1465 (0.089)
PRICE	0.0239 (0.000)	0.0236 (0.000)
CONSTANT	-4.1586 (0.000)	-4.1068 (0.000)
N	7,195	7,195
Pseudo R-squared	0.11	0.11

Panel B: Dependent variable is an indicator variable representing the top 10 percent of the distribution of $QFCSTERR_{t+1}$

	(1)	(2)
Variable	**$QFCSTERR\_90_{t+1}$**	**$QFCSTERR\_90_{t+1}$**
UPDATER	**0.0242 (0.814)**	
BB_WORDS		**0.0125 (0.611)**
LMVE	0.2577 (0.000)	0.2581 (0.000)
BTM	1.1714 (0.000)	1.1739 (0.000)
STDROE	0.1071 (0.001)	0.1073 (0.001)
CHGEARN	0.0112 (0.556)	0.0112 (0.553)
PRIORQLOSS	0.7041 (0.000)	0.6958 (0.000)
NUMEST	-0.4744 (0.000)	-0.4770 (0.000)
PRICE	0.0263 (0.000)	0.0264 (0.000)
CONSTANT	-4.9904 (0.000)	-5.0040 (0.000)
N	7,195	7,195
Pseudo R-squared	0.08	0.08

Table 10. Regressions of *ESHOCK_10*, *ANNFCSTERR_10*, *ESHOCK_90*, and *ANNFCSTERR_90* on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of *ESHOCK_10* and *ANNFCSTERR_10* on *UPDATER* or *BB_WORDS* and other control variables. Panel B presents coefficient estimates from logit regressions of *ESHOCK_90* and *ANNFCSTERR_90* on *UPDATER* or *BB_WORDS* and other control variables. *ESHOCK_10* is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ESHOCK*, and zero otherwise. *ESHOCK_90* is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ESHOCK*, and zero otherwise. *ESHOCK* is forecast error for the current year using predicted earnings from a cross-sectional regression model. *ANNFCSTERR_10* is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ANNFCSTERR*, and zero otherwise. *ANNFCSTERR _90* is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ANNFCSTERR*, and zero otherwise. *ANNFCSTERR* is forecast error for the current year using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Table 10 (Continued)

Panel A: Dependent variables are indicator variables representing the bottom 10 percent of the distribution of ESHOCK or ANNFCSTERR

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		**Current Fiscal Year End Following Quarterly Update**	
Variable	**ESHOCK_10**	**ESHOCK_10**	**ANNFCSTERR_10**	**ANNFCSTERR_10**
UPDATER	**0.7080 (0.000)**		**0.3209 (0.008)**	
BB_WORDS		**0.1343 (0.000)**		**0.0220 (0.440)**
LMVE	-0.4070 (0.000)	-0.4047 (0.000)	-0.1050 (0.125)	-0.1080 (0.112)
BTM	0.3424 (0.050)	0.3498 (0.047)	2.0140 (0.000)	2.0095 (0.000)
STDROE	0.1002 (0.013)	0.1093 (0.008)	0.0988 (0.148)	0.1010 (0.141)
CHGEARN	-0.1129 (0.000)	-0.1133 (0.000)	-0.0720 (0.000)	-0.0729 (0.000)
PRIORKLOSS	0.8864 (0.000)	0.8636 (0.000)	0.3121 (0.073)	0.3438 (0.049)
NUMEST			0.1717 (0.103)	0.1983 (0.060)
PRICE			0.0268 (0.000)	0.0265 (0.000)
CONSTANT	-0.5569 (0.262)	-0.5621 (0.259)	-4.3963 (0.000)	-4.3172 (0.000)
N	2,937	2,937	4,058	4,058
Pseudo R-squared	0.15	0.15	0.19	0.19

Table 10 (Continued)

Panel B: Dependent variables are indicator variables representing the top 10 percent of the distribution of ESHOCK or ANNFCSTERR

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		Current Fiscal Year End Following Quarterly Update	
Variable	**ESHOCK_90**	**ESHOCK_90**	**ANNFCSTERR_90**	**ANNFCSTERR_90**
UPDATER	**-0.0465 (0.745)**		**-0.1743 (0.145)**	
BB_WORDS		**0.0000 (0.999)**		**-0.0292 (0.312)**
LMVE	-0.2658 (0.000)	-0.2653 (0.000)	0.4163 (0.000)	0.4176 (0.000)
BTM	-0.8870 (0.000)	-0.8850 (0.000)	-0.0509 (0.728)	-0.0555 (0.704)
STDROE	0.1093 (0.014)	0.1089 (0.015)	0.0615 (0.185)	0.0595 (0.199)
CHGEARN	0.0571 (0.006)	0.0569 (0.006)	0.0444 (0.038)	0.0438 (0.040)
PRIORKLOSS	0.8555 (0.000)	0.8440 (0.000)	1.1410 (0.000)	1.1364 (0.000)
NUMEST			-0.5790 (0.000)	-0.5826 (0.000)
PRICE			0.0210 (0.000)	0.0209 (0.000)
CONSTANT	-0.2527 (0.666)	-0.2773 (0.638)	-5.0224 (0.000)	-5.0293 (0.000)
N	2,937	2,937	4,058	4,058
Pseudo R-squared	0.07	0.07	0.09	0.09

Table 11. Regressions of *ESHOCK_10*$_{t+1}$, *ANNFCSTERR_10* $_{t+1}$, *ESHOCK_90* $_{t+1}$, and *ANNFCSTERR_90* $_{t+1}$ on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of *ESHOCK_10* $_{t+1}$ and *ANNFCSTERR_10* $_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables. Panel B presents coefficient estimates from logit regressions of *ESHOCK_90* $_{t+1}$ and *ANNFCSTERR_90* $_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables. *ESHOCK_10* $_{t+1}$ is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ESHOCK* $_{t+1}$, and zero otherwise. *ESHOCK_90* $_{t+1}$ is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ESHOCK* $_{t+1}$, and zero otherwise. *ESHOCK* $_{t+1}$ is forecast error for the second fiscal year end following a Risk Factor update using predicted earnings from a cross-sectional regression model. *ANNFCSTERR_10* $_{t+1}$ is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ANNFCSTERR* $_{t+1}$, and zero otherwise. *ANNFCSTERR _90* $_{t+1}$ is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ANNFCSTERR* $_{t+1}$, and zero otherwise. *ANNFCSTERR* $_{t+1}$ is forecast error for the second fiscal year end following a Risk Factor update using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Table 11 (Continued)

Panel A: Dependent variables are indicator variables representing the bottom 10 percent of the distribution of $ESHOCK_{t+1}$ or $ANNFCSTERR_{t+1}$

	(1)	(2)	(3)	(4)
	NEXT Fiscal Year End Following Quarterly Update		**NEXT Fiscal Year End Following Quarterly Update**	
Variable	**$ESHOCK\_10_{t+1}$**	**$ESHOCK\_10_{t+1}$**	**$ANNFCSTERR\_10_{t+1}$**	**$ANNFCSTERR\_10_{t+1}$**
UPDATER	**0.1903 (0.218)**		**-0.0341 (0.803)**	
BB_WORDS		**0.0531 (0.104)**		**-0.0645 (0.050)**
LMVE	-0.1485 (0.016)	-0.1471 (0.017)	-0.0287 (0.691)	-0.0323 (0.657)
BTM	0.3120 (0.075)	0.3218 (0.068)	1.5069 (0.000)	1.5024 (0.000)
STDROE	0.0440 (0.370)	0.0477 (0.332)	0.0382 (0.568)	0.0401 (0.546)
CHGEARN	0.0325 (0.051)	0.0330 (0.046)	-0.0119 (0.467)	-0.0132 (0.429)
PRIORKLOSS	1.3625 (0.000)	1.3405 (0.000)	-0.3189 (0.181)	-0.2512 (0.294)
			-0.1587 (0.127)	-0.1283 (0.217)
			0.0253 (0.000)	0.0251 (0.000)
CONSTANT	-1.9034 (0.000)	-1.9607 (0.000)	-3.5746 (0.000)	-3.4830 (0.000)
N	2,248	2,248	3,092	3,092
Pseudo R-squared	0.09	0.09	0.11	0.11

Table 11 (Continued)

Panel B: Dependent variables are indicator variables representing the top 10 percent of the distribution of $ESHOCK_{t+1}$ or $ANNFCSTERR_{t+1}$

	(1)	(2)	(3)	(4)
	NEXT Fiscal Year End Following Quarterly Update		NEXT Fiscal Year End Following Quarterly Update	
Variable	**$ESHOCK\_90_{t+1}$**	**$ESHOCK\_90_{t+1}$**	**$ANNFCSTERR\_90_{t+1}$**	**$ANNFCSTERR\_90_{t+1}$**
UPDATER	**0.3673 (0.018)**		**0.1901 (0.144)**	
BB_WORDS		**0.0768 (0.024)**		**0.0253 (0.395)**
LMVE	-0.4939 (0.000)	-0.4920 (0.000)	0.1920 (0.008)	0.1910 (0.008)
BTM	-0.3288 (0.191)	-0.3285 (0.194)	0.3835 (0.015)	0.3890 (0.014)
STDROE	0.0977 (0.088)	0.1030 (0.073)	0.0802 (0.102)	0.0820 (0.092)
CHGEARN	-0.1178 (0.000)	-0.1179 (0.000)	-0.0196 (0.433)	-0.0196 (0.434)
PRIORKLOSS	-0.1705 (0.398)	-0.1831 (0.368)	0.5735 (0.002)	0.5880 (0.001)
			-0.1576 (0.157)	-0.1510 (0.179)
			0.0181 (0.000)	0.0181 (0.000)
CONSTANT	0.9160 (0.203)	0.8880 (0.221)	-4.3352 (0.000)	-4.3158 (0.000)
N	2,248	2,248	3,092	3,092
Pseudo R-squared	0.09	0.09	0.04	0.04

Table 12. Regressions of *CARf* on *UPDATER* or *BB_WORDS*

This table presents coefficient estimates from regressions of *CARf* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. Columns (1) and (2) present regression results for tests of H1 using Equation (1). Columns (3)-(6) include regression results for tests of H2 using Equation (2). All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

	(1)	(2)	(3)	(4)	(5)	(6)
	Whole Sample		INSTPERC Interaction		NUMEST Interaction	
Variable	**CARf**	**CARf**	**CARf**	**CARf**	**CARf**	**CARf**
UPDATER	**-0.0031 (0.034)**		**-0.0064 (0.075)**		**-0.0080 (0.040)**	
BB_WORDS		**-0.0008 (0.049)**		**-0.0013 (0.215)**		**-0.0025 (0.032)**
LMVE	-0.0007 (0.066)	-0.0007 (0.064)	-0.0005 (0.159)	-0.0005 (0.154)	-0.0009 (0.048)	-0.0010 (0.046)
BTM	0.0133 (0.000)	0.0133 (0.000)	0.0134 (0.000)	0.0133 (0.000)	0.0133 (0.000)	0.0132 (0.000)
NEWS	0.0125 (0.015)	0.0126 (0.015)	0.0127 (0.014)	0.0128 (0.013)	0.0129 (0.012)	0.0130 (0.012)
CARea	-0.0218 (0.009)	-0.0219 (0.009)	-0.0217 (0.010)	-0.0219 (0.009)	-0.0220 (0.009)	-0.0222 (0.008)
INSTPERC			-0.0004 (0.062)	-0.0004 (0.120)		
INSTPERC*UPDATER			**0.0006 (0.269)**			
INSTPERC*BB_WORDS				**0.0001 (0.568)**		
NUMEST					0.0003 (0.704)	-0.0002 (0.872)
NUMEST*UPDATER					**0.0026 (0.158)**	
NUMEST*BB_WORDS						**0.0009 (0.109)**
CONSTANT	0.0013 (0.681)	0.0017 (0.595)	0.0023 (0.475)	0.0027 (0.422)	0.0026 (0.426)	0.0040 (0.250)
N	6,498	6,498	6,498	6,498	6,498	6,498
Adjusted R-squared	0.02	0.02	0.02	0.02	0.02	0.02

Table 13. Regressions of $QFCSTERR_{t+1}$ on *UPDATER* or *BB_WORDS*

This table presents coefficient estimates from regressions of $QFCSTERR_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

	(1)	**(2)**
Variable	**$QFCSTERR_{t+1}$**	**$QFCSTERR_{t+1}$**
UPDATER	**-0.0321 (0.001)**	
BB_WORDS		**-0.0059 (0.057)**
LMVE	0.0082 (0.061)	0.0083 (0.059)
BTM	-0.1735 (0.000)	-0.1742 (0.000)
STDROE	-0.0088 (0.007)	-0.0091 (0.005)
CHGEARN	0.0058 (0.003)	0.0058 (0.003)
PRIORQLOSS	-0.0122 (0.422)	-0.0136 (0.377)
NUMEST	-0.0075 (0.312)	-0.0080 (0.285)
PRICE	-0.0008 (0.023)	-0.0008 (0.023)
CONSTANT	0.0556 (0.044)	0.0572 (0.038)
N	6,482	6,482
Adjusted R-squared	0.06	0.06

Table 14. Regressions of *ESHOCK*, *ANNFCSTERR*, $ESHOCK_{t+1}$ and $ANNFCSTERR_{t+1}$ on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from regressions of *ESHOCK* and *ANNFCSTERR* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. Panel B presents coefficient estimates from regressions of $ESHOCK_{t+1}$ and $ANNFCSTERR_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. *ESHOCK* is forecast error for the current year using predicted earnings from a cross-sectional regression model. *ANNFCSTERR* is forecast error for the current year using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Table 14 (Continued)

Panel A: The first fiscal year end following a quarterly update

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		Current Fiscal Year End Following Quarterly Update	
Variable	**ESHOCK**	**ESHOCK**	**ANNFCSTERR**	**ANNFCSTERR**
UPDATER	**-0.0188 (0.000)**		**-0.1254 (0.001)**	
BB_WORDS		**-0.0059 (0.000)**		**-0.0320 (0.008)**
LMVE	0.0049 (0.007)	0.0048 (0.008)	0.0923 (0.000)	0.0930 (0.000)
BTM	-0.0358 (0.000)	-0.0360 (0.000)	-0.9041 (0.000)	-0.9060 (0.000)
STDROE	-0.0010 (0.664)	-0.0011 (0.643)	-0.0291 (0.108)	-0.0300 (0.099)
CHGEARN	0.0088 (0.000)	0.0088 (0.000)	0.0401 (0.000)	0.0401 (0.000)
PRIORKLOSS	-0.0008 (0.941)	0.0001 (0.992)	-0.0516 (0.444)	-0.0512 (0.453)
NUMEST			-0.1405 (0.000)	-0.1423 (0.000)
PRICE			-0.0054 (0.002)	-0.0054 (0.002)
CONSTANT	-0.0143 (0.378)	-0.0108 (0.504)	0.1344 (0.312)	0.1421 (0.287)
N	2,327	2,327	3,389	3,389
Adjusted R-squared	0.10	0.10	0.20	0.20

Table 14 (Continued)

Panel B: The second fiscal year end following a quarterly update

Variable	(1) NEXT Fiscal Year End Following Quarterly Update ESHOCK$_{t+1}$	(2) ESHOCK$_{t+1}$	(3) NEXT Fiscal Year End Following Quarterly Update ANNFCSTERR$_{t+1}$	(4) ANNFCSTERR$_{t+1}$
UPDATER	**0.0079 (0.138)**		**0.0189 (0.737)**	
BB_WORDS		**0.0027 (0.146)**		**0.0300 (0.059)**
LMVE	-0.0045 (0.021)	-0.0045 (0.022)	0.0854 (0.001)	0.0857 (0.001)
BTM	-0.0277 (0.003)	-0.0276 (0.003)	-0.8636 (0.000)	-0.8647 (0.000)
STDROE	0.0016 (0.530)	0.0016 (0.529)	-0.0282 (0.168)	-0.0296 (0.152)
CHGEARN	-0.0047 (0.003)	-0.0047 (0.004)	0.0097 (0.335)	0.0097 (0.335)
PRIORKLOSS	-0.0463 (0.000)	-0.0467 (0.000)	0.0940 (0.195)	0.0771 (0.286)
NUMEST			-0.0568 (0.155)	-0.0635 (0.109)
PRICE			-0.0095 (0.000)	-0.0094 (0.000)
CONSTANT	0.0407 (0.020)	0.0389 (0.027)	-0.1170 (0.473)	-0.1481 (0.363)
N	1,795	1,795	2,598	2,598
Adjusted R-squared	0.04	0.04	0.10	0.10

Table 15. Regressions of *$QFCSTERR\_10_{t+1}$* and *$QFCSTERR\_90_{t+1}$* on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of *$QFCSTERR\_10_{t+1}$* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. Panel B presents coefficient estimates from logit regressions of *$QFCSTERR\_90_{t+1}$* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. All variables were defined in Table 3. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Panel A: Dependent variable is an indicator variable representing the bottom 10 percent of the distribution of $QFCSTERR_{t+1}$

Variable	(1) $QFCSTERR\_10_{t+1}$	(2) $QFCSTERR\_10_{t+1}$
UPDATER	**0.3524 (0.002)**	
BB_WORDS		**0.0603 (0.103)**
LMVE	0.0044 (0.946)	0.0034 (0.957)
BTM	2.1575 (0.000)	2.1648 (0.000)
STDROE	0.1371 (0.008)	0.1395 (0.007)
CHGEARN	-0.0576 (0.010)	-0.0575 (0.010)
PRIORQLOSS	0.4049 (0.030)	0.4166 (0.028)
NUMEST	-0.1865 (0.040)	-0.1799 (0.048)
PRICE	0.0240 (0.000)	0.0239 (0.000)
CONSTANT	-4.2047 (0.000)	-4.2127 (0.000)
N	6,482	6,482
Pseudo R-squared	0.12	0.11

Table 15 (Continued)

Panel B: Dependent variable is an indicator variable representing the top 10 percent of the distribution of $QFCSTERR_{t+1}$		
	(1)	**(2)**
Variable	**$QFCSTERR\_90_{t+1}$**	**$QFCSTERR\_90_{t+1}$**
UPDATER	**0.0635 (0.596)**	
BB_WORDS		**0.0285 (0.447)**
LMVE	0.2972 (0.000)	0.2968 (0.000)
BTM	1.1530 (0.000)	1.1525 (0.000)
STDROE	0.1142 (0.001)	0.1143 (0.001)
CHGEARN	0.0119 (0.571)	0.0120 (0.568)
PRIORQLOSS	0.7119 (0.000)	0.7055 (0.000)
NUMEST	-0.4994 (0.000)	-0.5004 (0.000)
PRICE	0.0248 (0.000)	0.0249 (0.000)
CONSTANT	-5.1773 (0.000)	-5.1928 (0.000)
N	6,482	6,482
Pseudo R-squared	0.08	0.08

Table 16. Regressions of *ESHOCK_10*, *ANNFCSTERR_10*, *ESHOCK_90*, and *ANNFCSTERR_90* on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of *ESHOCK_10* and *ANNFCSTERR_10* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. Panel B presents coefficient estimates from logit regressions of *ESHOCK_90* and *ANNFCSTERR_90* on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. *ESHOCK_10* is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ESHOCK*, and zero otherwise. *ESHOCK_90* is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ESHOCK*, and zero otherwise. *ESHOCK* is forecast error for the current year using predicted earnings from a cross-sectional regression model. *ANNFCSTERR_10* is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of *ANNFCSTERR*, and zero otherwise. *ANNFCSTERR _90* is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of *ANNFCSTERR*, and zero otherwise. *ANNFCSTERR* is forecast error for the current year using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Table 16 (Continued)

Panel A: Dependent variables are indicator variables representing the bottom 10 percent of the distribution of ESHOCK or ANNFCSTERR

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		Current Fiscal Year End Following Quarterly Update	
Variable	**ESHOCK_10**	**ESHOCK_10**	**ANNFCSTERR_10**	**ANNFCSTERR_10**
UPDATER	**0.5241 (0.001)**		**0.4394 (0.001)**	
BB_WORDS		**0.1221 (0.007)**		**0.0948 (0.026)**
LMVE	-0.4083 (0.000)	-0.4069 (0.000)	-0.1140 (0.138)	-0.1143 (0.135)
BTM	0.4426 (0.019)	0.4414 (0.020)	2.0513 (0.000)	2.0510 (0.000)
STDROE	0.1120 (0.006)	0.1167 (0.004)	0.1131 (0.117)	0.1149 (0.115)
CHGEARN	-0.1237 (0.000)	-0.1241 (0.000)	-0.0858 (0.000)	-0.0858 (0.000)
PRIORKLOSS	0.9079 (0.000)	0.9081 (0.000)	0.4100 (0.037)	0.4170 (0.034)
NUMEST			0.1632 (0.159)	0.1736 (0.132)
PRICE			0.0278 (0.000)	0.0277 (0.000)
CONSTANT	-0.3711 (0.500)	-0.3871 (0.482)	-4.4777 (0.000)	-4.4798 (0.000)
N	2,327	2,327	3,389	3,389
Pseudo R-squared	0.15	0.14	0.21	0.20

Table 16 (Continued)

Panel B: Dependent variables are indicator variables representing the top 10 percent of the distribution of ESHOCK or ANNFCSTERR

	(1)	(2)	(3)	(4)
	Current Fiscal Year End Following Quarterly Update		**Current Fiscal Year End Following Quarterly Update**	
Variable	**ESHOCK_90**	**ESHOCK_90**	**ANNFCSTERR_90**	**ANNFCSTERR_90**
UPDATER	**-0.0981 (0.562)**		**-0.1362 (0.322)**	
BB_WORDS		**-0.0477 (0.334)**		**-0.0537 (0.194)**
LMVE	-0.3151 (0.000)	-0.3162 (0.000)	0.4612 (0.000)	0.4626 (0.000)
BTM	-1.0443 (0.000)	-1.0489 (0.000)	-0.0347 (0.825)	-0.0358 (0.820)
STDROE	0.1072 (0.025)	0.1075 (0.025)	0.0602 (0.234)	0.0600 (0.236)
CHGEARN	0.0549 (0.033)	0.0548 (0.033)	0.0637 (0.021)	0.0635 (0.021)
PRIORKLOSS	0.9903 (0.000)	1.0082 (0.000)	0.9574 (0.000)	0.9698 (0.000)
NUMEST			-0.6648 (0.000)	-0.6629 (0.000)
PRICE			0.0210 (0.000)	0.0209 (0.000)
CONSTANT	0.1728 (0.795)	0.2210 (0.742)	-5.2334 (0.000)	-5.2104 (0.000)
N	2,327	2,327	3,389	3,389
Pseudo R-squared	0.09	0.09	0.10	0.10

Table 17. Regressions of $\textit{ESHOCK\_10}_{t+1}$, $\textit{ANNFCSTERR\_10}_{t+1}$, $\textit{ESHOCK\_90}_{t+1}$, and $\textit{ANNFCSTERR\_90}_{t+1}$ on *UPDATER* or *BB_WORDS*

Panel A presents coefficient estimates from logit regressions of $\textit{ESHOCK\_10}_{t+1}$ and $\textit{ANNFCSTERR\_10}_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. Panel B presents coefficient estimates from logit regressions of $\textit{ESHOCK\_90}_{t+1}$ and $\textit{ANNFCSTERR\_90}_{t+1}$ on *UPDATER* or *BB_WORDS* and other control variables, excluding quarterly updates larger than 95 percent of the most recent annual Risk Factors disclosure. $\textit{ESHOCK\_10}_{t+1}$ is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of $\textit{ESHOCK}_{t+1}$, and zero otherwise. $\textit{ESHOCK\_90}_{t+1}$ is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of $\textit{ESHOCK}_{t+1}$, and zero otherwise. $\textit{ESHOCK}_{t+1}$ is forecast error for the second fiscal year end following a Risk Factor update using predicted earnings from a cross-sectional regression model. $\textit{ANNFCSTERR\_10}_{t+1}$ is an indicator variable equal to 1 if an observation is in the bottom 10 percent of the distribution of $\textit{ANNFCSTERR}_{t+1}$, and zero otherwise. $\textit{ANNFCSTERR \_90}_{t+1}$ is an indicator variable equal to 1 if an observation is in the top 10 percent of the distribution of $\textit{ANNFCSTERR}_{t+1}$, and zero otherwise. $\textit{ANNFCSTERR}_{t+1}$ is forecast error for the second fiscal year end following a Risk Factor update using the first mean forecast of the year. All other variables were defined in Table 3 with the exception that they are now measured on an annual basis. P-values (to the right of coefficient estimates) are calculated using heteroskedasticity-robust standard errors clustered by firm.

Table 17 (Continued)

Panel A: Dependent variables are indicator variables representing the bottom 10 percent of the distribution of $ESHOCK_{t+1}$ or $ANNFCSTERR_{t+1}$

	(1)	(2)	(3)	(4)
	NEXT Fiscal Year End Following Quarterly Update		NEXT Fiscal Year End Following Quarterly Update	
Variable	**$ESHOCK\_10_{t+1}$**	**$ESHOCK\_10_{t+1}$**	**$ANNFCSTERR\_10_{t+1}$**	**$ANNFCSTERR\_10_{t+1}$**
UPDATER	**0.0014 (0.994)**		**0.0745 (0.628)**	
BB_WORDS		**0.0075 (0.882)**		**-0.0633 (0.194)**
LMVE	-0.1687 (0.014)	-0.1686 (0.014)	-0.0447 (0.555)	-0.0417 (0.586)
BTM	0.3437 (0.073)	0.3440 (0.072)	1.4980 (0.000)	1.5138 (0.000)
STDROE	0.0722 (0.155)	0.0719 (0.157)	-0.0196 (0.801)	-0.0132 (0.863)
CHGEARN	0.0313 (0.115)	0.0313 (0.114)	-0.0178 (0.377)	-0.0186 (0.368)
PRIORKLOSS	1.0784 (0.000)	1.0735 (0.000)	-0.1525 (0.565)	-0.1077 (0.686)
NUMEST			-0.0975 (0.383)	-0.0779 (0.485)
PRICE			0.0254 (0.000)	0.0250 (0.000)
CONSTANT	-1.5298 (0.005)	-1.5420 (0.005)	-3.6706 (0.000)	-3.6186 (0.000)
N	1,795	1,795	2,598	2,598
Pseudo R-squared	0.06	0.06	0.11	0.11

Tabel 17 (Continued)

Panel B: Dependent variables are indicator variables representing the top 10 percent of the distribution of $ESHOCK_{t+1}$ or $ANNFCSTERR_{t+1}$

	(1)	(2)	(3)	(4)
	NEXT Fiscal Year End Following Quarterly Update		NEXT Fiscal Year End Following Quarterly Update	
Variable	**$ESHOCK\_90_{t+1}$**	**$ESHOCK\_90_{t+1}$**	**$ANNFCSTERR\_90_{t+1}$**	**$ANNFCSTERR\_90_{t+1}$**
UPDATER	**0.2424 (0.151)**		**0.2176 (0.131)**	
BB_WORDS		**0.0528 (0.318)**		**0.0407 (0.338)**
LMVE	-0.5688 (0.000)	-0.5675 (0.000)	0.2789 (0.000)	0.2771 (0.000)
BTM	-0.5163 (0.071)	-0.5183 (0.071)	0.4268 (0.011)	0.4324 (0.009)
STDROE	0.1026 (0.087)	0.1053 (0.077)	0.0876 (0.085)	0.0894 (0.077)
CHGEARN	-0.1105 (0.001)	-0.1108 (0.001)	-0.0077 (0.800)	-0.0077 (0.802)
PRIORKLOSS	-0.1430 (0.539)	-0.1312 (0.575)	0.4843 (0.023)	0.4989 (0.018)
NUMEST			-0.2378 (0.047)	-0.2316 (0.055)
PRICE			0.0146 (0.000)	0.0146 (0.000)
CONSTANT	1.6232 (0.027)	1.6142 (0.029)	-4.7134 (0.000)	-4.7041 (0.000)
N	1,795	1,795	2,598	2,598
Pseudo R-squared	0.10	0.10	0.04	0.04

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