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Taking Credit and Avoiding Responsibility: The Causes and Career Consequences of Managers' Strategic Disclosures

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UNIVERSITY OF MIAMI

TAKING CREDIT AND AVOIDING RESPONSIBILITY:
THE CAUSES AND CAREER CONSEQUENCES OF MANAGERS' STRATEGIC
DISCLOSURES

By

Yamin Hao

A DISSERTATION

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy

Coral Gables, Florida

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TAKING CREDIT AND AVOIDING RESPONSIBILITY:
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Taking Credit and Avoiding Responsibility:

(August 2015)

The Causes and Career Consequences of Managers' Strategic Disclosures

Abstract of a dissertation at the University of Miami.

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This paper provides evidence on the determinants and career consequences of managers' strategic causal explanations (attributions) for firm performance. Using new textual analysis algorithms, I identify abnormal attributions and find that managers appear to strategically attribute favorable firm performance to internal factors and poor firm performance to external factors. More importantly, I find that strategic external attributions of poor performance are associated with lower CEO cash-compensation sensitivity and forced turnover likelihood. These findings suggest that managers' career-related incentives affect their disclosure choices. I also find that abnormal attributions are mitigated by greater analyst following, better corporate governance and greater peer performance commonality. Overall, the evidence is consistent with managers strategically presenting causal explanations to extract private benefits.

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TABLE OF CONTENTS

| | |
|--|-----|
| LIST OF FIGURES | vi |
| LIST OF TABLES | vii |
| CHAPTER 1 INTRODUCTION | 1 |
| CHAPTER 2 RELATED RESEARCH AND HYPOTHESES DEVELOPMENT | 8 |
| Why do managers react to performance results? | 8 |
| What are the benefits of strategic attributions?..... | 11 |
| What are the factors that deter managers from making strategic attributions? | 14 |
| CHAPTER 3 IMPORTANT VARIABLES..... | 17 |
| Measures of strategic disclosures..... | 17 |
| Measures of the underlying economy/ industry situations..... | 19 |
| CHAPTER 4 SAMPLE SELECTION AND DESCRIPTIVE STATISTICS | 21 |
| Data and sample selection..... | 21 |
| Descriptive statistics | 22 |
| Univariate test results and time-series tendency | 23 |
| CHAPTER 5 MULTIVARIATE RESULTS..... | 24 |
| Influence of performance on attribution choices | 24 |
| Consequences of strategic attributions..... | 26 |
| Constraints on managers' strategic disclosures | 29 |
| CHAPTER 6 ADDITIONAL TESTS..... | 33 |
| Does CEO tenure make a difference? | 33 |
| Which portion of CEO's cash compensation is affected the most? | 35 |
| Do late filers attribute differently than their peers? | 38 |
| CHAPTER 7 ALTERNATIVE PERFORMANCE MEASURES..... | 40 |
| Relative performance to industry peers | 40 |

| | |
|--|----|
| Changes in sales as performance measures..... | 42 |
| Accumulative stock return as the break point of firm performance..... | 44 |
| CHAPTER 8 CONCLUSIONS | 46 |
| REFERENCES | 48 |
| FIGURES..... | 53 |
| TABLES | 54 |
| APPENDIX 1 Variable Definitions..... | 80 |
| APPENDIX 2 Coding Examples and Dictionary | 82 |
| APPENDIX 3 Examples of Managers’ Attributions to External Factors..... | 84 |
| APPENDIX 4 Relative Performance | 85 |
| APPENDIX 5 Sales Performance..... | 88 |
| APPENDIX 6 Stock Return as Performance Breakpoint | 91 |
| APPENDIX 7 Normal vs. Abnormal Attributions | 93 |
| APPENDIX 8 “Freshman CEOs” and “CEOs over 65” | 94 |
| APPENDIX 9 Attribution Tendency | 96 |
| APPENDIX 10 Excluding the Impact of Special Items | 97 |
| APPENDIX 11 Controlling for Firm Fixed Effects | 98 |

LIST OF FIGURES

| | |
|---------------|----|
| FIGURE 1..... | 53 |
|---------------|----|

LIST OF TABLES

| | |
|---|----|
| TABLE 1 Descriptives and Correlation Matrix | 54 |
| TABLE 2 Attribution Asymmetry..... | 57 |
| TABLE 3 Firm Performance as Determinants of Strategic Causal Attributions | 59 |
| TABLE 4 Consequences of Strategic Causal Attributions..... | 62 |
| TABLE 5 Strategic Causal Attributions and CEO Turnover | 65 |
| TABLE 6 Factors that Mitigate Strategic Attributions | 67 |
| TABLE 7 “New CEOs” vs. “Tenured CEOs” | 73 |
| TABLE 8 Changes of Salary and Bonus | 76 |
| TABLE 9 Strategic Causal Attributions of Late Filers | 79 |

CHAPTER 1

INTRODUCTION

The goal of this dissertation is to expand our understanding of what leads managers to take credit or pass blame for corporate performance. While the traditional disclosure literature has generally focused on capital and/or product market determinants and outcomes, Healy and Palepu (2001) and Beyer et al. (2010) note that we know relatively little about whether or how managerial career concerns affect corporate disclosures. This study attempts to fill this void by exploring the causes and career-related consequences of managers' strategic causal explanations (i.e., passing blame or taking credit) for firm performance. Specifically, I use new textual analysis algorithms to isolate managers' abnormal attributions in 10-K filings and find evidence suggesting that managers use strategic causal explanations of corporate performance to extract private benefits.

The agency problem between managers and other stakeholders is a central topic in the accounting, finance and economics literatures (e.g., Jensen and Meckling, 1976). Executives possess superior information relative to other stakeholders and have incentives and wide latitude to exercise their discretion when making disclosure choices. Prior studies recognize that managers can strategically obfuscate their private information and extract rents for their own benefits (Bebchuk et al., 2002; Leuz et al., 2003; Rogers, 2008). Due to the information asymmetry, outside directors and shareholders often have to rely on publicly-released financial statements and contextual disclosures to assess

executives' performance and ability, and subsequently determine performance rewards and make retention or dismissal decisions (Bushman and Smith, 2001; Healy and Palepu, 2001; Armstrong et al., 2010; Beyer et al., 2010). However, managers have knowledge and controlling power over financial reporting contents and related disclosures. When not effectively monitored by shareholders and other outside scrutinizing forces, managers may issue self-serving disclosures (i.e., Hope and Thomas, 2008).

Causal explanations of firm performance serve as an appropriate setting to investigate how managers' career-related incentives affect their disclosures. The board of directors and shareholders generally assess the capability of top management based on periodic firm performance measures and make reward/punishment decisions accordingly. Thus, textual descriptions in the MD&A provide managers with the opportunity to give explanations of and excuses for corporate performance to a wide set of stakeholders. Since causal explanations can influence investors' beliefs about the persistence of accounting earnings and stakeholders' judgments about executive performance and ability (Baginski et al., 2004; Kimbrough and Wang, 2014), strategic explanations can affect information users' decisions and may lead to undesirable results in capital market evaluations, executive contracting arrangements, and turnover decisions (Staw et al., 1983; Barton and Mercer, 2005; Kimbrough and Wang, 2014).

In this paper, I define strategic disclosure as managers' abnormal use of causal explanations to attribute favorable performance to internal factors and unfavorable performance to external factors. I focus on the Management Discussion & Analysis (MD&A) section of U.S. firms' 10-K filings because it has long been recognized by

researchers as a major source of information to stakeholders (Cole and Jones, 2005). The MD&A section presents a comprehensive picture of a firm's annual operations through the view of management, and managers generally have control over its content. A tension exists because, on the one hand, the SEC requires managers to provide accurate and informative causal explanations of the firm's results of operations, liquidity status and other important issues (SEC Guidance Regarding MD&A, 2003), and the PCAOB requires auditors to review the presentation and content of the MD&A section (AT Section 701). On the other hand, biased attributions can exist and influence the audience because it is difficult for information users to fully verify the authenticity of such causal explanations. Due to its qualitative nature, the MD&A gives managers leeway to strategically exercise discretion in explaining corporate performance.

I collect 10-K filings of publicly traded companies from the SEC Edgar database for the sample period of 1995-2012 and separate Item 7 (MD&A) from the annual reports. Using newly developed Python algorithms, I construct measures of managers' total external attributions by identifying attribution sentence groups as including causality words and external-factor words simultaneously.¹ Alternatively, I follow Li (2012) to

¹ This paper follows the Staw et al. (1983) method to construct measures of total external attributions. Most studies in the attribution literature follow Staw et al. (1983) to capture external attributions by identifying *External attribution sentence groups* when *causality words* and *external-factor words* appear concurrently in the same sentence or two adjacent sentences. However, none of the prior research was able to use this method in a large sample size because of the labor-intensiveness of hand collection process. I create a new Python algorithm to automate this process and apply it to a large universe of firms. Specifically, I first develop dictionaries of *causality words* and *external-factor words* by manually-coding 200 randomly sampled MD&As. *Causality words* are defined by a group of words indicating causal links. "due to" is the most frequently used causality word in the MD&A. Other causality words include "because of/ impacted by/attribution to", etc. According to the manually-coded results, the two most observed categories of external attributions are the industry or the economy. Therefore, this paper uses these two types of attributions to represent managers' external attribution. Then I use the Python program to process MD&A text filings and identify economy attributions when economy-related words (economy/recession/crisis and their close variants) and causality words appear in the same sentence or two adjacent sentences, and industry attributions when industry-related words (competition/pricing pressure/reduced demand and their close variants) and causality words appear together. The full dictionary of *causality words* and *external-factor words* are shown in Appendix 2.

employ the frequency of first-person pronouns in the MD&A as a proxy for managers' tendency to implicitly take credit for themselves (internal attributions).² After computing these measures for a large universe of firms, I am able to isolate the abnormal portion for each company by taking out the yearly industry average of attributions. My results show that managers of poor-performing firms make significantly more total and abnormal attributions to external causes, while better-performing managers tend to use significantly more first-person pronouns. This asymmetry is strengthened during economic recessions. Using a changes specification, year-over-year regressions show similar results that, for a specific company, management is more likely to blame external factors in a sluggish year and make internal attributions in a better year.

Next, I examine how managers may benefit from strategic causal explanations. Using a two-way partition based on performance, I find that CEO's cash compensation is less sensitive to performance for poor-performing firms when the unfavorable result is attributed to external factors. This finding is consistent with the intuition that executives do not get punished as severely when poor performance can be attributed to factors outside of management control. In contrast, CEO's cash compensation is more closely related to performance metrics for better-performing firms when managers use abnormal internal attributions to take credit. Furthermore, survival analysis results show that abnormal external attributions can reduce the likelihood (hazard rate) of forced CEO turnover for poor-performing firms.

² According to the manually-coded results, it is not viable to define *internal attributions* in the same way as external attributions because firm-specific business decisions are idiosyncratic and extremely difficult to code using textual analysis techniques. Alternatively, I follow Li (2012) to calculate managers' use of first-person pronouns (we/us/our), as compared to "the company/the company's", in the MD&A as a proxy of *internal attributions* to capture managers' tendency to take credit for good performance.

Further, this paper investigates the determinants of why all managers may not engage in such “seemingly natural” strategic disclosures. Whereas the costs associated with strategic narrative disclosures might be lower than those associated with financial statement manipulations, they are still likely to be sufficient to temper some managers’ strategic disclosure choices. I find that executives of poor-performing firms tend to have fewer external attributions when peer firms report favorable operating results. I also examine the influence of financial analysts, institutional investors, board size, and percentage of independent directors on managers’ attribution patterns. Consistent with my expectations, among poor-performing firms, strategic attributions decrease with the number of analysts following because analysts possess comprehensive knowledge of the industry and economy and hence, can effectively monitor managers from an outsider’s perspective. In addition, a better corporate governance system also helps to scrutinize managers’ behavior and reduce strategic causal explanations for both well- and poor-performing firms.

This paper first contributes to the corporate disclosure literature by investigating managers’ career-related incentives to make strategic disclosures. The disclosure literature has largely focused on capital market and/or product market related incentives and consequences of disclosures, while how managers’ career concerns affect disclosures remain relatively unexplored (Healy and Palepu, 2001; Beyer et al., 2010). In addition, research papers in the growing field of managerial strategic disclosures have been limited to the timing and frequency of voluntary disclosures, as well as managers’ asymmetric reporting behavior for good news vs. bad news (Rogers et al., 2007; Kothari et al., 2009;

Niessner, 2014). My study, instead, breaks new ground by investigating career-related incentives of managers' strategic behavior in qualitative disclosures. Digging into the textual details of management discussions, the empirical results show that some executives can benefit from making strategic explanations, avoid punishments for poor performance and implicitly take credit for favorable performance.

This paper also extends the managerial attribution literature by identifying the abnormal portion of attributions rather than simply using unadjusted counts of attributions to proxy for managers' self-serving attribution bias. Prior studies define self-serving attribution bias as managers' general tendency to make more external attributions when firm performance is unfavorable and more internal attributions when firm performance is favorable.³ These studies, however, ignore the fact that normal attributions are likely to occur when managerial opportunism is absent. For example, it can be the case that poor performance is more likely due to exogenous shocks (e.g., to the economy or industry), while good performance is more likely the result of internal actions (e.g., introduction of new products). As a result, the asymmetry in total attributions might stem from unbiased causal explanations and not from managers' strategic disclosures.⁴ I address this potential concern by constructing a measure of abnormal causal explanations. To my knowledge, this study is the first to identify this potential problem and to attempt to separate abnormal from normal attribution levels.

³ Staw et al. (1983) and Bettman and Weiz (1983) are the first two papers to examine self-serving attribution bias in a corporate setting. Baginski et al. (2001, 2004), Barton and Mercer (2005), and Kimbrough and Wang (2014) follow a similar way to define self-serving attributions.

⁴ Kimbrough and Wang (2014) also find that investors see through part of managers' seemingly self-serving attributions by referring to performance commonality of the industry.

Li (2012) also investigates managers' self-serving attribution bias (SAB) for a large sample of firms. Using the frequency of first-person pronouns (relative to second- or third-person pronouns) to proxy for managers' attribution tendency, he finds that managers with higher SAB tend to be overconfident in the future (more likely to issue forward-looking statements and earnings forecasts, tend to be more optimistic, etc.). My paper differs from Li's work in two ways. First, rather than investigate future performance, I focus more on how managers explain past performance to stakeholders and the determinants and consequences of such backward-looking explanations. Second, my study follows the mainstream attribution literature to design the algorithm for identifying external attributions related to industry and macro effects.⁵ By examining external and internal attributions simultaneously, I am able to present a more complete picture of managers' strategic attributions.

⁵ One innovation of this paper lies in the design of an automatic algorithm to identify managers' external attributions in a very similar way with the manual-coding method used widely in the attribution literature. Specifically, when two groups of words, *causality words* and *external factor words* appear in the same or adjacent sentences, the sentence group is labeled as one occurrence of external attribution. To my knowledge, no prior study has used this method for a large group of firms.

CHAPTER 2

RELATED RESEARCH AND HYPOTHESES DEVELOPMENT

Why do managers react to performance results?

The well-established agency theory suggests the existence of information asymmetry between managers and other stakeholders (e.g., Jensen and Meckling, 1976). The rational expectations model plays an important role in explaining managerial disclosure choices (Verrecchia, 2001). Executives are insiders making business decisions that ultimately lead to the numbers reported in financial statements. Thus, executives possess superior information about the operating activities and performance results of the company. Shareholders and other outside stakeholders generally rely on the reporting and disclosures of management to make decisions (Healy and Palepu, 2001).

Before disclosing information to outsiders, managers weigh the benefits against the costs (Verrecchia, 1983). Causal explanations can be strategic because, for example, at the end of year t , managers observe the financial results of the firm, and they are obligated to provide detailed explanations of these results. Given the reported numbers in the financial statements, the qualitative nature of the MD&A allows them discretion to describe the underlying reasons strategically. Making self-serving attributions in the MD&A can provide managers a variety of benefits, including influencing the stock price evaluation of investors, and the cash compensation and CEO retention/dismissal decisions of the Board. At the same time, value-maximizing executives anticipate the possible response of information users. Since textual descriptions are difficult to verify

and are not strictly audited by public accountants, causal explanations cannot be easily refuted by outsiders.⁶ The litigation and reputation costs of textual manipulations can, therefore, be lower than those of financial statement manipulations, which makes strategic attributions attractive to managers. Taken together, the causal explanations in the MD&A may deviate away from normal levels because the benefits of managers from making abnormal attributions outweigh the costs.⁷

In addition, managers' attribution behavior can also be explained by the implications of the psychological attribution theory. A large stream of literature in social psychology has documented the existence of self-serving attributions when people draw causal inferences about their performance (Kelley, 1967; Weiner, 1979; etc.).

Researchers note that successful results are attributed to internal factors, such as personal ability and individual efforts, whereas negative results are attributed to external factors, such as poor environment, interference of other people, or lack of outside guidance.⁸

⁶ Even though macro-economy and industry situations are observable, the influence of these factors on a specific company remains unobservable to outsiders. (Bettman and Weiz, 1983; Barton and Mercer, 2005; Kimbrough and Wang, 2014).

⁷ The justification of the existence of strategic attribution in narrative disclosures is consistent with a common generalization of the basic Fischer and Verrecchia (2000) model, which proves the presence of managerial reporting bias when both managers and investors are rational and the capital market is efficient. The justification of the existence of strategic attribution in narrative disclosures is consistent with a common generalization of the basic Fischer and Verrecchia (2000) model, which proves the presence of managerial reporting bias when both managers and investors are rational and the capital market is efficient. Fischer and Verrecchia (2000) demonstrate that as long as outsiders are uncertain about the reporting incentives of managers, even in a rational expectations equilibrium, the market cannot fully "back out" reporting biases. Following the disclosure literature, their model assumes managers make disclosure decisions to influence capital market evaluations (Fischer and Verrecchia, 2000). Nevertheless, the authors state that their results can also hold for various situations in which managers attempt to manipulate the evaluations of other parties, such as regulators, bondholders, and the board of directors (Fischer and Verrecchia, 2000), which provides economic support for the theoretical analyses of my paper.

⁸ Although early literature states that the attribution behavior of managers stems from unintentional high ego-defensiveness (Schlenker, 1980; etc.), the psychological explanation does not capture the whole picture. Staw et al. (1983) provides evidence that the attributions of managers can also be caused by their attempts to influence investor impressions, and serve their self-interested trading incentives.

Empirical studies in accounting and management also demonstrate that such attribution bias exists in the corporate environment.⁹

Consistent with the rational expectation framework and attribution theory, Hypothesis 1 states that:

Hypothesis 1: Managers of poor-performing firms tend to blame external factors excessively in the MD&A, whereas managers of better-performing firms tend to make more internal attributions.

The present paper first replicates prior studies and validate its empirical measures by proving that self-serving asymmetric attribution pattern exists in managers' total attributions. However, the distribution of causal attributions under normal conditions (i.e., with no managerial opportunism) can manifest a similar pattern as suggested in prior studies. For example, in a specific year, firms are affected by a certain exogenous shock in the industry or economy. Following the SEC guidelines, managers are required to provide a detailed explanation of the factors that influence the firm's operating results. Since the poor (good) performance can truly arise from external (internal) factors, observed attributions may be misinterpreted as strategic even if they are not. One way to rule out this potential alternative explanation is to isolate the *abnormal* portion of managers' attributions. Using the industry average (median) as a benchmark for normal attribution, this paper further investigates how managers' *abnormal* attributions are related to firm performance.

⁹ Staw et al. (1983) and Bettman and Weiz (1983) are the first two papers examining self-serving attribution bias in corporate disclosures. Baginski et al. (2000, 2004), Li (2012), Kimbrough and Wang (2014), and others document that similar attribution bias exists in various types of corporate disclosures; managers of firms with favorable performance make more internal attributions, whereas managers of firms with poor performance make more external attributions.

In addition, as is true with all qualitative sections of 10-K filings, boilerplate disclaimers and generic language are prevalent in the MD&A (Brown and Tucker, 2011). Given their informational content, causal explanations should not remain constant over the years because the operating results of a company are not the same from period to period.¹⁰ Using a firm as its own control, I also conduct changes analyses to provide additional robustness to the results of the main hypothesis.

What are the benefits of strategic attributions?

One potential benefit of strategic disclosure lies in investors' evaluation of the firm's stock price. Staw et al. (1983) argue that managers attempt to affect the perceptions of investors by blaming poor performance on external factors, and by attributing better performance to internal factors. Previous studies (Baginski et al., 2000, 2004; Kimbrough and Wang, 2014) also reveal that investors rely on managers' causal explanations to assess the persistence of earnings surprises. Accordingly, I expect investors to react less strongly to earnings decreases due to external factors, because economic and industry grounds are perceived to be transitory as compared with the intrinsic strategy and characteristics of a firm. By contrast, this paper expects investors to react more strongly to earnings decreases due to internal reasons because internal factors are expected to be more persistent.

Hypothesis 2a: For poor-performing firms, investors react more (less) to 10-K filings with internal (external) attributions.

¹⁰ Linguistic techniques are appropriate in identifying deviations in management disclosures over several periods (Purda and Skillicorn, 2014).

A second, less explored benefit of strategic causal explanations could be their influence on the pay-performance sensitivity of CEO's cash compensation. In an efficient contracting setting, compensation contracts increase CEO's incentives to maximize firm value. In order to better align management incentives with shareholders' interests, executives should be awarded for their contribution to good corporate performance, and be penalized for their contribution to poor performance.

Under many circumstances, however, CEOs are not penalized for poor firm performance.¹¹ Prior research reveals that CEO cash compensation is less sensitive to poor earnings performance than to better earnings performance (Shaw and Zhang, 2010). One possible reason for this phenomenon could be the lack of an efficient corporate governance system (Core et al., 1999). Alternatively, poor operating results are possibly caused by factors beyond the management's control.¹² Since board members also exert their subjective judgment in determining executive compensation (Bushman et al., 1996; Gibbs et al., 2004), they may also take managerial performance explanations into consideration before finalizing CEOs' cash bonuses for the current period. If external (internal) attributions are associated with a lower (higher) cash compensation sensitivity to performance metrics, poor-performing executives have incentives to strategically pass

¹¹ For example, Bebchuk states in his book *Pay Without Performance* (2004) that "even though the escalation of pay has often been justified as necessary, when you look at the details, that is not the case, because much of the pay is not all that sensitive to performance."

¹² The two alternative explanations are not mutually exclusive. Bebchuk (2004) states that whether board members favor managers in compensation arrangements depends not only on governance mechanism and executive entrenchment, but also on the perception of outsiders of these arrangements. Causal explanations, therefore, can help managers (and board members on the same side) alleviate possible "outrage" risk among other stakeholders and reduce the costs of managerial rent extraction.

blame to external causes, whereas better-performing managers have incentives to attribute good performance to internal causes.¹³

Hypothesis 2b: The sensitivity of the CEO's current cash compensation to current firm performance is lower (higher) when there are greater external (internal) attributions in the MD&A.

Managers' causal explanations can also have long-term effect on their career path in the profession. Firm performance reveals information about a CEO's unobservable ability to stakeholders (Kim, 1996). Depending on the financial results after each period, board members and shareholders can update their beliefs of the CEO's capability (Adams et al., 2010). If, for example, a firm missed its performance goal (either target or threshold) in a specific year, board members may tend to trust managers' causal explanations if these attributions are plausible, and give the management a second opportunity to rebound. On the contrary, if managers ascribe the failure to internal factors, shareholders may revise their assessment of a CEO's ability and consider possible dismissal.

Hypothesis 2c: The likelihood of forced CEO turnover is lower for poor-performing firms if managers make external attributions, and higher if they make internal attributions.

¹³ Shaw and Zhang (2010) present a timeline of CEO's cash compensation. Before fiscal year t starts, CEOs and committee members agree upon the *ex ante* cash compensation contracts. These contracts generally involve accounting measures (e.g., ROA) and market-based measures (e.g., stock returns) that are used to evaluate the CEO's performance. After observing the operating results for year t , committee members determine CEO's cash compensation by comparing performance results to the *ex ante* targets. At the same time, committee members consider managerial performance explanations before finalizing cash compensation. In recent years, with more companies adopting the "Say on Pay" votes that allow shareholders to monitor the compensation of highly-paid executives, causal explanations in the MD&A can help committee members to justify the cash compensation of CEO, especially when the firm performed poorly.

What are the factors that deter managers from making strategic attributions?

Although it seems to be natural that managers make strategic attributions for their own benefits, this phenomenon is not as pervasive in certain industries and years (Kimbrough and Wang, 2014). One question worth asking is that what are the limiting forces that keep executives from making strategic causal explanations? In this section, I discuss the factors that influence managers' attribution choices.

Plausibility of the attribution. Despite the fact that MD&A texts are qualitative, subjective and sometimes difficult to be verified,¹⁴ they are selectively reviewed by SEC professionals. Comment letters can lead to both real and reputational damage to the company.¹⁵ In addition, plausibility is also important in determining whether other stakeholders will believe these explanations. Prior studies show that investors constantly use their common knowledge of the economy and industry, as well as the relative performance of peer firms, to assess the plausibility of managerial attributions.¹⁶ Therefore, plausibility is one of the critical issues that managers should consider before making strategic causal explanations.

The percentage of peer firms in the same industry that report good (bad) news is a frequently-used proxy for performance commonality. Higher performance-commonality refers to higher plausibility of managers' external attributions, and lower plausibility of internal attributions.¹⁷

¹⁴ Unlike other types of voluntary disclosures, such as management forecasts that can be verified by future accounting numbers, causal explanations are more subjective and difficult to verify.

¹⁵ Deloitte SEC Comment Letter Book 2013.

¹⁶ Even though macro-economy and industry situations are observable, the influence of these factors on a specific company remains unobservable to outsiders. (Bettman and Weiz, 1983; Barton and Mercer, 2005; Kimbrough and Wang, 2014).

¹⁷ Tse and Tucker, (2009); Gong et al. 2013; Kimbrough and Wang, 2014, etc.

Information environment. The information environment in which firms operate can also affect the costs of strategic disclosures. Financial analysts generally have knowledge and expertise to investigate industry and macro-economic conditions (Ramnath, 2002; Hutton et al., 2012), and institutional investors have better resources to process information (Bushee and Noe, 2000).

The monitoring effect of analysts and sophisticated investors on managerial behavior is widely recognized by various stakeholders. Yu (2008) documents that managers of companies with more analysts following engage in less earnings management. Hartzell and Starks (2003) state that large institutional shareholders are more likely to monitor companies than smaller retail investors. Similarly, this paper expects analysts and institutional investors to play an important role in curtailing strategic causal attributions.¹⁸

Corporate governance. Fama (1980) states that the board of directors serves as the central internal control mechanism to monitor the management. Prior studies note that an improved corporate governance system leads to higher disclosure quality (Eng and Mak, 2003) and lower levels of managerial opportunism (Michaely et al., 2013). Independent board members are possibly aware of managers' attempts to make strategic attributions of firm performance. Therefore, this paper expects a better corporate governance structure to facilitate the scrutiny of managerial disclosures, and reduce strategic attribution behavior.

In summary, hypothesis 3 is developed as follows,

¹⁸ The expertise of analysts and institutional investors stem from their following/investing of a group of firms in the same industry, as well as their knowledge, experience and close watch of the macro-economy (Kadan et al. 2012). Therefore, this paper only investigates the influence of information environment on managers' external attributions.

Hypothesis 3: Managers' asymmetric attribution patterns are mitigated by greater analyst following, better corporate governance and greater peer performance commonality.

CHAPTER 3

IMPORTANT VARIABLES

Measures of strategic disclosures

The most important variables in this paper are measures of strategic disclosures. Prior studies manually code textual filings to identify managers' attribution biases.¹⁹ Because of the limited coverage of firms in manually-coded samples, self-serving attribution bias is typically defined as the general tendency of managers to attribute favorable performance to internal factors and poor performance to external factors. One limitation of these studies is that they capture total rather than abnormal (strategic) attributions.²⁰ Li (2012) develops a simple and effective way to calibrate managers' use of first person pronouns in the 10-K filings as a proxy for self-serving attribution bias. My paper combines the merits of both by measuring internal attribution in a similar way to Li (2012), and by implementing new Python algorithms to automate the manual-coding methods suggested in prior papers (i.e., Staw et al., 1983; Kimbrough and Wang, 2014) to identify managers' external attributions in a large universe of firms. The attribution measures are developed as follows,

Measures of total attributions. Following prior studies, I randomly select a sample of 200 MD&As and manually code the primary reasons given by managers as having influenced the firm's performance results (See coding results in Appendix 2).

¹⁹ Staw et al. 1983; Baginski et al. 2000, 2004; Kimbrough and Wang, 2014, etc. These studies are generally constrained to a small sample size with less than 500 unique firms.

²⁰ For example, it can be the case that poor-performing firms are truly affected by an exogenous shock to the economy/industry, and better-performing firms succeed because of management's efforts.

According to manually-coding results, the two most frequently observed types of external attributions are related to economic factors and industry factors. Next, I construct dummy variables, *Attr_Eco/Attr_Indu* to indicate the occurrence of external attributions, and *Freq_Eco/Freq_Indu* to capture the number of External Attribution Sentence Groups, scaled by the total number of sentences in the MD&A.²¹ The frequency measures are the primary proxies used in the regression because they gauge the tendency of managers' external attribution in a more accurate way.²² Furthermore, following Li (2012), managers' inclination to take credit for favorable operating results (internal attributions) is proxied by their usage of first-person pronouns (We/Us/Our) vs. “the company” in the MD&A.²³

Measures of abnormal attributions. One limitation of total attribution measures is that they ignore the normal situation under which managerial opportunism is absent.

This paper disentangles the abnormal portion of causal explanations by subtracting yearly

²¹ Consistent with Staw et al. (1983), *Attr_Eco/Attr_Indu* are set to 1 if at least one external attribution sentence group is contained in the MD&A. External attribution sentence groups are identified if causality words and external-factor words appear concurrently in the same sentence or two adjacent sentences, and 0 otherwise. The dictionary is developed by the manually-coding of a 200 MD&As random example. Causality words are defined by a group of words indicating causal links, such as “due to/because of/ impacted by/attribution to”, etc. Then I use a Python program to process MD&A text filings and identify economy attributions when economy related words (economy/recession/crisis and their close variants) and causality words appear in the same sentence or two adjacent sentences, and industry attributions when industry-related words (competition/pricing pressure/reduced demand and their close variants) and causality words appear together. The full dictionary of “causality” words and “external-factor words” are shown in Appendix 2.

²² Other than the explanations of past performance, the MD&A also includes management's forward-looking statements, which are out of the scope of this paper and can add noise to my empirical tests. To address this issue, I exclude any descriptions that include forward-looking vocabulary (may/might/will/could/would, etc.) to make sure the constructed variables only capture the occurrence/frequency of attributions to past-performance discussions. Examples are given in Appendix 3 to illustrate the sentences captured by my textual-analysis program.

²³ In a more accurate way, internal attribution should be defined as attributions to a company's own business decisions or management's efforts (Staw et al. 1983, Kimbrough and Wang, 2014, etc.). However, unlike the external factors that can be easily represented by a small group of typical phrases, descriptions of firm-specific business decisions are extremely idiosyncratic and difficult to code using textual analysis techniques. Alternatively, I follow Li (2012) to calculate managers' use of first-person pronouns (we/us/our) vs. “the company”, in the MD&A to capture their tendencies to take credit for good performances. We/us/our and “the company” are essentially used to indicate exactly the same object, but implicitly express different direction of attributions. The definitions of all attribution variables can be seen in Appendix 1.

industry averages from the raw measures of management attributions.²⁴ Specifically, I define *Ab_External* as *Freq_External* minus its industry median, and *Ab_Internal* as *Freq_Internal* minus its industry median.²⁵

Measures of the underlying economy/ industry situations

The SEC requires managers to provide informative and accurate causal explanations regarding the real underlying reasons of a firm's financial results (SEC Guidance Regarding MD&A, 2003). In an effort to further control any remaining impact of external factors on attributions, I employ several variables documented by prior studies to capture external factors that likely have influenced a firm's operating performance.²⁶

GDP Correlation (GDP_Corr). The real dependence of a firm's performance on the macro-economy can be measured by the correlation between its changes in quarterly revenue and changes in the U.S. GDP (Hutton et al., 2012). A positive correlation indicates pro-cyclicality where a firm's revenue increases when the economy is growing. Companies with pro-cyclical revenues are expected to make more external attributions to the economy because of the real influence economy-wide factors have on firm performance.

Market Share (Market_Share). The stream of industrial organization literature in economics shows that market share serves as an effective proxy of a firm's status within

²⁴ Following the SEC guideline, managers of firms that are truly impacted by external factors (no matter of changes in performance) should make causal relations between the firm's performance and corresponding industry/economy reasons. Industry average (median) level of attributions, therefore, serves as a simple and effective benchmark to isolate the opportunistic portion of managers' strategic disclosures.

²⁵ Abnormal measures excluding industry median are the primary measures used in the following regressions. Abnormal measures excluding industry mean are tested in untabulated robustness analyses and all results remain unchanged.

²⁶ Porter 1979; Podolny 1993; Aguerrevere 2009; Hutton et al. 2012; etc.

the industry (e.g., Porter, 1979).²⁷ The *Market_Share* variable is defined as the percentage of an industry's total sales that is attributable to a particular company for a specified time period. Industry leaders (companies with a greater market share) enjoy higher profitability and better prospects, and, on average, should be less vulnerable to industry-wide shocks than firms with lower market share.²⁸

Revenue Correlation (Rev_Corr). Another industry-related factor stems from the economic intuition that competition is more intense when products of firms in the same industry are substitutes, rather than complements, for each other. A frequently used proxy for competition in management, marketing and finance (e.g., Aguerrevere, 2009) is the correlation between one firm's changes in revenue and changes in total revenue of all other firms in the same industry (*Rev_Corr*). Assuming a constant total demand, a negative *Rev_Corr* suggests that when one firm's sales increases, other firms suffer a decline, implying fierce competition within the industry. Hence, under normal circumstances, I expect the correlation between *Rev_Corr* and external attributions to be negative.

²⁷ Concentration ratios, such as the Herfindahl index and the Four-firm concentration ratio, are the most prevalent measures of industrial organization in economics, finance, and accounting literature. These measures, however, only capture the industrial condition at industry level and can be absorbed empirically by fixed effects.

²⁸ *Market_Share* and *Rev_Corr* are typically viewed as a concept defined within industry boundaries. Accordingly, in subsequent empirical tests, this paper uses the 2-digit historical SIC codes to classify industrial groups and calculate *Market_Share* and *Rev_Corr*. Other industry definitions are explored in robust tests (untabulated), and the primary regression results remain unchanged.

CHAPTER 4

SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

Data and sample selection

I collect 10-K filings from the SEC Edgar database for the period 1995–2012, and separate Item 7 (Management’s Discussion and Analysis) from annual reports.²⁹ After that, Central Index Key (CIK) and fiscal year-end date are used as a unique identifier to combine MD&A filings with financial data from Compustat annual files. All companies from utilities and financial service industries (with SIC code from 4800-4999, 6000-6999) are excluded.³⁰

My tests require firms to have non-missing data for Size (log of total assets), ROA, and MB (market to book ratio). Firms with sales and total assets that are less than zero, MB that are less than -1, and ROA that are greater than 100% or less than -100% are eliminated from the original dataset.³¹ The final sample covers 43,447 firm-years from 7,857 unique firms. For changes tests, I require non-missing data for the same company from one previous year, reducing my sample to 28,783 observations.

Furthermore, for determinant and consequence tests, I create subsamples of 31,777 firm-years with non-missing analyst data in the I/B/E/S and institutional ownership data from the 13F Holdings database, 16,540 with CEO age and changes in cash compensation available in the ExecuComp, 9,588 firm-years with board information

²⁹ For companies with several modifications of their annual reports in a certain year, only the earliest version of the MD&A is retained for market reaction and compensation test purposes.

³⁰ Firms in these industries have their own unique performance measures and face distinct disclosure requirements, making them inappropriate for inclusion in the overall sample.

³¹ After sample selection, all continuous financial variables are winsorized at 1% and 99%.

available in the Corporate Library, and 14,165 firm-years with non-missing CEO turnover data in Eisfeldt and Kuhnen (2013).³²

Descriptive statistics

Table 1, panel A summarizes the descriptive statistics. The mean of *Attr_Eco* (*Attr_Indu*) equals to 0.330 (0.379), indicating that on average about 33% (37.9%) of all companies make attributions to economic (industry-related) factors.³³ The mean of *Ab_External* and *Ab_Internal* are 0.018 and -0.020 respectively, and the medians of abnormal attribution measures are both zero.³⁴ The average total number of words in the MD&A is 8,639, comparable with prior studies (Brown and Tucker, 2011; Li 2012, etc). Indicator variables *Sales_Decrease* (*ROA_Decrease*) has an average value of 0.307 (0.510), in line with prior literature that on average about 30% (50%) companies suffer a sales (*ROA*) decline in a certain year.³⁵ Panel B presents the correlation matrix. The correlation between *Ab_External* (*Ab_Internal*) and *ROA_Decrease* is 0.06 (-0.01), both significant at 0.1% level ($p < 0.001$), suggesting that strategic external (internal) attribution is more prevalent for firms whose earnings performance are worse (better) than the previous year. *Length* and *Ab_External* are negatively correlated mainly because of the

³² I thank the *Journal of Financial Economics* and Andrea Eisfeldt & Camelia Kuhnen (authors of “CEO turnover in a competitive assignment framework”. *Journal of Financial Economics* (2013),109(2), 351-372) for providing CEO turnover data.

³³ According to untabulated univariate test results, there is no significant time trend in managers’ total and abnormal attribution patterns across the sample period.

³⁴ For interpretation purposes, *Freq_Eco* (*Freq_Indu*) and *Ab_External* are multiplied by 10. Therefore, 0.018 means on average a firm attribute 0.18 times more than the yearly industry median (per hundred sentences), and -0.02 means on average a firm uses 2 first person pronouns less than the yearly industry median (per hundred words). The medians of abnormal measures are both zero because of the construction mechanism.

³⁵ *Market_Share* has a median of 0.001 because the sample is mostly comprised of mid-size and small-size firms and the industry is defined at 2-digit SIC level. *Rev_Corr* has a median of 0.011, and a 25% percentile of -0.119, indicating that more than half companies have their revenue moving in the same direction with the industry, while one quarter of companies provide substitutes with their competitors. The mean (median) of *GDP_Corr* is 0.219 (0.231), suggesting that most firms have a total revenue moves in the same direction with the economy (procyclicality).

scaling effect in the construction of attributions measures. The correlation of all other variables are consistent with prior studies or predictions of this paper, although some of them (e.g. the negative correlation between *Ab_External* and *Num_Analyst*) are not significant unconditionally at the 0.1% level.

Univariate test results and time-series tendency

Figure 1 illustrates the asymmetry in total external attributions over years. Consistent with prior literature (Li et al., 2013), Figure 1a demonstrates that the average industry attribution among firms is persistent over time. The gap between good- and poor-performing firms in making industry attributions is around 10% over non-recession periods and more than 20% during recessions. Figure 1b shows a more dramatic pattern regarding to economy-related attributions. The distinction between good- and poor-performing firms in making economic attribution is only significant during recession periods, and is especially salient in the financial crisis of 2008-2010.³⁶

Table 2 reports the univariate evidence comparing descriptive statistics of subsamples split by the sign of $\Delta Sales$ and ΔROA . Firms with decreases in *Sales* (*ROA*) tend to make significantly more abnormal attributions to external factors, and significantly fewer attributions to internal factors. Meanwhile, firms with positive changes in *Sales* (*ROA*) are more likely to be larger, more profitable firms followed by more analysts and institutional investors.

³⁶ The occurrence of economy attribution fluctuates with the macroeconomic cycle. For example, from 2001 to 2003, as the .com bubble crashed, the growth in U.S. GDP slowed considerably, and companies started to discuss how the company had been impacted by the sluggish economy. After 2004, the U.S. economy accelerated and experienced robust growth through early-2008. Accordingly, economy-attribution had reached its lowest level in this period. Since mid-2008, the U.S. economy has been in a recession and the average attribution to macro-economy surged to a historical high in 2009.

CHAPTER 5

MULTIVARIATE RESULTS

Influence of performance on attribution choices

First, this paper examines the impact of firm performance on managers' total and abnormal attributions (Hypothesis 1), and the main results are presented in Table 3.³⁷ In Panel A equations (3a) and (3b), β_1 captures the impact of *ROA_Decrease* on managers' attributions. The positive coefficients of β_1 are expected for external attribution regressions (3a), and negative β_1 are expected for internal attribution regressions (3b). In addition, $\beta_2\sim\beta_4$ account for the influence of underlying economy (industry) factors on managers' causal explanations. According to the analyses in preceding sections, coefficients are expected to be positive for *GDP_Corr*, and negative for *Market_Share* and *Rev_Corr* in equation (3a). *Length*, *Size* and potential growth rate (*MB*) are expected to affect managers' attribution choices and are added into the regressions.³⁸

Results in Table 3 Panel A are consistent with my expectations in hypothesis 1. In Columns (1) to (4), the coefficients of *ROA_Decrease* on *Freq_External* (*Ab_External*) are positive and significant, suggesting that when ROA decreases, managers tend to

³⁷ Performance explanations in the MD&A are disclosed simultaneously with financial statements. Accordingly, I expect managers' attributions in the MD&A to be influenced the most by accounting measures, such as sales and earnings performance. Prior studies generally assume that managers and other stakeholders care the most about earnings performance among all accounting measures, and *ROA* is the most frequently used accounting measure in compensation and CEO turnover tests. Therefore, in order to keep consistency with prior studies, I use *ROA* (*ΔROA*) as the main performance metric and *ROA_Decrease* as the main performance cut point in multivariate tests of this paper. Sales is also tested in untabulated robust tests and results remain very similar.

³⁸ These controlling variables are also documented to affect qualitative disclosures and are widely used by prior studies (Li, 2008; Brown and Tucker, 2011; etc.). In addition, in an effort to absorb attribution trends common to all firms in a certain year, year-fixed effects are included in regressions. Industry fixed effects are also included to pick up any systematic heterogeneity across industries related to managers' attribution behavior. Standard errors are clustered by firm and by year in each of the following regressions. In robust tests (see appendix), firm fixed effects are also included and the main results remain unchanged.

attribute more to external factors, even after removing the industry average tendency of making attributions. The coefficients of *GDP_Corr* are positive and significant, reflecting that firms with a higher dependence on the macro-economy tend to attribute more to external factors.³⁹ Columns (5) to (8) present the results of internal attributions.

Consistent with Hypotheses 1, *ROA_Decrease* is associated with lower level of internal attributions, indicating the propensity of managers to implicitly take credit for favorable performance results.⁴⁰

Next, I conduct changes analyses to examine how the frequencies of external and internal attributions change over time for a specific company in response to performance fluctuations. Using a company as its own control, the changes regressions provide more solid results that are less impacted by correlated omitted variables. Equations (3e) and (3f) are modified from (3a) and (3b). $\Delta Freq_External$ ($\Delta Ab_External$) and $\Delta Freq_Internal$ ($\Delta Ab_Internal$) are defined as changes in external (internal) attributions.⁴¹ Coefficients of β_1 are expected to be positive in (3e) and negative in (3f).

Results in Panel C demonstrate that changes in external attributions are positively associated with *ROA_Decrease*, consistent with the predictions of hypothesis 1c and the

³⁹ Consistent with my predictions, the coefficients of *Market_Share* and *Rev_Corr* are both negatively significant before clustering standard errors, indicating that these two variables successfully capture the industry dependence of a firm's performance. The underlying mechanism for this phenomenon is that for firms with a smaller market share, or firms whose products are substitutes of their competitors, performance are impacted more by industry-related factors. After clustering SE by firm and by year, coefficients of the two variables remain negative.

⁴⁰ Consistent with the findings in Panel A, Table 3 Panel B confirms that after controlling for one-year accumulative stock return, the main results are not weakened. In particular, coefficients of *ROA_Decrease* remain negatively significant for external attributions and positively significant for internal attributions. This evidence suggests that even after controlling for the influence of accumulative stock return, the asymmetric attribution patterns between firms with favorable and unfavorable ROAs remain salient. The sample size of Table 3 Panel B is reduced substantially because of the limitation of data availability from CRSP. Therefore, to retain a large sample, this paper excludes *RET* as a control variable in testing Hypothesis 3 (see Table 6).

⁴¹ *ROA_Decrease* and *MB* are defined the same as before. *GDP_Corr* and *Rev_Corr* are not included because they are calculated using time-series data. All other variables are defined as the changes in value over the past one year.

results documented in level-analyses. On the other hand, changes in internal attributions are negative but only significant in total attribution regressions.

Overall, the results in Table 3 suggest that managers tend to blame external factors when the firm is performing poorly, and make internal attributions to take credit when the firm is performing well. This strategic disclosure pattern holds after removing the normal level of attributions in the same year and same industry.

Consequences of strategic attributions

This section examines whether abnormal causal explanations in the MD&A are associated with abnormal stock returns, changes in the pay–performance sensitivity of CEO’s cash compensation, or changes in the hazard rate of forced CEO turnover.

Market reaction. Column (1) of Table 4, Panel A replicates the market reaction test of prior studies and obtains similar results. The magnitude of three-day abnormal return around the 10-K filing date ($|CAR_{10K}|$) is positively related to market reaction to the fourth-quarter earnings announcement ($|CAR_{EA}|$), magnitude of changes in earnings ($|\Delta ROA|$), *Length* of the narrative text, and late filing (*File_Late*), while negatively associated with *Size* of the company. In Columns (2) to (4), *Ab_Internal* increases the magnitude of market reaction to firms with *ROA_Decrease*, whereas *Ab_External* reduces the market reaction for ROA-declining firms. After adding controlling variables, the influence of *Ab_Internal* remains salient while *Ab_External* loses its significance. This finding is consistent with Hypothesis 2a. Internal attributions lead to a stronger market reaction to the bad news because investors believe that factors inside the firm can cause more persistent drop of the profitability.

Sensitivity of CEO cash compensation. Under many circumstances, CEOs are not penalized for the firms' bad performance. One possible explanation is that board members believe the poor performance is due to factors beyond the management's control. This section examines whether external (internal) attributions are associated with lower (higher) pay-performance sensitivity of CEO cash compensation.⁴²

Table 4 Panel B regresses changes in CEO cash compensation ($\Delta Cash_Comp$) on changes of ROA (ΔROA), one-year cumulative stock return (RET), changes in $Size$ (log of total assets), MB (market-to-book ratio), and the interaction items of ΔROA and RET with abnormal attributions. First, I begin by running Equation (4b) for a subsample of firms experiencing decline in ROA .⁴³ Column (1) shows that for firms with ROA decreases, $\Delta Cash_Comp$ is not sensitive to ΔROA , but it remains positively associated with RET . These findings are consistent with prior studies that for poor-performing firms, CEO cash reward is less sensitive to accounting performance measures, while remains sensitive to stock market evaluations (Leone et al., 2006; Shaw and Zhang, 2010; Albuquerque et al., 2014). Columns (2) and (4) show negative coefficients of $RET*Ab_External$, which suggests a significant reduction in the sensitivity of cash compensation to RET when abnormal external attributions are high, supporting the predictions of Hypothesis 2b.⁴⁴

⁴² Performance metrics based on stock price (e.g., stock returns) and accounting performance (e.g., ROA) are the two fundamental categories of performance measures in executive compensation contracts. Following prior studies (Sloan, 1993; Leone et al., 2006; Shaw and Zhang, 2010), this paper selects changes of ROA and one-year cumulative stock return as performance measures to test the impact of attributions on the sensitivity of CEO cash compensation. Following Shaw and Zhang (2010), the proxy for CEO's cash compensation is changes in total cash compensation. Using changes in cash bonuses obtains similar results.

⁴³ Regressions are conducted on two subsamples with ROA decreases/increases separately because prior studies (Leone et al., 2006; Shaw and Zhang, 2010) document that the CEO pay-performance sensitivity differs significantly for better/worse performing firms.

⁴⁴ External attributions have no significant influence on the sensitivity of CEO cash compensation to ΔROA , which can be explained by the unconditional non-significance of ΔROA . Similarly, internal attributions have no significant impact on the cash compensation sensitivity of poorly-performing CEOs.

Columns (5) to (8) examine the pay-performance sensitivity for better-performing firms. The coefficients of $\Delta ROA * Ab_Internal$ and $RET * Ab_External$ are both positively significant, indicating that when better-performing executives make abnormal internal attributions, their cash compensation is more sensitive to firm performance.

Likelihood of CEO turnover. I then examine how managerial strategic attributions affect the likelihood of CEO dismissals. Board members make CEO retention and replacement decisions by evaluating performance. Managers' causal explanations can possibly influence board member decisions given the information asymmetry and agency problems between management and the Board.

Table 5 Panel A presents how total turnover likelihood is influenced by managers' strategic attributions using semi-parametric Cox models (proportional hazards regressions).⁴⁵ Column (1) demonstrates that CEO_Age and poor ROA or RET performance escalate the likelihood of overall replacement, consistent with implications of the CEO turnover literature.

Panel B presents changes in the hazard rates of forced turnovers. CEO_Age is not significant, while the hazard ratios of ΔROA and RET become considerably lower than those in the total turnover tests (Panel A), consistent with forced CEO dismissals being more closely related to poor performance. After adding covariates, the hazard ratio of the interaction item $Ab_External * \Delta ROA$ is significantly greater than one and its Z-statistics has an opposite sign as compared with that of ΔROA , suggesting that abnormal external

⁴⁵ Total turnover include turnovers due to death, retirement, resignations and performance-related reasons. The data provided by Eisfeldt and Kuhnen (2013) include 2,113 CEO departures, 15.52% of which are coded as "forced turnovers". My paper identifies observations from the 2,113 sample universe as "Total Turnover" firm-years, and observations from the 15.52% subsample as "Forced Turnover" firm-years.

attributions significantly decrease the sensitivity of forced CEO turnover to changes in *ROA*.

Overall, the results in Table 5 imply that poor-performing CEOs can reduce the likelihood of forced turnover by making strategic external attributions. They avoid, to some extent, the responsibility of poor performance and benefit their career by blaming firm performance on external factors.

Constraints on managers' strategic disclosures

Performance commonality (plausibility of attributions). In this section I investigate how peer performance influences managers' strategic attributions. Kimbrough and Wang (2014) demonstrate that investors rely on other sources of information to assess the plausibility of attributions. According to the rational expectation theory, managers consider the response of information users before choosing a disclosure strategy. They would not make attributions that can be easily rebutted by investors and other stakeholders.

Following prior studies, this paper employs *Good_Commonality* (i.e., the percentage of firms reporting increased *ROA* in the same industry) and *Bad_Commonality* (defined as one minus *Good_Commonality*) to capture peer performance, and runs regressions (6a) and (6b) among different subsamples of firms. In Table 6 Panel A, Columns (1) to (4) report the regression results for the full sample. The coefficients of *ROA_Decrease*Good_Common* are -3.879 (-2.617) with t-statistics of -4.35 (-3.41), suggesting that poor-performing managers make less (strategic) external attributions when most peer firms report favorable results. On the contrary, peer

performance has no significant asymmetric influence on internal attributions. Columns (5) to (8) demonstrate regression results for separate subsamples and report coefficients consistent with hypothesis 3. Overall, results in Table 6 Panel A bolster hypothesis 3 that managers take into account the plausibility of attributions before making strategic attributions. When most peer firms report a favorable year, poor-performing executives reduce causal attributions to external factors.

Analyst following and institutional investors. This section provides evidence on whether a firm's information environment (analyst following and institutional investors) influences managers' strategic attributions. Regressions of equation (6c) and (6d) include interaction variables between *Num_Analyst* (*Institutional*) and *ROA_Decrease* to investigate if any asymmetric effect of analyst following (institutional holdings) on external attributions exists between well- and poor-performing firms.⁴⁶ *Num_Analyst* represents the log number of analysts following the firm, and *Institutional* represents the percentage of outstanding shares held by institutional investors. Hypothesis 3 predicts that in equation (6c) β_3 and $\beta_5 < 0$, and in equation (6d) β_1 and $\beta_2 < 0$.

Panel B of Table 6 summarizes the results of equations (6c) and (6d). In Columns (1) and (2), the interaction item *Num_Analyst*ROA_Decrease* is negative and significant, indicating an asymmetric influence of analyst following on managers' external attributions. Specifically, when experiencing a drop in profit, managers of firms with more analysts following tend to make fewer external attributions. In Columns (3) and (4), coefficients of *Num_Analyst* on *Freq_External* (*Ab_External*) are -0.691 (-0.708),

⁴⁶ Regressions of equation (6d) are estimated among firms with decreases in ROA examine the deterring effect of analyst following and institutional investors separately in a subsample of firms in order to control for any non-linearity in the tests.

negative and statistically significant at 1% level. These results corroborate the prediction that analyst following serves as an effective mechanism in deterring managers' strategic attributions. Since analysts are knowledgeable of industry and economic situations, they are capable of discerning the real reasons underlying firm performance. The presence of analysts may encourage executives to think twice before making strategic disclosures.⁴⁷

Corporate governance. This paper then conducts a set of tests to investigate the influence of corporate governance on managers' strategic attributions.⁴⁸ Regressions (6e) and (6f) are estimated separately among firms with ROA decreases (for external attributions) and firms with ROA increases (for internal attributions).⁴⁹ As suggested in hypothesis 3, a better corporate governance system leads to higher disclosure quality and a lower level of managerial opportunism. Accordingly, positive β_1 and negative β_2 are predicted for both equations (6e) and (6f).⁵⁰

Table 6 Panel C reports the regression results of managerial attributions on *Board_Size* (log of total number of board members) and *Outside_Director* (the percentage of outside directors). Columns (1) and (2) show results of total and abnormal external attributions among poor-performing firms. A significantly positive association between abnormal external attribution and board size is documented in Column (2), indicating that smaller boards are related to fewer abnormal external attributions. In

⁴⁷ Counter to the analyst following results, the percentage of institutional investors does not have a significant impact on managers' attribution choices. This insignificance may arise because a large portion of institutional holdings is passive ownership, which limits its monitoring effect on management behavior.

⁴⁸ Samples of the corporate governance tests are smaller in size and comprised by larger, more profitable firms because of the limited data coverage of the Corporate Library.

⁴⁹ For simplicity, this section only keeps the two scenarios in which the managerial opportunism is most likely: external attributions in poorly-performing firms and internal attributions in better-performing firms.

⁵⁰ The percentage of outsiders (the board size) are expected to have a negative (positive) impact on poor-performing managers' external attributions, and a negative (positive) impact on better-performing managers' internal attributions.

addition, Columns (3) and (4) report that *Out_Director* is, as expected, negatively associated with both total and abnormal internal attributions.

Overall, the results in Table 6 demonstrate that peer performance commonality, analyst following, and corporate governance can help to mitigate managers' strategic disclosures.

CHAPTER 6

ADDITIONAL TESTS

Does CEO tenure make a difference?

Empirical results in Tables 3 and 4 show that on average, managers of poor-performing firms make more external attributions to avoid punishment. This piece of evidence is consistent with the controllability principle that under an ideal scenario, managers should be rewarded or punished for reasons under their control, and also consistent with the agency theory that managers have incentives to maximize their personal benefits at the expense of shareholders. In addition, because of the information asymmetry between managers and outsiders, various stakeholders would, to a large extent, rely on managerial disclosures to make their decisions.

However, people may start to ask why board members would ever believe in managers' performance explanations if they know these descriptions are biased. The efficient market framework suggests that market forces would eventually drive out the bias. Nevertheless, various types of frictions in the real business world can delay the process of achieving an equilibrium. For example, board members can take several years to figure out the authenticity of managers' performance explanations. At the early stage of a CEO's tenure, board members are uncertain about his/her efforts and ability in managing the firm, or his/her honesty in making disclosures. Accordingly, directors rely on managers' performance explanations to make compensation and retention/dismissal decisions. As time passes by, the truth reveals itself and the information asymmetry

between CEO and board members is reduced. Board members may choose to place less weight on attributions of a “Tenured CEO” either because they are more familiar with the CEO and rely less on qualitative descriptions, or because they have gradually uncovered the bias in disclosures and have decided to reduce their trust in the CEO. Therefore, this paper expects that the influence of strategic attributions on managers’ career consequences will be stronger for “New CEOs”, and weaker (or diminished) for “Tenured CEOs”.

In line with prior studies (Dikolli et al., 2014), I first classify the observations into two groups. Group one includes CEOs with tenure of less than five years in the current firm (“New CEOs”), while group two is composed of CEOs with tenure of at least five years in the current firm (“Tenured CEOs”). CEOs are classified according to their tenure because previous studies find that on average, “Tenured CEOs” are more entrenched and are less scrutinized by internal monitoring forces (Dikolli et al., 2014).

Table 7 Panel A shows that for “Tenured CEOs”, strategic attributions do not have significant impact on their pay-performance sensitivity, while for “New CEOs”, the mitigating effect of external attribution is especially salient. In particular, the coefficients and t-statistics of interaction items between performance and abnormal attributions are larger for the “New CEOs” group than for the entire sample as shown in Table 4 Panel B, indicating that strategic attributions have greater impact on the cash compensation of newly-hired CEOs. These results are consistent with the theoretical argument that the uncertainty of a CEO’s ability reduces over time (Sabac, 2008), and that stakeholders put

less weight on biased disclosures as they gradually become aware of the existence of bias (Fischer and Verrecchia, 2000).

To further examine the disparate influence of managerial attributions on “New CEOs” vs. “Tenured CEOs”, this paper also investigates whether the likelihood of CEO turnover is different for the two subsamples of firms. If board members rely less on qualitative performance explanations over time, it is less likely to observe a significant impact of strategic attributions on “Tenured CEOs”, either because board members are less uncertain about the CEO’s capability or because they are able to see through biased disclosures.

As presented in Table 7, results of Panel B do not support my predictions. For forced turnovers, I find that only “Tenured CEOs” are significantly affected by managers’ strategic attributions. This inconsistent result may stem from the extremely low occurrence of forced turnovers in the subsample of “New CEOs”, which reduces the statistical power of survival analysis.

Overall, strategic attributions have varied effects on managers’ career benefits for new and tenured CEOs, as shown exclusively in the tests of pay-performance sensitivity. No sufficient evidence supports a disparate effect of attributions on the likelihood of forced CEO turnover in the survival analyses between new and tenured CEOs.

Which portion of CEO’s cash compensation is affected the most?

As discussed in previous sections, one important reason why strategic attributions can affect CEOs’ pay-performance sensitivity is that the board of directors have discretions in finalizing managers’ cash compensation. After the fiscal-year end, board

members do not simply follow the *ex ante* contract to determine executive cash compensation. By contrast, they also use subjective judgment and other performance evaluation methods (e.g., performance scorecard) to make up decisions (Bushman et al., 1996; Gibbs et al., 2004). To investigate the possibility that strategic attributions affect managers' pay-performance sensitivity through the discretionary rather than the rigid portion of cash compensation, this section further breaks CEO cash compensation down to salary and bonuses.

First, I test whether the CEO's current cash salary is affected by strategic attributions. Using $\Delta Salary_{t,t-1}$ instead of $\Delta Cash_Comp_{t,t-1}$ as the dependent variable of Equation (8a), it is expected to observe a weaker influence of attributions on managers' salary-performance sensitivity than that in Table 4 Panel B.

In addition, the renegotiation process of executive future salary can also be affected by managers' strategic performance explanations. If board members believe that external factors have caused the firm's poor performance, managers may be able to avoid salary reductions in the succeeding year. Therefore, changes in CEO future salary can also be influenced by abnormal attributions. To investigate this prediction, I then conduct regressions of $\Delta Salary_{t+1,t}$ to test whether CEO future salary can be affected by current performance results, as well as managers' abnormal attributions in the MD&A of year t .

Table 8 Panel A presents the results of salary regressions. In Columns (2) and (4), coefficients on interaction variables are consistent with those in previous sections, but with a smaller t-statistics. As reported at the bottom of the table, the R-squares are much smaller than those in Table 4 Panel B, suggesting that $\Delta Salary_{t,t-1}$ are affected, to a lesser

extent, by managers' strategic disclosures than $\Delta Cash_Comp_{t,t-1}$. Columns (5) to (8) provide insufficient evidence on how the salary renegotiation process is affected by managers' abnormal attributions, because $\Delta Salary_{t+1,t}$ are not impacted by attributions in a significant way.

In addition to analyzing the impact of attributions on executive salaries, this paper also investigates how strategic disclosures can affect the sensitivity of CEO cash bonus on performance metrics. To focus on the discretionary portion of cash compensation, I only include observations that are most likely to be inside the incentive-zone of bonus contracts. Focusing on the incentive-zone is appropriate in this context because prior studies have documented that bonus contracts of most companies are restricted by upper and lower bounds (Healy, 1985; etc.). Firm observations with extreme earnings performance can fall beyond the upper or lower bounds of bonus contracts, which will distort the pay-performance sensitivity and introduce noises into the test results.

In line with prior studies, this paper classifies observations as inside the incentive zone when changes in *ROA* fall between the 25% percentile and 75% percentile among all observations in a specific year (Shaw and Zhang, 2010). According to the executive compensation literature, managers inside the incentive zone have the strongest motivation to make strategic manipulations. Therefore, for the subsample of firms inside the incentive zone, I expect to observe the most salient impact of attributions on CEO pay-performance sensitivity.

The results are reported in Panel B of Table 8. As expected, the interaction item between ΔROA and *Ab_External* is significantly negative, while the interaction between

ΔROA and $Ab_Internal$ is significantly positive. These two significant coefficients of interaction items have a larger t-statistics and a higher R-square than those in Table 4 Panel B, indicating that for firms inside the incentive zone, managers can benefit more from making strategic disclosures.

Overall, these results are consistent with CEO cash compensation being affected by managers' strategic disclosures, especially for the discretionary portion of cash compensation. The evidence in Table 8 also demonstrates that managers' current salary is weakly affected by strategic attributions, whereas their future salary (or the salary renegotiation process) is not significantly affected by qualitative disclosures.

Do late filers attribute differently as compared to their peers?

Next, I investigate whether later filers explain their performance results in a different way. The results in previous sections have documented that managers can benefit from making strategic attributions. In order to maximize their benefits, a few poor-performing managers may choose to wait until most of their peers have released 10-K filings.

Following prior studies, this paper defines late filers (*Filelate*) as firms disclosing their 10-K filings more than 90 days after the fiscal-year end (Li and Ramesh, 2009). An interaction item between two dummy variables, *Filelate* and *ROA_Decrease*, is added to investigate whether poor-performing managers make attributions differently than peers, assuming that they have chosen to delay the issuance of the annual report.

In regression (9), all factors that might affect abnormal attributions are controlled based on previous analyses. The regression results are reported in Panel A of Table 9.

The coefficients of the interaction item *Filelate*ROA_Decrease* are positively significant in Columns (1) and (2), indicating that poor-performing late filers tend to make more external attributions (especially abnormal external attributions). Meanwhile, late filers do not significantly differ in making internal attributions. This evidence suggests that, on average, poor-performing managers tend to employ external attributions to avoid punishment, especially when they choose to issue annual reports more than 90 days after the fiscal-year end. In addition, the results in Table 9 implicitly support the argument in previous sections that managers consider the financial outcomes of their industry peers before making their own performance explanations.

Overall, the behavior of poor-performing late-filers documented in Table 9 is consistent with the tendency of managers to select attribution strategies to maximize their own benefits.

CHAPTER 7

ALTERNATIVE PERFORMANCE MEASURES

To this point, the empirical results of this dissertation support the hypotheses that managers make strategic attributions to obtain private benefits. In order to further assess the robustness of my results, additional analyses are conducted through alternative performance measures in several ways. In previous sections, this paper implicitly assumes that stakeholders employ a random walk approach to evaluate firm performance. Specifically, the expected level of ROA_t is proxied for by ROA_{t-1} . When a firm has a lower ROA than that of the previous year, the dummy variable, $ROA_Decrease$, is set to one and the firm is identified as a poor-performing firm. To relax this assumption, I first conduct robustness tests using performance measures relative to peer firms in the same industry. Subsequently, sales performance and one-year accumulative stock return are implemented as the cut point of firm performance (instead of changes in ROA) to examine whether there exists any asymmetry in managerial attributions between firms with better or worse sales (stock) performance.

Relative performance to industry peers

In reality, board members and other stakeholders may also refer to financial results of peer firms in the same industry to evaluate managers' efforts and ability, in addition to a firm's own performance results (Albuquerque, 2009). A higher level of average ROA among industry peers increases the probability that a firm underperforms its

competitors. This situation, in turn, reduces the plausibility of external attributions made by poor-performing managers.

To evaluate the influence of attribution patterns on managers' career benefits, this paper also investigates how managers make strategic disclosures in response to the firm's relative performance. Since comparable firms in the same industry are widely used as the benchmark of firm performance, one way to gauge relative performance is to adjust the raw performance measure by its yearly industry median.

The entire sample of firms is sorted by $\Delta ROA_{t,t-1}$ to obtain the industry median of a specific year. The yearly industry median is then used as the benchmark of peer performance to calculate the relative performance measures. Specifically, I create a dummy variable *Adj_ROA_Decrease* as one when a firm's $\Delta ROA_{t,t-1}$ is more negative than the industry median, and zero otherwise. *Adj_ROA* (*Adj_ΔROA*) are defined as the original *ROA* (ΔROA) minus its industry median, and *Adj_RET* as a firm's abnormal stock return adjusted for the yearly industry average return.

An economically and statistically significant negative relation between *Adj_ROA_Decrease* and external attribution measures is documented in Appendix 4, Panel A, which indicates that managers of firms deteriorating in their relative profitability tend to make more attributions to external factors. By contrast, managers of firms that become more profitable than peers tend to make more internal attributions to take credit of the success.

In addition, Panel B shows that managers of firms with a worse relative *ROA* can benefit from a lower pay-performance sensitivity by making external attributions. On the

other hand, when a firm successfully beats its competitors, managers tend to make more internal attributions to grasp the fruit of the good performance through obtaining a higher pay-performance sensitivity. Both effects are more pronounced in this section than in Table 4 Panel B when absolute levels (changes) are employed as performance metrics.

Appendix 4 also demonstrates how the likelihood of CEO turnover is affected by relative performance and managers' strategic attributions. Specifically, Panel C shows that the possibility of a CEO getting fired is largely determined by the firm's performance relative to industry peers. Managers' strategic external attributions can significantly reduce the relation between forced turnover and industry-adjusted ROA performance.

In summary, regression results in Appendix 4 indicate that the career benefits of strategic attributions are consistent or even stronger under relative performance evaluation.

Changes in sales as performance measures

To align with prior studies, this paper adopts *ROA* (ΔROA) in previous sections as the proxy of accounting performance. Alternatively, declining sales can also be an important and informative signal of poor performance (Ertimur et al., 2003). As the primary driver of accounting earnings, sales information generally plays a critical role in the decision-making process of board members and other stakeholders (Kothari, 2001). When managers make strategic attributions, they also take sales performance into their consideration.

To test this prediction, a dummy variable *Sales_Decrease*, is set to one when $Sales_t$ is less than $Sales_{t-1}$, and zero otherwise. This dummy variable is then implemented

as the main performance measure in determinant tests. $\Delta Sales$ is calculated as the percentage changes in total sales from year t-1 to year t. Instead of ΔROA , $\Delta Sales$ is adopted as the main proxy of accounting performance in CEO compensation and turnover tests.

Appendix 5 presents test results of sales performance. In Panel A. The variable of interest is the dummy variable, *Sales_Decrease*. β_1 captures the impact of sales performance on managers' attribution choices. Columns (2) and (4) show that declines in sales significantly increase strategic external attributions and reduce strategic internal attributions.

Panel B includes $\Delta Sales$ instead of ΔROA to test the influence of sales performance on CEO cash compensation. Columns (2) and (4) suggest that for poor-performing firms, strategic external attributions reduce the sensitivity between CEO cash compensation and stock return, consistent with results in previous sections.⁵¹

Panel C further explores the combined effect of $\Delta Sales$ and strategic attributions on the likelihood of CEO turnover. As predicted, abnormal external attributions can significantly reduce the association between forced CEO turnover and the stock performance, which is consistent with results in previous sections.

Overall, the main results of this dissertation are robust with sales performance metrics. Specifically, the benefits of strategic external attributions also occur in firms with sales decreases. With the presence of abnormal external attributions, CEO cash

⁵¹ Because $\Delta Sales$ is not significant unconditionally, there is no salient impact of attributions on the relation between $\Delta Sales$ and cash compensation.

compensation and turnover likelihood are less likely to be affected by poor performance of the firm.

Accumulative stock return as the break point of firm performance

Analyses in previous sections examine how asymmetric *ROA* performance can affect managers' disclosure choices. In determinants tests, *ROA_Decrease* is to distinguish better and worse performance. To solidify the robustness of my test results, this section employs the sign of accumulative stock return as an alternative breakpoint of firm performance.

First, a dummy variable, *Neg_RET*, is set to one when a firm's one-year accumulative stock return is negative, and zero otherwise. The results in Appendix 6 Panel A are very similar with those in Table 3 Panel A. In particular, *Neg_RET* is negatively associated with external attributions, and positively associated with internal attributions, suggesting that a poor stock performance also encourages managers to make strategic attributions.

Results in Appendix 6 Panel B are partially inconsistent with those in Table 4 Panel B. First, there is no asymmetry in the pay-performance sensitivity between better and worse stock-performing firms. Unlike the cases using *ROA* as the breakpoint, the pay-performance sensitivity between CEO cash compensation and accounting (stock) performance measures are significant in both subsamples (with positive or negative one-year accumulative stock return), consistent with prior studies (Leone et al., 2006). One reason for this phenomenon is that accounting measures are historically based, whereas stock returns reflect forward-looking information. Firms with a negative stock return do

not necessarily have poor financial results. Because of the possible mismatch in the classification of poor- and good-performing firms, this dichotomy leads to somewhat nuanced results with previous sections.

Overall, the evidence from this section provides a less consistent interpretation than those in Tables 3 to 5 probably because managerial attributions in the MD&A are made to explain accounting performance instead of stock performance. Therefore, this dissertation considers *ROA* (ΔROA) as a more appropriate breakpoint for good- and poor-performing firms in the main tests.

CHAPTER 8

CONCLUSIONS

This dissertation provides evidence on the causes and career-related consequences of managers' strategic disclosures. Using newly designed textual analysis algorithms, I am able to disentangle the abnormal portion of causal explanations from normal disclosures, and create a more accurate measure for analyzing managers' strategic attributions. The empirical results demonstrate that executives of poor-performing firms appear to blame external reasons to avoid responsibility and benefit from lower pay-performance sensitivity and lower forced turnover likelihood. On the other hand, managers of better-performing firms tend to ascribe favorable operating results to themselves. Such strategic attribution appears to be mitigated by greater analyst following, better corporate governance and greater peer firm performance commonality. Overall, the evidence is consistent with managers strategically presenting causal explanations to extract private benefits.

This paper's primary contribution is to provide new insights on the career-related incentives for managers' strategic disclosures. Finding evidence consistent with managers extracting private benefits from strategic attributions, this paper fundamentally extends the disclosure literature by highlighting how and why career concerns may impact managerial disclosure decisions. Further, this paper contributes to the literature that examines managers' self-serving attribution bias by identifying the abnormal portion of attributions rather than simply using unadjusted counts of attributions. To my knowledge,

this study is the first to identify and attempt to disentangle the abnormal portion of attribution from normal disclosures.

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FIGURE 1

Figure 1a

The percentage of firms that attribute performance to industry factors by fiscal year

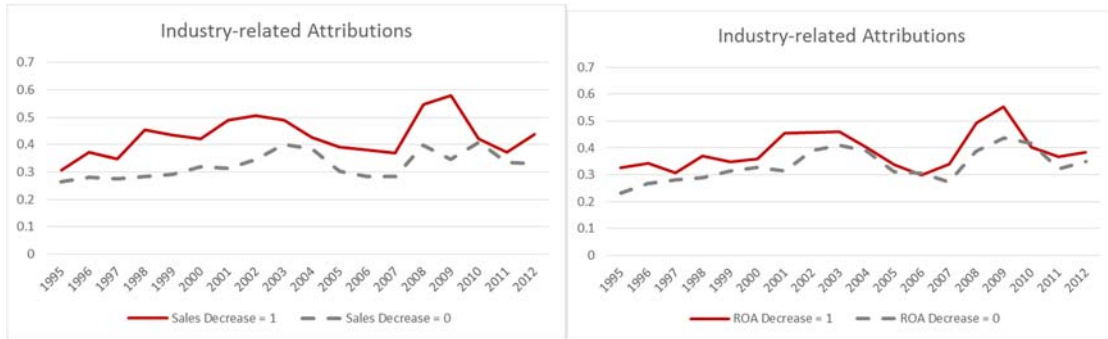
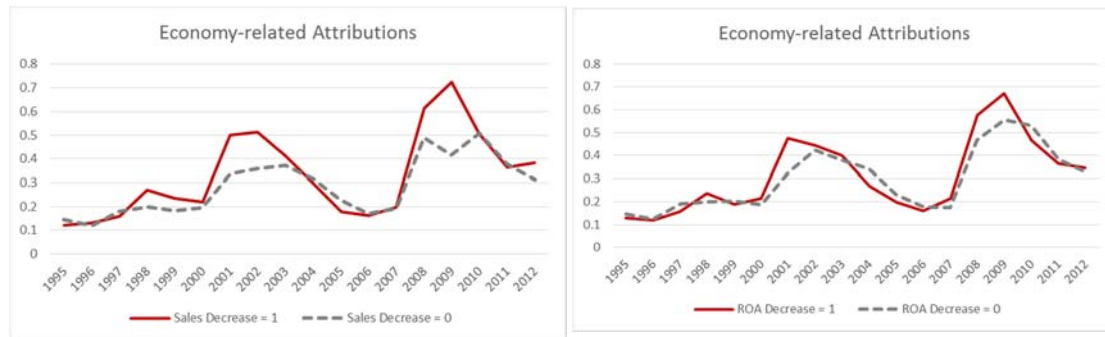


Figure 1b

The percentage of firms that attribute performance to economic factors by fiscal year



These figures present the univariate difference between better- and worse- performing firms in their attribution to industry and economic reasons.

Figure 1A presents the difference in the percentage of firms attributing to industry factors in terms of their sales performance and ROA performance. The results demonstrate that industry-attribution is relatively stable over years, suggesting that on average, managers' attributions to industry factors in the MD&A are persistent across time. In addition, the gap in the percentage of good/poor-performing firms making industry-attributions is around 10% when sales is used as performance measure (and 5% when ROA is used), also stable over years. Figure 1B presents the difference in economic attributions between better- and worse-performing firms over the sample period. The occurrence of economic attribution fluctuates with the macroeconomic cycle, and poor-performing firms blame more to economic factors during recession periods. For example, from 2001 to 2003, as the U.S. economy entered a depression after the Dot Com bubble crashed, managers started to discuss much more about how general economy has affected firm performance. After 2004, the U.S. economy accelerated and experienced robust growth through 2007. Accordingly, economy-attributions reached the lowest level in this period, and the difference between better/worse-performing firms is not significant. Since mid-2008, the U.S. economy has been in a recession after the financial crisis, and the average attribution of economy in the MD&A surged to a historical high in 2009. The distinction in economy attribution between better- and poor-performing firms is especially salient in the financial crisis period after 2008 and before 2011.

Table 1 – Descriptives and Correlation Matrix

Panel A: Descriptive Analysis

| <i>Variables</i> | <i>N</i> | <i>Mean</i> | <i>Median</i> | <i>Std Dev</i> | <i>10th</i> | <i>25th</i> | <i>75th</i> | <i>90th</i> |
|-------------------------|----------|-------------|---------------|----------------|-------------|-------------|-------------|-------------|
| <i>Attr_Eco</i> | 43,447 | 0.330 | 0 | 0.470 | 0 | 0 | 1 | 1 |
| <i>Attr_Indu</i> | 43,447 | 0.379 | 0 | 0.485 | 0 | 0 | 1 | 1 |
| <i>Attr_External</i> | 43,447 | 0.523 | 1 | 0.499 | 0 | 0 | 1 | 1 |
| <i>Freq_Eco</i> | 43,447 | 0.023 | 0 | 0.052 | 0 | 0 | 0.029 | 0.075 |
| <i>Freq_Indu</i> | 43,447 | 0.029 | 0 | 0.060 | 0 | 0 | 0.038 | 0.093 |
| <i>Freq_First</i> | 43,447 | 0.020 | 0.022 | 0.019 | 0 | 0 | 0.037 | 0.045 |
| <i>Freq_Company</i> | 43,447 | 0.008 | 0.003 | 0.009 | 0 | 0 | 0.015 | 0.023 |
| <i>Freq_External</i> | 43,447 | 0.053 | 0.018 | 0.092 | 0 | 0 | 0.071 | 0.150 |
| <i>Freq_Internal</i> | 43,447 | 0.012 | 0.018 | 0.027 | -0.022 | -0.014 | 0.036 | 0.044 |
| <i>Ab_External</i> | 43,447 | 0.018 | 0 | 0.051 | -0.019 | -0.002 | 0.027 | 0.069 |
| <i>Ab_Internal</i> | 43,447 | -0.020 | 0 | 0.182 | -0.307 | -0.092 | 0.077 | 0.171 |
| <i>Total_Words</i> | 43,447 | 8,639 | 7,332 | 5,999 | 4,178 | 5,248 | 10,371 | 14,329 |
| <i>Total_Sentences</i> | 43,447 | 363 | 311 | 224 | 181 | 227 | 436 | 598 |
| <i>GDP_Corr</i> | 43,447 | 0.219 | 0.231 | 0.299 | -0.168 | 0.025 | 0.437 | 0.596 |
| <i>Market_Share</i> | 43,447 | 0.013 | 0.001 | 0.048 | 0.000 | 0.000 | 0.006 | 0.027 |
| <i>Revenue_Corr</i> | 43,447 | 0.020 | 0.011 | 0.222 | -0.243 | -0.119 | 0.152 | 0.295 |
| <i>Total Revenue</i> | 43,447 | 1,973 | 287 | 5,516 | 19 | 66 | 1,193 | 4,325 |
| <i>Total Assets</i> | 43,447 | 2,007 | 305 | 5,372 | 26 | 80 | 1,243 | 4,415 |
| <i>ROA</i> | 43,447 | -0.024 | 0.029 | 0.190 | -0.274 | -0.062 | 0.077 | 0.132 |
| <i>MB</i> | 43,447 | 3.054 | 1.971 | 3.702 | 0.632 | 1.137 | 3.454 | 6.227 |
| <i>Sale_Decrease</i> | 43,447 | 0.307 | 0 | 0.461 | 0 | 0 | 1 | 1 |
| <i>ROA_Decrease</i> | 43,447 | 0.510 | 1 | 0.500 | 0 | 0 | 1 | 1 |
| <i>Good_Commonality</i> | 43,447 | 0.539 | 0.544 | 0.103 | 0.402 | 0.477 | 0.607 | 0.655 |
| <i>Bad_Commonality</i> | 43,447 | 0.461 | 0.456 | 0.103 | 0.345 | 0.393 | 0.523 | 0.598 |
| <i>Num_Analyst</i> | 31,777 | 5.519 | 4 | 4.489 | 1 | 2 | 8 | 12 |
| <i>Institutional</i> | 31,777 | 0.502 | 0.525 | 0.288 | 0.086 | 0.250 | 0.754 | 0.877 |
| <i>CEO_Age</i> | 14,165 | 55.62 | 56 | 7.476 | 46 | 51 | 61 | 65 |
| <i>Board_Size</i> | 9,588 | 8.968 | 9 | 2.165 | 6 | 7 | 10 | 12 |
| <i>Out_Director</i> | 9,588 | 0.713 | 0.75 | 0.156 | 0.5 | 0.625 | 0.833 | 0.889 |

Table 1, Panel A provides descriptive statistics for the main sample of 43,447 firm-year observations. Descriptives of *Num_Analyst*, *Institutional*, *CEO_Age*, *Board_Size*, and *Out_Director* are calculated in corresponding subsamples with non-missing data of these variables.

Attr_Eco (*Attr_Indu*) is 1 if managers make attribution to economic (industry) factors in the MD&A, and 0 otherwise. *Attr_External* is 1 if managers attribute to either economic or industry factors in the MD&A, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Total_Words* (*Total_Sentences*) is the total number of words (sentences) in the MD&A. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *ROA* is income before extraordinary items scaled by average total assets of year *t*. *MB* is the ratio of a firm’s market to book value of equity in year *t*. *ROA_Decrease* (*Sale_Decrease*) is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year

t than that of year t-1, and 0 otherwise. *Good_Commonality* (*Bad_Commonality*) is the percentage of firms in the same SIC2 industry that report increases (declines) of ROA in year t. *Num_Analyst* is the number of analyst following the firm in year t. *Institutional* is the average percentage of the firm's outstanding shares hold by institutional investors in year t. *Board_Size* is the firm's number of board members in year t. *CEO_Age* is the CEO's age in year t. *Outside_Director* is the percentage of independent directors in the firm's board of year t. (In the following tests, *Num_Analyst* and *Board_Size* are the log number of analysts/board members.)

Table 1 – Descriptives and Correlation Matrix

Panel B: Correlation Matrix

| | <i>Ab_Ex</i> | <i>Ab_In</i> | <i>Length</i> | <i>GDP</i> | <i>MS</i> | <i>Rev_Cor</i> | <i>ROA_Dcr</i> | <i>Good</i> | <i>ROA</i> | <i>Size</i> | <i>MB</i> | <i>Analyst</i> | <i>Instit</i> | <i>Board</i> | <i>Out</i> |
|----------------------|--------------|--------------|---------------|--------------|-------------|----------------|----------------|--------------|--------------|--------------|--------------|----------------|---------------|--------------|--------------|
| <i>Ab_External</i> | | -0.02 | 0.01 | 0.07 | 0.01 | -0.01 | 0.05 | -0.01 | 0.01 | 0.09 | -0.06 | -0.03 | - | 0.03 | 0.02 |
| <i>Ab_Internal</i> | -0.03 | | 0.09 | 0.01 | 0.03 | 0.00 | -0.01 | 0.01 | -0.03 | 0.04 | 0.09 | 0.09 | 0.01 | -0.06 | -0.08 |
| <i>Length</i> | -0.05 | 0.04 | | 0.09 | 0.13 | 0.01 | -0.01 | -0.01 | -0.02 | 0.39 | 0.05 | 0.17 | 0.02 | 0.21 | 0.13 |
| <i>GDP_Corr</i> | 0.09 | -0.00 | 0.08 | | 0.07 | -0.13 | -0.03 | -0.04 | 0.17 | 0.26 | 0.03 | 0.10 | - | 0.08 | -0.01 |
| <i>Market_Share</i> | -0.02 | 0.02 | 0.12 | 0.03 | | 0.03 | -0.01 | -0.05 | 0.34 | 0.69 | -0.02 | 0.37 | 0.03 | 0.50 | 0.09 |
| <i>Revenue_Corr</i> | -0.02 | -0.00 | 0.01 | -0.11 | 0.02 | | -0.01 | 0.02 | 0.06 | 0.02 | 0.07 | 0.04 | 0.01 | 0.01 | -0.04 |
| <i>ROA_Decrease</i> | 0.06 | -0.01 | -0.02 | -0.04 | -0.01 | -0.00 | | -0.21 | -0.29 | -0.02 | -0.13 | 0.00 | - | -0.03 | -0.02 |
| <i>Good_Common</i> | -0.02 | 0.00 | -0.02 | -0.04 | -0.01 | 0.03 | -0.22 | | 0.09 | -0.02 | 0.12 | 0.01 | - | -0.01 | 0.03 |
| <i>ROA</i> | 0.06 | -0.01 | -0.00 | 0.15 | 0.09 | 0.05 | -0.26 | 0.09 | | 0.32 | 0.28 | 0.19 | 0.08 | 0.04 | 0.01 |
| <i>Size</i> | 0.07 | 0.03 | 0.39 | 0.24 | 0.32 | 0.02 | -0.02 | -0.04 | 0.35 | | 0.07 | 0.60 | 0.03 | 0.58 | 0.18 |
| <i>MB</i> | -0.07 | 0.08 | 0.01 | -0.02 | -0.01 | 0.06 | -0.08 | 0.08 | 0.02 | -0.03 | | 0.26 | - | 0.06 | 0.03 |
| <i>Num_Analyst</i> | -0.02 | 0.06 | 0.17 | 0.06 | 0.21 | 0.04 | -0.01 | 0.02 | 0.16 | 0.59 | 0.15 | | 0.12 | 0.24 | 0.06 |
| <i>Institutional</i> | -0.04 | -0.01 | 0.01 | 0.01 | -0.01 | 0.01 | -0.01 | -0.01 | 0.13 | 0.07 | -0.01 | 0.18 | | -0.11 | 0.15 |
| <i>Board_Size</i> | 0.01 | -0.04 | 0.21 | 0.07 | 0.25 | 0.02 | -0.03 | 0.01 | 0.07 | 0.58 | 0.04 | 0.24 | - | | 0.14 |
| <i>Out_Director</i> | -0.01 | -0.06 | 0.11 | -0.00 | 0.03 | -0.04 | -0.02 | 0.04 | 0.02 | 0.16 | 0.03 | 0.06 | 0.18 | 0.12 | |

Panel B presents the correlations for main variables. The bottom-left triangular reports Pearson correlations, and the top-right triangular reports Spearman correlations. Bold numbers correspond to significant correlations at the percentile 0.1%, based on two-tailed tests.

Freq_Eco (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *ROA* is income before extraordinary items scaled by average total assets of year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *Num_Analyst* is the log number of analyst following the firm in year t. *Institutional* is the average percentage of the firm’s outstanding shares hold by institutional investors in year t. *Board_Size* is the log number of board members in year t. *Outside_Director* is the percentage of independent directors in the firm’s board of year t.

**Table 2 – Attribution Asymmetry between
Better- and Worse-Performing Firms**

Panel A: Univariate Analysis of Better and Worse Sales Firms

| | $\Delta Sales > 0$ N=30120 | | $\Delta Sales < 0$ N=13327 | | <i>Difference</i> | <i>t-Statistics</i> |
|----------------------|-------------------------------|------------|-------------------------------|------------|-------------------|---------------------|
| | <i>Mean</i> | <i>STD</i> | <i>Mean</i> | <i>STD</i> | | |
| <i>Attr_External</i> | 0.481 | 0.500 | 0.617 | 0.486 | -0.136*** | -26.43 |
| <i>Freq_External</i> | 0.042 | 0.076 | 0.077 | 0.116 | -0.035*** | -36.69 |
| <i>Freq_Internal</i> | 0.013 | 0.027 | 0.011 | 0.027 | 0.002*** | 4.70 |
| <i>Ab_External</i> | 0.014 | 0.044 | 0.027 | 0.064 | -0.013*** | -24.5 |
| <i>Ab_Internal</i> | -0.015 | 0.181 | -0.033 | 0.185 | 0.018*** | 9.47 |
| <i>Total_Words</i> | 8,630 | 6,122 | 8,660 | 5,712 | -29.8 | -0.48 |
| <i>GDP_Corr</i> | 0.235 | 0.299 | 0.183 | 0.295 | 0.052*** | 16.73 |
| <i>Market_Share</i> | 0.014 | 0.051 | 0.011 | 0.043 | 0.003*** | 6.29 |
| <i>Revenue_Corr</i> | 0.029 | 0.224 | -0.001 | 0.217 | 0.030*** | 13.22 |
| <i>ROA_Decrease</i> | 0.441 | 0.497 | 0.666 | 0.471 | -0.224*** | -44.09 |
| <i>Total Revenue</i> | 2,164 | 5,828 | 1,542 | 4,710 | 621.9*** | 10.85 |
| <i>Total Assets</i> | 2,171 | 5,607 | 1,636 | 4,778 | 535.3*** | 9.59 |
| <i>ROA</i> | 0.011 | 0.173 | -0.104 | 0.226 | 0.115*** | 52.86 |
| <i>MB</i> | 3.358 | 3.765 | 2.369 | 3.458 | 0.989*** | 25.87 |
| <i>Num_Analyst</i> | 5.822 | 4.590 | 4.729 | 4.113 | 1.094*** | 19.57 |
| <i>Institutional</i> | 0.523 | 0.285 | 0.452 | 0.290 | 0.071*** | 21.90 |
| <i>Board_Size</i> | 8.999 | 2.165 | 8.905 | 2.204 | 0.093* | 1.94 |
| <i>Out_Director</i> | 0.710 | 0.157 | 0.716 | 0.156 | -0.006* | 1.79 |

Table 2, Panel A provides univariate descriptives between firms with sales increases and sales decreases.

Attr_External is 1 if managers either attribute to economic or industry factors in the MD&A, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Total_Words* (*Total_Sentences*) is the total number of words (sentences) in the MD&A. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *ROA* is income before extraordinary items scaled by average total assets of year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA_Decrease* (*Sale_Decrease*) is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *Good_Commonality* (*Bad_Commonality*) is the percentage of firms in the same SIC2 industry that report increases (declines) of ROA in year t. *Num_Analyst* is the number of analyst following the firm in year t. *Institutional* is the average percentage of the firm’s outstanding shares hold by institutional investors in year t. *Board_Size* is the number of board members in year t. *CEO_Age* is the CEO’s age in year t. *Outside_Director* is the percentage of independent directors in the firm’s board of year t.

Table 2 – Attribution Asymmetry between Better- and Worse-Performing Firms

Panel B: Univariate Analysis of Better and Worse ROA Firms

| | $\Delta ROA > 0$ N=21289 | | $\Delta ROA < 0$ N=22158 | | <i>Difference</i> | <i>t-Statistics</i> |
|----------------------|-----------------------------|------------|-----------------------------|------------|-------------------|---------------------|
| | <i>Mean</i> | <i>STD</i> | <i>Mean</i> | <i>STD</i> | | |
| <i>Attr_External</i> | 0.502 | 0.500 | 0.542 | 0.498 | -0.040*** | -8.28 |
| <i>Freq_External</i> | 0.047 | 0.084 | 0.059 | 0.099 | -0.012*** | -13.66 |
| <i>Freq_Internal</i> | 0.013 | 0.027 | 0.011 | 0.027 | 0.002*** | 7.19 |
| <i>Ab_External</i> | 0.015 | 0.047 | 0.021 | 0.055 | -0.006*** | -11.60 |
| <i>Ab_Internal</i> | -0.020 | 0.185 | -0.021 | 0.180 | 0.001** | 2.37 |
| <i>Total_Words</i> | 8,730 | 5,737 | 8,552 | 6,239 | 177.4*** | 3.08 |
| <i>GDP_Corr</i> | 0.230 | 0.296 | 0.209 | 0.302 | 0.022*** | 7.54 |
| <i>Market_Share</i> | 0.013 | 0.048 | 0.012 | 0.048 | 0.001** | 2.38 |
| <i>Revenue_Corr</i> | 0.021 | 0.219 | 0.02 | 0.225 | 0.001 | 0.66 |
| <i>Sale_Decrease</i> | 0.209 | 0.407 | 0.400 | 0.490 | -0.191*** | -44.09 |
| <i>Total Revenue</i> | 2,128 | 5,787 | 1,825 | 5,239 | 303.3*** | 5.73 |
| <i>Total Assets</i> | 2,121 | 5,580 | 1,898 | 5,161 | 223.0*** | 4.33 |
| <i>ROA</i> | 0.028 | 0.160 | -0.074 | 0.217 | 0.102*** | 55.4 |
| <i>MB</i> | 3.355 | 3.871 | 2.766 | 3.509 | 0.589*** | 16.63 |
| <i>Num_Analyst</i> | 5.606 | 4.596 | 5.434 | 4.381 | 0.172*** | 3.28 |
| <i>Institutional</i> | 0.515 | 0.287 | 0.490 | 0.289 | 0.025*** | 8.52 |
| <i>Board_Size</i> | 9.029 | 2.127 | 8.905 | 2.203 | 0.125*** | 2.90 |
| <i>Out_Director</i> | 0.715 | 0.287 | 0.712 | 0.289 | 0.003 | 1.00 |

Table 2, Panel B provides univariate descriptives between firms with ROA increases and ROA decreases.

Attr_External is 1 if managers either attribute to economic or industry factors in the MD&A, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Total_Words* (*Total_Sentences*) is the total number of words (sentences) in the MD&A. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *ROA* is income before extraordinary items scaled by average total assets of year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA_Decrease* (*Sale_Decrease*) is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *Good_Commonality* (*Bad_Commonality*) is the percentage of firms in the same SIC2 industry that report increases (declines) of ROA in year t. *Num_Analyst* is the number of analyst following the firm in year t. *Institutional* is the average percentage of the firm’s outstanding shares hold by institutional investors in year t. *Board_Size* is the number of board members in year t. *CEO_Age* is the CEO’s age in year t. *Outside_Director* is the percentage of independent directors in the firm’s board of year t.

Table 3 – Firm Performance as Determinants of Strategic Causal Attributions**Panel A: Multivariate tests of Attributions on ROA Decrease**

$$\begin{aligned} Freq_External (Ab_External) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share + \beta_4 Rev_Corr \\ & + \beta_5 Length + \beta_6 Size + \beta_7 MB + \beta_8 ROA + \varepsilon \end{aligned} \quad (3a)$$

$$\begin{aligned} Freq_Internal (Ab_Internal) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share + \beta_4 Rev_Corr \\ & + \beta_5 Length + \beta_6 Size + \beta_7 MB + \beta_8 ROA + \varepsilon \end{aligned} \quad (3b)$$

| Dep. Variables | Freq_External | | Ab_External | | Freq_Internal | | Ab_Internal | |
|--------------------|----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| ROA_Decrease | 0.714*** (13.38) | 0.652*** (5.19) | 0.578*** (11.41) | 0.588*** (5.58) | -2.313*** (-11.07) | -1.463*** (-4.65) | -0.856*** (-4.72) | -1.26*** (-4.71) |
| GDP_Corr | 1.753*** (19.6) | 1.237** (2.53) | 1.099*** (12.94) | 1.163** (2.46) | 4.558*** (13.02) | 1.053 (1.07) | -0.288 (-0.95) | 0.744 (0.79) |
| Market_Share | -0.841 (-1.5) | -0.618 (-0.56) | -2.612*** (-4.91) | -1.156 (-1.05) | 3.206*** (4.51) | -0.685 (-0.81) | 5.762*** (3.03) | -1.261 (-0.41) |
| Rev_Corr | -0.900*** (-7.72) | -0.256 (-1.36) | -0.142 (-1.29) | -0.183 (-1.04) | 0.062 (0.14) | -0.102 (-0.11) | 0.222 (0.56) | 0.235 (0.27) |
| Length | -0.485*** (-9.02) | -0.758*** (-5.27) | -0.866*** (-16.96) | -0.796*** (-5.62) | 13.761*** (65.39) | 4.390*** (4.62) | 0.539*** (2.95) | 3.966*** (4.61) |
| Size | 0.303*** (18.23) | 0.278*** (6.93) | 0.255*** (16.16) | 0.277*** (6.95) | -0.053 (-0.71) | 0.399** (2.25) | 0.504*** (8.91) | 0.341** (2.2) |
| MB | -0.002*** (-2.68) | -0.002** (-2.21) | -0.001** (-2.2) | -0.002** (-2.33) | 0.005* (1.81) | 0.005* (1.78) | 0.005* (1.94) | 0.005 (1.47) |
| ROA | -0.475*** (-3.11) | -0.094 (-0.38) | -0.148 (-1.02) | 0.097 (0.42) | -11.31*** (-18.95) | -11.24*** (-6.22) | -8.786*** (-16.92) | -9.15*** (-6.09) |
| Fixed Effects | No | Yes | No | Yes | No | Yes | No | Yes |
| Clustered SE | No | Yes | No | Yes | No | Yes | No | Yes |
| Adj-R ² | 0.0630 | 0.1158 | 0.0188 | 0.0305 | 0.1198 | 0.3824 | 0.0087 | 0.0662 |
| N | 43,447 | 43,447 | 43,447 | 43,447 | 43,447 | 43,447 | 43,447 | 43,447 |

Table 3 reports the multi-variate regression results of hypothesis 1. Panel A shows how the total and abnormal attributions are impacted by a firm's ROA performance. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA in year t than that of year t-1, and 0 otherwise. *, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 3 – Firm Performance as Determinants of Strategic Causal Attributions**Panel B: Multivariate tests of Attributions on ROA Decrease, Controlling for Stock Performance**

$$\begin{aligned} Freq_External (Ab_External) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\ & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\ & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon \end{aligned} \quad (3c)$$

$$\begin{aligned} Freq_Internal (Ab_Internal) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\ & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\ & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon \end{aligned} \quad (3d)$$

| Dependent Variables | <i>Freq_External</i> | <i>Ab_External</i> | <i>Freq_Internal</i> | <i>Ab_Internal</i> |
|-------------------------------|----------------------|----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| <i>ROA_Decrease</i> | 0.602*** (4.91) | 0.536*** (5.2) | -1.096*** (-3.52) | -1.019*** (-3.13) |
| <i>GDP_Corr</i> | 1.377** (2.62) | 1.305** (2.56) | 0.570 (0.58) | 0.670 (0.61) |
| <i>Market_Share</i> | -0.561 (-0.44) | -1.203 (-0.96) | -4.530 (-0.77) | -2.790 (-0.4) |
| <i>Rev_Corr</i> | -0.312 (-1.56) | -0.234 (-1.26) | 0.624 (0.66) | 0.976 (0.9) |
| <i>Length</i> | -0.779*** (-5.05) | -0.818*** (-5.35) | 4.068*** (4.66) | 4.766*** (4.55) |
| <i>Size</i> | 0.258*** (5.98) | 0.259*** (6.04) | 0.295 (1.42) | 0.239 (1.06) |
| <i>MB</i> | -0.001* (-1.72) | -0.001* (-1.77) | 0.006** (2.23) | 0.006* (1.88) |
| <i>ROA</i> | 0.037 (0.13) | 0.241 (0.85) | -13.708*** (-6.28) | -13.550*** (-6.05) |
| <i>RET</i> | -0.218*** (-4.03) | -0.218*** (-4.36) | 0.820** (2.49) | 1.128*** (2.76) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1198 | 0.0325 | 0.3995 | 0.0538 |
| <i>N</i> | 38,840 | 38,840 | 38,840 | 38,840 |

Panel B shows how the total and abnormal attributions are impacted by a firm's ROA performance, after controlling for a firm's one-year accumulative stock return. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA in year t than that of year t-1, and 0 otherwise. *RET* is the one-year accumulative return of a firm's stock price by the end of fiscal year t. *, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and year.

Table 3 – Firm Performance as Determinants of Strategic Causal Attributions**Panel C: Changes Tests of Attributions on ROA Decrease**

$$\Delta Freq_External (Ab_External) = \beta_0 + \beta_1 ROA_Decrease + \beta_2 \Delta Length + \beta_3 \Delta Size + \beta_4 MB + \beta_5 \Delta ROA + \varepsilon \quad (3e)$$

$$\Delta Freq_Internal (Ab_Internal) = \beta_0 + \beta_1 ROA_Decrease + \beta_2 \Delta Length + \beta_3 \Delta Size + \beta_4 MB + \beta_5 \Delta ROA + \varepsilon \quad (3f)$$

| <i>Dependent Variables</i> | <i>ΔFreq_External</i> | <i>ΔAb_External</i> | <i>ΔFreq_Internal</i> | <i>ΔAb_Internal</i> |
|-------------------------------|-----------------------|----------------------|-----------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| <i>ROA_Decrease</i> | 0.122*** (5.57) | 0.591*** (5.89) | -0.027** (-2.5) | -0.126 (-1.15) |
| <i>ΔLength</i> | -0.138*** (-5.81) | -0.813*** (-6.13) | 0.101 (0.97) | 0.743 (0.91) |
| <i>ΔSize</i> | -0.028 (-1.03) | -0.147 (-0.89) | 0.117* (1.74) | 0.513 (1.01) |
| <i>MB</i> | 0.000 (1.28) | 0.000** (2.01) | 0.000 (0.84) | 0.000 (0.64) |
| <i>ΔROA</i> | -0.152*** (-3.18) | -0.882*** (-3.39) | -0.051 (-0.56) | -0.095 (-0.12) |
| <i>RET</i> | -0.030*** (-5.83) | -0.144*** (-5.2) | 0.114 (1.02) | 0.183 (1.59) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0925 | 0.0164 | 0.0498 | 0.0182 |
| <i>N</i> | 28,783 | 28,783 | 28,783 | 28,783 |

Panel C shows how the changes of attributions are impacted by the firm's ROA performance. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *ΔFreq_External* (*ΔFreq_Internal*) is the change of *Freq_External* (*Freq_Internal*) from year t-1 to year t. *Ab_External* is *Freq_External* minus the yearly median of *Freq_External* of all firms in the same industry, and *Ab_Internal* is *Freq_Internal* minus the yearly median of *Freq_Internal* of all firms in the same industry. *ΔAb_External* (*ΔAb_Internal*) is the change of *Ab_External* (*Ab_Internal*) from year t-1 to year t. *ΔLength* is the log of total number of words in the MD&A of year t minus that of year t-1. *ΔSize* is the log of average total assets in year t minus that of year t-1. *MB* is the ratio of a firm's market to book value of equity in year. *ΔROA* is the *ROA* in year t minus that of year t-1. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower *ROA* (total sales) in year t than that of year t-1, and 0 otherwise. *RET* is the one-year accumulative return of a firm's stock price by the end of fiscal year t.

*, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 4 – Consequences of Strategic Causal Attributions**Panel A Market Reaction to Strategic Attributions in the MD&A**

$$|CAR_{10K}| = \beta_0 + \beta_1 Ab_External + \beta_2 Ab_Internal + \beta_3 ROA_Decrease + \beta_4 Ab_External * ROA_Decrease + \beta_5 Ab_Internal * ROA_Decrease + \beta_6 |CAR_EA| + \beta_7 |\Delta ROA| + \beta_8 Length + \beta_9 File_Late + \beta_{10} Size + \beta_{11} MB + \varepsilon \quad (4a)$$

| <i>Independent Variables</i> | (1) | (2) | (3) | (4) |
|-----------------------------------|-----------------------|---------------------|--------------------|-----------------------|
| <i>Ab_External</i> | | -0.021** (-1.98) | | 0.006 (0.56) |
| <i>Ab_Internal</i> | | | 0.003 (0.84) | -0.002 (-0.62) |
| <i>ROA_Decrease</i> | | 0.004*** (4.09) | 0.004*** (4.52) | 0.003*** (3.36) |
| <i>Ab_External * ROA_Decrease</i> | | -0.018** (-2.05) | | -0.002 (-0.16) |
| <i>Ab_Internal * ROA_Decrease</i> | | | 0.012*** (2.70) | 0.011** (2.18) |
| <i> CAR_EA </i> | 0.278*** (8.36) | | | 0.267*** (7.46) |
| <i> \Delta ROA </i> | 0.038*** (5.73) | | | 0.033*** (8.32) |
| <i>Length</i> | 0.003*** (2.81) | | | 0.004*** (4.08) |
| <i>File_Late</i> | 0.014*** (6.49) | | | 0.011*** (8.06) |
| <i>Size</i> | -0.005*** (-13.41) | | | -0.005*** (-14.26) |
| <i>MB</i> | -0.000 (-0.05) | | | -0.000 (-0.02) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.2109 | 0.0478 | 0.0483 | 0.2116 |
| <i>N</i> | 33,449 | 33,449 | 33,449 | 33,449 |

Table 4, panel A shows how stock market reacts to abnormal attributions in 10-K filings.

$|CAR_{10K}|$ is the absolute value of three-day abnormal return (size adjusted) around the 10-K filing date. $|CAR_{EA}|$ is the absolute value of three-day abnormal return (size adjusted) around the fourth quarter earnings announcement date. $|\Delta ROA|$ is the absolute value of changes in ROA. *ROA_Decrease* is defined as 1 when ROA of a specific year is less than that of the previous year, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Length* is the natural log of total number of words in the MD&A. *File_Late* is an indicator variable equals to 1 if the lag between fiscal year-end date and 10-K filing date is larger than 90 days, and 0 otherwise. *Size* is the natural log of a firm’s average total assets in year *t*. *MB* is the ratio of a firm’s market to book value of equity in year *t*. *, **, and *** indicate statistical significance of at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 4 – Consequences of Strategic Causal Attributions

Panel B: Changes of CEO Cash Compensation with regard to Abnormal Attributions

$$\Delta\text{Cash_Comp} = \beta_0 + \beta_1 \Delta\text{ROA} + \beta_2 \text{RET} + \beta_3 \text{Ab_External} + \beta_4 \Delta\text{ROA} * \text{Ab_External} + \beta_5 \text{RET} * \text{Ab_External} + \beta_6 \text{Ab_Internal} + \beta_7 \Delta\text{ROA} * \text{Ab_Internal} + \beta_8 \text{RET} * \text{Ab_Internal} + \beta_9 \Delta\text{Size} + \beta_{10} \text{MB} + \varepsilon \quad (4b)$$

| <i>Independent Variables</i> | <i>ΔROA<0</i> | | | | <i>ΔROA>0</i> | | | |
|-------------------------------|--------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>ΔROA</i> | 0.052 (0.58) | 0.036 (0.35) | 0.051 (0.60) | 0.033 (0.34) | 0.506*** (4.06) | 0.495*** (4.18) | 0.507*** (3.83) | 0.504*** (3.98) |
| <i>RET</i> | 0.135*** (3.73) | 0.148*** (4.87) | 0.134*** (3.49) | 0.148*** (4.55) | 0.045*** (3.43) | 0.045*** (3.86) | 0.041*** (4.14) | 0.044*** (4.31) |
| <i>Ab_External</i> | | -0.197 (-1.51) | | -0.195 (-1.46) | | -0.094 (-0.83) | | -0.089 (-0.79) |
| <i>ΔROA* Ab_External</i> | | 0.486 (0.53) | | 0.525 (0.55) | | 0.523 (0.27) | | 0.232 (0.12) |
| <i>RET* Ab_External</i> | | -0.476** (-2.17) | | -0.479** (-2.33) | | -0.011 (-0.05) | | 0.021 (0.10) |
| <i>Ab_Internal</i> | | | 0.013 (0.32) | 0.014 (0.33) | | | 0.039 (0.99) | 0.036 (0.99) |
| <i>ΔROA* Ab_Internal</i> | | | 0.503 (1.17) | 0.526 (1.27) | | | 0.305** (2.08) | 0.283** (2.16) |
| <i>RET* Ab_Internal</i> | | | 0.017 (0.23) | 0.004 (0.06) | | | 0.081* (1.67) | 0.087* (1.70) |
| <i>ΔSize</i> | 0.076** (2.36) | 0.070** (2.14) | 0.076** (2.42) | 0.071** (2.20) | 0.006 (0.15) | 0.005 (0.13) | 0.007 (0.12) | 0.005 (0.16) |
| <i>MB</i> | -0.000 (-0.14) | -0.001 (-0.37) | -0.000 (-0.1) | -0.001 (-0.32) | -0.006** (-2.16) | -0.006** (-2.18) | -0.005** (-2.40) | -0.005** (-2.28) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0512 | 0.0522 | 0.0515 | 0.0524 | 0.0764 | 0.0765 | 0.0776 | 0.0782 |
| <i>N</i> | 8,177 | 8,177 | 8,177 | 8,177 | 8,363 | 8,363 | 8,363 | 8,363 |

Panel B shows how CEO's cash compensation sensitivity differs with abnormal attributions.

ΔCash_Comp is the natural log of CEO's cash compensation in year t minus the natural log of CEO's cash compensation in year t-1. *ΔROA* is the change in ROA from year t-1 to year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t. *Freq_Eco* (*Freq_Indu*) is the number of times that

managers making economic attributions, scaled by the total number of sentences in the MD&A. $Freq_First$ ($Freq_Company$) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. $Freq_External$ is $Freq_Eco$ plus $Freq_Indu$, and $Freq_Internal$ is $Freq_First$ minus $Freq_Company$. $Ab_External$ ($Ab_Internal$) is $Freq_External$ ($Freq_Internal$) minus its yearly industry median. $\Delta Size$ is the difference between log of average total assets in year t and that of year $t-1$. MB is the ratio of a firm’s market to book value of equity in year t . *, **, and *** indicate statistical significance of at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

**Table 5 – Strategic Causal Attributions and CEO Turnover Likelihood
(Survival Analysis)**

Panel A: Cox Proportional Hazards Regression on Total CEO Turnover

| <i>Determinants of Total Turnover</i> | (1) | (2) | (3) | (4) |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|
| ΔROA | 0.172*** (-4.03) | 0.149*** (-4.09) | 0.181*** (-4.02) | 0.156*** (-3.98) |
| RET | 0.759*** (-3.14) | 0.710*** (-3.42) | 0.765*** (-2.87) | 0.705*** (-3.32) |
| $Ab_External$ | | 1.024** (2.44) | | 1.024** (2.47) |
| $\Delta ROA * Ab_External$ | | 1.043 (0.59) | | 1.045 (0.62) |
| $RET * Ab_External$ | | 1.029* (1.85) | | 1.029* (1.84) |
| $Ab_Internal$ | | | 1.001 (0.23) | 1.001 (0.25) |
| $\Delta ROA * Ab_Internal$ | | | 0.977 (-0.88) | 0.975 (-1) |
| $RET * Ab_Internal$ | | | 1.000 (-0.15) | 1.000 (0.09) |
| CEO_Age | 4.570*** (4.09) | 4.669*** (4.12) | 4.619*** (4.11) | 4.738*** (4.16) |
| $Size$ | 1.300*** (8.08) | 1.290*** (7.85) | 1.298*** (8.1) | 1.288*** (7.81) |
| MB | 0.995 (-0.35) | 0.996 (-0.28) | 0.994 (-0.42) | 0.996 (-0.25) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>LR-Chi-Square</i> | 141.37 | 155.20 | 143.52 | 156.39 |
| <i>N</i> | 14,165 | 14,165 | 14,165 | 14,165 |

Table 5 shows how abnormal attributions affect CEO turnover likelihood using survival analysis (Cox proportional hazards regression model).

Panel A reports the impact of abnormal attribution on total CEO turnover likelihood. A significant coefficient greater than one means the covariate has positive impact on the hazard rate of total CEO turnover, while a significant coefficient less than one means the covariate has negative impact on the hazard rate of total CEO turnover. ΔROA is the change in ROA from year t-1 to year t. RET is the one-year accumulative return of stock prices by the end of fiscal year t. $Freq_Eco$ ($Freq_Indu$) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. $Freq_First$ ($Freq_Company$) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. $Freq_External$ is $Freq_Eco$ plus $Freq_Indu$, and $Freq_Internal$ is $Freq_First$ minus $Freq_Company$. $Ab_External$ ($Ab_Internal$) is $Freq_External$ ($Freq_Internal$) minus its yearly industry median. CEO_Age is natural log of the CEO’s age in year t. $Size$ is the log of average total assets in year t. MB is the ratio of a firm’s market to book value of equity in year t. *, **, and *** indicate statistical significance of at 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification.

**Table 5 – Strategic Causal Attributions and CEO Turnover Likelihood
(Survival Analysis)**

Panel B: Cox Proportional Hazards Regression on Forced CEO Turnover

| <i>Determinants of Forced Turnover</i> | (1) | (2) | (3) | (4) |
|--|---------------------|---------------------|---------------------|---------------------|
| <i>ΔROA</i> | 0.061*** (-3.04) | 0.025*** (-3.67) | 0.058*** (-3.16) | 0.026*** (-3.59) |
| <i>RET</i> | 0.419*** (-3.01) | 0.320*** (-3.3) | 0.431*** (-2.87) | 0.319*** (-3.27) |
| <i>Ab_External</i> | | 1.049** (2.11) | | 1.045* (1.88) |
| <i>ΔROA*Ab_External</i> | | 1.702** (2.06) | | 1.680** (2.13) |
| <i>RET*Ab_External</i> | | 1.052 (1.39) | | 1.052 (1.43) |
| <i>Ab_Internal</i> | | | 0.985* (-1.92) | 0.986* (-1.74) |
| <i>ΔROA*Ab_Internal</i> | | | 1.055 (0.89) | 1.053 (0.85) |
| <i>RET*Ab_Internal</i> | | | 0.988 (-0.7) | 0.992 (-0.41) |
| <i>CEO_Age</i> | 0.393 (-0.98) | 0.504 (-0.7) | 0.330 (-1.14) | 0.432 (-0.85) |
| <i>Size</i> | 1.316*** (3.26) | 1.330*** (3.3) | 1.344*** (3.43) | 1.356*** (3.42) |
| <i>MB</i> | 0.981 (-0.5) | 0.986 (-0.36) | 0.988 (-0.32) | 0.994 (-0.16) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>LR-Chi-Square</i> | 44.52 | 59.76 | 51.67 | 64.71 |
| <i>N</i> | 14,165 | 14,165 | 14,165 | 14,165 |

Panel B reports the impact of abnormal attribution on forced CEO turnover likelihood. A significant coefficient greater than one means the covariate has positive impact on the hazard rate of forced CEO turnover, while a significant coefficient less than one means the covariate has negative impact on the hazard rate of forced CEO turnover. *ΔROA* is the change in ROA from year t-1 to year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *CEO_Age* is natural log of the CEO’s age in year t. *Size* is the log of average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t.

*, **, and *** indicate statistical significance of at 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification.

Table 6 – Factors that Mitigate Strategic Attributions

Panel A: Multivariate Tests of Attributions on Peer Performance Commonality

$$Freq_External(Ab_External) = \beta_0 + \beta_1 Good_Commonality + \beta_2 GDP_Corr + \beta_3 Market_Share + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size + \beta_7 MB + \beta_8 ROA + \varepsilon \quad (6a)$$

$$Freq_Internal(Ab_Internal) = \beta_0 + \beta_1 Bad_Commonality + \beta_2 GDP_Corr + \beta_3 Market_Share + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size + \beta_7 MB + \beta_8 ROA + \varepsilon \quad (6b)$$

| Dependent Variables | Full Sample | | | | $\Delta ROA < 0$ | | $\Delta ROA > 0$ | |
|----------------------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | Freq External | Ab External | Freq Internal | Ab Internal | Freq External | Ab External | Freq Internal | Ab Internal |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>ROA Decrease</i> | 2.696*** (5.58) | 2.007*** (4.88) | -2.479** (-2.46) | -1.828** (-2.04) | | | | |
| <i>Good Common</i> | 0.077 (0.45) | 0.496 (1.33) | | | -3.145*** (-3.94) | -0.453 (-1.25) | | |
| <i>ROA Decrease* Good Common</i> | -3.879*** (-4.35) | -2.617*** (-3.41) | | | | | | |
| <i>Bad Common</i> | | | 3.009 (1.08) | -0.851 (-1.16) | | | 1.390 (1.59) | 0.350 (1.55) |
| <i>ROA Decrease*Bad Common</i> | | | 1.971 (0.97) | 1.088 (0.58) | | | | |
| <i>GDP Corr</i> | 1.209** (2.5) | 1.145** (2.44) | 1.039 (1.05) | 0.995 (1.06) | 1.156** (2.17) | 1.085** (2.07) | 0.521 (0.47) | 0.453 (0.4) |
| <i>Market Share</i> | -0.692 (-0.62) | -1.233 (-1.11) | -0.406 (-0.81) | -0.384 (-0.75) | -0.298 (-0.23) | -0.871 (-0.68) | -0.484 (-0.87) | -0.285 (-0.55) |
| <i>Rev Corr</i> | -0.250 (-1.35) | -0.181 (-1.03) | -0.093 (-0.1) | -0.090 (-0.1) | -0.341 (-1.38) | -0.262 (-1.12) | -0.531 (-0.55) | 0.329 (0.37) |
| <i>Length</i> | -0.760*** (-5.3) | -0.796*** (-5.61) | 4.387*** (4.61) | 4.116*** (4.58) | -1.003*** (-5.51) | -1.022*** (-5.8) | 4.798*** (4.65) | 4.424*** (4.68) |
| <i>Size</i> | 0.273*** (6.92) | 0.275*** (6.97) | 0.394** (2.23) | 0.354** (2.18) | 0.328*** (5.84) | 0.318*** (5.86) | 0.333 (1.51) | 0.259 (1.4) |
| <i>MB</i> | -0.001** (-2.23) | -0.002** (-2.35) | 0.005* (1.77) | 0.005* (1.68) | -0.008*** (-4.11) | -0.008*** (-3.15) | 0.004 (1.21) | 0.004 (1.63) |
| <i>ROA</i> | -0.058 (-0.23) | 0.103 (0.44) | -11.38*** (-6.32) | -10.23** (-6.2) | -0.405 (-1.31) | -0.214 (-0.74) | -9.316*** (-6.55) | -8.695*** (-6.21) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1179 | 0.0311 | 0.3827 | 0.0242 | 0.1288 | 0.0355 | 0.3692 | 0.0746 |
| <i>N</i> | 43,447 | 43,447 | 43,447 | 43,447 | 22,176 | 22,176 | 21,271 | 21,271 |

Table 6 reports the multi-variate results of hypothesis 3: how various constraining forces influence managers' attribution choices?

Panel A shows how strategic attributions are limited by the earnings commonality of peer firms. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Good_Common* is the percentage of firms report increases in ROA in the same industry. *Bad_Common* is defined as one minus *Good_Common*. *ROA_Decrease* is defined as 1 when ROA of a specific year is less than that of the previous year, and 0 otherwise. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is log of the total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t.

*, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 6 – Factors that Mitigate Strategic Attributions

Panel B: Multivariate Tests of External Attributions on Analyst Following

$$\begin{aligned}
 Freq_External (Ab_External) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 Num_Analyst \\
 & + \beta_3 ROA_Decrease * Num_Analyst \\
 & + \beta_4 Institutional + \beta_5 ROA_Decrease * Institutional \\
 & + \beta_6 Good_Common + \beta_7 GDP_Corr + \beta_8 Market_Share + \beta_9 Rev_Corr \\
 & + \beta_{10} Length + \beta_{11} Size + \beta_{12} MB + \beta_{13} ROA + \varepsilon \tag{6c}
 \end{aligned}$$

$$\begin{aligned}
 Freq_External (Ab_External) = & \beta_0 + \beta_1 Num_Analyst + \beta_2 Institutional + \beta_3 Good_Commonality \\
 & + \beta_4 GDP_Corr + \beta_5 Market_Share + \beta_6 Rev_Corr \\
 & + \beta_7 Length + \beta_8 Size + \beta_9 MB + \beta_{10} ROA + \varepsilon \tag{6d}
 \end{aligned}$$

| Dependent Variables | Full Sample | | $\Delta ROA < 0$ | |
|----------------------------|----------------------|----------------------|----------------------|----------------------|
| | Freq_External | Ab_External | Freq_External | Ab_External |
| | (1) | (2) | (3) | (4) |
| ROA_Decrease | 0.602*** (3.25) | 0.680*** (4.15) | | |
| Num_Analyst | 0.135 (1.13) | 0.091 (0.77) | -0.691*** (-4.14) | -0.708*** (-3.97) |
| Num_Analyst*ROA_Decrease | -0.815*** (-5.14) | -0.756*** (-4.32) | | |
| Institutional | 0.703* (1.69) | 0.686* (1.68) | 0.438 (1.05) | 0.414 (0.97) |
| Institutional*ROA_Decrease | -0.278 (-0.71) | -0.341 (-0.91) | | |
| Good_Common | -1.846** (-2.24) | -0.402** (-2.15) | -3.353*** (-3.61) | -0.591** (-2.03) |
| GDP_Corr | 1.440** (2.6) | 1.371** (2.30) | 1.419** (2.26) | 1.376** (2.19) |
| Market_Share | -0.721 (-0.48) | -1.503 (-1.48) | -0.403 (-0.23) | -1.396 (-0.89) |
| Rev_Corr | -0.277 (-1.29) | -0.196 (-0.87) | -0.292 (-1.1) | -0.192 (-0.67) |
| Length | -0.686*** (-4.25) | -0.731*** (-4.52) | -0.881*** (-4.3) | -0.908*** (-4.53) |
| Size | 0.469*** (7.23) | 0.458*** (6.87) | 0.498*** (6.02) | 0.501*** (6.11) |
| MB | -0.001 (-1.61) | -0.001 (-1.63) | -0.008** (-2.2) | -0.008** (-2.17) |
| ROA | -0.233 (-0.65) | -0.049 (-0.22) | -0.480 (-1.13) | -0.322 (-0.80) |
| Fixed Effects | Yes | Yes | Yes | Yes |
| Clustered SE | Yes | Yes | Yes | Yes |
| Adjusted-R ² | 0.1342 | 0.0418 | 0.1427 | 0.0413 |
| N | 31,777 | 31,777 | 16,128 | 16,128 |

Panel B shows how external attributions are limited by analysts and institutional investors. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*. *Ab_External* is *Freq_External* minus its yearly industry median. *Num_Analyst* is the natural log of the number of analyst following in year t. *Institutional* is the average percentage of the firm’s outstanding shares hold by institutional investors in year t. *Good_Common* is the percentage of firms report increases in ROA in the same industry. *ROA_Decrease* is defined as 1 when ROA of a specific year is less than that of the previous year, and 0 otherwise. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue

and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is log of the total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year *t*. *MB* is the ratio of a firm's market to book value of equity in year *t*. *ROA* is income before extraordinary items scaled by average total assets of year *t*.

*, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 6 – Factors that Mitigate Strategic Attributions**Panel C: Multivariate Tests of Attributions on Corporate Governance**

$$\begin{aligned} Freq_External (Ab_External) = & \beta_0 + \beta_1 Board_Size + \beta_2 Out_Director + \beta_3 GDP_Corr \\ & + \beta_5 Rev_Corr + \beta_6 Num_Analyst + \beta_7 Bad_Common \\ & + \beta_8 Length + \beta_9 Size + \beta_{10} MB + \beta_{11} ROA + \varepsilon \end{aligned} \quad (6e)$$

$$\begin{aligned} Freq_Internal (Ab_Internal) = & \beta_0 + \beta_1 Board_Size + \beta_2 Out_Director + \beta_3 GDP_Corr + \beta_4 Market_Share \\ & + \beta_5 Rev_Corr + \beta_6 Num_Analyst + \beta_7 Bad_Common \\ & + \beta_8 Length + \beta_9 Size + \beta_{10} MB + \beta_{11} ROA + \varepsilon \end{aligned} \quad (6f)$$

| Dependent Variables | $\Delta ROA < 0$ | | $\Delta ROA > 0$ | |
|-------------------------------|----------------------|----------------------|----------------------|----------------------|
| | <i>Freq_External</i> | <i>Ab_External</i> | <i>Freq_Internal</i> | <i>Ab_Internal</i> |
| | (1) | (2) | (3) | (4) |
| <i>Board_Size</i> | 1.083 (1.62) | 1.103* (1.74) | -2.072 (-0.94) | -0.849 (-0.37) |
| <i>Out_Director</i> | -0.804 (-1.12) | -1.000 (-1.32) | -5.486* (-1.71) | -6.460** (-2.25) |
| <i>GDP_Corr</i> | 3.222*** (3.01) | 3.183*** (2.96) | -2.126 (-1.11) | -2.030 (-1.04) |
| <i>Market_Share</i> | -0.679 (-0.28) | -0.934 (-0.42) | 0.410 (0.32) | 0.763 (0.61) |
| <i>Rev_Corr</i> | -0.271 (-0.37) | -0.263 (-0.36) | 0.104 (0.35) | 0.251 (0.81) |
| <i>Num_Analyst</i> | -0.430* (-1.96) | -0.487** (-2.39) | 1.265 (0.9) | 0.825 (0.83) |
| <i>Good_Common</i> | -5.816*** (-3.38) | -1.744* (-1.75) | | |
| <i>Bad_Common</i> | | | 1.857 (1.24) | 0.610 (0.98) |
| <i>Length</i> | -1.123*** (-2.71) | -1.124*** (-2.81) | 5.018*** (4.72) | 4.705*** (4.7) |
| <i>Size</i> | 0.210 (1.60) | 0.211* (1.7) | 0.328 (1.25) | 0.330 (1.12) |
| <i>MB</i> | -0.008 (-1.43) | -0.007 (-1.39) | 0.000*** (4.45) | 0.002*** (2.91) |
| <i>ROA</i> | -0.514** (-1.98) | -0.465* (-1.87) | -7.864*** (-3.2) | -8.492*** (-3.04) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.2017 | 0.0806 | 0.1610 | 0.1165 |
| <i>N</i> | 4,682 | 4,682 | 4,906 | 4,906 |

Panel C shows how strategic attributions are limited by corporate governance. *Board_Size* is the firm's number of board members in year *t*. *Outside_Director* is the percentage of independent directors in the firm's board of year *t*. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Good_Common* is the percentage of firms report increases in ROA in the same industry. *Bad_Common* is defined as one minus *Good_Common*. *ROA_Decrease* is defined as 1 when ROA of a specific year is less than that of the previous year, and 0 otherwise. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP.

Market_Share is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is log of the total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t . *MB* is the ratio of a firm's market to book value of equity in year t . *ROA* is income before extraordinary items scaled by average total assets of year t .

*, **, and *** indicate statistical significance at two-tailed 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included in all estimations. Industry is defined using two-digit SIC industry classification. Standard errors are clustered by firm and by year.

Table 7 – “New CEOs” vs. “Tenured CEOs”

Panel A: Changes of CEO Cash Compensation with regard to Abnormal Attributions

$$\Delta\text{Cash_Comp} = \beta_0 + \beta_1 \Delta\text{ROA} + \beta_2 \text{RET} + \beta_3 \text{Ab_External} + \beta_4 \Delta\text{ROA} * \text{Ab_External} + \beta_5 \text{RET} * \text{Ab_External} + \beta_6 \text{Ab_Internal} + \beta_7 \Delta\text{ROA} * \text{Ab_Internal} + \beta_8 \text{RET} * \text{Ab_Internal} + \beta_9 \Delta\text{Size} + \beta_{10} \text{MB} + \varepsilon \quad (4)$$

| <i>Independent Variables</i> | <i>ΔROA<0</i> | | | | <i>ΔROA>0</i> | | | |
|-------------------------------|----------------------|----------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | Tenure ≤ 5 years | | Tenure >5 years | | Tenure ≤ 5 years | | Tenure >5 years | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>ΔROA</i> | -0.035 (-0.28) | -0.047 (-0.37) | 0.207* (1.8) | 0.216* (1.89) | 0.608*** (3.88) | 0.615*** (4.06) | 0.273** (2.21) | 0.261** (2.12) |
| <i>RET</i> | 0.134*** (3.8) | 0.134*** (3.55) | 0.165*** (4.6) | 0.164*** (4.48) | 0.050*** (3.57) | 0.047*** (3.35) | 0.041*** (5.18) | 0.042*** (5.11) |
| <i>Ab_External</i> | -0.258** (-2.22) | -0.252** (-2.1) | -0.209 (-0.9) | -0.207 (-0.89) | | -0.065 (-0.32) | | -0.074 (-0.56) |
| <i>ΔROA* Ab_External</i> | 0.402 (0.32) | 0.389 (0.3) | -0.237 (-0.2) | -0.278 (-0.24) | | -0.498 (-0.19) | | 0.880 (0.68) |
| <i>RET* Ab_External</i> | -0.551*** (-3.59) | -0.547*** (-3.63) | -0.322 (-0.77) | -0.305 (-0.74) | | 0.245 (0.63) | | -0.118 (-0.61) |
| <i>Ab_Internal</i> | | -0.117 (-0.31) | | 0.346 (0.63) | -0.398 (-0.73) | -0.405 (-0.74) | 1.258 (1.46) | 1.261 (1.4) |
| <i>ΔROA* Ab_Internal</i> | | 0.743** (2.58) | | -0.195 (-0.04) | 0.277 (0.55) | 0.294 (0.61) | 0.365 (0.23) | 0.324 (0.23) |
| <i>RET* Ab_Internal</i> | | -0.012 (-0.02) | | 0.048 (0.06) | 1.319*** (3.31) | 1.352*** (3.29) | 0.045 (0.17) | 0.041 (0.17) |
| <i>ΔSize</i> | 0.091*** (2.78) | 0.093*** (2.8) | 0.062 (1.35) | 0.061 (1.32) | -0.068 (-1.32) | -0.068 (-1.31) | 0.101** (2.02) | 0.101** (1.99) |
| <i>MB</i> | 0.000 (0.04) | 0.000 (0.17) | -0.003 (-1.06) | -0.003 (-1.07) | 0.000 (-0.8) | 0.000 (-0.81) | 0.000** (-2.53) | 0.000** (-2.57) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0490 | 0.0499 | 0.0739 | 0.0741 | 0.0764 | 0.0738 | 0.1033 | 0.1089 |
| <i>N</i> | 4,201 | 4,201 | 3,976 | 3,976 | 4,493 | 4,493 | 3,870 | 3,870 |

Panel A shows how CEO's cash compensation sensitivity differs for new CEOs vs. tenured CEOs. The full sample of observations are categorized into two groups according to CEO tenure. *Tenure* is the number of years a CEO has served as the Chief Executive Officer in the firm. $\Delta Cash_Comp$ is the natural log of CEO's cash compensation in year t minus the natural log of CEO's cash compensation in year $t-1$. ΔROA is the change in ROA from year $t-1$ to year t . *RET* is the one-year accumulative return of stock prices by the end of fiscal year t . *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. $\Delta Size$ is the difference between log of average total assets in year t and that of year $t-1$. *MB* is the ratio of a firm's market to book value of equity in year t .

Panel B: Cox Proportional Hazards Regression on Forced CEO Turnover

| | Tenure ≤ 5 years | | Tenure > 5 years | |
|--|---------------------|---------------------|--------------------|---------------------|
| Determinants of Forced Turnover | (1) | (2) | (3) | (4) |
| <i>ΔROA</i> | 0.812 (-0.4) | 0.498 (-0.5) | 0.002*** (-3.7) | 0.001*** (-3.64) |
| <i>RET</i> | 0.206*** (-3.41) | 0.222*** (-2.73) | 0.877 (-0.43) | 0.627* (-1.89) |
| <i>Ab_External</i> | | 1.046 (1.42) | | 0.978 (-0.44) |
| <i>ΔROA*Ab_External</i> | | 1.245 (0.75) | | 1.071 (0.14) |
| <i>RET*Ab_External</i> | | 0.975 (-0.39) | | 1.175** (2.49) |
| <i>Ab_Internal</i> | | 0.981 (-1.42) | | 0.983 (-1.21) |
| <i>ΔROA*Ab_Internal</i> | | 1.003 (0.85) | | 0.887 (-0.92) |
| <i>RET*Ab_Internal</i> | | 0.988 (-0.59) | | 0.991 (-0.31) |
| <i>CEO_Age</i> | 0.159 (-1.38) | 0.105 (-1.62) | 1.486 (0.25) | 2.292 (0.47) |
| <i>Size</i> | 1.168 (1.36) | 1.191 (1.44) | 1.376** (2.44) | 1.449** (2.54) |
| <i>MB</i> | 0.963 (-0.71) | 0.986 (-0.27) | 0.977 (-0.35) | 1.023 (0.28) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>LR-Chi-Square</i> | 24.37 | 29.86 | 23.59 | 38.92 |
| <i>N</i> | 5,979 | 5,979 | 8,186 | 8,186 |

Panel B shows how abnormal attributions affect forced CEO turnover likelihood using survival analysis (Cox proportional hazards regression model).

A significant coefficient greater than one means the covariate has positive impact on the hazard rate of forced CEO turnover, while a significant coefficient less than one means the covariate has negative impact on the hazard rate of forced CEO turnover. *Tenure* is the number of years a CEO has served as the Chief Executive Officer in the firm. *ΔROA* is the change in ROA from year t-1 to year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *CEO_Age* is natural log of the CEO’s age in year t. *Size* is the log of average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *Tenure* is the number of years a CEO serves in the specific firm in year t.

Table 8 – Changes of Salary and Bonus

Panel A: Changes of CEO Salary with regard to Abnormal Attributions

$$\Delta \text{Salary} = \beta_0 + \beta_1 \Delta \text{ROA} + \beta_2 \text{RET} + \beta_3 \text{Ab_External} + \beta_4 \Delta \text{ROA} * \text{Ab_External} + \beta_5 \text{RET} * \text{Ab_External} + \beta_6 \text{Ab_Internal} + \beta_7 \Delta \text{ROA} * \text{Ab_Internal} + \beta_8 \text{RET} * \text{Ab_Internal} + \beta_9 \Delta \text{Size} + \beta_{10} \text{MB} + \varepsilon \quad (8a)$$

| <i>Dependent Variables</i> | $\Delta \text{Salary}_{t,t-1}$ | | | | $\Delta \text{Salary}_{t+1,t}$ | | | |
|-------------------------------|--------------------------------|--------------------|-------------------------|---------------------|--------------------------------|-------------------|-------------------------|-------------------|
| | $\Delta \text{ROA} < 0$ | | $\Delta \text{ROA} > 0$ | | $\Delta \text{ROA} < 0$ | | $\Delta \text{ROA} > 0$ | |
| <i>Independent Variables</i> | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>ΔROA</i> | -0.047 (-1.07) | -0.028 (-0.5) | 0.399*** (5.26) | 0.402*** (4.42) | -0.311 (-1.35) | -0.263 (-1.61) | 0.055 (0.99) | 0.021 (0.46) |
| <i>RET</i> | 0.025*** (4.2) | 0.033*** (4.27) | 0.010 (1.53) | 0.012 (1.44) | 0.023* (1.9) | 0.020 (1.24) | 0.000 (-0.06) | 0.001 (0.16) |
| <i>Ab_External</i> | | -0.081 (-0.82) | | -0.038 (-0.32) | | 0.017 (0.11) | | -0.001 (-0.01) |
| <i>ΔROA* Ab_External</i> | | -0.467 (-0.56) | | 0.266 (0.14) | | -1.499 (-0.97) | | 1.298 (0.79) |
| <i>RET* Ab_External</i> | | -0.214* (-1.71) | | -0.199 (-0.97) | | 0.770 (1.31) | | -0.085 (-1.11) |
| <i>Ab_Internal</i> | | 0.014 (0.49) | | -0.016 (-0.47) | | 0.008 (0.37) | | 0.183 (0.7) |
| <i>ΔROA* Ab_Internal</i> | | 0.096 (0.35) | | -0.306 (-0.61) | | 0.223 (0.58) | | 1.100 (0.68) |
| <i>RET* Ab_Internal</i> | | -0.026 (-0.71) | | 0.033* (1.79) | | -0.011 (-0.2) | | 0.163 (0.94) |
| <i>ΔSize</i> | 0.019 (1.44) | 0.018 (1.34) | -0.037 (-1.33) | -0.039 (-1.37) | -0.006 (-0.18) | -0.036 (-1.55) | 0.024 (0.65) | 0.021 (0.57) |
| <i>MB</i> | -0.001 (-0.89) | -0.001 (-0.92) | -0.003** (-2.46) | -0.003** (-2.79) | -0.004 (-0.89) | -0.003 (-1.17) | 0.000 (-0.1) | 0.000 (-0.2) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0091 | 0.0095 | 0.0179 | 0.0186 | 0.0151 | 0.0187 | 0.0135 | 0.0142 |
| <i>N</i> | 8,177 | 8,177 | 8,363 | 8,363 | 7,416 | 7,416 | 7,835 | 7,835 |

Panel A shows how CEO's salary-performance sensitivity differs with abnormal attributions. $\Delta Salary$ is the natural log of the CEO's salary in year t minus the natural log of the CEO's salary in year t-1. ΔROA is the change in ROA from year t-1 to year t. RET is the one-year accumulative return of stock prices by the end of fiscal year t. $Freq_Eco$ ($Freq_Indu$) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. $Freq_First$ ($Freq_Company$) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. $Freq_External$ is $Freq_Eco$ plus $Freq_Indu$, and $Freq_Internal$ is $Freq_First$ minus $Freq_Company$. $Ab_External$ ($Ab_Internal$) is $Freq_External$ ($Freq_Internal$) minus its yearly industry median. $\Delta Size$ is the difference between log of average total assets in year t and that of year t-1. MB is the ratio of a firm's market to book value of equity in year t.

Table 8 – Changes of Salary and Bonus**Panel B: Changes of CEO Cash Bonus within the Incentive Zone**

$$\begin{aligned}
 \text{Bonus} = & \beta_0 + \beta_1 \Delta ROA + \beta_2 RET + \beta_3 Ab_External + \beta_4 \Delta ROA * Ab_External + \beta_5 RET * Ab_External \\
 & + \beta_6 Ab_Internal + \beta_7 \Delta ROA * Ab_Internal + \beta_8 RET * Ab_Internal \\
 & + \beta_9 Size + \beta_{10} MB + \varepsilon
 \end{aligned}
 \tag{8b}$$

| <i>Independent Variables</i> | (1) | (2) |
|-------------------------------|--------------------|----------------------|
| <i>ΔROA</i> | 1.656*** (3.92) | 1.633*** (4.03) |
| <i>RET</i> | 0.046*** (3.45) | 0.051*** (4.2) |
| <i>Ab_External</i> | | 0.525 (0.21) |
| <i>ΔROA* Ab_External</i> | | -0.210*** (-3.15) |
| <i>RET* Ab_External</i> | | 0.006 (0.05) |
| <i>Ab_Internal</i> | | 0.180 (1.52) |
| <i>ΔROA* Ab_Internal</i> | | 0.167*** (2.99) |
| <i>RET* Ab_Internal</i> | | -0.460 (-1.42) |
| <i>Size</i> | 0.024*** (3.36) | 0.025*** (3.37) |
| <i>MB</i> | 0.004** (2.64) | 0.004** (2.6) |
| <i>Fixed Effects</i> | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes |
| <i>Adjusted-R²</i> | 0.5447 | 0.5489 |
| <i>N</i> | 8,270 | 8,270 |

Panel B shows how CEO's bonus-performance sensitivity differs with abnormal attributions for firms inside the incentive zone. *Bonus* is the log of cash bonus in year *t*. *ΔROA* is the change in ROA from year *t*-1 to year *t*. *RET* is the one-year accumulative return of stock prices by the end of fiscal year *t*. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *ΔSize* is the difference between log of average total assets in year *t* and that of year *t*-1. *MB* is the ratio of a firm's market to book value of equity in year *t*.

Table 9 –Strategic Causal Attributions of Late Filers

$$\begin{aligned}
 \text{Freq_External (Ab_External)} = & \beta_0 + \beta_1 \text{ROA_Decrease} + \beta_2 \text{Filelate} \\
 & + \beta_3 \text{ROA_Decrease} * \text{Filelate} + \beta_4 \text{GDP_Corr} + \beta_5 \text{Market_Share} \\
 & + \beta_6 \text{Rev_Corr} + \beta_7 \text{Length} + \beta_8 \text{Size} + \beta_9 \text{MB} + \beta_{10} \text{ROA} + \varepsilon \quad (9)
 \end{aligned}$$

| <i>Dependent Variables</i> | <i>Freq_External</i> | <i>Ab_External</i> | <i>Freq_Internal</i> | <i>Ab_Internal</i> |
|-------------------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| <i>ROA_Decrease</i> | 0.625*** (4.7) | 0.553*** (5.0) | -1.368*** (-4.47) | -1.383*** (-4.21) |
| <i>Filelate</i> | -0.210** (-2.41) | -0.240*** (-2.84) | -1.658** (-2.57) | -1.766** (-2.31) |
| <i>ROA_Dcr * Late</i> | 0.251* (1.66) | 0.322** (2.2) | -0.583 (-0.82) | -0.876 (-0.96) |
| <i>GDP_Corr</i> | 1.236** (2.52) | 1.163** (2.46) | 0.678 (0.67) | 0.902 (0.79) |
| <i>Market_Share</i> | -0.618 (-0.56) | -1.156 (-1.05) | -4.619 (-0.85) | -2.559 (-0.4) |
| <i>Rev_Corr</i> | -0.255 (-1.36) | -0.182 (-1.03) | 0.006 (0.01) | 0.218 (0.21) |
| <i>Length</i> | -0.757*** (-5.24) | -0.795*** (-5.6) | 4.134*** (4.73) | 4.882*** (4.62) |
| <i>Size</i> | 0.276*** (6.87) | 0.275*** (6.91) | 0.416** (2.4) | 0.374** (1.96) |
| <i>MB</i> | -0.002** (-2.21) | -0.002** (-2.32) | 0.005* (1.74) | 0.006 (1.47) |
| <i>ROA</i> | -0.093 (-0.38) | 0.103 (0.44) | -11.90*** (-6.56) | -11.61*** (-6.47) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1159 | 0.0306 | 0.3856 | 0.0542 |
| <i>N</i> | 43,447 | 43,447 | 43,447 | 43,447 |

Table 9 reports the attribution choices of late filers. *Filelate* is a dummy variable that equals to 1 if a firm issues its 10-K filings more than 90 days after the fiscal-year end, and 0 otherwise. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm’s average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t.

APPENDIX 1 Variable Definitions

Attribution Variables

| | |
|-------------------------|---|
| <i>Attr_Eco</i> | A dummy variable that equals to 1 if managers of a firm make attribution to economic factors in the MD&A, and 0 otherwise |
| <i>Attr_Indu</i> | A dummy variable that equals to 1 if managers of a firm make attribution to industry factors in the MD&A, and 0 otherwise |
| <i>Attr_External</i> | A dummy variable that equals to 1 if managers of a firm make attribution to economic factors or industry factors in the MD&A, and 0 otherwise |
| <i>Freq_Eco</i> | The number of times that managers make attributions (measured in groups of sentences) to economic factors, scaled by the total number of sentences in the MD&A. |
| <i>Freq_Indu</i> | The number of times (measured in the number of groups of sentences) that managers make attributions to industry factors, scaled by the total number of sentences in the MD&A. |
| <i>Freq_External</i> | The frequency of managers making attributions to economic factors or industry factors, defined as <i>Freq_Eco</i> plus <i>Freq_Indu</i> . |
| <i>Freq_First</i> | The number of times that managers use first person pronouns, scaled by the total number of words in the MD&A. |
| <i>Freq_Company</i> | The number of times that managers use “the company”, scaled by the total number of words in the MD&A |
| <i>Freq_Internal</i> | The frequency of managers making internal, defined as <i>Freq_First</i> minus <i>Freq_Company</i> . |
| <i>Ab_External</i> | Abnormal external attributions, defined as a firm’s <i>Freq_External</i> minus the yearly industry median of <i>Freq_External</i> . |
| <i>Ab_Internal</i> | Abnormal internal attributions, defined as a firm’s <i>Freq_Internal</i> minus the yearly industry median of <i>Freq_Internal</i> . |
| $\Delta Freq_External$ | The <i>Freq_External</i> of year t minus that of year t-1 |
| $\Delta Ab_External$ | The <i>Ab_External</i> of year t minus that of year t-1 |
| $\Delta Freq_Internal$ | The <i>Freq_Internal</i> of year t minus that of year t-1 |
| $\Delta Ab_Internal$ | The <i>Ab_Internal</i> of year t minus that of year t-1 |

Other Variables (in Alphabetical Sequence)

| | |
|------------------------|--|
| <i>Bad_Commonality</i> | The percentage of firms in the same SIC2 industry that report decreases of ROA in year t. |
| <i>Board_Size</i> | Natural log of the firm’s number of board members in year t. |
| $\Delta Cash_Comp$ | Natural log of CEO’s cash compensation in year t minus the natural log of CEO’s cash compensation in year t-1. |
| <i>CAR_10K</i> | The absolute value of three-day abnormal return (size adjusted) around the 10-K filing date. |
| <i>CAR_EA</i> | The absolute value of three-day abnormal return (size adjusted) around the fourth quarter earnings announcement date. |
| <i>CEO_Age</i> | Natural log of the CEO’s age in year t. |
| <i>File_Late</i> | Indicator variable equals to 1 if the lag between fiscal year-end date and 10-K filing date is larger than 90 days, and 0 otherwise. |
| <i>GDP_Corr</i> | The correlation between changes of a firm’s quarterly revenue and changes in the U.S. GDP |

| | |
|-------------------------|--|
| <i>Good_Commonality</i> | The percentage of firms in the same SIC2 industry that report increases of ROA in year t. |
| <i>Institutional</i> | The average percentage of the firm's outstanding shares hold by institutional investors in year t. |
| <i>Length</i> | Natural log of the total number of words in the MD&A of year t. |
| <i>ΔLength</i> | The natural log of total number of words in the MD&A of year t minus that of year t-1. |
| <i>Market_Share</i> | The average of a firm's quarterly market share (defined as its total sales scaled by the sum of total revenue of all firms in the same SIC2 industry) in year t. |
| <i>ΔMarket_Share</i> | The <i>Market_Share</i> of year t minus that of year t-1. |
| <i>MB</i> | The ratio of a firm's market to book value of equity in year t. |
| <i>Num_Analyst</i> | Natural log of the number of analyst following in year t. |
| <i>Outside_Director</i> | The percentage of independent directors in the firm's board of year t. |
| <i>RET</i> | The firm's one-year cumulative stock return as of the end of fiscal year t. |
| <i>Rev_Corr</i> | The correlation between changes in the firm's quarterly revenue and changes in the sum of total revenue of all firms in the same SIC2 industry. |
| <i>RET</i> | One-year accumulative return of stock prices by the end of fiscal year t. |
| <i>ROA</i> | Income before extraordinary items scaled by average total assets of year t. |
| <i>ΔROA</i> | ROA of year t minus ROA of year t-1. |
| <i> ΔROA </i> | The absolute value of changes in ROA. |
| <i>ROA_Decrease</i> | A dummy variable that equals to 1 if a firm has lower ROA in year t than that of year t-1, and 0 otherwise |
| <i>Sale_Decrease</i> | A dummy variable that equals to 1 if a firm has lower sales in year t than that of year t-1, and 0 otherwise |
| <i>Size</i> | Natural log of a firm's average total assets in year t. |
| <i>ΔSize</i> | The difference between log of average total assets in year t and that of year t-1. |

Attribution Types Included in the Algorithm

| <i>Attribution Type</i> | <i>Frequency</i> | <i>Dictionary</i> | <i>Examples</i> |
|-------------------------|------------------|---|---|
| <i>Macro-Economy</i> | 46 | economic/economy crisis recession | challenging economic and retail conditions/soft U.S. economy/overall improvement in the economy/general economic slowdown/downturn in the domestic and international economy/delays in the client decision-making process due to the general economic environment/market sluggishness associated with the current economy global credit crisis and plunging consumer confidence/global macroeconomic crisis global recession and credit contraction |
| <i>Industry</i> | 58 | competition/competitor/ competitive pressure Industry...condition pricing market demand/demand in ... market/sector | Increased (increasing) competition/ competitive pressures/new product of competitors/due to competing therapies lackluster retail environment in the industry/Industry factors were significantly unfavorable/slowdown in the manufacturing and automotive sectors/prolonged unfavorable industry conditions/ improved industry conditions difficult industry conditions/pricing pressures/favorable pricing/ reduction of average price/ increasingly difficult pricing environment decline in the industry demand/market saturation/increased product demand/reduced demand in the commercial interiors market |
| <i>Causality words</i> | | attribute/driven/due to/reason/result/impact/cause/because/contributed/reflect/affected/stemmed/effect | |

Attribution Types NOT Included in the Algorithm

| <i>Attribution Type</i> | <i>Frequency</i> | <i>Sub-type</i> | <i>Examples</i> |
|-------------------------|------------------|---|---|
| <i>Internal Factors</i> | 52 | Strategic Transition Changes in product mix Marketing activities Cost and expenses | strategic repositioning activities/change in our strategy / Company shifts its strategic focus/ re-deploy of production assets product relocation/changes in sales mix/favorable mix/case mix trends/ newly developed products/ change in the mix of services marketing initiatives/ new promotional plans/ increased reimbursement rates/ higher engineering and marketing expenses higher operating expenses/savings from supply chain cost-reduction / savings from the cost containment/ cost-control programs/ reduced spending in warehousing and product handling costs |

| | | | |
|-------------------------------|------------|--|---|
| | | Exit (Discontinuation) of Business/Start new business | exit of the business/termination of a product/ line/ new trials initiated/ new agreements/ new contract/ liquidation and divestiture of stores |
| | | Acquisition/Restructuring | Synergies from acquisition/Company restructuring/Acquisition of a subsidiary/ deconsolidation of operations |
| | | Operation Related | productivity improvement/operational efficiencies/staff reductions/ strong relationships with suppliers/ cost-control programs/better utilization/investments in equipment/ increase in average occupancy |
| <i>Government</i> | 5 | Government Activities | decrease in government procurement/decline in federal spending/federal tax |
| <i>Weather</i> | 3 | Weather conditions | adverse weather conditions/ very cold winter |
| <i>Accounting Related</i> | 2 | 53 rd week issues | 53 rd week in the prior year/ extra week |
| <i>No Attribution</i> | 34 | N/A | N/A |
| Total | 200 | | |

Examples Captured by the Algorithm

“The Company attributes the decrease in revenues primarily to a decline in customer traffic resulting from increased competition in the theme dining industry and tourism in several retail markets.”

(CIK: 0001008597 YEAR: 1999)

“The recent domestic economic recession and continuing economic uncertainty has had a material adverse effect on the Company's business, results of operations, cash flows and financial condition.”

(CIK: 0000931911 YEAR: 2002)

“The decrease in net sales was due to both decreases in unit volume as well as pricing, due to increases in competition in the United States and international markets.”

(CIK: 0001003471 YEAR: 2004)

“Fiscal 2006 results reflected a recovery in the semiconductor and semiconductor-related industries and the global economy as end-user demand for electronic products and flat panel displays drove increased customer requirements for advanced silicon and display products.”

(CIK: 0000006951 YEAR: 2006)

“Our comparable store sales were also positively affected by the exit of a significant competitor from our Boston market.”

(CIK: 0001078383 YEAR: 2007)

“The financial results of fiscal 2009 reflect the impact of a significant global economic contraction affecting many end markets, products and services. The deterioration in macroeconomic conditions has adversely affected the demand for most of Merix' customers and has significantly reduced our orders, backlog and net sales.”

(CIK: 0000921365 YEAR: 2009)

“Generally, we believe that our operating results for both of the years ended December 31, 2009 and 2008 have been adversely impacted by the weakened global economy.”

(CIK: 0000906553 YEAR: 2009)

Panel A: Multivariate tests of Attributions on Relative ROA Decrease

$$\begin{aligned} \text{Freq_External (Ab_External)} = & \beta_0 + \beta_1 \text{Adj_ROA_Decrease} + \beta_2 \text{GDP_Corr} + \beta_3 \text{Market_Share} \\ & + \beta_4 \text{Rev_Corr} + \beta_5 \text{Length} + \beta_6 \text{Size} \\ & + \beta_7 \text{MB} + \beta_8 \text{Adj_ROA} + \varepsilon \end{aligned} \quad (10a)$$

$$\begin{aligned} \text{Freq_Internal (Ab_Internal)} = & \beta_0 + \beta_1 \text{Adj_ROA_Decrease} + \beta_2 \text{GDP_Corr} + \beta_3 \text{Market_Share} \\ & + \beta_4 \text{Rev_Corr} + \beta_5 \text{Length} + \beta_6 \text{Size} \\ & + \beta_7 \text{MB} + \beta_8 \text{Adj_ROA} + \varepsilon \end{aligned} \quad (10b)$$

| Dependent Variables | Freq_External | Ab_External | Freq_Internal | Ab_Internal |
|-------------------------------|----------------------|---------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| <i>Adj_ROA_Decrease</i> | 0.560*** (4.67) | 0.584*** (4.65) | -1.600*** (-4.6) | -1.686*** (-4.28) |
| <i>GDP_Corr</i> | 1.230** (2.51) | 1.157** (2.45) | 0.759 (0.76) | 0.994 (0.88) |
| <i>Market_Share</i> | -0.589 (-0.53) | -1.088 (-0.99) | -4.818 (-0.89) | -2.775 (-0.44) |
| <i>Rev_Corr</i> | -0.255 (-1.35) | -0.184 (-1.04) | 0.008 (0.01) | 0.220 (0.21) |
| <i>Length</i> | -0.761*** (-5.26) | -0.794*** (-5.6) | 4.069*** (4.73) | 4.807*** (4.62) |
| <i>Size</i> | 0.280*** (6.86) | 0.277*** (6.89) | 0.454** (2.68) | 0.418** (2.22) |
| <i>MB</i> | -0.002** (-2.23) | -0.001** (-2.35) | 0.005* (1.74) | 0.006 (1.46) |
| <i>Adj_ROA</i> | -0.150 (-0.62) | 0.110 (0.47) | -11.761*** (-6.36) | -11.448*** (-6.27) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1150 | 0.0305 | 0.3850 | 0.0534 |
| <i>N</i> | 43,447 | 43,447 | 43,447 | 43,447 |

Appendix 4 reports the impact of relative performance on managers' attributions.

Panel A shows how total and abnormal attributions are impacted by a firm's relative ROA performance. *Ab_External* (*Ab_Internal*) are defined the same as in previous sections. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *Adj_ROA* is a firm's ROA minus its yearly industry median. *Adj_ROA_Decrease* is a dummy variable that equals to 1 if a firm has more negative changes in ROA than its industry peers, and 0 otherwise.

Panel B: Changes of CEO Cash Compensation with regard to Abnormal Attributions and Relative Performance Measures

$$\Delta\text{Cash_Comp} = \beta_0 + \beta_1 \text{Adj_}\Delta\text{ROA} + \beta_2 \text{Adj_RET} + \beta_3 \text{Ab_External} + \beta_4 \text{Adj_}\Delta\text{ROA} * \text{Ab_External} + \beta_5 \text{Adj_RET} * \text{Ab_External} + \beta_6 \text{Ab_Internal} + \beta_7 \text{Adj_}\Delta\text{ROA} * \text{Ab_Internal} + \beta_8 \text{Adj_RET} * \text{Ab_Internal} + \beta_9 \Delta\text{Size} + \beta_{10} \text{MB} + \varepsilon \quad (10c)$$

| Independent Variables | Adj_ΔROA<0 | | | | Adj_ΔROA>0 | | | |
|-------------------------|-------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Adj_ΔROA | 0.046 (0.65) | 0.039 (0.44) | 0.043 (0.62) | 0.032 (0.37) | 0.512*** (4.37) | 0.500*** (4.66) | 0.523*** (4.27) | 0.516*** (4.75) |
| Adj_RET | 0.166*** (4.8) | 0.180*** (6.29) | 0.168*** (4.81) | 0.184*** (6.26) | 0.072*** (4.26) | 0.069*** (4.26) | 0.074*** (4.78) | 0.071*** (4.74) |
| Ab_External | | -0.290* (-1.71) | | -0.291* (-1.73) | | -0.158 (-1.18) | | -0.147 (-1.1) |
| Adj_ΔROA* Ab_External | | 0.242 (0.25) | | 0.289 (0.29) | | 0.533 (0.22) | | 0.303 (0.12) |
| Adj_RET* Ab_External | | -0.568* (-1.87) | | -0.594** (-1.99) | | 0.255 (0.92) | | 0.246 (0.92) |
| Ab_Internal | | | -0.007 (-0.18) | -0.010 (-0.27) | | | 0.053 (1.6) | 0.051 (1.62) |
| Adj_ΔROA* Ab_Internal | | | 0.240 (0.5) | 0.207 (0.55) | | | 0.101 (1.49) | 0.099 (1.51) |
| Adj_RET* Ab_Internal | | | -0.058 (-0.64) | -0.070 (-0.9) | | | 0.941** (2.05) | 0.939** (2.14) |
| ΔSize | 0.068** (2.24) | 0.063** (2.05) | 0.069** (2.29) | 0.064** (2.1) | 0.026 (0.61) | 0.025 (0.59) | 0.028 (0.68) | 0.026 (0.65) |
| MB | 0.001 (0.37) | 0.000 (0.18) | 0.001 (0.44) | 0.001 (0.26) | -0.005* (-1.89) | -0.005* (-1.93) | -0.005* (-1.92) | -0.005* (-1.97) |
| Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clustered SE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted-R ² | 0.0530 | 0.0539 | 0.0531 | 0.0540 | 0.0745 | 0.0748 | 0.0757 | 0.0759 |
| N | 7,870 | 7,870 | 7,870 | 7,870 | 8,675 | 8,675 | 8,675 | 8,675 |

Panel B shows how CEO's cash compensation sensitivity differs with abnormal attributions and relative performance metrics. $\Delta\text{Cash_Comp}$ is the natural log of CEO's cash compensation in year t minus the natural log of CEO's cash compensation in year t-1. Ab_External (Ab_Internal) are defined the same as in previous sections. ΔROA is the change in ROA from year t-1 to year t. $\text{Adj_}\Delta\text{ROA}$ is a firm's ΔROA minus the industry median of ΔROA in year t. Adj_RET is the industry-adjusted one-year abnormal return of stock prices by the end of fiscal year t. ΔSize is the difference between log of average total assets in year t and that of year t-1. MB is the ratio of a firm's market to book value of equity in year t.

Panel C: Cox Proportional Hazards Regression on Forced CEO Turnover

| Determinants of Forced Turnover | (1) | (2) | (3) | (4) |
|--|---------------------|---------------------|---------------------|---------------------|
| <i>Adj_ΔROA</i> | 0.064*** (-3.18) | 0.019*** (-4.03) | 0.057*** (-3.26) | 0.018*** (-4.02) |
| <i>Adj_RET</i> | 0.257*** (-3.6) | 0.269*** (-3.13) | 0.274*** (-3.41) | 0.278*** (-3.02) |
| <i>Ab_External</i> | | 1.047** (2.01) | | 1.043* (1.83) |
| <i>Adj_ΔROA*Ab_External</i> | | 1.981*** (2.83) | | 1.970*** (2.77) |
| <i>Adj_RET*Ab_External</i> | | 0.972 (-0.55) | | 0.971 (-0.54) |
| <i>Ab_Internal</i> | | | 0.987* (-1.66) | 0.989 (-1.49) |
| <i>Adj_ΔROA*Ab_Internal</i> | | | 1.042 (0.78) | 1.033 (0.63) |
| <i>Adj_RET*Ab_Internal</i> | | | 1.001 (0.04) | 1.003 (0.17) |
| <i>CEO_Age</i> | 0.421 (-0.9) | 0.558 (-0.6) | 0.373 (-1.02) | 0.497 (-0.71) |
| <i>Size</i> | 1.313*** (3.17) | 1.308*** (3.08) | 1.337*** (3.31) | 1.330*** (3.17) |
| <i>MB</i> | 0.983 (-0.45) | 0.987 (-0.35) | 0.987 (-0.35) | 0.991 (-0.23) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>LR-Chi-Square</i> | 50.77 | 61.4 | 56.4 | 65.91 |
| <i>N</i> | 14,165 | 14,165 | 14,165 | 14,165 |

Panel C reports the impact of abnormal attribution on forced CEO turnover likelihood. A significant coefficient greater than one means the covariate has positive impact on the hazard rate of forced CEO turnover, while a significant coefficient less than one means the covariate has negative impact on the hazard rate of total CEO turnover. ΔROA is the change in ROA from year t-1 to year t. $Adj_ΔROA$ is a firm's ΔROA minus the industry median of ΔROA in year t. Adj_RET is the industry-adjusted one-year abnormal return of stock prices by the end of fiscal year t. $Ab_External$ ($Ab_Internal$) are defined the same as in previous sections. CEO_Age is natural log of the CEO's age in year t. $Size$ is the log of average total assets in year t. MB is the ratio of a firm's market to book value of equity in year t.

Panel A: Multivariate tests of Attributions on Sales Decrease

$$\begin{aligned} \text{Freq_External (Ab_External)} = & \beta_0 + \beta_1 \text{Sales_Decrease} + \beta_2 \text{GDP_Corr} + \beta_3 \text{Market_Share} \\ & + \beta_4 \text{Rev_Corr} + \beta_5 \text{Length} + \beta_6 \text{Size} \\ & + \beta_7 \text{MB} + \beta_8 \text{ROA} + \varepsilon \end{aligned} \quad (11a)$$

$$\begin{aligned} \text{Freq_Internal (Ab_Internal)} = & \beta_0 + \beta_1 \text{Sales_Decrease} + \beta_2 \text{GDP_Corr} + \beta_3 \text{Market_Share} \\ & + \beta_4 \text{Rev_Corr} + \beta_5 \text{Length} + \beta_6 \text{Size} \\ & + \beta_7 \text{MB} + \beta_8 \text{ROA} + \varepsilon \end{aligned} \quad (11b)$$

| <i>Dependent Variables</i> | <i>Freq_External</i> | <i>Ab_External</i> | <i>Freq_Internal</i> | <i>Ab_Internal</i> |
|-------------------------------|----------------------|----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| <i>Sales_Decrease</i> | 1.733*** (6.45) | 1.554*** (6.88) | -2.967*** (-4.04) | -3.442*** (-4.24) |
| <i>GDP_Corr</i> | 1.376** (3.23) | 1.288*** (3.1) | 0.511 (0.55) | 0.706 (0.67) |
| <i>Market_Share</i> | -0.856 (-0.77) | -1.371 (-1.25) | -4.025 (-0.75) | -1.943 (-0.31) |
| <i>Rev_Corr</i> | -0.116 (-0.71) | -0.056 (-0.36) | -0.250 (-0.28) | -0.073 (-0.07) |
| <i>Length</i> | -0.821*** (-5.48) | -0.852*** (-5.79) | 4.202*** (4.79) | 4.954*** (4.67) |
| <i>Size</i> | 0.320*** (7.36) | 0.315*** (7.36) | 0.367** (2.17) | 0.322* (1.69) |
| <i>MB</i> | -0.001** (-2.3) | -0.001** (-2.43) | 0.005* (1.8) | 0.006 (1.5) |
| <i>ROA</i> | 0.389* (1.68) | 0.527** (2.24) | -12.172*** (-6.21) | -12.060*** (-6.36) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1310 | 0.0441 | 0.3871 | 0.0565 |
| <i>N</i> | 43,447 | 43,447 | 43,447 | 43,447 |

Appendix 5 reports the impact of sales performance on managers' attributions. Panel A shows how the total and abnormal attributions are impacted by a firm's sales performance. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *Sales_Decrease* is a dummy variable that equals to 1 if a firm has lower total sales in year t than that of year t-1, and 0 otherwise.

Panel B: Changes of CEO Cash Compensation with regard to Abnormal Attributions and Sales Performance Measures

$$\Delta Cash_Comp = \beta_0 + \beta_1 \Delta Sales + \beta_2 RET + \beta_3 Ab_External + \beta_4 \Delta Sales * Ab_External + \beta_5 RET * Ab_External + \beta_6 Ab_Internal + \beta_7 \Delta Sales * Ab_Internal + \beta_8 RET * Ab_Internal + \beta_9 \Delta Size + \beta_{10} MB + \varepsilon \quad (11c)$$

| Independent Variables | $\Delta Sales < 0$ | | | | $\Delta Sales > 0$ | | | |
|-------------------------------|--------------------|--------------------|-------------------|---------------------|----------------------|---------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $\Delta Sales$ | 0.092 (0.62) | 0.061 (0.44) | 0.104 (0.69) | 0.076 (0.54) | 0.076*** (3.55) | 0.065*** (3.13) | 0.078*** (3.49) | 0.067*** (3.07) |
| RET | 0.059* (1.83) | 0.062* (1.98) | 0.070** (2.13) | 0.073** (2.28) | 0.113*** (6.3) | 0.107*** (5.71) | 0.115*** (6.86) | 0.108*** (6.22) |
| $Ab_External$ | | -0.162 (-0.98) | | -0.169 (-1.03) | | -0.237* (-1.81) | | -0.237* (-1.82) |
| $\Delta Sales * Ab_External$ | | 0.750 (0.79) | | 0.681 (0.76) | | 0.750 (0.34) | | 0.608 (0.39) |
| $RET * Ab_External$ | | -0.229* (-1.96) | | -0.246** (-2.36) | | 0.465 (0.42) | | 0.531 (0.64) |
| $Ab_Internal$ | | | 0.872 (0.89) | 0.899 (0.91) | | | 0.317 (0.88) | 0.311 (0.87) |
| $\Delta Sales * Ab_Internal$ | | | 0.753* (1.72) | 0.738* (1.73) | | | -1.115 (-0.94) | -1.194 (-1.02) |
| $RET * Ab_Internal$ | | | 0.136** (1.99) | 0.137** (2.06) | | | -0.145 (-0.35) | -0.051 (-0.11) |
| $\Delta Size$ | -0.003 (-0.04) | -0.003 (-0.04) | -0.019 (-0.23) | -0.018 (-0.22) | -0.017 (-0.69) | -0.017 (-0.69) | -0.014 (-0.56) | -0.013 (-0.56) |
| MB | 0.002 (0.29) | 0.001 (0.26) | 0.001 (0.19) | 0.001 (0.16) | -0.004*** (-2.72) | -0.004** (-2.63) | -0.004** (-2.58) | -0.004** (-2.5) |
| Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clustered SE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted-R ² | 0.0348 | 0.0362 | 0.0376 | 0.0390 | 0.0773 | 0.0783 | 0.0775 | 0.0785 |
| N | 4,363 | 4,363 | 4,363 | 4,363 | 12,182 | 12,182 | 12,182 | 12,182 |

Panel B shows how CEO's cash compensation sensitivity differs with abnormal attributions. $\Delta Cash_Comp$ is the natural log of CEO's cash compensation in year t minus the natural log of CEO's cash compensation in year t-1. $\Delta Sales$ is the percentage changes in total sales from year t-1 to year t. RET is the one-year accumulative return of stock prices by the end of fiscal year t. $Ab_External$ ($Ab_Internal$) are defined the same as in previous sections. $\Delta Size$ is the difference between log of average total assets in year t and that of year t-1. MB is the ratio of a firm's market to book value of equity in year t.

Panel C: Cox Proportional Hazards Regression on Forced CEO Turnover

| Determinants of Forced Turnover | (1) | (2) | (3) | (4) |
|--|---------------------|---------------------|---------------------|---------------------|
| <i>ΔSales</i> | 0.092*** (-4.1) | 0.102*** (-3.58) | 0.092*** (-4.14) | 0.107*** (-3.56) |
| <i>RET</i> | 0.418*** (-2.94) | 0.279*** (-3.52) | 0.441*** (-2.7) | 0.290*** (-3.34) |
| <i>Ab_External</i> | | 1.028 (1.29) | | 1.027 (1.21) |
| <i>ΔSales *Ab_External</i> | | 0.123 (-0.27) | | 0.018 (-0.46) |
| <i>RET*Ab_External</i> | | 1.095** (2.52) | | 1.090** (2.36) |
| <i>Ab_Internal</i> | | | 0.985** (-2.26) | 0.985** (-2.12) |
| <i>ΔSales*Ab_Internal</i> | | | 1.039 (1.29) | 1.036 (1.22) |
| <i>RET*Ab_Internal</i> | | | 0.979 (-1.37) | 0.982 (-1.05) |
| <i>CEO_Age</i> | 0.250 (-1.39) | 0.255 (-1.35) | 0.245 (-1.39) | 0.260 (-1.31) |
| <i>Size</i> | 1.272*** (2.89) | 1.293*** (3.05) | 1.304*** (3.14) | 1.319*** (3.23) |
| <i>MB</i> | 1.007 (0.18) | 1.011 (0.3) | 1.009 (0.24) | 1.013 (0.35) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>LR-Chi-Square</i> | 56.42 | 65.32 | 59.31 | 70.77 |
| <i>N</i> | 14,165 | 14,165 | 14,165 | 14,165 |

Panel C shows how abnormal attributions affect forced CEO turnover likelihood using survival analysis (Cox proportional hazards regression model). A significant coefficient greater than one means the covariate has positive impact on the hazard rate of forced CEO turnover, while a significant coefficient less than one means the covariate has negative impact on the hazard rate of forced CEO turnover. *ΔSales* is the percentage changes in total sales from year t-1 to year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t. *Ab_External* (*Ab_Internal*) are defined the same as in previous sections. *CEO_Age* is the natural log of the CEO's age in year t. *Size* is the log of average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t.

Panel A: Multivariate tests of Attributions on Negative Stock Performance

$$\begin{aligned}
 Freq_External (Ab_External) = & \beta_0 + \beta_1 Neg_RET + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \varepsilon
 \end{aligned}
 \tag{12a}$$

$$\begin{aligned}
 Freq_Internal (Ab_Internal) = & \beta_0 + \beta_1 Neg_RET + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \varepsilon
 \end{aligned}
 \tag{12b}$$

| Dependent Variables | Freq_External | Ab_External | Freq_Internal | Ab_Internal |
|-------------------------------|----------------------|----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| <i>Neg_RET</i> | 0.651*** (6.26) | 0.615*** (6.04) | -0.213 (-0.38) | -0.699 (-1.07) |
| <i>GDP_Corr</i> | 1.403** (2.62) | 1.329** (2.56) | 0.635 (0.63) | 0.715 (0.65) |
| <i>Market_Share</i> | -0.862 (-0.67) | -1.476 (-1.17) | -3.657 (-0.63) | -1.899 (-0.28) |
| <i>Rev_Corr</i> | -0.275 (-1.36) | -0.200 (-1.06) | 0.613 (0.65) | 0.948 (0.87) |
| <i>Length</i> | -0.820*** (-5.22) | -0.857*** (-5.51) | 4.138*** (4.7) | 4.850*** (4.58) |
| <i>Size</i> | 0.295*** (6.49) | 0.293*** (6.52) | 0.221 (1.11) | 0.146 (0.68) |
| <i>MB</i> | -0.002* (-1.81) | -0.002* (-1.85) | 0.007** (2.34) | 0.008* (1.96) |
| <i>ROA</i> | -0.281 (-0.93) | -0.045 (-0.16) | -12.119*** (-6.26) | -12.004*** (-5.99) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1180 | 0.0309 | 0.3976 | 0.0509 |
| <i>N</i> | 38,840 | 38,840 | 38,840 | 38,840 |

Appendix 6 reports the impact of accumulative stock return on managers' attributions. Panel A shows how the total and abnormal attributions are impacted by a firm's stock performance. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *Neg_RET* is a dummy variable that equals to 1 if a firm has negative accumulative stock performance in fiscal year t, and 0 otherwise.

Panel B: Changes of CEO Cash Compensation with regard to Abnormal Attributions

$$\Delta Cash_Comp = \beta_0 + \beta_1 \Delta ROA + \beta_2 RET + \beta_3 Ab_External + \beta_4 \Delta ROA * Ab_External + \beta_5 RET * Ab_External + \beta_6 Ab_Internal + \beta_7 \Delta ROA * Ab_Internal + \beta_8 RET * Ab_Internal + \beta_9 \Delta Size + \beta_{10} MB + \varepsilon \quad (12c)$$

| <i>Independent Variables</i> | <i>RET<0</i> | | | | <i>RET>0</i> | | | |
|-------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>ΔROA</i> | 0.485*** (6.04) | 0.508*** (6.38) | 0.488*** (5.9) | 0.511*** (6.26) | 0.444*** (4.23) | 0.359*** (3.19) | 0.450*** (4.24) | 0.369*** (3.34) |
| <i>RET</i> | 0.172*** (3.53) | 0.177*** (3.84) | 0.172*** (3.61) | 0.177*** (3.97) | 0.044*** (3.41) | 0.047*** (4) | 0.043*** (3.67) | 0.046*** (4.15) |
| <i>Ab_External</i> | | -0.182 (-1.27) | | -0.189 (-1.32) | | -0.103 (-1.02) | | -0.109 (-1.09) |
| <i>ΔROA * Ab_External</i> | | -0.708 (-0.77) | | -0.718 (-0.78) | | -0.681* (-1.95) | | -0.657** (-1.98) |
| <i>RET* Ab_External</i> | | -0.203 (-0.93) | | -0.211 (-0.94) | | -0.217 (-1.05) | | -0.194 (-0.95) |
| <i>Ab_Internal</i> | | | 0.063 (0.37) | 0.067 (0.4) | | | 0.071 (0.2) | 0.075 (0.21) |
| <i>ΔROA * Ab_Internal</i> | | | -0.322 (-1.21) | -0.321 (-1.19) | | | -0.464 (-1.13) | -0.347 (-0.98) |
| <i>RET* Ab_Internal</i> | | | 0.208*** (2.79) | 2.127*** (2.91) | | | 0.451 (1.34) | 0.418 (1.35) |
| <i>ΔSize</i> | 0.021 (0.73) | 0.019 (0.67) | 0.020 (0.72) | 0.019 (0.66) | 0.009 (0.31) | 0.004 (0.11) | 0.006 (0.2) | 0.000 (0.01) |
| <i>MB</i> | -0.003** (-2.06) | -0.004** (-2.14) | -0.003** (-2.01) | -0.004** (-2.09) | -0.004 (-1.09) | -0.004 (-1.17) | -0.004 (-1.19) | -0.004 (-1.26) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0566 | 0.0569 | 0.0572 | 0.0576 | 0.0817 | 0.0830 | 0.0824 | 0.0836 |
| <i>N</i> | 9,405 | 9,405 | 9,405 | 9,405 | 7,140 | 7,140 | 7,140 | 7,140 |

Panel B shows how CEO's cash compensation sensitivity differs with abnormal attributions. *ΔCash_Comp* is the natural log of CEO's cash compensation in year t minus the natural log of CEO's cash compensation in year t-1. *ΔROA* is the change in ROA from year t-1 to year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t. *Ab_External* (*Ab_Internal*) are defined the same as in previous sections. *ΔSize* is the difference between log of average total assets in year t and that of year t-1. *MB* is the ratio of a firm's market to book value of equity in year t.

$$\begin{aligned}
 Ab_External\ (Nor_External) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon
 \end{aligned} \tag{13a}$$

$$\begin{aligned}
 Ab_Internal\ (Nor_Internal) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon
 \end{aligned} \tag{13b}$$

| <i>Dependent Variables</i> | <i>Ab_External</i> | <i>Nor_External</i> | <i>Ab_Internal</i> | <i>Nor_Internal</i> |
|-------------------------------|----------------------|----------------------|-----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| <i>ROA_Decrease</i> | 0.536*** (5.2) | 0.111** (2.17) | -1.019*** (-3.13) | -0.284*** (-2.79) |
| <i>GDP_Corr</i> | 1.305** (2.56) | 0.123*** (2.83) | 0.670 (0.61) | 0.407* (1.65) |
| <i>Market_Share</i> | -1.203 (-0.96) | 1.088*** (2.8) | -2.790 (-0.4) | -2.730 (-1.05) |
| <i>Rev_Corr</i> | -0.234 (-1.26) | -0.132** (-2.47) | 0.976 (0.9) | -0.331 (-1.34) |
| <i>Length</i> | -0.818*** (-5.35) | 0.067** (2.51) | 4.766*** (4.55) | 0.514** (2.47) |
| <i>Size</i> | 0.259*** (6.04) | -0.001 (-0.23) | 0.239 (1.06) | 0.064 (1.05) |
| <i>MB</i> | -0.001* (-1.77) | 0.000* (1.65) | 0.006* (1.88) | 0.000 (0.59) |
| <i>ROA</i> | 0.241 (0.85) | -0.345*** (-3.63) | -13.550*** (-6.05) | -2.773*** (-2.83) |
| <i>RET</i> | -0.218*** (-4.36) | 0.000 (-0.04) | 1.128*** (2.76) | -0.143 (-0.73) |
| <i>Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0325 | 0.7027 | 0.0538 | 0.8792 |
| <i>N</i> | 38,840 | 38,840 | 38,840 | 38,840 |

Appendix 7 reports the results of determinant tests using both normal and abnormal attribution measures.

Freq_Eco (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *Nor_External* (*Nor_Internal*) is the yearly industry median of *Freq_External* (*Freq_Internal*). *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm’s average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t.

Panel A: Multivariate tests of Attributions on ROA Decrease

$$Ab_External (Ab_Internal) = \beta_0 + \beta_1 ROA_Decrease + \beta_2 Freshman + \beta_3 Freshman * ROA_Decrease + \beta_4 GDP_Corr + \beta_5 Market_Share + \beta_6 Rev_Corr + \beta_7 Length + \beta_8 Size + \beta_9 MB + \beta_{10} ROA + \beta_{11} RET + \varepsilon \quad (14a)$$

| Dependent Variables | Ab_External | Ab_Internal |
|-------------------------------|----------------------|----------------------|
| | (1) | (2) |
| <i>ROA_Decrease</i> | 0.383** (2.19) | -0.510 ** (-2.25) |
| <i>Freshman</i> | 0.186 (1.01) | -0.383 (-0.56) |
| <i>Fresh* ROA_Dcr</i> | -0.003 (-0.01) | -0.175 (-0.19) |
| <i>GDP_Corr</i> | 1.637*** (2.65) | 0.946 (0.53) |
| <i>Market_Share</i> | -0.168 (-0.1) | 0.540 (0.52) |
| <i>Rev_Corr</i> | -0.556 (-1.57) | 0.584 (1.27) |
| <i>Length</i> | -0.844*** (-3.8) | 3.613*** (4.13) |
| <i>Size</i> | 0.203*** (3.26) | -1.170*** (-2.88) |
| <i>MB</i> | -0.001** (-2.02) | 0.006* (1.76) |
| <i>ROA</i> | -0.343*** (-4.86) | -5.586** (-2.1) |
| <i>RET</i> | -0.259*** (-2.78) | 1.110* (1.78) |
| <i>Fixed Effects</i> | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0502 | 0.0782 |
| <i>N</i> | 16,559 | 16,559 |

Appendix 8 reports the impact of freshman CEOs and CEOs over 65 on attributions.

Freshman is one if a CEO has served in the company for less than or equal to one year. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm’s average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t.

Panel B: Multivariate tests of Attributions on ROA Decrease

$$Ab_External (Ab_Internal) = \beta_0 + \beta_1 ROA_Decrease + \beta_2 Age65 + \beta_3 Age65 * ROA_Decrease \\ + \beta_4 GDP_Corr + \beta_5 Market_Share + \beta_6 Rev_Corr \\ + \beta_7 Length + \beta_8 Size + \beta_9 MB + \beta_{10} ROA + \beta_{11} RET + \varepsilon \quad (14b)$$

| Dependent Variables | Ab_External | Ab_Internal |
|-------------------------------|----------------------|----------------------|
| | (1) | (2) |
| <i>ROA_Decrease</i> | 0.398** (2.52) | -0.426** (-2.09) |
| <i>Age65</i> | 0.406 (1.33) | -2.129** (-2.06) |
| <i>Age65* ROA_Dcr</i> | -0.196 (-0.6) | -0.551 (-0.61) |
| <i>GDP_Corr</i> | 1.623** (2.62) | 0.728 (0.41) |
| <i>Market_Share</i> | -0.178 (-0.11) | 0.457 (0.43) |
| <i>Rev_Corr</i> | -0.558 (-1.58) | 0.586 (1.39) |
| <i>Length</i> | -0.843*** (-3.79) | 3.484*** (4.03) |
| <i>Size</i> | 0.205*** (3.31) | -1.084*** (-2.61) |
| <i>MB</i> | -0.001** (-2.02) | 0.004* (1.82) |
| <i>ROA</i> | -0.346*** (-4.93) | -6.794** (-2.45) |
| <i>RET</i> | -0.257*** (-2.77) | 1.232** (2.03) |
| <i>Fixed Effects</i> | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0504 | 0.0793 |
| <i>N</i> | 16,559 | 16,559 |

Age65 is one if the CEO's age is greater than 65. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA (total sales) in year t than that of year t-1, and 0 otherwise. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t.

$$\begin{aligned}
 \text{External_Tendency} = & \beta_0 + \beta_1 \text{ROA_Decrease} + \beta_2 \text{GDP_Corr} + \beta_3 \text{Market_Share} \\
 & + \beta_4 \text{Rev_Corr} + \beta_5 \text{Length} + \beta_6 \text{Size} \\
 & + \beta_7 \text{MB} + \beta_8 \text{ROA} + \beta_9 \text{RET} + \varepsilon
 \end{aligned}
 \tag{15}$$

| Dependent Variables | External_Tendency100 | External_Tendency10 |
|-------------------------|----------------------|----------------------|
| | (1) | (2) |
| ROA_Decrease | 4.659*** (5.99) | 0.452*** (5.72) |
| GDP_Corr | 6.033** (2.43) | 0.585* (1.69) |
| Market_Share | -3.957 (-0.38) | -0.319 (-0.31) |
| Rev_Corr | -1.965 (-1.12) | -0.185 (-1.07) |
| Length | -6.247*** (-3.82) | -0.644*** (-3.97) |
| Size | 1.026** (2.55) | 0.096** (2.35) |
| MB | -0.020** (-2.2) | -0.002** (-2.18) |
| ROA | 2.296*** (5.54) | 0.214*** (5.49) |
| RET | -2.502*** (-8.36) | -0.239*** (-7.98) |
| Fixed Effects | Yes | Yes |
| Clustered SE | Yes | Yes |
| Adjusted-R ² | 0.0377 | 0.0401 |
| N | 38,840 | 38,840 |

Appendix 9 reports the impact of ROA performance on managers' attribution tendency.

External_Tendency is calculated by sorting firms by their abnormal external (internal) attribution measures into groups, and define the rank of a firm's group as its external (internal) attribution score. *External_Tendency100* equals to a firm's external attribution score minus its internal score (ranked into 100 groups), reflecting a firm's abnormal external attribution tendency. *External_Tendency10* is calculated in a similar way using 10 groups in ranking. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA in year t than that of year t-1, and 0 otherwise. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t.

$$Ab_External (Ab_Internal) = \beta_0 + \beta_1 ROA_Decrease_SPI + \beta_2 GDP_Corr + \beta_3 Market_Share + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size + \beta_7 MB + \beta_8 ROA_SPI + \beta_9 RET + \epsilon \quad (16)$$

| Dependent Variables | Ab_External | Ab_Internal |
|-------------------------------|----------------------|----------------------|
| | (1) | (2) |
| <i>ROA_Decrease_SPI</i> | 0.941*** (6.19) | -1.332*** (-3.41) |
| <i>GDP_Corr</i> | 1.300*** (2.63) | 0.748 (0.69) |
| <i>Market_Share</i> | -0.580 (-0.45) | -0.357 (-0.5) |
| <i>Rev_Corr</i> | -0.227 (-1.25) | 0.914 (0.83) |
| <i>Length</i> | -0.797*** (-5.24) | 4.895*** (4.57) |
| <i>Size</i> | 0.232*** (5.65) | 0.282 (1.25) |
| <i>MB</i> | -0.001* (-1.68) | 0.006* (1.88) |
| <i>ROA_SPI</i> | 1.370*** (4.25) | -15.96*** (-6.29) |
| <i>RET</i> | -0.205*** (-4.19) | 1.050** (2.59) |
| <i>Fixed Effects</i> | Yes | Yes |
| <i>Clustered SE</i> | Yes | Yes |
| <i>Adjusted-R²</i> | 0.0370 | 0.0547 |
| <i>N</i> | 38,840 | 38,840 |

Appendix 10 reports the impact of ROA performance on managers' attributions, adjusted for the impact of special items.

Freq_Eco (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns ("the company"), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *ROA_SPI* is income before extraordinary items minus special items, scaled by average total assets of year t. *ROA_Decrease_SPI* is a dummy variable that equals to 1 if a firm has lower *ROA_SPI* in year t than that of year t-1, and 0 otherwise. *GDP_Corr* is the correlation between changes of the company's quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company's total revenue. *Rev_Corr* is defined as the correlation between changes of the company's quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm's average total assets in year t. *MB* is the ratio of a firm's market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *RET* is the one-year accumulative return of stock prices by the end of fiscal year t.

$$\begin{aligned}
 Freq_External (Ab_External) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon
 \end{aligned} \tag{17a}$$

$$\begin{aligned}
 Freq_Internal (Ab_Internal) = & \beta_0 + \beta_1 ROA_Decrease + \beta_2 GDP_Corr + \beta_3 Market_Share \\
 & + \beta_4 Rev_Corr + \beta_5 Length + \beta_6 Size \\
 & + \beta_7 MB + \beta_8 ROA + \beta_9 RET + \varepsilon
 \end{aligned} \tag{17b}$$

| <i>Dependent Variables</i> | <i>Freq_External</i> | <i>Ab_External</i> | <i>Freq_Internal</i> | <i>Ab_Internal</i> |
|-------------------------------|-----------------------|----------------------|----------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| <i>ROA_Decrease</i> | 0.431*** (7.81) | 0.363*** (6.65) | -0.609*** (-4.49) | -0.341** (-2.56) |
| <i>Market_Share</i> | -0.629 (-0.47) | -2.778** (-2.1) | -6.060* (-1.84) | -2.503 (-0.56) |
| <i>Length</i> | -0.692*** (-8.5) | -0.764*** (-9.49) | 1.852*** (9.24) | 1.835*** (7.18) |
| <i>Size</i> | -0.061 (-1.06) | -0.004 (-0.07) | 2.233*** (15.78) | 1.532*** (8.49) |
| <i>MB</i> | -0.001* (-1.65) | -0.001* (-1.7) | 0.001 (0.46) | 0.001 (0.23) |
| <i>ROA</i> | -0.252*** (-11.09) | -0.213*** (-9.51) | -4.076*** (-7.3) | -1.837** (-2.58) |
| <i>RET</i> | -0.166*** (-5.84) | -0.165*** (-5.85) | 0.325*** (4.64) | 0.507*** (5.68) |
| <i>Firm Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Year Fixed Effects</i> | Yes | Yes | Yes | Yes |
| <i>Adjusted-R²</i> | 0.1710 | 0.0293 | 0.4772 | 0.0878 |
| <i>N</i> | 38,840 | 38,840 | 38,840 | 38,840 |

Appendix 11 shows how the total and abnormal attributions are impacted by a firm’s ROA performance, after controlling for firm fixed effects. *Freq_Eco* (*Freq_Indu*) is the number of times that managers making economic attributions, scaled by the total number of sentences in the MD&A. *Freq_First* (*Freq_Company*) is the number of times that managers use first person pronouns (“the company”), scaled by the total number of words in the MD&A. *Freq_External* is *Freq_Eco* plus *Freq_Indu*, and *Freq_Internal* is *Freq_First* minus *Freq_Company*. *Ab_External* (*Ab_Internal*) is *Freq_External* (*Freq_Internal*) minus its yearly industry median. *GDP_Corr* is the correlation between changes of the company’s quarterly revenue and changes in the U.S. GDP. *Market_Share* is the average quarterly market share of the company’s total revenue. *Rev_Corr* is defined as the correlation between changes of the company’s quarterly revenue and changes in the total revenue of all other firms in the industry. *Length* is the log of total number of words in the MD&A. *Size* is the natural log of a firm’s average total assets in year t. *MB* is the ratio of a firm’s market to book value of equity in year t. *ROA* is income before extraordinary items scaled by average total assets of year t. *ROA_Decrease* is a dummy variable that equals to 1 if a firm has lower ROA in year t than that of year t-1, and 0 otherwise. *RET* is the one-year accumulative return of a firm’s stock price by the end of fiscal year t.