

CORPORATE GOVERNANCE CHANGES FOLLOWING EARNINGS
RESTATEMENTS

By

ALIZA ROTENSTEIN

A dissertation submitted to the Graduate Faculty in Business in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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Dr. Masako Darrough

Date

Chair of Examining Committee

Dr. Joseph Weintrop

Date

Executive Officer

Dr. Jay Dahya

Dr. Masako Darrough

Dr. Jimmy Ye

Supervisory Committee

Abstract

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by

Aliza Rotenstein

Advisor: Professor Masako Darrough

This dissertation investigates whether firms that restate previously released financial reports implement subsequent changes in internal governance in an effort to correct underlying problems that contributed to the need for restatement in the first place. Restatements might be expected to spur improvements to corporate governance. On the other hand, perhaps entrenched and/or overconfident managers do not initiate governance changes. Also, governance changes may be less likely following relatively technical restatements.

Various likely responses to financial reporting problems, including board, audit, and management changes, are indexed into a single measure in an effort to assess the joint strength of *multiple* corporate governance attributes within a firm. The results indicate that corporate governance changes are *most* likely following income-decreasing restatements, when there are declines in prior firm performance, and in larger firms. In these circumstances, firms appear to understand the value in strengthening their corporate governance. On the other hand, they are *least* likely following technical revenue recognition restatements involving Staff Accounting Bulletin No. 101, when the governance level in the pre-restatement period is high, and when there is a gain in the

market value of the firm following its announcement of restatement. Due to the nature of these types of restatements, regulators might deem intervention in these circumstances unnecessary. However, in a variety of other types of restatements, the benefits of regulation to correct the problems that prompted the misreporting and the eventual need for restatement are more apparent.

This study makes several contributions. First, it classifies Government Accountability Office restatements more finely on the basis of presence of fraud, prompter, magnitude, severity, and reason for the restatement. Where prior studies consider only selective changes, this study examines the joint impact of changes to *multiple* governance attributes. Furthermore, this study recognizes that responses to restatements likely relate to particular characteristics of the restatement as well as to individual firm characteristics that were present in prompting the need for restatement. Accordingly, this investigation relates the nature and magnitude of a restatement with the likelihood of changes designed to strengthen the weaknesses in governance attributes that might have contributed to misstatement.

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1. Introduction

Empirical studies report that key corporate governance features, such as outside board members, separate CEO and Chairman of the Board positions, an independent audit committee, the use of a Big Four auditor, and a small board size, can be useful in reducing financial misreporting (e.g., Beasley, 1996; Dechow, Sloan, and Sweeney, 1996; Abbott, Parker, and Peters, 2004; Agrawal and Chadha, 2005; Farber, 2005; Baber, Kang, and Liang, 2007). In these studies, both restatement and SEC-targeted fraud firms are associated with weaknesses in their internal corporate governance mechanisms.¹ This relation between corporate governance quality and financial reporting credibility has been one driving force behind the euphoria surrounding corporate governance regulation in recent years. In particular, the Sarbanes-Oxley Act of 2002 enhanced regulatory standards for all U.S. public company boards and management by requiring the certification of financial reports by top managers and by establishing harsh criminal penalties for altering or falsifying records.²

The heightened interest in the governance of U.S. firms has resulted in part from a restatement trend in recent years (Abbott et al., 2004). According to the U.S. Government Accountability Office (GAO, hereafter), the number of financial statement restatements

¹ Baber et al. (2007) find that it is weak external governance mechanisms rather than internal governance mechanisms that relate to the occurrence of restatements.

² Sections 302 and 802, respectively.

steadily rose from 92 in 1997 to 370 in 2004.³ In addition, consequences to restatement firms have been severe, typically resulting in large losses in market value following announcements of restatements, which are sometimes accompanied by legal actions by investors and/or the Securities and Exchange Commission (SEC, hereafter) (e.g., GAO, 2002; Wu, 2002; Palmrose, Richardson, and Scholz, 2004; Palmrose and Scholz, 2004).⁴

The purpose of this dissertation is to investigate whether firms that restate previously released financial reports implement subsequent changes in internal governance in an effort to correct underlying problems that contributed to the need for restatement in the first place. In doing so, various likely responses to financial reporting problems, including board, audit, and management changes, are indexed into a single measure. Prior studies have examined selective aspects of changes to corporate governance in the period following a restatement, including the turnover of senior management and board members (e.g., Desai, Hogan, and Wilkins, 2006; Srinivasan, 2005). This study goes beyond prior literature on the topic by further examining the link between restatements and internal corporate governance changes. In doing so, a broad measure of corporate governance that encapsulates board, audit, and management elements is created in an effort to assess the joint strength of *multiple* corporate governance attributes within a firm.

While it would appear reasonable to think that all firms would prefer to correct problems that prompted restatements, a reform in corporate governance does not

³ There was a slight drop in number of firms restating between 2002 and 2003 (GAO, 2006).

⁴ Palmrose et al. (2004) report a significant average abnormal return of -9.2% over a 2-day announcement window. Similarly, the GAO Report finds that stock prices of restating companies over the 1997 to 2001 period fell 9.5% on average, over a 3-day announcement window.

necessarily follow restatements. It is likely that entrenched and/or overconfident managers may not fully recognize the need to implement nor the value of implementing governance changes and thus choose not to undertake improvements. Further, in technical restatements, such as those that arise in response to guidance by the SEC or the Financial Accounting Standards Board (FASB, hereafter), governance changes are, perhaps, less necessary and therefore less likely. Prior studies do not control for all the variation in the characteristics of restatements. For example, Desai et al. (2006) do not differentiate restatements by their relative effects on firms' financial statements or by the stated reason for the restatement. It is likely, though, that responses by firms following restatements might vary according to the severity and reason for the restatement.

This study contributes to the literature by classifying GAO restatements more finely on the basis of presence of fraud, prompter, magnitude, severity, and reason for the restatement. This classification recognizes that responses to restatements likely relate to particular characteristics of the restatement as well as to individual firm characteristics that were present in prompting the need for restatement. For instance, restatements involving outright fraudulent activities often stem from poor managerial oversight, spiraling from weak internal control systems. In these scenarios, corporate governance changes might be expected to follow restatements in a direct effort by restatement firms to strengthen company controls. In contrast, many restatements may not arise from poor managerial oversight. Rather, it is often overconfident and, possibly, entrenched managers who engage in overly aggressive accounting methods that leads to the need for restatement. In these cases, the expected association between restatements and resulting changes to firms' corporate governance is less clear and remains an empirical question.

Accordingly, this investigation explores the characteristics connected to the restatement in an effort to relate the nature of a restatement with the likelihood of corporate governance changes and to identify those features that are most strongly associated with governance changes.

Depending on the nature and magnitude of a financial statement restatement, one might expect that some restatements pose more serious concerns than others. Some are “retrospective applications” of more appropriate accounting principles, while others are necessary as a result of intentional manipulations undertaken by management to mislead stakeholders.⁵ Thus, the response by a firm following its announcement of the need for a restatement is expected to be correlated with the gravity of the restatement and its individual characteristics. Along these lines, the results indicate that corporate governance changes are *most* likely following income-decreasing restatements and when prior firm performance is relatively more negative.⁶ In addition, they are more common in larger firms. Furthermore, they are *least* likely following technical revenue recognition restatements involving Staff Accounting Bulletin No. 101 (SAB101, hereafter), when the governance level in the pre-restatement period is high, and when there is a gain in the market value of the firm to its announcement of restatement.

⁵ The classification of the restatement database on the basis of presence of fraud, prompter, magnitude, severity, and reason for the restatement is used to distinguish these, to the extent possible. For example, based on an analysis of restatement announcements, revenue recognition restatements are partitioned by whether or not they arise in response to guidance by the SEC or FASB. While those that do are deemed more technical in nature, those that do not are considered relatively more severe.

⁶ While univariate results confirm findings by Farber (2005) and show that corporate governance changes are more likely in the presence of fraud, multivariate regression results do not provide statistical significance ($p=.1690$). Tests of individual responses by firms to restatements reveal that while CEO turnover is significantly likely following restatements involving fraud, board and audit changes are not.

Given the pervasiveness of earnings restatements in recent years as well as the severe penalties that restatements present to firms, the decision by restatement firms to implement changes designed to improve governance mechanisms is important for managers, auditors, and board members. In addition, the relationship, if any, between restatement characteristics and subsequent governance changes also has implications for investors and regulators. First, investors can be comforted by the finding that income-decreasing restatements and declines in firm performance prior to the restatement announcement “force” firms to correct underlying problems by implementing changes to their governance mechanisms. In these circumstances, firms appear to understand the value in strengthening their corporate governance. On the other hand, technical restatements that involve SAB101 and those that result in gains to firms’ market values are less likely to effect governance changes. Due to the nature of these types of restatements, regulators might deem intervention in these circumstances unnecessary. However, in a variety of other types of restatements, the benefits of regulation to correct the problems that prompted the misreporting and the eventual need for restatement are more apparent. These include restatements affecting a greater number of quarters, those resulting in a loss in market value following the restatement announcement, and those that are classified as relating to relatively more serious revenue recognition issues.

The next Chapter provides a brief background and overview of the literature on restatement firms. Chapter 3 outlines the research methodology, and Chapter 4 develops the hypotheses and presents a simple model. Chapter 5 describes the sample selection process and the sample firms, and Chapter 6 explains the method used to construct the

governance index. The empirical results are reported in Chapter 7, and Chapter 8 discusses implications for future research and concludes.

2. Background and Review of Restatement Literature

The financial reporting system serves to provide information about firms to investors as a basis for resource allocation decisions. In addition, it serves as a basis for contracting and as a basis for monitoring managerial actions. Vital to the interpretation of published financial statements is that they be credible and accurate. To the extent that imprecision or discretion is permitted, the value of the financial reporting system can, to a degree, be reduced. Consequently, the importance of its reliability cannot be overstated. In recent years, the credibility of accounting practices and the quality of financial disclosure and oversight in the United States have been called into question due to large-scale restatements and accompanying scandals in large, public companies such as Enron, Tyco, and WorldCom.

A study published by the GAO in October 2002 (GAO Report, hereafter) examines financial statement restatements announced over January 1997 through June 2002 and finds that the number of financial statement restatements rose from 92 in 1997 to 225 in 2001. Furthermore, the proportion of listed companies on the New York Stock Exchange (NYSE, hereafter), American Stock Exchange, and NASDAQ identified as restating their financial reports tripled from less than 0.89% in 1997 to approximately 2.5% in 2001, with the trend continuing to rise in 2002. Overall, the GAO Report finds that from January 1997 through June 2002, about 10% of all listed companies announced at least one restatement. The restatements were not only confined to small firms, but the number of large company restatements grew as well over this 5-year period. The average

(median) size by market capitalization of a restating company increased from \$500 million (\$143 million) in 1997 to \$2 billion (\$351 million) in the first half of 2002. The Huron Consulting Group confirmed the persistence of this restatement trend by noting that the number of restatements by public companies grew from 233 in 2000 to 414 by 2004 (Huron Consulting Group, 2005). In a follow-up study by the GAO, the number of restatements showed little sign of abating, climbing to 370 in 2004 and 523 in the January 2005 through September 2005 period (GAO, 2006).

The dominating reason for financial statement restatements is also significant. The GAO Report finds that issues involving revenue recognition account for almost 38% of the 919 announced restatements that it identifies over 1997 through June 2002. Similarly, the Huron Consulting Group ranks revenue recognition as the most important accounting issue in driving restatements over 2000 through 2004 (Huron Consulting Group, 2005). Premature recognition of income by management appears to be the most common cause of financial statement restatement over these years.

2.1 Characteristics/Motivations of Restating Firms

Kinney and McDaniel (1989) find the typical restating firm to be smaller, less profitable, more highly leveraged, and slower growing than other firms in the same industry. In addition, they find that, on average, the corrections reduce earnings originally reported. Similarly, DeFond and Jiambalvo (1991) find the majority of errors in reported earnings to be overstatements of earnings. As such, DeFond and Jiambalvo (1991) contend that errors may arise as a result of management seeking to improve reported earnings. Confirming the income-increasing motivation, they find that overstatements are

more likely when firms have diffuse ownership, lower growth in earnings, and fewer income-increasing GAAP alternatives available.

In a similar vein, Richardson, Tuna, and Wu (2003) argue that earnings restatement firms intentionally manipulated earnings, and thus the occurrence of restatements might be explained by previously cited motivations for earnings management. They report results that are consistent with the view that outstanding debt and capital market pressures caused firms to manage their earnings upward. Restatement firms are shown in this study to be, on average, high growth firms that have greater external financing needs. In addition, restatement firms record larger total accruals than non-restatement firms. Since prior research documents that firms with high accruals are more likely to be subject to SEC Enforcement Actions (Dechow et al., 1996), and firms subject to SEC Enforcement Actions can be characterized as having adopted aggressive accounting policies, the implication of this result is that earnings restatement firms might have adopted aggressive accounting policies too.

Compensation incentives appear to also play a role. Efendi, Srivastava, and Swanson (2006) argue that CEOs of restatement firms were motivated to misstate earnings in order to increase stock price and thus benefit from holding in-the-money stock options. Similarly, Burns and Kedia (2006) report that CEOs with option portfolios that are more sensitive to stock price are significantly more likely to behave opportunistically and misreport. Finally, Burns, Kedia, and Lipson (2006) examine incentives of institutional investors with short investment horizons and show that the incidence of restatements increases with ownership.

2.2 *Reactions to Restatement Announcements*

Restatements typically trigger strong negative stock price reactions, resulting in a diminution in firm value. Palmrose et al. (2004) report a statistically significant abnormal return of -9.2% over a 2-day announcement window for a sample of 403 restatements announced from 1995 through 1999. Similarly, the GAO Report finds that stock prices of restating companies over 1997 to 2001 fell, on average, by almost 10% during a 3-day announcement window.^{7,8} According to the GAO Report, the restating companies lost a staggering \$100 billion in market capitalization, of which \$56 billion was attributed to revenue recognition restatements. Other studies document increases in the cost of equity capital following restatements, making it more costly for these firms to secure future financing (Hribar and Jenkins, 2004; Anderson and Yohn, 2002), decreases in the earnings response coefficient, reducing the information content of earnings (Wu, 2002; Wilson, 2006), and increased incidence of litigation against restating companies (Palmrose and Scholz, 2004). In sum, financial statement restatements appear to be important and significant economic events for exchange-traded firms in the United States.

2.3 *Determinants of Stock Price Reaction to Restatement Announcement*

A number of papers attempt to explain the market reaction to restatement announcements. One interpretation is that announcements of restatements signal to investors that prior financial statements are of relatively lower “quality” and are

⁷ The GAO Report also finds a longer-term market-adjusted decline of 18% over the period from 60 trading days before the announcement to 60 trading days after the announcement.

⁸ See also Turner, Dietrich, Anderson, and Bailey (2001), Anderson and Yohn (2002), Wu (2002), and Richardson, Tuna, and Wu (2003) for evidence of negative stock price reactions to restatement announcements.

unreliable (Anderson and Yohn, 2002). The most prevalent finding among these studies is that a large negative stock price reaction follows restatement announcements of revenue recognition issues. Investors appear to be most concerned about restatements related to revenue recognition, presumably because they affect the quality of future cash flows. In this vein, Anderson and Yohn (2002) suggest that revenue recognition issues are more fundamental in terms of their implications for future profitability.

Furthermore, perhaps investors perceive revenue recognition issues to be more indicative of overconfident CEOs and senior managers aggressively reporting financial results. This draws on the behavioral corporate finance literature that examines overconfident CEOs who overestimate their ability to generate value within their company. In several studies, this overconfidence bias is linked to systematic distortions in corporate investment decisions. For example, Malmendier and Tate (2005a and 2005b) study the tendency of a CEO to overly invest in his or her own company by regularly buying its stock or by holding onto stock options long beyond the point at which they should be exercised. Malmendier and Tate (2005c) also report that overconfident CEOs overestimate their ability to generate returns, and thus, on the margin, undertake mergers that destroy value. With regard to financial reporting, overconfident managers may similarly overestimate their own abilities to benefit the company and may employ overly aggressive accounting methods that result in the need for restatements.

Richardson et al. (2003) show that restatement firms reporting the highest level of accruals experience the largest negative stock price reaction on the announcement of

earnings restatements. This finding indicates that information in accruals can be useful in predicting the earnings management behavior of restatement firms.⁹

Palmrose et al. (2004) hypothesize that restatements that increase expected monitoring costs are associated with relatively more negative returns. These include restatements involving fraud, such as those associated with the issuance of an Accounting and Auditing Enforcement Release (AAER, hereafter) by the SEC, as well as restatements identified externally by an auditing firm or by the SEC. Palmrose et al. (2004) empirically show that the presence of fraud, more material negative changes in previously reported net income, and the pervasiveness of the restatement (as proxied by the number of account groups affected) are associated with a more negative market reaction. While restatements attributed to the auditing firm or management are associated with more negative returns, there is surprisingly little incremental effect when the SEC initiates a restatement.

Gordon, Henry, Peytcheva, and Sun (2006) examine the characteristics of the restatement announcement and find that disclosure credibility also plays a role in the market reaction. Specifically, greater management credibility, as measured by the amount and tone of discretionary disclosure prior to a restatement, is associated with a less negative market reaction.

2.4 *Corporate Governance Studies*

The association between firms' governance structures and the likelihood of restatement has been examined in several papers. Agrawal and Chadha (2005) find that the presence of independent directors with a background in accounting or finance reduces

⁹ This idea is further developed in Darrough, Rotenstein, and Ye (2006).

the likelihood of restatement. However, they find no relation between the probability of restatement and board independence, audit committee independence, or auditor conflicts. Abbott et al. (2004) document that the independence of the audit committee and whether the committee meets at least four times per year significantly reduces the likelihood of financial reporting restatements.¹⁰ In addition, they show that the probability of restatements increases with board size. Evidence in both these papers underscores the importance of financial expertise as a means of strengthening the role that the audit committee plays in the financial reporting process.

Highlighting the importance of shareholder participation in the governance process, Baber et al. (2007) provide evidence indicating that restrictions on shareholder participation foster a greater degree of management entrenchment and thus increase firms' propensity to misreport.¹¹

The studies that relate most closely to this one explore firms' reactions following earnings restatements. Considering the substantial costs associated with financial statement restatements, the incidence of a restatement might propel firms to take actions to prevent a future occurrence. In particular, firms might choose to penalize those managers and/or directors who are responsible for overseeing the financial reports. Desai et al. (2006) document significant penalties for senior managers (defined as Chairman, CEO, or President) in the two years following a restatement. They find that corporate boards and the external labor market impose severe penalties on top managers in the form

¹⁰ The audit committee plays a role in the financial monitoring of the firm and is thus examined to ascertain the extent of its influence in internal and external audit effectiveness.

¹¹ Though external governance mechanisms relate to the occurrence of restatements, Baber et al. (2007) find that internal governance mechanisms (e.g., independence of the board of directors) fail to explain the likelihood of restatement.

of termination and a low re-hire rate for displaced managers. Collins, Reitenga, and Sanchez-Cuevas (2006) find an increase in the termination of non-CEOs as well as a reduction in bonus payments for both CEOs and non-CEOs in restatement years. Cheng and Farber (2006) report a reduction in the proportion of CEOs' compensation in the form of options in the two years following a restatement.

Penalties are not only confined to CEOs and senior managers, but outside directors are also subject to greater scrutiny. Srinivasan (2005) documents a significantly higher turnover on restating company boards in firms that restate earnings downward and that the probability of outside director turnover increases with the severity of the restatement, as measured by the income effect of the restatement and the length of the restatement period.

Much of the restatement literature parallels a more developed body of literature concerning financial statement frauds. With regard to corporate governance associations, studies find various internal corporate governance mechanisms to be useful in reducing the likelihood of financial statement fraud. Beasley (1996) and Dechow et al. (1996) provide evidence that the presence of outside board members reduces the likelihood of fraud. Dechow et al. (1996) further show that the separation of the CEO and Chairman of the Board positions, the creation of an audit committee, and the presence of a blockholder reduce the incidence of fraud in firms.¹² Finally, Farber (2005) finds that the use of a Big Four auditor mitigates the likelihood of fraud.

¹² Farber (2005) likewise reports that fraud (AAER) firms are more likely to have a CEO who also serves as the board chair. In contrast, Beasley (1996), Abbott et al. (2004), Agrawal and Chadha (2005), and Erickson, Hanlon, and Maydew (2006) find that the probability of accounting failure is unaffected by the separation of the CEO and Chairman of the Board positions.

While Agrawal, Jaffe, and Karpoff (1999) and Beneish (1999) find no association between the detection of financial reporting fraud and senior management turnover, Feroz, Park, and Pastena (1991) find increased forced resignations of top managers in SEC-targeted firms. Similarly, Livingston (1997) reports significant turnover of top managers and financial officers subsequent to detection. And, in another post-fraud study of 87 AAER firms during 1982 – 2000, Farber (2005) focuses on changes in various governance mechanisms following the detection of financial reporting fraud. He finds a number of governance changes in the three years following the revelation of fraud, including an increase in the proportion of outside directors, an increase in the number of audit committee meetings, and a reduced prevalence of the same individual holding the title of Chairman and CEO. The paper also documents improved stock price performance as evidence of the successful efforts of fraud firms to restore investors' trust.

2.5 *Focus of this Study*

While fraudulent activity could result in the need for restatement, restatements do not necessarily involve fraud and thus represent a broader group of firms. Moreover, firm and governance characteristics in the two settings might be quite different, resulting in different causes for as well as responses to the respective financial reporting problems. Specifically, financial statement fraud often stems from poor managerial oversight, spiraling from weak internal control systems. Because internal controls are ineffective, management turnover as well as other changes in governance are likely to follow fraud detection as a means to curb fraudulent behavior and strengthen the internal control

system.¹³ It should be noted, however, that although governance changes may be initiated in an effort to achieve a stronger internal control system that will reduce fraudulent behavior, it is certainly possible that governance changes may not actually achieve anything other than send investors a signal that actions are being taken.

In contrast to financial statement fraud, many restatements do not arise due to poor managerial oversight and outright fraudulent activities. Rather, it is often overconfident and, possibly, entrenched managers who engage in overly aggressive accounting methods that leads to the need for restatement. As discussed earlier, this is based on the growing behavioral corporate finance literature that examines overtly confident CEOs who overestimate their ability to generate value within their company and thus systematically make distorted decisions about when, how, and how much to invest in new projects. For example, Malmendier and Tate (2005a and 2005b) relate the overconfidence bias to a managerial reluctance to raise outside equity to fund new projects. Instead, overconfident CEOs overly invest in their own companies by regularly buying company stock or by holding onto stock options long beyond the point at which they should be exercised. Malmendier and Tate (2005c) also report a tendency of overconfident CEOs to overestimate their ability to generate returns, and thus, on the margin, undertake mergers that destroy value. More generally, ‘superstar CEOs,’ described as those who receive prestigious nationwide awards from the business press, are reported in Malmendier and Tate (2007) to subsequently react to the media-induced superstar culture with behavioral distortions, specifically with respect to managing company earnings. These effects are strongest in firms with weak corporate governance,

¹³ Findings by Feroz et al. (1991), Livingston (1997), and Farber (2005) support this expectation.

suggesting that changes in corporate governance could limit the negative consequences that result following the winning of awards.

With regard to financial reporting, managers have discretion in obtaining estimates relating to bad debt allowances, accruals, impairment of assets, recognition of gains and losses, and various timing issues, among others. Although they are not inherently fraudulent, consistently aggressive estimates may result in the need for restatements. It is likely that entrenched and/or overconfident managers may not fully recognize the value in implementing governance changes and thus choose not to undertake improvements. In overestimating their own abilities to benefit the company, they may actually make distorted decisions, resulting in the eventual need for restatements, with their associated losses in value to the firm.

In addition, restatements are sometimes merely technical adjustments for compliance or represent companies strengthening their internal controls. In particular, the certification of financial reports required by Section 302 and the internal controls provisions of Section 404 of the Sarbanes-Oxley Act of 2002 prompted restatements.

While corporate governance changes are expected to follow restatements involving outright fraud, the reaction by firms to various non-fraudulent restatements and to other relatively technical restatements is unclear. Thus, the impact of these restatements on corporate governance and possible changes in the period following the restatements remains an empirical issue.

Extant research offers mixed conclusions on the impact of restatements in driving firms to take actions to prevent the need for future restatements. Considering the substantial costs associated with financial statement restatements, firms would

undoubtedly seek to correct underlying problems that potentially contributed to the need for restatement.¹⁴ In that context, restatements might be expected to spur improvements in corporate governance arrangements. On the other hand, perhaps entrenched and/or overconfident managers do not initiate governance changes. Also, in other types of more technical restatements, governance changes are, perhaps, less necessary and therefore less likely. Where prior studies consider only selective changes, this study examines the joint impact of changes to *multiple* governance attributes. In addition, while previous literature does not consider the significant variation in the characteristics of restatements and restating firms, this study recognizes that governance responses to restatements likely relate to particular characteristics of the restatement as well as to individual firm characteristics that were present in prompting the need for restatement. Accordingly, this investigation focuses on the relation between the nature and magnitude of financial statement restatements and any changes designed to jointly strengthen the weaknesses in multiple governance attributes that might have contributed to misstatement.

¹⁴ Although, in general, restatements present substantial costs to firms, they are often cost effective to managers with short-term incentives. For example, a CEO close to retirement might choose to distort earnings to increase his pension.

3. Research Methodology

To assess the impact of corporate governance changes following restatements, this study employs a composite score computed using an array of governance features that may have been adjusted in light of a financial statement restatement. This idea is similar to the “Governance Index” (*G-Index*), a composite measure of the strength in shareholder rights developed by Gompers, Ishii, and Metrick (2003). However, the index in this study differs from the *G-Index*, as the primary focus is on board strength as well as audit and management elements. A single score, comprising board, audit, and management features, is intended to give a more accurate portrayal of the joint strength of *multiple* governance attributes within a firm. A composite score is calculated in the year preceding a restatement announcement and then again two years following the restatement. The change in the composite score and determinants of that change is the focus of this study.

As with the *G-Index*, the composite score (*Index*, hereafter) may not accurately reflect the relative impact of different governance components. However, it has the advantage of being transparent, objective, and easily reproducible. Furthermore, as with the *G-Index*, the *Index* is a more efficient tool than pooling all the variables. Although certain corporate governance components might be expected to play a stronger role than others, substantial multicollinearity between the components would make it difficult to

construct powerful tests.¹⁵ Consequently, the *Index* enhances the power of any tests that might be performed.¹⁶ Moreover, the *Index* provides a convenient method to compare changes to firms' corporate governance levels over time and to examine the determinants of those changes.¹⁷

The following sections describe the construction of the *Index*. Specifically, board, audit, and management characteristics are discussed in terms of findings documented in previous studies, and the *Index* is constructed in accordance with attributes shown in prior literature to be associated with "good" corporate governance.

3.1 *Board Features*

Several characteristics of the board of directors have been examined in prior literature. For instance, numerous academic studies analyze the link between board composition and overall firm performance (Baysinger and Butler, 1985; Hermalin and Weisbach, 1991; Agrawal and Knoeber, 1996; Yermack, 1996; Klein, 1998; Bhagat and Black, 1999). Although results are mixed, there is no convincing evidence that firms with majority-independent boards perform better than firms without such boards (Bhagat and Black, 1999). However, greater board independence appears to enhance key decisions made by management with respect to responding to takeovers, setting executive compensation, and approving new CEOs (e.g., Weisbach, 1988; Cotter, Shivdasani, and Zenner, 1997; Core, Holthausen, and Larcker, 1999).

¹⁵ Gompers et al. (2003) find that there is lack of power in subindex regressions and that the relative importance of individual governance provisions cannot be measured precisely because of large standard errors that are partly due to multicollinearity between regressors.

¹⁶ This refers to statistical tests where the *Index* is an independent variable (right-hand side).

¹⁷ In this case, changes to the *Index* would function as the dependent variable (left-hand side).

Weisbach (1988) finds that more independent boards are more effective in their discipline of management, as indicated by a higher likelihood of CEO turnover following poor performance in firms with boards dominated by outsiders. Similarly, in their investigation of the effect of the Cadbury Committee's issuance of the *Code of Best Practice (Code)* on U.K. corporations, Dahya, McConnell, and Travlos (2002) find an increase in the sensitivity of management turnover to corporate performance in those firms that adopted the *Code*, in which boards of U.K. corporations were mandated to include at least three outside directors. The increase in sensitivity of turnover to performance is shown to be due to an increase in outside board members.¹⁸ Still others find that independent boards are more effective in reducing excessive executive compensation (Core et al., 1999; Cyert, Kang, and Kumar, 2002) and in increasing share values in the context of takeovers (Byrd and Hickman, 1992; Brickley, Coles, and Terry, 1994; Cotter et al., 1997). Moreover, recent public policy debate advocates independence of not only the full board, but also key oversight committees.¹⁹

Beyond independence, several other board characteristics have been discussed in prior literature. For instance, concerns about a lack of independent leadership are voiced in Jensen (1993), where he notes that when the CEO also holds the position of Chairman of the Board, internal control systems appear to fail. Among the board's chief functions is its responsibility to evaluate (and fire) the CEO. In boards where the CEO presides as

¹⁸ In contrast, Kang and Shivdasani (1995) report that the sensitivity of CEO turnover to performance is unrelated to the fraction of outside directors on the board. Similarly, Mikkelsen and Partch (1997) find no reliable relation between board characteristics and management turnover.

¹⁹ The Sarbanes-Oxley Act of 2002 required that publicly-traded firms have audit committees composed solely of independent directors. Similarly, as of November 2003, companies listed on the NYSE are required to establish audit, nominating/corporate governance, and compensation committees composed entirely of independent directors, and companies with securities quoted on NASDAQ are required to have audit committees composed entirely of independent directors.

chairman, it is likely that this job cannot be carried out effectively. Goyal and Park (2002) similarly find that CEO turnover is significantly less sensitive to firm performance in firms with combined titles than in firms with separate titles.²⁰

Yermack (1996) shows a positive association between a small board size and corporate valuation in large U.S. firms. In addition, other studies show negative effects when directors are involved in serving on other companies' boards (Core et al., 1999; Shivdasani and Yermack, 1999). Finally, interlocked directorships are found to have negative effects as well, especially in their association with higher CEO compensation and lower CEO turnover (Fich and White, 1993; Hallock, 1997; Core et al., 1999).

Given that some board attributes shown in prior literature are associated with “good” corporate governance, the *Index* increases by one if: (1) more than two-thirds of the board is comprised of independent directors; (2) all audit committee members are independent directors; (3) all compensation committee members are independent directors; (4) all nominating committee members are independent directors; (5) all corporate governance committee members are independent directors; (6) the titles of CEO and Chairman of the Board are not held by one individual; (7) the Chairman of the Board is an independent outside director; (8) the board size is less than the median of the distribution of all firms (adjusted for firm size and time); (9) the board interlock is less than the median of all firms (adjusted for firm size and time); or (10) the mean number of other boards served by a director is less than the median of the distribution of means of

²⁰ In opposing this view, Brickley, Coles, and Jarrell (1997) suggest that there are a number of costs that may offset the monitoring advantages that arise from a separate CEO-chairman leadership structure. These include costs in monitoring the chairman as well as information sharing costs between the CEO and the chairman. After reviewing potential benefits and costs associated with the separation of leadership roles, Brickley et al. (1997) conclude that the costs of separation may be larger than the benefits for most large firms.

all firms (adjusted for firm size and time). These ten attributes are used to measure the strength of a board.

Obviously, this approach has numerous shortcomings. Specifically, the assumption that each board attribute carries equal weight may be inaccurate, since it is likely that certain components might play a stronger role than others. Further, it is possible that there is a point at which higher levels of the *Index* do not indicate greater board strength. For example, there may be diminishing marginal returns in the case of too many independent directors. Finally, the selection of the variables is, at best, arbitrary. Some variables may proxy the same effect, and some variables may offset one another.

3.2 *Audit Features*

The consensus in prior studies that examine the value of audit firms suggests that Big Four audit firms provide better monitoring than other types of audit firms. For example, DeAngelo (1981) relates audit-firm quality to audit-firm size and finds that larger audit firms supply a higher level of audit quality. Larger firms are more susceptible to negative consequences resulting from failure to perform adequately and thus have less incentive to engage in opportunistic practices. Larger audit firms are also thought to face less litigation than other firms, because they provide higher quality audits (e.g., Palmrose, 1988). In view of this association, the *Index* increases by one if the firm employs a Big Six audit firm.²¹

Furthermore, the *Index* considers potential audit-firm changes (of any type) following a restatement. The *Index* increases by one in the post-restatement period

²¹ The Big Six existed until Price Waterhouse merged with Coopers and Lybrand in 1998.

(defined as two years following the restatement announcement) if there is a change in the external auditor since the pre-restatement period (defined as the year preceding the restatement announcement).

A potential limitation to this construction is that it captures all audit-firm changes regardless of the reason for the change. It does not distinguish between unexplained changes and changes that were merely routine.

3.3 *Management Features*

The significant inverse relation between firm performance and the probability of top management turnover is a finding that has been widely documented throughout the accounting and finance literatures.²² Specifically, turnover is found to increase when firm performance deteriorates. Consistent with effective internal monitoring, this result is most often credited to successful monitoring by boards of directors, other competing managers, large shareholders, and the threat posed by the takeover market. Given a negative relation between corporate performance and top management turnover, it follows that the announcement of a restatement, with its associated decline in stock market performance, might result in a change in management. If internal monitoring mechanisms are effective, and if stock price performance reflects information on managers' efficiency, there should be a negative relation between the probability of a top management change and share price performance (Warner, Watts, and Wruck, 1998). Thus, top managers are expected

²² See Benston (1985), Coughlan and Schmidt (1985), Weisbach (1988), Warner, Watts, and Wruck (1988), Gilson (1989), Jensen and Murphy (1990), Martin and McConnell (1991), Murphy and Zimmerman (1993), Denis and Denis (1995), Kang and Shivdasani (1995), Franks and Mayer (1996), Mikkelsen and Partch (1997), Denis and Sarin (1999), Huson, Parrino, and Starks (2001), Dahya, McConnell, and Travlos (2002), and Conyon and Florou (2002). For a review and discussion of evidence on top management turnover, see Furtado and Karan (1990).

to be held responsible for the occurrence of a restatement and its related stock market consequences.

To incorporate management changes into the study, the *Index* is adjusted according to the level of CEO turnover. If a restatement firm experiences a change in CEO between the pre-restatement and post-restatement periods, the *Index* increases by one in the post-restatement period.

There are a number of caveats here that should be noted. First, similar to the case of audit-firm changes, this approach does not discern forced changes from normal management turnover. Moreover, as with changes to board features, it is possible that management changes do not imply stronger corporate governance. Alternatively, it is conceivable that a CEO is fired as a scapegoat to send a signal to investors that fundamental changes are being made. Finally, despite the steep decline in stock prices associated with restatements, top management turnover does not necessarily occur so soon after an announced restatement. Rather, it might require several years of sustained underperformance before any change is likely.

3.4 Calculation of *Index-Change*

Index-Pre is calculated in the year preceding the restatement announcement, and *Index-Post* is calculated two years following the restatement. $Index-Post / Index-Pre - 1$ (*Index-Change*) is calculated as the percentage change between the two.

Index-Change demonstrates the extent of board, audit, and CEO changes implemented by restatement firms. By construction, the larger the score, the greater the extent of improvements.

4. Regression Model and Hypotheses Development

4.1 Overview

The purpose of the regression model is to explore the relation between *Index-Change* and various restatement and firm characteristics thought to influence *Index-Change*. The expectation is that variation in *Index-Change* among restatement firms can be explained by restatement- and firm-specific characteristics.

Broadly speaking, the decision to strengthen corporate governance following a restatement is a function of the type and severity of the restatement. This conjecture is summarized in the base case equation below.

$$\text{Index-Change} = F(\text{presence of fraud, prompter, duration, magnitude, reason, market reaction, pre-restatement governance, firm size, prior performance, firm industry, restatement year})$$

The following sections discuss the arguments in the preceding equation and then formulate related hypotheses. Sections 4.2 and 4.3 identify the test and control variables.

4.2 Test Variables

4.2.1 Presence of Fraud

The expectation is that restatements that indicate lack of management integrity will motivate a decision to strengthen corporate governance and thus be positively related

to *Index-Change*. As in Palmrose et al. (2004), restatements involving fraud are classified based on company disclosures of fraud (irregularities) or issuance of an SEC AAER. Since fraud represents intentional, non-GAAP financial reporting, it demonstrates lack of management integrity. Therefore, the first hypothesis follows:

Hypothesis 1. There is a positive relation between restatements involving fraud and changes to strengthen firms' governance mechanisms in the aftermath of restatement.

4.2.2 *Prompter of the Restatement*

Similarly, the party that identifies the need for restatement reveals information about management competence and integrity. Indicator variables are used for company, external auditor, and SEC-attributed restatements. As in Palmrose et al. (2004), restatements without attribution serve as a no-information baseline. Relative to this baseline, the incremental effect of company attribution should be negative, since detection by the company signals relatively stronger oversight by management, boards, and audit committees. Conversely, attribution to outside parties, either the external auditor or the SEC, indicates weak internal monitoring functions and should thus be positively associated with *Index-Change*. Hypotheses 2a and 2b summarize:

Hypothesis 2a. Company-initiated restatements are associated with less change in the corporate governance index in the period following the restatement.

Hypothesis 2b. Restatements prompted by the external auditor or the SEC are associated with more change in the corporate governance index in the period following the restatement.

4.2.3 *Severity of the Restatement*

The severity of the restatement undoubtedly plays a role in the decision to alter governance structure in the post-restatement period. Severity can be regarded in terms of the duration or magnitude of the restatement. As in Palmrose et al. (2004) and Srinivasan (2005), duration refers to the number of quarters restated, and magnitude is measured by subtracting originally reported net income (in millions) from restated net income (summed over all restated periods) and scaling the difference by total assets at the year-end prior to the restatement announcement. The duration of the restatement is expected to be positively related to *Index-Change*. On the other hand, by construction, a restatement with negative magnitude refers to an income-decreasing restatement, while one with positive magnitude refers to an income-increasing restatement. Therefore, the lower the magnitude, the greater the expectation for an association with *Index-Change*. Hence, Hypotheses 3a and 3b follow:

Hypothesis 3a. The longer the duration of the restatement period, the greater the magnitude of change in the corporate governance index.

Hypothesis 3b. There is a negative relation between the magnitude of a restatement, measured as restated net income less original net income (scaled by total assets), and change in the corporate governance index.

4.2.4 Reason for the Restatement

The primary reason for the restatement likely reveals further details as far as the extent to which internal control (or lack thereof) might have been at fault. For instance, revenue recognition restatements potentially signal a greater degree of mismanagement. On the other hand, restatements resulting from matters that are more technical in nature are, perhaps, less indicative of improper financial reporting oversight. One such group may be those restatements triggered by the SEC initiative in late 1998 to restate in-process research and development (IPR&D, hereafter) charges.

Likewise, some revenue-related restatements are arguably more serious than others. In that vein, indicator variables are used to classify revenue recognition restatements into one of the following groups: (1) those restatements triggered by the SEC adoption of revenue recognition rules under SAB101;²³ (2) those restatements resulting from guidance by a FASB Emerging Issues Task Force (EITF, hereafter); or (3) all other revenue-related restatements.

This classification is intended to partition revenue recognition restatements in terms of severity. The expectation is that those revenue-related restatements that involve SAB101 or a FASB EITF are somewhat more technical in nature and should therefore have little effect on the decision by firms to improve corporate governance. On the other

²³ SAB101 targeted revenue recognition practices that had been used by some firms to manage earnings. The regulation prohibited revenue recognition prior to completion of the earnings process (see Altamuro, Beatty, and Weber (2005)).

hand, the most serious revenue-related restatements, such as those resulting from improperly recorded or overstated sales, understated costs of goods sold and other expenses, and timing of revenue recognition issues, should have a greater effect on the firm's decision to improve governance, and such changes should be positively correlated with *Index-Change*. Consequently, Hypotheses 4a and 4b result:

Hypothesis 4a. Restatements resulting from more technical matters do not lead to significant changes in the corporate governance index following restatements. These include restatements involving IPR&D write-offs, restatements related to SAB101, or restatements prompted by FASB guidance via an EITF.

Hypothesis 4b. The most severe revenue recognition restatements lead to significant changes to restatements firms' corporate governance index following restatements.

4.2.5 *Market Reaction to the Restatement*

Although the announcement of restatement typically triggers strong negative stock price reactions, there is some cross-sectional variation among restatement firms. Specifically, revenue recognition issues, high levels of accruals, the presence of fraud, more material negative changes in previously reported net income, and the pervasiveness of the restatement (as proxied by the number of account groups affected) all appear to be associated with a more negative market reaction (Anderson and Yohn, 2002; Richardson et al., 2003; Palmrose et al., 2004).

Farber (2005) shows that firms that take actions to change their corporate governance following the detection of financial statement fraud exhibit increases in future stock price performance, suggesting that investors appear to value governance improvements. If governance improvements are, in fact, viewed as credible signals, changes to corporate governance following restatements might likewise be expected to result in improved stock price performance and greater firm value in the long-run. Furthermore, the stock market reaction to a restatement announcement and its resulting effect on the market value of the restating firm might influence a firm in its response to the restatement. Specifically, a more negative stock market reaction signals a greater decrease in expected earnings and future cash flows and thus might induce more changes to a firm's governance mechanisms in an effort to avoid future restatements and to positively affect firm value and future company prospects. Empirically, the stock market reaction should be negatively related to *Index-Change*. Therefore, Hypothesis 5 obtains:

Hypothesis 5. There is a negative relation between the 2-day restatement announcement stock market return and changes in the corporate governance index in the period following the restatement.

4.3 Control Variables

In addition to the test variables, five variables are added to control for firm characteristics that might affect changes in corporate governance.

4.3.1 *Pre-Restatement Governance*

Because of data limitations, the restatement firms in the sample have a maximum *Index* value between 3 and 13 (mean = 10.84; median = 11). The governance level in the pre-restatement period is calculated as the fraction represented by the *Index* divided by the maximum *Index* for that firm-year, less the median governance level in the same industry-year in the control sample of non-restatement firms. This measure is used to compare the pre-restatement governance level of each restatement firm to the remaining firms in the industry in that particular year. Presumably, the higher the pre-restatement governance level, the greater the cost and effort needed for a restatement firm to enhance its governance mechanisms.²⁴ Perhaps, in such a situation, a firm would be less inclined (or able) to expend the necessary resources. In addition, as a second control of pre-restatement governance levels, the pre-restatement period of each sample restatement is matched to the median governance level in the same industry-year in non-restatement firms. This variable is used to control for patterns in governance levels among the various industries.

An important shortcoming of this approach is that it only accounts for governance changes among variables that are available in the pre-restatement period. To illustrate, a firm that retained its governance level among pre-restatement governance variables but enhanced its governance among other variables that are not available in pre-restatement data will appear to have made no enhancements to governance mechanisms. Moreover, a firm that reduced its governance level among pre-restatement variables but replaced those

²⁴ Since governance changes come at a cost to the firm, the benefits need to outweigh the costs. The higher the pre-restatement governance level, the more costly improvements become, and the less likely it is that the benefits will outweigh the costs.

governance features with other variables that are not available in pre-restatement data will appear to have weakened its corporate governance, when, in fact, it has merely adjusted its form.

4.3.2 *Firm Size*

Larger firms have stronger internal control systems than smaller firms (O'Reilly et al., 1998). If firms' internal controls act as sufficient monitoring mechanisms, then it would seem that larger firms require less additional monitoring of their reporting systems. On the other hand, if shareholders are more likely to sue larger firms than smaller firms, then larger firms may try to inoculate themselves against lawsuits by adopting stronger monitoring mechanisms than might otherwise be expected (Klein, 2002). In view of these alternatives, the association between firm size and enhancements to corporate governance in the wake of an earnings restatement is uncertain. Therefore, the size of the restatement firm, measured by total assets (in billions) at the year-end before the restatement announcement, is used in the model as a control. Larger firms are more homogeneous with regard to both resources and incentives to implement governance changes. In addition, larger firms are more likely to be homogeneous in terms of their audit features due to the higher likelihood of Big Four auditors.²⁵

4.3.3 *Prior Firm Performance*

To address the potential endogeneity between earnings restatements, governance changes, and corporate performance, the change in return on assets (ROA, hereafter) over

²⁵ Findings by previous studies suggest that Big Four audit firms provide better monitoring than other types of audit firms. For example, DeAngelo (1981) relates audit-firm quality to audit-firm size.

the two years leading up to the restatement announcement is used to control for prior firm performance to ensure that governance changes are not simply a reaction to deterioration in operating performance. The presumption is that firms with worse performance in the pre-restatement period are more likely to respond to the need for restatements with changes to corporate governance.

This control for prior firm performance successfully addresses concerns for reverse-causality but falls short of completely alleviating concerns of endogeneity. Because restatements are not exogenously determined, it may be that factors driving the need for restatement are also correlated with governance changes. As opposed to the restatement announcement directly driving the change in governance, it might be that poor performance (as well as other predictors of restatement) provides the impetus for restatement firms to implement governance changes. One possible solution that would further alleviate the endogeneity concern would be to condition the model on the probability of restatement.

4.3.4 Firm Industry and Restatement Year

Industry and restatement year variables are necessary to control for normal changes in corporate governance structure that vary by industry and by year. Previous studies have shown that restatements are more likely in certain industries, such as manufacturing and technology (Dechow, Sloan, and Sweeney, 1995; Richardson et al., 2003; Burns and Kedia, 2006). In addition, the year of the restatement needs to be considered. For example, the Sarbanes-Oxley Act of 2002 imposed a number of regulations that mandated enhanced standards for all U.S. public company boards,

management, and public accounting firms. Of particular consequence to the calculation of the *Index*, Section 301 of the Sarbanes-Oxley Act required all listed companies to have audit committees composed entirely of independent directors. In addition, the internal controls provisions of Section 404 likely prompted a number of restatements after 2002. As such, it is decidedly important to control for the effects of both the industry and the year of the restatement.

The median *Index-Change* over the prior three years is calculated for each industry-year in non-restatement firms, where an industry is defined by its 2-digit SIC code. The intuition for this calculation is as follows. *Index-Change* corresponds to the change in governance level between the pre-restatement and post-restatement periods. By construction, this represents a span of three years. Therefore, to control for “normal” changes in the *Index* over a three-year period, each sample restatement is matched to the median *Index-Change* for the corresponding industry-year in non-restatement firms. This control variable is referred to as *Index-Change-Control*.

5. Sample Selection and Summary Statistics

5.1 Sample Selection

The sample consists of 919 financial statement restatements issued by 845 public companies from January 1, 1997 through June 30, 2002, as identified by the 2002 GAO Report. These restatements were announced to correct previous material misstatements of financial results. The GAO database excludes announcements involving stock splits, changes in accounting principles, and other financial statement restatements that were not made to correct mistakes in the application of accounting standards.

The GAO Report supplies some useful data regarding each restatement announcement. For instance, restatements are categorized into one or more of nine major categories, such as revenue- and expense-related restatements. In addition, the prompter of each restatement (i.e., company, auditor, SEC) is identified. The research employed herein uses a more detailed classification of the restatement firms, which, specifically, scrutinizes restatements and partitions them on the basis of the magnitude of the restatement's effect on net income, the total number of financial periods restated, and the reason for the restatement. These items are identified through a comprehensive search of restating firms' 10-Ks/10-Qs and amended 10-Ks/10-Qs as well as from information provided by the individual firms.

The GAO restatement firm database is then merged with Compustat's Executive Compensation (ExecuComp, hereafter) database to ensure that management-related data are available to include in the *Index*. The data are further merged with the database

compiled by the Investor Responsibility Research Center (IRRC, hereafter). IRRC data are taken from publicly-available 1996-2004 proxy statements issued in anticipation of the annual meetings for the S&P 1500 companies. The data include characteristics pertaining to the board of directors and are thus utilized in the calculation of the *Index*.

These datasets combine to obtain 254 restatements by 225 unique firms. In order to perform the analysis, data must be available in both the pre-restatement and post-restatement periods. Because of this requirement, the sample is reduced to 140 restatements. An additional three observations are further eliminated due to missing data regarding the restatement duration and magnitude, yielding 137 restatements in the final sample.

Panel A of Table 1 presents a reconciliation of the sample, and Panel B presents the control sample. The control sample consists of all non-restatement firms (i.e., non-GAO firms) over the period 1996 – 2004 appearing in both the ExecuComp and IRRC databases. Table 1, Panel B provides a distribution of control sample firms across the years 1996 – 2004. The number of firms with available data increases slightly each year from 949 in 1996 to 1,262 in 2004.

5.2 *Summary Statistics*

Panel A of Table 2 presents the yearly distribution of sample restatements. Although the sample period extends from the beginning of 1997 through June 2002, the vast majority of the restatements (71%) are announced between the years 1999 and 2001, in part due to the SEC initiatives to restate IPR&D charges and to adopt new revenue recognition rules under SAB101, in late 1998 and late 1999, respectively. Table 2, Panel

B provides the distribution of sample restatements across firms. Because of several cases of multiple restatements by firms, the 137 sample restatements are issued by 121 unique firms. Multiple restatements by firms are analyzed independently, each one presenting its own set of circumstances. Finally, Panel C of Table 2 provides the industry distribution of sample restatements. With more than 37% of the restatements, manufacturing is the most frequently occurring industry in the sample. Using the same industry classification system, manufacturing is also the industry with the greatest number of Compustat firms (32.5%), implying that this finding is consistent.

Descriptive statistics for sample restatements are presented in Table 3. Based on the GAO Report, Panel A itemizes the sample by initiator of the restatement, exchange listing of the restatement firm, and reason for the announced restatement. In addition, the sample is classified by the presence or absence of fraud based on company admission of misstatement due to fraud/irregularities or based on issuance of an enforcement action (AAER) by the SEC. The Lexis-Nexis Academic Universe is searched by restatement firm name for occurrences of AAERs in all years subsequent to the announced restatement. The circumstances surrounding each AAER are carefully studied to determine whether fraudulent behavior by the firm prompted the SEC action.²⁶

While auditor-initiated restatements account for the smallest portion of the sample (4%), 30% of the identified sample restatements are initiated by the company, and 25% are initiated by the SEC. The majority of the restatements in the sample are announced by NYSE-listed firms (75.2%), reflecting the fact that the sample restatements are made by

²⁶ AAERs are generally quite explicit in specifying the targets and causes of the enforcement action. Therefore, based on the timeline and stated details of each AAER, it is relatively objective to ascertain whether it was fraudulent behavior by the firm that prompted the SEC action.

relatively large companies. Of the total control sample, 66% are NYSE-listed firms, as compared to 36.6% of all Compustat firms. This indicates that it is the sample selection that leads to the large-company bias. Fraud is associated with 28% of the sample restatements. This is roughly comparable to the 21% identified by Palmrose et al. (2004) in their restatement sample. Finally, revenue recognition is identified as the reason for restatement in 44% of the sample, which is comparable to the findings of the GAO Report.²⁷

Panel B of Table 3 describes the restatements identified as revenue-related in further detail. Restatements triggered by the SEC adoption of revenue recognition rules under SAB101 and those resulting from guidance by a FASB EITF account for equal shares of the sample (32% each). The remainder of the sample (about 37%) comprises all remaining revenue-related restatements, such as those resulting from improperly recorded or overstated sales, understated costs of goods sold and other expenses, and timing of revenue recognition issues.

Panel C of Table 3 reports some further descriptive statistics for the sample restatements. The mean (median) restatement amount is -\$353.6 (-\$4.9) million. This is calculated by subtracting originally reported net income (in millions) from restated net income (summed over all restated periods). The magnitude of the restatement measures the restatement amount as a percentage of the firm's total assets at the year-end prior to the restatement announcement. The mean (median) magnitude for the sample is -2.3% (-0.16%). These numbers are consistent with the notion that, on average, it is income-decreasing restatements that are required to correct prior misstatements of net income,

²⁷ The GAO Report identifies revenue recognition as the reason for restatement in 38% of the restatements analyzed.

often due to intentional manipulation. The duration of the restatement, measured as the number of quarters restated, has a mean (median) value of 6.3 (4.0). This is similar to findings by Palmrose et al. (2004) and Srinivasan (2005), among others.

As in Palmrose et al. (2004), a market-adjusted model based on an equally weighted index (with dividends) is used to estimate abnormal returns. This model subtracts the CRSP market index return from a firm's daily return to obtain the market-adjusted abnormal return for each day and firm. The daily abnormal returns are summed to calculate the cumulative abnormal return (CAR, hereafter) for a given time period.²⁸ The mean (median) market-adjusted CAR, using an equally weighted index over the 2-day window beginning on day 0, the day of the restatement announcement, is -5.0% (-2.7%).²⁹ This is comparable to results in Agrawal and Chadha (2005) but slightly lower than results in Palmrose et al. (2004).³⁰ Finally, the panel confirms that the sample firms are relatively large. The mean (median) total assets at the year-end prior to the restatement announcement is \$9,101 (\$2,513) million.

Panel D of Table 3 provides a cross-sectional analysis of the 2-day announcement return beginning on day 0. T-tests and Wilcoxon signed-rank tests are used to determine whether mean and median measures are significantly different from zero in each case. The mean (median) CAR of -5.0% (-2.7%) for the full sample is statistically significant at the 1% level. Though the restatements identified as non-fraudulent have a mean (median)

²⁸ In computing abnormal returns, Agrawal and Chadha (2005) define the stock market return as the value-weighted CRSP index return.

²⁹ As in Palmrose et al. (2004), the announcement effect occurs primarily on days 0 and +1. The mean (median) CAR over a three-day window beginning one day prior to the restatement announcement (day -1) is -5.0% (-3.3%).

³⁰ Agrawal and Chadha (2005) report the CAR over a three-day window to have a mean (median) of -5.7% (-2.5%). Palmrose et al. (2004) find the 2-day CAR to have a mean (median) of -9.2% (-4.6%).

CAR of -4.5% (-2.1%) that is economically less than those associated with fraud (-6.2% mean; -4.4% median), both groups have negative announcement returns that are significantly different from zero, albeit not significantly different from one another.

Consistent with Palmrose et al. (2004), the restatements attributed to auditors have the most negative returns (-14.5% mean; -11.4% median), the SEC-initiated restatements have the least negative returns (-2.7% mean; -1.9% median), and the company-initiated restatements have returns that are more negative than the SEC-initiated group but less negative than the auditor-initiated group (-8.0% mean; -5.0% median). Furthermore, the mean announcement returns are significantly different across the restatement groups at the 1% level. With the exception of those restatements prompted by the SEC, all sample restatements also have a statistically significant median CAR.

While mean and median market reactions over a 2-day window are negative for all restatements regardless of their effect on net income, only the income-decreasing restatements have highly significant (at the 1% level) mean and median announcement returns (-6.3% mean; -3.5% median). In addition, the difference in mean announcement returns is significant across the restatement groups at the 5% level. This is consistent with income-decreasing restatements being the most alarming to investors in terms of their implications for firms' future earnings and cash flows.

With respect to the number of quarters restated, a breakdown into quintiles shows that the most significant market reactions follow restatements in the highest (most quarters restated) and lowest (fewest quarters restated) quintiles, though the returns are not statistically significant across groups. For instance, the mean (median) market reaction to the first [fifth] quintile is -3.7% (-2.1%) [-9.3% (-5.7%)]. On the other hand,

restatements in the third quintile have market reactions that are not statistically significant (-3.1% mean; 0.2% median). An examination of restatement magnitude in each of the quintiles reveals that restatements in those quintiles with less significant market reactions also have less adverse effects on net income. The implication is that there is a correlation between a restatement's effect on net income and the stock market reaction to the announcement of restatement. A further analysis of this correlation is discussed in Section 7.1.

Finally, mean and median announcement returns are negative across all restatements irrespective of the restatement reason, and the mean returns are significantly different across restatement groups at the 5% level. However, with a mean (median) CAR of -11.5% (-9.7%), revenue-related restatements, other than those resulting from SAB101 or an EITF, are the most significant, at the level of 1%. Although market reactions following EITF-related revenue recognition restatements are not significant (-1.0% mean; -0.4% median), those following SAB101-related revenue recognition restatements are significant at the 5% level (-3.4% mean; -3.6% median). The only other significant announcement returns follow restatements involving costs or expenses (-5.8% mean; -2.9% median) and restructuring, assets, or inventory (-4.8% mean; -3.3% median).

6. Dependent Variable

6.1 Data

The dependent variable, *Index-Change*, is derived through a number of steps from data collected from the IRRC, Compustat, and ExecuComp databases. The IRRC database provides information on the board of directors, Compustat provides data on audit variables, and ExecuComp provides data on management-related variables. Based on the data collection, an *Index* is calculated for the firm in each sample restatement in the year preceding the restatement announcement (pre-restatement period) and then again two years following the restatement (post-restatement period). As discussed earlier, the *Index* is a composite score computed based on an array of governance features, including board, audit, and management-related variables.

Table 4 describes the variables included in the *Index*. Variables 1-10 relate to the board of directors, variables 11-12 concern the external auditor, and variable 13 relates to the top management (CEO) of the firm.³¹ Table 5 presents descriptive statistics for the components of the *Index*. Panel A provides statistics for the 10,767 firm-year control observations (1996 – 2004), and Panel B reports statistics for a reduced control sample of 7,517 firm-year observations beginning in 1999. The purpose of the reduced control sample is to facilitate comparison with the *Index* variables of sample restatements in the post-restatement period. For restatements in the sample (1997 – 2002), the post-

³¹ An important drawback in the design of the model is that each *Index* variable carries equal weight, yielding unequal weighting between board, audit, and management elements.

restatement period refers to the years 1999 – 2004. Because statistics are undoubtedly linked to the time period, it is imperative to view the post-restatement period of restatement firms with regard to a contemporaneous control sample.³²

Panel C provides summary statistics for the post-restatement period of the 137 sample restatements. A comparison between Panels B and C highlights a number of differences between the control and restatement samples. In particular, the difference in means is statistically significant for the fraction of independent directors on the board as well as various board sub-committees, the size of the board, whether the board chair is an independent outside director, and whether there is a change in CEO over the prior three years.³³

As discussed in Chapter 3, the *Index* is calculated for the pre- and post-restatement periods for each sample restatement by assigning a 0 or 1 to each variable based on specific guidelines. Table 4 reviews the specifications for each variable. Although the *Index* can in theory range from 0 to 13, due to data limitations, the sample firms have a maximum *Index* of anywhere between 3 and 13 (mean = 10.84; median = 11). In cases where the variables available for calculation of the *Index* differ between the pre-restatement and post-restatement periods, only those variables that are common to both periods are included in each *Index*. This eliminates any potential biases regarding

³² A comparison between Panels A and B of Table 5 shows that, indeed, there are some differences in the means of key variables between the full control sample (1996 – 2004) and the reduced control sample (1999 – 2004). For example, the fraction of independent directors on the board (*bd-ind*) increases from 0.637 in Panel A to 0.653 in Panel B. This suggests that the fraction of independent directors increased over the time period. Similar differences can be observed for other variables.

³³ Although these statistically significant differences in *Index* variables are meaningful, it should be noted that additional controls for the time period are necessary, since sample restatements are not evenly distributed across the years. In further analyses, these additional controls are implemented.

data availability.³⁴ The *Index Percentage* refers to the *Index* divided by the total number of variables available. Variables 1-11 can take on a value of either 0 or 1. However, variables 12-13 always have a value of 0 in the pre-restatement period and can only vary (between 0 and 1) in the post-restatement period.

As described in Section 3.4, the dependent variable, *Index-Change*, refers to the percentage change between the *Index* in the pre-restatement period and the *Index* in the post-restatement period.³⁵

6.2 Descriptive Statistics

Table 6 presents Pearson correlations among the values assigned to the *Index* variables.³⁶ Panels A and B show correlations among variables in the pre- and post-restatement periods, respectively.³⁷ According to Panel A, *bd-ind* exhibits a significant positive correlation with *indep-chair*, *audit-indep*, *comp-indep*, *nom-indep*, *corpgov-indep*, and *interlock*. As expected, all *Index* variables (with the exception of *bd-size* and *other-boards*), have a strong significant positive correlation with *Index-Pre*, the total *Index* in the pre-restatement period. *Other-boards* is significantly negatively correlated

³⁴ As discussed previously, there is a major limitation to this approach, since a change in corporate governance may not necessarily be reflected in the variables that are available in the pre-restatement period. To illustrate, a firm that retained its governance level among pre-restatement governance variables but enhanced its governance among other variables that are not available in pre-restatement data will appear to have made no enhancements to governance mechanisms. Moreover, a firm that reduced its governance level among pre-restatement variables but replaced those governance features with other variables that are not available in pre-restatement data will appear to have weakened its corporate governance, when, in fact, it has merely adjusted its form.

³⁵ Because the denominator of the *Index Percentage* is the same in both the pre- and post-restatement periods, there is no concern for the denominator when calculating *Index-Change*.

³⁶ Unreported Spearman correlations are almost identical to Pearson values.

³⁷ Due to the data and their construction, *auditor-big6*, *auditor-switch*, and *CEO-switch* do not have Pearson values in the pre-restatement period.

with *bd-ind* and *indep-chair*. *Audit-indep* is significantly positively correlated with *dual-CEO*, *comp-indep*, *nom-indep*, *corpgov-indep*, and *interlock* but significantly negatively correlated with *indep-chair*. Finally, *corpgov-indep* has a significant positive correlation with *nom-indep*, *comp-indep* has a significant positive correlation with *interlock*, and *bd-size* has a significant negative correlation with *indep-chair*.

For additional comparison to another measure of corporate governance used in prior literature, the values assigned to the *Index* variables are correlated with *G-Index*, the governance index measuring the strength in shareholder rights, developed by Gompers et al. (2003), in the pre-restatement period.³⁸ Pearson correlations show a significant positive correlation between *G-Index-Pre* and both *bd-ind* and *indep-chair* and a significant negative correlation between *G-Index-Pre* and *dual-CEO*, *bd-size*, and *other-boards*. Since higher values of *G-Index* indicate greater managerial power, the negative correlation seems intuitive. Greater managerial power is conceivably correlated with joint CEO-Chairmen, larger boards, and greater percentages of other boards served by board members. This translates to a negative correlation with *dual-CEO*, *bd-size*, and *other-boards*.

Panel B of Table 6 examines correlations among variables in the post-restatement period. Once again, *bd-ind* exhibits a significant positive correlation with *indep-chair* and each of the sub-committee independence variables. As expected again, all *Index* variables (with the exception of *bd-size*, *other-boards*, and *auditor-switch*), have a strong significant positive correlation with *Index-Post*, the total *Index* in the post-restatement

³⁸ The *G-Index* is available in the IRRC database for the years 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006. Because of these data limitations, 1995 data are used to match the pre-restatement years 1996 and 1997, 1998 data are used to match the pre-restatement years 1998 and 1999, and 2000 data are used to match the pre-restatement years 2000 and 2001.

period. *Other-boards* is significantly negatively correlated with *bd-ind* and *audit-indep* and significantly positively correlated with *dual-CEO*. The committee independence variables are all significantly positively correlated with each other, and *bd-size* is significantly negatively correlated with *bd-ind*, *indep-chair*, and *auditor-big6*. *Interlock* has a significant negative correlation with *indep-chair* but a significant positive correlation with *comp-indep*. *Auditor-big6* has a significant positive correlation with *bd-ind*, *indep-chair*, *audit-indep*, *comp-indep*, and *nom-indep* but a significant negative correlation with *auditor-switch*. Finally, *dual-CEO* has a significant positive correlation with *CEO-switch*. Intuitively, a separate CEO and Chairman of the Board in the post-restatement period is more likely to be associated with changes in CEO since the pre-restatement period.

With regard to comparison of *Index* variables to the *G-Index*, there is a significant positive correlation between *G-Index-Post* and *bd-ind*, *indep-chair*, *comp-indep*, *nom-indep*, *corpgov-indep*, and *Index-Post* and a significant negative correlation between *G-Index-Post* and *dual-CEO*, *bd-size*, and *other-boards*.³⁹ Once again, the negative correlations seem more intuitive than the positive correlation. In untabulated results, however, *G-Index-Pre* exhibits a significant positive correlation of 0.21 with *Index-Change*. This supports the notion that the higher the *G-Index* level in the pre-restatement period, the greater the expectation for improvements to corporate governance following the restatement announcement. This expectation is further corroborated by the finding in Baber et al. (2007) that the probability of restatement increases with *G-Index*. In other

³⁹ Because of data limitations for *G-Index*, 2000 data are used to match the post-restatement years 1999 and 2000, 2002 data are used to match the post-restatement years 2001 and 2002, and 2004 data are used to match the post-restatement years 2003 and 2004.

words, greater restriction to shareholder rights is associated with a greater probability of the need for restatement, and in turn, a greater need for corporate governance improvements.

Table 7 provides some descriptive statistics for the overall *Index Percentage* in the pre- and post-restatement periods and then for *Index-Change*, which represents the change in the *Index* between the two periods. Panel A compares the *Index Percentage* among sample restatements in the pre-restatement period (year $t - 1$) with a sample that matches the median *Index Percentage* in the same industry-year among the control sample of non-restatement firms to each sample restatement. Sample restatements exhibit lower levels of *Index Percentage* across all quartiles, and the difference in means is statistically significant at the 1% level (0.486 among sample restatements versus 0.540 among the control sample). Panel B reports that the *Index Percentage* among sample restatements in the post-restatement period (year $t + 2$) is higher than the *Index Percentage* in the pre-restatement period (year $t - 1$) across all quartiles. Furthermore, with a mean *Index Percentage* of 0.580 in year $t + 2$ and 0.486 in year $t - 1$, the difference in means between the two periods is statistically significant (t-stat = -5.08; $p < .0001$).

As discussed in Section 4.3.3, *Index-Change-Control* is used to control for “normal” changes in the *Index* over a three-year period. Each sample restatement is matched to the median *Index-Change* for the corresponding industry-year in non-restatement firms (control sample).⁴⁰ Panel C of Table 7 compares statistics between

⁴⁰ The calculation of the *Index* in non-restatement firms is similar to the calculation in sample firms, with the following exceptions: (1) all available data are used for the calculation each year; (2) all variables can take on values of either 0 or 1 in any given year. To calculate *Index-Change* in non-restatement firms, the following method is employed. For each firm-year, the *Index* is divided by the total number of variables

Index-Change and *Index-Change-Control*. The difference in mean values between the two variables is statistically significant (t-stat = 3.72; $p < .0001$). The implication is that changes to the *Index* appear to be more pronounced among sample restatement firms than in the control sample of non-restatement firms.

available. This creates an *Index Percentage* and allows for changes in data availability. For each firm-year, *Index-Change* is then calculated as the percentage change in the *Index Percentage* over the prior three years.

7. Empirical Results

7.1 Univariate Correlations

Table 8 defines the variables as they are used in the analyses that follow. The dependent variables, test variables, and control variables are described fully in the table. Table 9 presents correlations among the variables. According to the Pearson correlations in Panel A, *Index-Change* has a strong significant negative correlation with both *Pre* and *Gov-Control*, where *Pre* controls for the firm-level governance in the pre-restatement period, and *Gov-Control* controls for industry-level patterns in governance in the pre-restatement period. Therefore, this association confirms the conjecture that firms with higher governance levels and those in industries with higher governance levels in the pre-restatement period are less likely to implement changes, perhaps because the additional improvements would be too costly or too difficult.

As discussed in Section 4.3.3 regarding prior firm performance, there is concern for potential endogeneity here as well. Because restatements are not exogenously determined, it may be that factors driving the need for restatement are also correlated with governance changes. As opposed to the announcement of restatement directly driving the change in governance, it might be that the level of governance in the pre-restatement period, a predictor of restatement, provides the motivation for governance change. Specifically, those firms with lower governance levels in the pre-restatement period might be more likely to implement governance changes following a restatement.

AAER, the variable indicating the presence of fraud, exhibits a significant positive correlation with *Auditor*, *Rev-Other*, and *Firm-Size* and a significant negative correlation with *SAB101* and *EITF*. This supports the view that while *Rev-Other* restatements relate to more severe problems and are most likely to be associated with fraud and to be pursued by the SEC, restatements relating to SAB101 or an EITF are less serious and least likely to result in AAERs (enforcement actions) against the restating firm. While the SEC is most likely to pursue firms following the most serious revenue recognition restatements, it is *Auditor* and *Comp* that are positively correlated with *Rev-Other*, signifying that the auditor and company are the ones likely to bring the most severe revenue recognition issues to light and prompt the need for restatement.

The SEC-initiated restatements in the sample are significantly correlated with a long duration (number of quarters) and are likely to concern IPR&D and M&A issues. *Magnitude* has a significant negative correlation with *M-A* and *Cost-Exp* and a significant positive correlation with *IPRD*, suggesting that restatements dealing with mergers and acquisitions or costs and expenses are likely income-decreasing (i.e., *Magnitude* < 0), while those involving IPR&D write-offs are likely income-increasing (i.e., *Magnitude* > 0).⁴¹

Duplicating the findings by Palmrose et al. (2004), the market reaction to restatements (*CAR* (0,1)) is more negative if the restatement is attributed to the auditor or the company (but not the SEC). For example, the mean 2-day *CAR* is -14.5% and -8.0% for restatements prompted by the auditor and company, respectively, but only -2.7% for the SEC-prompted group. Furthermore, the market reaction is positively correlated with

⁴¹ Palmrose et al. (2004) find that half of the income-increasing restatements in their sample involve only IPR&D write-offs.

Magnitude, implying that income-increasing restatements are associated with higher stock market returns, and income-decreasing restatements are associated with lower market returns. As was expected, the market reaction is positively correlated with *EITF* and strongly negatively correlated with *Rev-Other*, again substantiating the notion that it is the revenue-related restatements that are least technical in nature that are penalized most harshly by the market.

Finally, *Prior-Perf* is significantly positively correlated with *Magnitude* and *CAR (0,1)*, suggesting that income-increasing restatements as well as those with less negative market reactions on the restatement announcement are more likely to have improved their performance in the two years leading up to the restatement announcement. On the other hand, the significant negative association with *M-A* and *Cost-Exp* suggests that restatements dealing with mergers and acquisitions or costs and expenses might follow declines in performance.

Spearman correlation coefficients are reported in Panel B of Table 9. The variable on *Index-Change* exhibits a significantly positive association with *Rev-Other* and a significantly negative association with *SAB101*, *EITF*, *Pre*, and *Gov-Control*. The interpretation here is that changes aimed to strengthen firms' governance structures following restatements appear most likely in the more severe revenue recognition cases (*Rev-Other*) and least likely in the more technical revenue recognition cases involving *SAB101* and other emerging issues brought forth by FASB (*EITF*). In addition, changes in sample restatement firms are least pronounced when there are high governance levels in the pre-restatement period among sample restatement firms (*Pre*) and among control firms in the same industry (*Gov-Control*).

Panel B further reveals that while SEC-initiated restatements have a significant positive correlation with *Magnitude*, auditor- and company-initiated restatements have a significant negative correlation. This is consistent with a high frequency of IPR&D-related income-increasing restatements among the SEC-initiated group. On the other hand, income-decreasing restatements are more prevalent among the auditor- and company-initiated groups. In addition, *Magnitude* exhibits a strong negative association with *Rev-Other*, again implying that the most severe category of revenue-related restatements is also correlated with the most adverse effects on net income.

Firm-Size is positively correlated with *CAR (0,1)* and *Gov-Control*, indicating that larger firms experience more positive market returns following a restatement announcement and have higher levels of industry-wide governance in the pre-restatement period. However, since many of the firms in the sample are large firms, it is possible that this result is biased.

Finally, *Prior-Perf* exhibits a significantly positive correlation with *SEC* but a significantly negative correlation with *Auditor* and *Rev-Other*. Once again, this is consistent with the prevalence of IPR&D-related income-increasing restatements among the SEC-initiated group, and it is not surprising that this group of restatements is positively associated with prior performance. The negative correlation between *Prior-Perf* and both *Auditor* and *Rev-Other* is similarly intuitive, since the less technical restatements among the auditor-initiated and *Rev-Other* groups are more likely to be associated with prior declines in performance.

7.2 Univariate Regressions

Table 10 presents univariate cross-sectional results for the full *Index* of 13 variables, as described in Chapters 3 and 6.1. The general model in each of Panels A – O can be illustrated as follows:

$$\begin{aligned} \text{Index-Change} = & \beta_0 + \beta_1 \text{Pre} + \beta_2 \text{Gov-Control} \\ & + \beta_3 \text{Index-Change-Control} + \beta_4 X + \varepsilon \end{aligned} \quad (1)$$

where X refers to each of the 13 test variables as well as the two remaining control variables identified in Panel A of Table 8. As discussed in Chapter 4, each of the test and control variables represents a restatement or firm characteristic predicted to explain *Index-Change* in a specific way. Due to the strong negative correlations between *Index-Change* and both *Pre* and *Gov-Control*, highlighted in Table 9, these control variables are included in each of the models. *Index-Change-Control* is included in each model as well because of its importance in controlling for industry and year effects. To control for the “normal” changes in the *Index* over a three-year period, *Index-Change-Control* matches each sample restatement with the median *Index-Change* for the corresponding industry-year in non-restatement firms. Panels A – O provide estimates of equation (1) for each of the 15 (13 test plus two control) variables denoted by X .

Results in Panel A show that as predicted by Hypothesis 1, the coefficient of *AAER* is significant at the 5% level in explaining changes to firms’ governance mechanisms in the post-restatement period. Firms are more likely to implement corporate governance changes following restatements involving fraud. Although this could be because of a genuine belief that governance changes will prevent future restatements, it could simply be a symbolic move or a reaction to deterioration in performance.

Coefficients of *Pre* and *Gov-Control* are highly significant at the 1% level, and the model's adjusted R^2 is 47%.

Panels B, C, and D estimate equation (1) using the test variables *SEC*, *Auditor*, and *Comp*, respectively. Contrary to expectations in Hypotheses 2a and 2b, the coefficient of each of the test variables is insignificant at the 5% level. Despite this, because of the strongly significant control variables (*Pre* and *Gov-Control*), the models remain significant, with a reported adjusted R^2 of 44% in each case.

Hypotheses 3a and 3b are addressed by Panels E and F. To do so, equation (1) is estimated using the test variables *Magnitude* and *Qtrs*.⁴² Here again, the coefficient of each of the test variables is insignificant at the 5% level, and the adjusted R^2 remains 44%.

Panels G – L examine restatement reasons by estimating equation (1) using the test variables *SAB101*, *EITF*, *Rev-Other*, *IPRD*, *M-A*, and *Cost-Exp*, respectively. Predictions for *SAB101*, *EITF*, *Rev-Other*, and *IPRD* are given in Hypotheses 4a and 4b. However, no specific predictions are made for coefficients of *M-A* and *Cost-Exp*. Results in Panel G demonstrate that as predicted by Hypothesis 4a, the coefficient on *SAB101* is significantly negative at the 5% level. Firms that restate due to SAB101 are less likely to implement corporate governance changes following the restatement, perhaps because of their more technical nature. Coefficients of *Pre* and *Gov-Control* are highly significant at the 1% level, and the model's adjusted R^2 is 46%. On the other hand, contrary to Hypotheses 4a and 4b, the coefficient on each of the test variables *EITF*, *Rev-Other*, and

⁴² *Magnitude* is partitioned into income-increasing (*Magnitude-incr*) and income-decreasing (*Magnitude-decr*) restatements to separately examine the effect of each type on *Index-Change*. See Table 8, Panel A for definitions.

IPRD (Panels H-J) is insignificant at the 5% level (though in the predicted direction), and the model's adjusted R^2 remains 44% in each case.

Results in Panel K similarly present an insignificant coefficient on the test variable, *M-A*, and the reported adjusted R^2 remains 44%. Panel L, however, finds the coefficient of *Cost-Exp* to be significantly positive at the 5% level ($t = 2.04$) in predicting *Index-Change*. Corporate governance changes are more likely following restatements related to costs and expenses. Once again, coefficients of *Pre* and *Gov-Control* are highly significant at the 1% level, and the model's adjusted R^2 is 46%. Although the model is primarily explained by the control variables, *Pre* and *Gov-Control*, there is some additional significance provided by *Cost-Exp*.

Panel M estimates equation (1) using the test variable *CAR (0,1)*.⁴³ Contrary to predictions by Hypothesis 5, the coefficient of the test variable is insignificant (though in the expected direction), and the model's adjusted R^2 remains 44%.

Results presented in Panel N show the coefficient of *Firm-Size* to be significant at the 10% level in predicting changes to firms' governance mechanisms in the post-restatement period. Larger firms are more likely to implement corporate governance changes in the period following the restatement. Coefficients of *Pre* and *Gov-Control* are highly significant at the 1% level, and the model's adjusted R^2 is 45%. In contrast to this, however, Table O indicates that *Prior-Perf* offers no additional significance to the overall fit of the model, so the model's adjusted R^2 remains 44%.

⁴³ *CAR (0,1)* is partitioned into positive (*CAR (0,1)-pos*) and negative (*CAR (0,1)-neg*) cumulative abnormal returns to separately examine the effect of each type on *Index-Change*. See Table 8, Panel A for definitions.

7.2.1 Summary of Univariate Regressions

A comparison of the results in Panels A – O of Table 10 reveals that only some of the test and control variables have coefficients that are statistically significant in predicting the likelihood of changes to corporate governance mechanisms in the period following restatement. In each of the panels, the model includes the significant control variables *Pre* and *Gov-Control* as well as *Index-Change-Control*, yielding an adjusted R² of 44%. Beyond that, the variables that improve significance and the R² of the model are *AAER*, *SAB101*, *Cost-Exp*, and *Firm-Size* (in order of most to least significant). These variables improve the adjusted R² of the model to 47%, 46%, 46%, and 45%, respectively. All other test and control variables listed in Panel A of Table 8 offer no additional significance to the model.

Results presented in Table 10 lend support to Hypotheses 1 and 4a. However, there is little support for Hypotheses 2, 3, 4b, or 5.

7.3 Multivariate Regressions – Full Index

Table 11 provides results of the multivariate regression model for the full *Index* of 13 variables, as described in Chapters 3 and 6.1. The model is shown as follows:

$$\begin{aligned}
 \text{Index-Change} = & \beta_0 \\
 & + \beta_1 \text{AAER} && H1 \\
 & + \beta_2 \text{Comp} + \beta_3 \text{SEC} + \beta_4 \text{Auditor} && H2 \\
 & + \beta_5 \text{Qtrs} + \beta_6 \text{Magnitude-incr} + \beta_7 \text{Magnitude-decr} && H3 \\
 & + \beta_8 \text{IPRD} + \beta_9 \text{SAB101} + \beta_{10} \text{EITF} && H4 \\
 & + \beta_{11} \text{Rev-Other}
 \end{aligned}$$

$$\begin{aligned}
& + \beta_{12} M-A + \beta_{13} Cost-Exp \\
& + \beta_{14} CAR (0,1)-pos + \beta_{15} CAR (0,1)-neg & H5 \\
& + \beta_{16} Pre + \beta_{17} Gov-Control & controls \\
& + \beta_{18} Firm-Size + \beta_{19} Prior-Perf \\
& + \beta_{20} Index-Change-Control + \varepsilon & (2)
\end{aligned}$$

Variables are defined in Panel A of Table 8, and H1 – H5 are used to reference the specific hypotheses in Chapter 4 to which the equation variables refer.

According to the estimation of equation (2) in Table 11, the overall fit of the model yields an F -statistic of 8.05 and an adjusted R^2 of 51%. Consistent with the univariate results in Table 10, *Index-Change* has a highly significant negative association (at the 1% level) with both *Pre* and *Gov-Control*. This confirms the expectation that firms with higher governance levels and those in industries with higher governance levels in the pre-restatement period are less likely to implement changes, perhaps because the additional improvements would be too costly or too difficult. Furthermore, some firms might already be at their optimum governance level. Similarly, as with univariate results in Panel G of Table 10, multivariate results provide support for Hypothesis 4a. Specifically, the significant negative association with *SAB101* at the 5% level supports the expectation that perhaps due to their more technical nature, revenue recognition restatements involving SAB101 are less likely to prompt corporate governance improvements following the restatement. Finally, similar to the univariate results in Panel N of Table 10, the coefficient on *Firm-Size* is positively associated with *Index-Change* at the 10% level, suggesting that larger firms might have greater incentives and resources to implement internal control improvements.

Unlike in the univariate results in Table 10, however, there is no support for a significant association between *Index-Change* and *Cost-Exp* (p-value = .1008). In addition, with a p-value of .1690, there is little support for Hypothesis 1 in predicting a significant association between *Index-Change* and *AAER*. One might conjecture that the additional variables in the multivariate regression model are likely responsible for eliminating the significance of *AAER*.

The multivariate results, on the other hand, do substantiate priors regarding *Magnitude-decr*, *CAR (0,1)-pos*, and *Prior-Perf*. The expectation was that due to their severity, income-decreasing restatements would be followed by greater changes to governance mechanisms in an effort to strengthen corporate governance and prevent the need for future restatements. With a highly significant coefficient (at the 1% level), *Magnitude-decr* exhibits a positive association in accordance with this hypothesis.⁴⁴ Similarly, the expectation was that while more negative stock market reactions signal a decrease in expected future cash flows and thus might motivate a decision to strengthen corporate governance in an effort to avoid future restatements, more positive stock market reactions would be less likely to prompt corporate governance changes. With a statistical significance at the 10% level, the negative coefficient on *CAR (0,1)-pos* is consistent with this belief. Finally, the highly significant (at the 1% level) negative coefficient on *Prior-Perf* supports the expectation that restatement firms that are performing more poorly in the 2-year period leading up to the restatement announcement are more likely to improve their corporate governance.

⁴⁴ A positive sign expected for *Magnitude-decr* is equivalent to a negative sign for *Magnitude-incr*.

7.3.1 Summary of Multivariate Regressions – Full Index

The results in Table 11 show a model with an F -statistic of 8.05 and an adjusted R^2 of 51%, in which *Pre*, *Gov-Control*, *Magnitude-decr*, *Prior-Perf*, *SAB101*, *CAR (0,1)-pos*, and *Firm-Size* are significant at the .10 level of statistical significance (in order from most to least significant) in predicting the likelihood of corporate governance changes in the post-restatement period.

Results presented in Table 11 support Hypotheses 3b, 4a, and 5, relating to the restatement's effect on net income, the technical nature of restatements involving SAB101, and the stock market reaction on the restatement announcement. The predictions regarding the control variables, *Pre*, *Gov-Control*, and *Prior-Perf*, are likewise supported. However, there is little support for Hypotheses 1, 2, 3a, or 4b, which respectively refer to the presence of fraud, the prompter of the restatement, the number of quarters restated, and the level of severity in the least technical revenue recognition restatements.

7.4 Additional Tests

In this section, three additional tests are performed. First, to directly consider the effects of industry on *Index-Change*, an indicator variable is assigned to technology firms, as they are defined in Panel C of Table 2. In untabulated results, technology firms exhibit significant positive correlations with *Rev-Other* and *Auditor* (at the 1% and 5% levels, respectively). Because of the association with more serious revenue-related issues, technology firms might be more likely to implement corporate governance changes in the

post-restatement period.⁴⁵ However, in results not shown, the effect of the technology indicator on the model is found to be insignificant in the estimations of both the univariate and multivariate regression models (equations (1) and (2), respectively). Adjusted R^2 remains 44% and 51% in the respective models.

To investigate the effects of restatement status on *Index-Change*, the sample is partitioned between those restatements that have already taken place and those that are forthcoming. To do this, restatement announcements are carefully read and partitioned. Words such as “done,” “will,” “intends,” “may,” and their variants generally appear in the restatement announcements. Sample restatements that are announced to have been completed are coded as “done,” and those that assert with certainty that they will occur in the future are coded as “will.” Untabulated descriptive statistics show that 33% of sample restatements are announced to have already taken place (“done”), and 43% are announced to be forthcoming (“will”).

The prediction for the model remains unclear. In results not shown, the effect of the restatement status on the model is found to be insignificant in the estimations of both the univariate and multivariate regression models (equations (1) and (2), respectively). Adjusted R^2 remains 44% and 51% in the respective models.

As discussed in Section 6.2, there is a significant positive correlation between *Index-Change* and *G-Index-Pre*. This supports the expectation that corporate governance changes in the post-restatement period follow higher pre-restatement period *G-Index* levels. Since higher *G-Index* levels indicate greater managerial power and weaker shareholder rights, it is conceivable that changes made to improve corporate governance

⁴⁵ Alternatively, technology firm managers might be relatively more overconfident. This overconfidence and entrenchment might result in less corporate governance change following the restatement.

in the period following a restatement would be more likely for higher levels of *G-Index*. Therefore, an analysis of *G-Index-Pre* is performed.

Consistent with expectations, results of estimating the univariate model presented in equation (1) show that *G-Index-Pre* exhibits a significantly positive association with *Index-Change* (t-stat = 1.93; p = .0565) and improves the fit of the model (not shown in the tables). However, in further testing, results of the multivariate model presented in equation (2) show that no additional significance to the model is provided by *G-Index-Pre*.

7.4.1 Summary of Additional Tests

Equation (1) is re-estimated using three additional test variables to directly investigate the effects of industry, the restatement status, and pre-restatement period *G-Index* levels on *Index-Change*. Untabulated results indicate that no additional significance is added to the univariate model when a technology indicator variable or a restatement status variable is included (adjusted R^2 remains 44%). On the other hand, *G-Index-Pre* exhibits a significantly positive association with *Index-Change* (t-stat = 1.93; p = .0565) and improves the fit of the model (results not shown).⁴⁶ However, in further testing, results of the multivariate model presented in equation (2) show that no additional significance to the model is provided by *G-Index-Pre*.

⁴⁶ The adjusted R^2 of the model improves to 49%. However, because of data limitations for *G-Index-Pre*, there are only 119 observations.

7.5 Multivariate Regressions – Index Components

As discussed in Chapter 3, the *Index* may not accurately reflect the relative impact of different governance components, because certain components may play a stronger role than others. Therefore, Table 12 examines changes in components of the *Index* individually. The general model in each of Panels A – M can be illustrated as follows:

$$\begin{aligned}
 \text{VarX-switch} &= \beta_0 \\
 &+ \beta_1 \text{AAER} && H1 \\
 &+ \beta_2 \text{Comp} + \beta_3 \text{SEC} + \beta_4 \text{Auditor} && H2 \\
 &+ \beta_5 \text{Qtrs} + \beta_6 \text{Magnitude-incr} + \beta_7 \text{Magnitude-decr} && H3 \\
 &+ \beta_8 \text{IPRD} + \beta_9 \text{SAB101} + \beta_{10} \text{EITF} && H4 \\
 &+ \beta_{11} \text{Rev-Other} \\
 &+ \beta_{12} \text{M-A} + \beta_{13} \text{Cost-Exp} \\
 &+ \beta_{14} \text{CAR (0,1)-pos} + \beta_{15} \text{CAR (0,1)-neg} && H5 \\
 &+ \beta_{16} \text{Pre-VarX} && \text{controls} \\
 &+ \beta_{17} \text{Firm-Size} + \beta_{18} \text{Prior-Perf} \\
 &+ \beta_{19} \text{Switch-Percent} + \varepsilon && (3)
 \end{aligned}$$

where *VarX* and *Pre-VarX* in each panel refer to one of the 13 component variables of the *Index*. Variables are defined in Panels A and B of Table 8, and H1 – H5 are used to reference the specific hypotheses in Chapter 4 to which the equation variables refer.⁴⁷

Although the hypotheses in Chapter 4 specify changes to the overall *Index*, the above

⁴⁷ *VarX-switch* and *Pre-VarX* are listed in Panel B of Table 8 separately for each of the 13 component variables of the *Index*. For instance, Panel A of Table 12 addresses the *bd-ind* variable. Therefore, *VarX-switch* and *Pre-VarX* are listed in Table 8, Panel B as *bd-ind-switch* and *Pre-bd-ind*, respectively.

model assumes that the same hypotheses should apply to the individual components of the *Index* as well.

As discussed in Chapter 4, each of the test and control variables represents a restatement or firm characteristic predicted to explain the change in the *Index* variable in a specific way. *Pre-VarX* is used as a control to take into account the value of the variable under consideration in the pre-restatement period (0 or 1). This is similar to *Pre*, as used for the full *Index* in Tables 10 and 11. Furthermore, in each panel, *Switch-Percent* is used to control for the percentage rate of improvement of the specific *Index* variable under analysis in the same year among non-restatement firms. As with *Index-Change-Control* for the full *Index*, this is important in controlling for the normal changes in the *Index* variable that vary by year. Panels A – M provide estimates of equation (3) for each of the 13 dependent variables.⁴⁸

Panels A and B estimate equation (3) for *bd-ind-switch* and *dual-CEO-switch*, respectively. Results in the panels report adjusted R^2 of 16% and 41%, respectively. However, in both models, this is primarily due to the highly significant (at the 1% level) negative coefficients on the *Pre-VarX* variables. Just as in the case of *Pre* for the full *Index*, this association is consistent with expectations. In addition, *M-A* is positively associated with *dual-CEO-switch* at the 5% level, implying that restatements involving mergers and acquisitions are associated with the separation of CEO and Chairman of the

⁴⁸ Because of data limitations in years 1999 and 2000, *Switch-Percent* is eliminated as a control variable from equation (3) for analyses of *audit-indep*, *comp-indep*, *nom-indep*, *corpgov-indep*, and *other-boards* in Panels D, E, F, G, and J, respectively. Similarly, *Pre-VarX* is eliminated as a control variable from equation (3) for analysis of *auditor-big6* in Panel K to allow for a full rank model. Finally, due to the construction of the *auditor-switch* and *CEO-switch Index* variables, these variables are used directly as the dependent variables in Panels L and M, respectively. No lag variables (i.e., *Pre-VarX*) are present in Panels L and M, because *auditor-switch* and *CEO-switch* simply measure whether there was a change between the pre- and post-restatement periods in auditor and CEO, respectively.

Board positions in the post-restatement period. No other variables provide additional significance to the models.

Results in Panel C show a number of test and control variables to be significantly associated with *indep-chair-switch*, and the overall fit of the model produces an *F*-statistic of 8.78 and an adjusted R^2 of 52%. Consistent with the predictions of Hypotheses 3b and 5, *Magnitude* and *CAR (0,1)* have significant coefficients.⁴⁹ Sample firms are less likely to switch to an independent outside director for the Chairman of the Board position after income-increasing restatements. Similarly, firms are more likely to switch to an independent outside chair after more negative 2-day restatement announcement returns, though it could be the announcement of the restatement rather than the negative returns that is driving the switch. On the other hand, *Rev-Other* exhibits a significant association (at the 5% level) with *indep-chair-switch* in the opposite direction than was predicted by Hypothesis 4b. Restatements related to more serious revenue recognition issues appear less likely to be followed by improvements to the *indep-chair* variable.

With regard to control variables, both *Pre-indep-chair* and *Switch-Percent* have significant coefficients in accordance with predictions (p-values are less than .0001 and equal to .0062, respectively). Intuitively, restatement firms that already have independent outside chairs in the pre-restatement period cannot switch to independent outside chairs in the post-restatement period. In addition, the higher the percentage rate of improvement of *indep-chair* (i.e., switches to independent outside chairs) in the same year among non-

⁴⁹ As defined in Panel A of Table 8, *Magnitude-decr* refers to income-decreasing restatements, and *Magnitude-incr* refers to income-increasing (or no effect on net income) restatements. A positive sign expected for *Magnitude-decr* is equivalent to a negative sign for *Magnitude-incr*. Similarly, *CAR (0,1)-neg* refers to negative cumulative abnormal returns, and *CAR (0,1)-pos* refers to positive cumulative abnormal returns. A positive sign expected for *CAR (0,1)-neg* is equivalent to a negative sign for *CAR (0,1)-pos*. Results indicate that *Magnitude-incr*, *CAR (0,1)-pos* and *CAR (0,1)-neg* are all significant in the predicted directions at the 1%, 10%, and 5% levels, respectively.

restatement firms, the more likely sample firms are to switch to an independent outside chair as well.

Panels D – G estimate equation (3) for *audit-indep-switch*, *comp-indep-switch*, *nom-indep-switch*, and *corpgov-indep-switch*, respectively. Although each model is significant, with R^2 ranging from 24% to 54%, different numbers of observations in each panel (due to data limitations) make them less comparable. With regard to the fit of the model, the *F*-statistic is the highest for *audit-indep-switch* and the lowest for *nom-indep-switch*. As expected, the *Pre-VarX* control variable is highly significant at the 1% level in each case. In addition, *Firm-Size* has a significantly positive association with both *audit-indep-switch* and *nom-indep-switch*.

In line with expectations, *Magnitude-decr* is significantly associated with *audit-indep-switch* at the 5% level, implying that changes to the independence of the audit committee are significantly more likely following income-decreasing restatements. In addition, *Prior-Perf* exhibits a significant negative association with *audit-indep-switch* (p-value = .0671). In other words, the more poorly a sample firm performs in the 2-year period leading up to the restatement, the more likely it is to improve the independence of its audit committee (and make it completely independent). This result, however, might conceivably happen even without the impetus of a restatement. Furthermore, consistent with Hypothesis 3a, *Qtrs* is significantly related to *audit-indep-switch* (at the 10% level), indicating that restatement periods of longer duration are more likely to be followed by improvements to the independence of the audit committee. On the other hand, restatements related to mergers and acquisitions (*M-A*) are less likely to be followed by improvements in the independence of the compensation committee (p-value = .0286).

This result might be a function of the nature of the mergers involved (i.e., hostile vs. friendly).

Panels H and I estimate equation (3) for *bd-size-switch* and *interlock-switch*, respectively. Once again, both models are significant (adjusted R^2 s are 31% and 46%, respectively), with highly significant *Pre-VarX* coefficients. However, contrary to predictions by Hypothesis 3b, *Magnitude-decr* is significantly negatively correlated with *bd-size-switch* at the 5% level. Improvements to *bd-size* (i.e., decreasing the size of the board) appear less likely following income-decreasing restatements. In addition, contrary to Hypothesis 3a, *Qtrs* is significantly negatively correlated with *interlock-switch* at the 5% level. Restatement periods of longer duration appear less likely to be followed by improvements to *interlock* (i.e., reducing the fraction of interlocked directors on the board). Implications of these results are unclear.

A number of surprising results are presented in the analysis of *other-boards-switch* in Panel J. Although the model is significant overall (F -statistic = 3.99; adjusted $R^2 = 35\%$), with highly significant coefficients on *Pre-other-boards* and *Cost-Exp*, *AAER*, *Magnitude-incr*, and *Prior-Perf* all exhibit significant associations with *other-boards-switch* in directions opposite to predictions. This is contrary to Hypotheses 1 and 3b as well as expectations regarding prior performance. An inspection of the data reveals that the frequency of negative changes to *other-boards* (i.e., increasing the number of other boards served by directors) is double that of positive changes. This finding undoubtedly plays a part in the results.

Panel K presents results in the analysis of *auditor-big6-switch*. Once again, the model is significant overall (F -statistic = 14.91; adjusted $R^2 = 66\%$). Although

Magnitude, *EITF*, and *Prior-Perf* all exhibit significant associations at the 5% level with *auditor-big6-switch* in the predicted directions, an analysis of the frequency of changes to *auditor-big6* shows that the vast majority of sample restatements (98%) do not change *auditor-big6* (i.e., do not switch to or from a Big Six audit firm). Consequently, the results in the panel are not as meaningful.

Finally, Panels L and M use logistic regression to estimate equation (3) for *auditor-switch* and *CEO-switch*, respectively. Although the other panels employ ordinary least squares regression, logistic regression is appropriate here, since the only possible values for the dependent variables are zero and one. With a Chi-Square of 20.40, the overall model in Panel L for the prediction of *auditor-switch* is insignificant. This implies that whether or not a sample firm changes its auditor in the post-restatement period cannot be predicted by the test and control variables in the model. On the other hand, with a Chi-Square of 34.78, the model presented in Panel M is significant at the 5% level. This significant result stems primarily from a highly significant positive coefficient on *AAER* (Chi-Square = 7.82). As predicted by Hypothesis 1, changes in CEO in the post-restatement period likely follow restatements involving fraud. In addition, there is a significant negative coefficient on *Prior-Perf* (Chi-Square = 3.22), indicating that changes in CEO in the post-restatement period are more likely following declines in performance by restatement firms in the 2-year period prior to the restatement announcement.

As noted earlier, a number of endogeneity issues present themselves here. First, the above result might very well occur even without the impetus of a restatement. Specifically, the change in CEO in the post-restatement period might be driven by poor

performance rather than the restatement announcement. Moreover, it could be the change in CEO in the post-restatement period that itself leads to further governance changes.

7.5.1 Summary of Multivariate Regressions – Index Components

A comparison of the results in Panels A – M of Table 12 reveals that only some of the test and control variables have coefficients that are statistically significant in predicting the likelihood of change to the individual components of the *Index* in the period following restatement. Consistent throughout the models is the highly significant control variable, *Pre-VarX*, which is used in each panel to reflect the value of the variable under consideration in the pre-restatement period. Beyond that, the variables that improve significance of *indep-chair-switch* in the predicted directions are *Magnitude-incr* and *CAR (0,1)*, following Hypotheses 3b and 5, respectively. On the other hand, *Rev-Other* is significant in the direction opposite that which was predicted by Hypothesis 4b. Among the four board committee variables that are analyzed, *audit-indep-switch* offers the best prediction model, with *Pre-audit-indep*, *Firm-Size*, *Magnitude-decr* (Hypothesis 3b), *Prior-Perf*, and *Qtrs* (Hypothesis 3a) all significant (in order of most to least) in the predicted directions.

The models for *bd-size-switch* and *interlock-switch* yield significant variable coefficients in directions that are counterintuitive to the predictions for *Magnitude-decr* and *Qtrs*, respectively. Similarly, the model for *other-boards-switch* produces significance for *Magnitude-incr*, *AAER*, and *Prior-Perf* in directions contrary to expectations. This could be due to the high frequency of negative changes to *other-boards* (i.e., increasing the number of other boards served by directors) among the data.

Results of the model for *auditor-big6-switch* are found to be not particularly meaningful, because the vast majority of sample restatements (98%) do not change *auditor-big6* (i.e., do not switch to or from a Big Six audit firm). Finally, while the logit model for the prediction of *auditor-switch* is found to be insignificant at the 10% level, *CEO-switch* is found to be highly significant following restatements involving fraud (Hypothesis 1) and following declines in performance by restatement firms in the 2-year period prior to the restatement announcement.

7.6 *Multivariate Regressions – Sub-Indices*

In this section, the findings of Table 5, Panel C, are used to create two modified forms of the *Index*. The use of sub-indices with common features is an endeavor to increase the power of the tests. It may be, for instance, that changes to board features are all associated with restatement characteristics in the same way. Panel A examines the first *Sub-Index*, *Partial-Index*, and Panel B examines the second *Sub-Index*, *Board-Index*. In *Partial-Index*, only the eight *Index* variables whose means are statistically different between the control and restatement samples in the post-restatement period are included. These consist of the fraction of independent directors on the board as well as each of the four board sub-committees, the size of the board, whether the board chair is an independent outside director, and whether there is a change in CEO over the prior three years. *Partial-Index-Change* then represents the change in *Partial-Index* between the pre- and post-restatement periods.

Panel A of Table 13 provides results of a multivariate regression model that focuses on *Partial-Index-Change*. This model is identical to the one presented in equation

(2) with the following exceptions: (1) *Index-Change* is replaced with *Partial-Index-Change*; (2) *Pre* is replaced with *Pre-Partial*; (3) *Gov-Control* is replaced with *Gov-Control-Partial*; and (4) *Index-Change-Control* is replaced with *Partial-Index-Change-Control*. Variables are defined in Panels A and B of Table 8.

With an *F*-statistic of 4.52 (adjusted $R^2 = 36\%$), the overall fit of the model is lower than that of the model presented in Table 11. Furthermore, as compared with the results in Table 11, the coefficients on *CAR (0,1)-pos* and *Firm-Size* do not have significant values. On the other hand, with a p-value of .0620, the coefficient on *AAER* is significant at the 10% level in predicting the model. Corporate governance improvements based on changes to *Partial-Index* are significantly more likely following restatements involving fraud. P-values (t-statistics) of all remaining variables in the model that are statistically significant are higher (lower) than those of corresponding test and control variables in Table 11. The lower significance of the overall model and its individual variables suggests that the initial formulation of the *Index* with its inclusion of all 13 governance variables provides added value above that of the *Partial-Index*.

In Panel B of Table 13, the board variables are considered in isolation. A *Board-Index*, consisting of only the 10 board-related variables (described in Section 3.1), is created. *Board-Index-Change* then represents the change in *Board-Index* between the pre- and post-restatement periods. Panel B provides results of the multivariate regression model. The model is identical to the one presented in equation (2) with the following exceptions: (1) *Index-Change* is replaced with *Board-Index-Change*; (2) *Pre* is replaced with *Pre-Board*; (3) *Gov-Control* is replaced with *Gov-Control-Board*; and (4) *Index-*

Change-Control is replaced with *Board-Index-Change-Control*. Variables are defined in Panels A and B of Table 8.

As with *Partial-Index-Change*, the overall fit of the model is lower than that of the model presented in Table 11 (F -statistic = 5.54; adjusted R^2 = 41%). In addition, as compared with results in Table 11, the coefficients on *Magnitude-decr*, *SAB101*, *Gov-Control-Board*, and *Firm-Size* do not have significant values.⁵⁰ With the exception of *CAR (0,1)-pos*, p -values (t -statistics) of all remaining significant variables in the model are higher (lower) than those of corresponding test and control variables in Table 11. The lower significance of the overall model and its individual variables again suggests that board variables alone are not adequate to capture the strength of a firm's *comprehensive* corporate governance, but it is the consolidation of board, audit, and management-related variables that conveys a more accurate portrayal.

7.6.1 Summary of Multivariate Regressions – Sub-Indices

Panels A and B of Table 13 each present multivariate regression results examining changes in a modified version of the *Index*. Panel A analyzes the changes to the *Sub-Index*, *Partial-Index*, and Panel B analyzes changes to the *Sub-Index*, *Board-Index*. Results in Panels A and B show F -statistics of 4.52 and 5.54, respectively, and adjusted R^2 s of 36% and 41%, respectively. However, in each case, the overall fit of the model is lower than that of the model in Table 11 using the full *Index*. The lower significance of the overall models and their individual variables suggests that the initial

⁵⁰ As defined in Panel B of Table 8, *Gov-Control-Board* for *Board-Index* corresponds to *Gov-Control* for the full *Index*.

formulation of the *Index* with its inclusion of all 13 governance variables provides added value above that of the *Sub-Indices*.

According to Panel A, the test and control variables that are statistically significant in predicting the likelihood of corporate governance changes in the post-restatement period (using the *Partial-Index* to measure corporate governance) are *Pre-Partial*, *Gov-Control-Partial*, *SAB101*, *Prior-Perf*, *AAER*, and *Magnitude-decr* (in order from most to least significant). With the exception of *AAER* and *Magnitude-decr*, all significant variables have negative coefficients. No other test or control variable provides additional significance to the model.

Results in Panel B show that the test and control variables that are statistically significant (using the *Board-Index* to measure corporate governance) are *Pre-Board*, *Prior-Perf*, and *CAR (0,1)-pos* (in order from most to least significant). All significant variables have negative coefficients. No other test or control variable provides additional significance to the model. The results imply that changes to board features in the post-restatement period are more likely for restatement firms with declines in performance in the 2-year period prior to the restatement announcement and less likely for sample firms with positive stock market reactions on the restatement announcement. As in previous discussions, however, it may be that board changes are driven by poor performance rather than the restatement.

7.7 Performance Analysis

Table 14 provides a multivariate analysis of restatement firms' operating performance between the pre- and post-restatement periods. The purpose of this analysis

is to investigate the effect of changes to corporate governance on sample firms' operating performance. Panel A examines changes in ROA, and Panel B examines changes in ROE. ROA for each firm-year is calculated as net income before extraordinary items and discontinued operations divided by total assets (multiplied by 100), as listed in the ExecuComp database. Similarly, ROE is defined as reported in the ExecuComp database. The model is shown as follows:

$$\begin{aligned}
 \text{Perf-Change} &= \beta_0 \\
 &+ \beta_1 \text{Index-Change-pos} + \beta_2 \text{Index-Change-neg}^{51} \\
 &+ \beta_3 \text{AAER} && H1 \\
 &+ \beta_4 \text{Comp} + \beta_5 \text{SEC} + \beta_6 \text{Auditor} && H2 \\
 &+ \beta_7 \text{Qtrs} + \beta_8 \text{Magnitude-incr} + \beta_9 \text{Magnitude-decr} && H3 \\
 &+ \beta_{10} \text{IPRD} + \beta_{11} \text{SAB101} + \beta_{12} \text{EITF} && H4 \\
 &+ \beta_{13} \text{Rev-Other} \\
 &+ \beta_{14} \text{M-A} + \beta_{15} \text{Cost-Exp} \\
 &+ \beta_{16} \text{CAR (0,1)-pos} + \beta_{17} \text{CAR (0,1)-neg} && H5 \\
 &+ \beta_{18} \text{Pre-Perf} && \text{controls} \\
 &+ \beta_{19} \text{Firm-Size} + \varepsilon && (4)
 \end{aligned}$$

where *Perf-change* in Panels A and B refers to *ROA-Change* and *ROE-Change*, respectively. *ROA-Change* (*ROE-Change*) is the difference in ROA (ROE) between the pre- and post-restatement periods (years $t - 1$ and $t + 2$, respectively). Similarly, the

⁵¹ *Index-Change-pos* refers to those restatement firms with an increase in *Index-Change*, and *Index-Change-neg* refers to those restatement firms with no change or a decrease in *Index-Change*. A negative sign expected for *Index-Change-neg* is equivalent to a positive sign for *Index-Change*.

control variable, *Pre-Perf*, refers to ROA (ROE) in the pre-restatement period, in Panels A and B, respectively.

As in the prior models, H1 – H5 are used to reference the specific hypotheses in Chapter 4 to which the equation variables refer. However, it is not obvious that test and control variables here should predict the model in accordance with previously discussed hypotheses. On the one hand, it seems that any variables that are predicted to exhibit a positive association with *Index-Change* are also predicted to be associated with improvements in operating performance in the post-restatement period. The conjecture would be that improvements to restatement firms' governance mechanisms are also influential in improving operating performance.⁵² However, it is also possible that problems related to the restatement are so severe that the performance improvement does not occur by the second year following the restatement announcement.

In contrast, the least severe restatements, such as income-increasing restatements or those with positive 2-day announcement returns, are expected to have negative associations with *Index-Change* (Hypotheses 3b and 5, respectively). Consequently, they might also have negative associations with performance changes, since they are less likely to implement the corporate governance changes that might induce performance improvement. On the other hand, because they are relatively more technical, with less severe associated consequences, performance might improve regardless of the lower

⁵² Eisenhofer and Levin (2005) review about two dozen recent studies on the link between corporate governance and performance. For instance, Brown and Caylor (2004) analyze firms' Corporate Governance Quotients (CGQ), as developed by Institutional Shareholder Services, Inc. (ISS), and find corporate governance to be directly correlated with positive performance, as measured by shareholder returns, profitability, risk, and dividend payouts and yields. Gompers et al. (2003) find that firms with stronger shareholder rights have higher firm value, higher profits, and higher sales growth. Brown and Caylor (2006b) create firms' Gov-Scores, based on data by ISS, and find a high association with expected firm performance. Aggarwal and Williamson (2006) similarly find a positive and significant relation between corporate governance practices and firm value. Brown and Caylor (2006a) show that seven (six) governance provisions are significantly and positively related to return on assets (equity).

expected likelihood for corporate governance changes. Because of these competing possibilities, no predictions on the signs of the coefficient are made.

Results of the model in Panel A document an F -statistic of 2.95 and an adjusted R^2 of 22%, in part due to the significant (at the 1% level) negative coefficient on the control variable, *Pre-ROA*. As expected, the higher the ROA in the pre-restatement period, the lower the change in ROA by the end of the post-restatement period. However, neither *Index-Change-pos* nor *Index-Change-neg* exhibits a significant association with *ROA-Change*, suggesting that the extent of changes to the *Index* over the years $t - 1$ through $t + 2$ is not useful in predicting the change in operating performance, as measured by ROA, in sample restatement firms.

Results of a number of other test variables provide mixed conclusions. For instance, sample restatements prompted by auditors are less likely to be followed by improvements in ROA (t-stat = -1.69; $p = .0937$). Similarly, *Rev-Other* is negatively correlated with *ROA-Change* at the 1% level, indicating that restatements related to the most severe revenue recognition issues are less likely to be followed by increases in ROA as well. Perhaps, the severity of these restatements is such that operating performance does not improve by year $t + 2$. Conversely, a positive coefficient on *Qtrs* (at the 10% level) indicates that restatement periods of longer duration are more likely to be followed by improvements in ROA performance. Similarly, with a p-value of .0737, a positive coefficient on *CAR (0,1)-neg* implies that sample restatement firms with negative announcement returns are more likely to improve ROA by the second year following the restatement announcement. Both these results are consistent with the conjecture that

variables that predict a positive association with *Index-Change* also predict improvements in operating performance in the post-restatement period.⁵³

Panel B estimates equation (4) for *ROE-Change*. Results of the model show an *F*-statistic of 8.61 and an adjusted R^2 of 54%, primarily due to the significant (at the 1% level) negative coefficient on the control variable, *Pre-ROE*. Here, however, *Index-Change-neg* exhibits a significant positive association with *ROE-Change* (at the 1% level), indicating that improvements in ROE over the years $t - 1$ through $t + 2$ are more likely for sample restatement firms with no changes to or decreases in *Index-Change* over the same time period. It could be that this group of sample restatements includes those that are more technical in nature, and consequently, performance will improve in these firms regardless of the lower expected likelihood for corporate governance changes. Along these lines, *EITF* exhibits a positive association (at the 5% level) with *ROE-Change*, perhaps as a result of its more technical nature.

On the other hand, in accordance with initial predictions of variables on *Index-Change*, a positive coefficient on *SEC* at the 5% level indicates that restatements prompted by the SEC are more likely to be followed by improvements in ROE. Though this might be due to improvements in corporate governance in the post-restatement period, it could also be due to the high frequency of the relatively more technical IPR&D-related restatements among the SEC-initiated restatement group.⁵⁴ In addition, with a *p*-value of .0591, the positive coefficient on *CAR (0,1)-neg* again implies that sample restatement firms with negative announcement returns are likely to improve operating

⁵³ It should be noted, however, that coefficient values on both *Qtrs* and *CAR (0,1)-neg* are not significant in the multivariate regression results on *Index-Change* in Table 11.

⁵⁴ Here, too, it should be noted that the coefficient value on *SEC* is not significant in the multivariate regression results on *Index-Change* in Table 11.

performance (as measured by ROE) by the second year following the restatement announcement. The positive significant coefficients on both *SEC* and *CAR (0,1)-neg* are consistent with the conjecture that variables that predict a positive association with *Index-Change* also predict improvements in operating performance in the post-restatement period.

7.7.1 Summary of Performance Analysis

Equation (4) is estimated for changes in sample restatement firms' operating performance between the pre- and post-restatement periods (years $t - 1$ and $t + 2$, respectively). Panel A examines *ROA-Change*, and Panel B examines *ROE-Change*. Results in both Panels A and B indicate that the regression models are significant (F -statistics = 2.95 and 8.61, respectively; adjusted R^2 s = 22% and 54%, respectively), in large part due to the highly significant negative coefficients on the respective control variables, *Pre-ROA* and *Pre-ROE*.

In Panel A, significant negative coefficients on *Auditor* and *Rev-Other* suggest that the severity of these restatements might be such that the operating performance is not yet improved by year $t + 2$. Conversely, significant positive coefficients on *Qtrs* and *CAR (0,1)-neg* are consistent with the conjecture that variables that predict a positive association with *Index-Change* also predict improvements in operating performance in the post-restatement period. The conjecture is that improvements to restatement firms' governance mechanisms are also influential in improving operating performance.

In Panel B, significant positive coefficients on *Index-Change-neg* and *EITF* at the 1% and 5% levels, respectively, are suggestive of improvements in operating

performance following those restatements that are, perhaps, more technical in nature, regardless of the lower expectation for corporate governance changes. On the other hand, the significant positive coefficients on *SEC* and *CAR (0,1)-neg* are again consistent with the conjecture that variables that predict a positive association with *Index-Change* also predict improvements in operating performance in the post-restatement period.

8. Conclusions and Implications for Future Research

This dissertation conducts an analysis on a sample of 137 restatements issued by 121 unique U.S. firms over the period January 1997 through June 2002. It uses a detailed classification of the sample on the basis of presence of fraud, prompter, magnitude, severity, and reason for the restatement. It investigates whether a correlation exists between restatement characteristics and steps taken by firms to improve their governance mechanisms in the period following a restatement. In doing so, the study develops an *Index*, calculated as a composite score based on an array of governance features, including board, audit, and management-related variables in an effort to assess the joint strength of *multiple* corporate governance attributes within a firm. The *Index* is calculated for each firm in the year preceding the restatement announcement and then again two years following the restatement. The comparison of the *Index* between the two periods is then used to relate the nature and magnitude of a restatement with the likelihood of changes designed to jointly strengthen the weaknesses in multiple governance attributes that may have contributed to misstatement in the first place.

Univariate results reveal that changes aimed to strengthen firms' governance structures following restatements appear most likely in the more severe revenue recognition cases and least likely in the more technical revenue recognition cases involving SAB101 and other emerging issues brought forth by FASB (EITF). In addition, changes in sample restatement firms are least pronounced when the governance level in the pre-restatement period is high. Though not consistent with all the univariate results,

multivariate results substantiate the conjecture that a decision to implement corporate governance changes is frequently motivated following income-decreasing restatements, when prior firm performance is more negative, and in larger firms. On the other hand, corporate governance changes are less likely following the more technical revenue recognition restatements involving SAB101, when the governance level in the pre-restatement period is high, and when there is a gain in the market value of the firm following its announcement of restatement.

In view of the prevalence of earnings restatements in recent years, this study is both timely and important. While consequences to restatement firms can be quite severe, it appears that it is firms facing restatements with the biggest negative effect on net income and those with the worst performance in the period prior to the restatement announcement that are most highly motivated to strengthen their governance mechanisms. In contrast, more technical restatements that involve SAB101 and those that result in gains to firms' market values are least likely to provide incentive to restatement firms to implement changes.

This has implications for investors as well as regulators. First, investors can be comforted by the finding that income-decreasing restatements and declines in firm performance prior to the restatement announcement "force" firms to correct underlying problems by implementing changes in their governance arrangements. Under such circumstances, firms appear to understand the value in strengthening their corporate governance. On the other hand, technical restatements that involve SAB101 and those that result in gains to firms' market values are less likely to effect governance changes. Due to the nature of these types of restatements, regulators might deem intervention in

these circumstances unnecessary.⁵⁵ However, in a variety of other types of restatements, the benefits that regulation might bring to correct the problems that prompted the misreporting and the eventual need for restatement are more apparent. In particular, these include restatements affecting a greater number of quarters, those resulting in a loss in market value following the restatement announcement, and those that are classified as relating to relatively more serious revenue recognition issues.

There are a number of caveats associated with this study. First, there is potential endogeneity between earnings restatements, governance changes, and corporate performance. It is possible that governance changes may simply be a reaction to deterioration in corporate performance. Several of the results documented in the paper might very well occur even without the impetus of a restatement. For instance, the change in the CEO in the post-restatement period might be driven by poor performance rather than the restatement announcement. Moreover, it could be the change in CEO in the post-restatement period that itself leads to further governance changes.

Restatements are not exogenously determined, and it may be that factors driving the need for restatement are also correlated with *Index-Change*. Consequently, the results may, in part, be driven by predictors on the probability of restatement rather than directly by the restatement. One possible solution to alleviate endogeneity concerns would be to condition the model on the probability of restatement.

There are also several limitations associated with the *Index* and its construction. First, as with the *G-Index*, the *Index* may not accurately reflect the relative impacts of

⁵⁵ It should be noted that although some restatements are relatively more technical, all restatements are wasteful. Even if some restatements do not prompt negative consequences, restating financial statements is not a value-producing activity.

different components. In addition, each *Index* variable carries equal weight, yielding unequal weighting between board, audit, and management elements. However, like the *G-Index*, the *Index* has the advantage of being transparent, objective, and easily reproducible. Furthermore, the *Index* provides a convenient method to compare changes to firms' corporate governance levels over time and to examine the determinants of those changes.

With regard to the design of the model, a significant shortcoming is that the model only accounts for governance changes among variables that are available in the pre-restatement period. To illustrate this point, a firm that retained its governance level among pre-restatement governance variables but enhanced its governance among other variables that are not available in pre-restatement data will appear to have made no enhancements to governance mechanisms. Moreover, a firm that reduced its governance level among pre-restatement variables but replaced those governance features with other variables that are not available in pre-restatement data will appear to have weakened its corporate governance, when, in fact, it has merely adjusted its form.

A further shortcoming of the model is the assumption that increases in the value of the *Index* correspond with improvements in corporate governance. While the model is designed with this in mind, it is possible that there is a point at which higher levels of the *Index* do not indicate stronger corporate governance. For example, there might exist diminishing marginal returns in the case of too many independent directors. In a similar vein, management changes do not necessarily imply stronger corporate governance. Alternatively, it is conceivable that a CEO is fired as a scapegoat to send a signal to investors that fundamental changes are being made. More broadly, even in circumstances

where governance changes are initiated in a genuine attempt to achieve a stronger internal control system, it is possible that governance changes do not achieve anything other than send investors a signal that actions are being taken.

A final drawback concerning governance changes is that the model captures all audit-firm changes regardless of the reason for the change. It does not distinguish between unexplained changes and changes that were merely routine. Similarly, forced changes in management are not differentiated from normal management turnover.

This dissertation has implications for several other lines of future research. First, future research may look to address alternative formulations of the *Index*. For instance, the inclusion of other governance variables would add to the robustness of the *Index* as a measure for the *overall* strength of a firm's corporate governance. Furthermore, weighting component features of the *Index* using a systematic method might yield added insight regarding firms' decisions to implement changes to their governance mechanisms.

In addition, the prospects of restatement firms in future years depend upon firms' abilities to survive the restatement crisis and recover. An investigation of this process and whether or not there is a correlation between restatement characteristics and the ability to survive and fully recover provides another area for further study.

Other opportunities for future research include expanding the study to incorporate additional restatements. In particular, the GAO followed up on its first GAO Report with the collection of an additional 1,390 restatements that were announced by 1,121 public companies between July 1, 2002 and September 30, 2005 (GAO, 2006). This second report (2006 GAO Report, hereafter) updated key aspects of the original report. According to the report, the number of restatement announcements continued to grow

from 314 in 2002 to 370 in 2004⁵⁶. In addition, the percentage of listed companies and large companies restating grew as well. The average (median) size by market capitalization of a restating company increased from \$4 billion (\$282 million) in the latter half of 2002 to almost \$6 billion (\$672 million) through September 2005.

However, in a departure from the trends reported in the 2002 GAO Report, the 2006 GAO Report finds that issues involving revenue recognition account for only 20% of the announced restatements, surpassed by restatements made for cost- or expense-related reasons (35%). Furthermore, the decrease in market capitalization to restating companies is only \$63 billion, compared to \$100 billion in the 2002 GAO Report, and the decrease in stock price over a 3-day announcement window is only 2% on average, compared to almost 10% in the 2002 GAO Report. This seems to suggest a decrease in the effect of restatement announcements, perhaps due to a change in the nature of restatements.

To account for the less severe impact of restatement announcements in the later time period, the 2006 GAO Report suggests that while prior to 2002, restatement announcements led to concerns about the unreliability of financial reports, since 2002, the cause of the increase in restatements has been less clear to investors. Though restatements sometimes represent a response to aggressive accounting practices, there are several new factors likely to prompt restatements as well. First, since the passage of the Sarbanes-Oxley Act of 2002, some restatements are an expected result of a greater focus on the quality of financial reporting by management and audit committees.⁵⁷ In addition,

⁵⁶ There were an additional 523 restatements announced between January 1, 2005 and September 30, 2005.

⁵⁷ In particular, the certification of financial reports required by Section 302 and the internal controls provisions of Section 404 of the Sarbanes-Oxley Act might prompt restatements.

increased scrutiny of public accounting firms by the Public Company Accounting Oversight Board (PCAOB), and increased review of firms by the SEC might result in increased restatements. Perhaps, investors have a greater recognition that some restatements are merely technical adjustments for compliance or represent companies strengthening their internal controls.

Because of the less pronounced negative consequences following restatement announcements in the period since 2002, an analysis of corporate governance changes following these restatements might yield different results. Furthermore, alternate hypotheses would need to be considered according to the sample distribution.⁵⁸

⁵⁸ For instance, the high frequency of cost- or expense-related reasons for restatements in the July 2002 – September 2005 period can be traced to numerous lease accounting issues in early 2005. These were primarily technical restatements to correct the accounting for leases by the retail/restaurant industry.

Table 1*Sample Selection and Control Sample***Panel A: Sample selection of 137 restatements in the period 1997 – June 2002**

| Restriction | Sample Size |
|---|--------------------|
| Number of restatements in the period 1997 - June 2002 (GAO database) | 919 |
| Less: | |
| Firms without data in both the S&P ExecuComp and IRRC (Investor Responsibility Research Center) databases (1996 – 2004) | 665 <u>254</u> |
| Observations without data for the pre- or post- restatement period | 114 <u>140</u> |
| Observations with missing restatement severity data | 3 _____ |
| Final restatement sample | 137 |

Table 1: Sample Selection and Control Sample (cont'd)**Panel B: Control sample: non-restatement firms**

| Year | Number of Firms | Percentage of Total |
|-------|-----------------|---------------------|
| 1996 | 949 | 8.8% |
| 1997 | 1,099 | 10.2% |
| 1998 | 1,202 | 11.2% |
| 1999 | 1,214 | 11.3% |
| 2000 | 1,217 | 11.3% |
| 2001 | 1,284 | 11.9% |
| 2002 | 1,255 | 11.7% |
| 2003 | 1,285 | 11.9% |
| 2004 | 1,262 | 11.7% |
| Total | 10,767 | 100% |

The control sample consists of all non-restatement firms (i.e., non-GAO firms) in the period 1996 – 2004 appearing in both the S&P Executive Compensation (ExecuComp) and Investor Responsibility Research Center (IRRC) databases. The number of firms with available data increases slightly each year of the period.

Table 2

Descriptive Statistics for Distribution of Sample Restatements by Year, Firm, and Industry

Panel A: Yearly distribution of restatements

| | Year | | | | | | Total |
|------------------------|------|------|------|------|------|------|---------------------|
| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | |
| Number of Observations | 7 | 9 | 29 | 26 | 42 | 24 | 137 |
| Percentage of Total | 5% | 7% | 21% | 19% | 31% | 18% | 100% ^(a) |

(a) The numbers do not sum to 100% due to rounding.

Panel B: Number of restatements per sample firm

| | Number of Restatements Per Sample Firm | | | |
|-------------------------|--|----|---|-------|
| | 1 | 2 | 3 | Total |
| Number of Firms | 106 | 14 | 1 | 121 |
| Total # of Restatements | 106 | 28 | 3 | 137 |

Panel C: Industry distribution of sample firms^(a)

| | Frequency | Percentage of Total |
|-----------------------------------|-----------|---------------------|
| Agriculture, mining, construction | 5 | 3.65% |
| Communication | 1 | 0.73% |
| Financial services | 13 | 9.49% |
| Manufacturing | 51 | 37.23% |
| Services | 4 | 2.92% |
| Technology | 31 | 22.63% |
| Transportation | 0 | 0.00% |
| Utilities | 9 | 6.57% |
| Wholesale / retail | 21 | 15.33% |
| Other | 2 | 1.46% |
| Total | 137 | 100% |

Table 2: Panel C (cont'd)

(a) Industries are defined by the following SIC codes: Agriculture, mining, and construction = 0 – 1999; Manufacturing = 2000 – 3999 (except codes assigned to Technology); Technology = 3570 – 3579 plus 7370 – 7379; Transportation = 4000 – 4799; Communications = 4800 – 4899; Utilities = 4900 – 4999; Wholesale / retail = 5000 – 5999; Financial services = 6000 – 6999; Services = 7000 – 8999 (except codes assigned to Technology). Industry classification is taken from Palmrose and Scholz (2004).

Table 3*Descriptive Statistics for Sample Restatements***Panel A: Restatement characteristics**

| | Frequency | Percentage of Total |
|--|-----------|---------------------|
| <i>Full Sample</i> | 137 | 100% |
| <i>Prompter^(a)</i> | | |
| Auditor | 6 | 4% |
| Company | 41 | 30% |
| SEC | 34 | 25% |
| Other | 56 | 41% |
| <i>Exchange Listing^(a)</i> | | |
| AMEX | 1 | 0.7% |
| NASDAQ | 33 | 24.1% |
| NYSE | 103 | 75.2% |
| <i>AAER/Fraud^(b)</i> | | |
| Yes | 39 | 28% |
| No | 98 | 72% |
| <i>Reason^{(a)(c)}</i> | | |
| Cost or expense | 21 | 15% |
| In-process R&D | 8 | 6% |
| Loan-loss | 3 | 2% |
| Mergers and acquisitions | 14 | 10% |
| Reclassification | 6 | 4% |
| Related-party transactions | 8 | 6% |
| Restructuring, assets, or inventory | 23 | 17% |
| Revenue recognition | 60 | 44% |
| Securities related | 3 | 2% |
| Unspecified | 5 | 4% |
| Other | 12 | 9% |

(a) This breakdown is based on the GAO Report (2002).

(b) *AAER/Fraud* is defined as in Palmrose et al. (2004) as the issuance of an enforcement action (AAER) by the SEC or company disclosures of fraud/irregularities.

(c) A number of restatements are coded with multiple reasons. Therefore, the percentages listed do not sum to 100%.

Table 3: Descriptive Statistics (cont'd)**Panel B: Revenue recognition restatements**

| | Frequency | Percentage of Total |
|----------------------------|-----------|---------------------|
| <i>Revenue recognition</i> | 60 | 100% ^(a) |
| SAB101 ^(b) | 19 | 32% |
| EITF ^(c) | 19 | 32% |
| Other | 22 | 37% |

(a) The numbers do not sum to 100% due to rounding.

(b) SAB101 refers to restatements resulting from the SEC adoption of revenue recognition rules under Staff Accounting Bulletin No. 101 (SAB101).

(c) EITF refers to restatements resulting from guidance by a FASB Emerging Issues Task Force (EITF).

Panel C: Further descriptive statistics

| | Mean | Q1 | Median | Q3 |
|--|--------|--------|--------|-------|
| Restatement amount (in \$ millions) | -353.6 | -27.0 | -4.9 | 0 |
| Magnitude (scaled by total assets) | -2.3% | -0.8% | -0.16% | 0% |
| Duration (number of quarters) | 6.3 | 3 | 4 | 8 |
| Announcement return (0,1) ^(a) | -5.0% | -10.1% | -2.7% | 1.0% |
| Size of firm (total assets in \$ millions) | 9,101 | 836 | 2,513 | 9,536 |

(a) The announcement return is defined as the market-adjusted cumulative abnormal return (equally weighted index) over days 0 and 1, where day 0 is the restatement announcement date.

Table 3: Descriptive Statistics (cont'd)**Panel D: Announcement returns**

| | Number | Percent or Mean | Mean CAR (0,1) | Median CAR (0,1) |
|---------------------------------------|--------|--------------------|-------------------|---------------------|
| <i>Full Sample</i> | 137 | 100% | -5.0%*** | -2.7%*** |
| <i>AAER/Fraud^(b)</i> | | | | |
| Yes | 39 | 28% | -6.2%*** | -4.4%*** |
| No | 98 | 72% | -4.5%*** | -2.1%*** |
| <i>Prompter^(a)</i> | | | | |
| Auditor | 6 | 4% | -14.5%*** | -11.4%* |
| Company | 41 | 30% | -8.0%*** | -5.0%*** |
| SEC | 34 | 25% | -2.7%* | -1.9%*** |
| Other | 56 | 41% | -3.2%*** | -1.0%** |
| <i>Magnitude</i> | | | | |
| Income-Increasing | 27 | 20% | -3.0%* | -1.0%*** |
| Income-Decreasing | 90 | 66% | -6.3%*** | -3.5%*** |
| No Change | 20 | 15% | -1.6% | -0.0% |
| <i>Duration (No. of Quarters)</i> | | | | |
| Overall Mean | | 6.3 | | |
| Quintile Means | 31 | 1.4 | -3.7%** | -2.1%*** |
| | 28 | 3 | -4.8%** | -2.9%** |
| | 20 | 4.9 | -3.1%** | 0.2%* |
| | 30 | 7.6 | -3.8%** | -1.4%* |
| | 28 | 14.8 | -9.3%*** | -5.7%*** |
| <i>Reason^{(a)(c)}</i> | | | | |
| Cost or expense | 21 | 15% | -5.8%** | -2.9%** |
| In-process R&D | 8 | 6% | -2.2%* | -0.8% |
| Loan-loss | 3 | 2% | -9.0%* | -9.3% |
| Mergers and acquisitions | 14 | 10% | -4.2% | -4.4% |
| Reclassification | 6 | 4% | -6.8% | -3.3% |
| Related-party transactions | 8 | 6% | -1.4% | -1.0% |
| Restructuring, assets or inventory | 23 | 17% | -4.8%** | -3.3%** |
| SAB101 | 19 | 14% | -3.4%** | -3.6%** |
| EITF | 19 | 14% | -1.0% | -0.4% |
| Other revenue recognition | 22 | 16% | -11.5%*** | -9.7%*** |
| Securities related | 3 | 2% | -1.6% | -2.1% |
| Unspecified | 5 | 4% | -9.1% | -5.8% |
| Other | 12 | 9% | -3.9% | -1.3% |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively, based on a two-tailed t-test for the mean and a Wilcoxon signed-rank test for the median.

(a) With the exception of the three revenue recognition categories (SAB101, EITF, and Other revenue recognition), this breakdown is based on the GAO Report (2002).

(b) *AAER/Fraud* is defined as in Palmrose et al. (2004) as the issuance of an enforcement action (AAER) by the SEC or company disclosures of fraud/irregularities.

(c) A number of restatements are coded with multiple reasons. Therefore, the percentages listed do not sum to 100%.

Table 4*Description of Index Variables*

| Variable Name | Variable Description |
|-----------------------|--|
| <i>bd-ind</i> | Fraction of independent directors on the board. |
| <i>dual-CEO</i> | 1 if the CEO is not the board chair; zero, otherwise. |
| <i>indep-chair</i> | 1 if an independent outside director is the board chair; zero, otherwise. |
| <i>audit-indep</i> | Fraction of independent directors on the audit committee. |
| <i>comp-indep</i> | Fraction of independent directors on the compensation committee. |
| <i>nom-indep</i> | Fraction of independent directors on the nominating committee. |
| <i>corpgov-indep</i> | Fraction of independent directors on the corporate governance committee. |
| <i>bd-size</i> | Number of board members. |
| <i>interlock</i> | Fraction of interlocked directors on the board. |
| <i>other-boards</i> | Total number of other companies' boards served by all directors, divided by total number of board members. |
| <i>auditor-big6</i> | 1 if the firm is audited by a Big Six firm; zero, otherwise. |
| <i>auditor-switch</i> | 1 if there is a change in auditor; zero, otherwise. |
| <i>CEO-switch</i> | 1 if there is a change in CEO; zero, otherwise. |
| <i>Index-Pre</i> | Total <i>Index</i> in the pre-restatement period (year $t - 1$). |
| <i>Index-Post</i> | Total <i>Index</i> in the post-restatement period (year $t + 2$). |
| <i>G-Index-Pre</i> | Governance index developed by Gompers et al. (2003), in the pre-restatement period. |
| <i>G-Index-Post</i> | Governance index developed by Gompers et al. (2003), in the post-restatement period. |

The *Index* can range from 0 to 13. The *Index* increases by one if: (1) more than two-thirds of the board is comprised of independent directors; (2) the CEO is not also Chairman of the Board; (3) the Chairman of the Board is an independent outside director; (4) all audit committee members are independent directors; (5) all compensation committee members are independent directors; (6) all nominating committee members are independent directors; (7) all corporate governance committee members are independent directors; (8) the board size is less than the median of all firms (adjusted for firm size and time); (9) the board interlock is less than the median of all firms (adjusted for firm size and time); (10) the mean number of other boards served by a director is less than the median of all firms (adjusted for firm size and time); (11) the firm is audited by a Big Six firm; (12) there is a change in the external auditor within the last three years; (13) there is a change in the CEO within the last three years. To adjust for firm size and time, the measure is computed net of the median for the particular year and firm size decile.

Table 5*Descriptive Statistics for Index Variables***Panel A: Control sample (non-restatement firms): 1996 – 2004**

| | Mean | Median | Minimum | Maximum | Std. Dev. | N |
|-----------------------|-------|--------|---------|---------|-----------|--------|
| <i>bd-ind</i> | 0.637 | 0.667 | 0.077 | 1.000 | 0.178 | 10,671 |
| <i>dual-CEO</i> | 0.333 | 0.000 | 0.000 | 1.000 | 0.471 | 10,767 |
| <i>indep-chair</i> | 0.508 | 1.000 | 0.000 | 1.000 | 0.500 | 10,767 |
| <i>audit-indep</i> | 0.887 | 1.000 | 0.200 | 1.000 | 0.182 | 8,577 |
| <i>comp-indep</i> | 0.904 | 1.000 | 0.143 | 1.000 | 0.176 | 8,451 |
| <i>nom-indep</i> | 0.824 | 1.000 | 0.111 | 1.000 | 0.220 | 6,118 |
| <i>corpgov-indep</i> | 0.869 | 1.000 | 0.200 | 1.000 | 0.190 | 3,962 |
| <i>bd-size</i> | 9.594 | 9.000 | 1.000 | 39.000 | 3.024 | 10,671 |
| <i>interlock</i> | 0.010 | 0.000 | 0.000 | 0.500 | 0.037 | 10,608 |
| <i>other-boards</i> | 0.860 | 0.700 | 0.000 | 2.941 | 0.911 | 8,545 |
| <i>auditor-big6</i> | 0.978 | 1.000 | 0.000 | 1.000 | 0.147 | 9,877 |
| <i>auditor-switch</i> | 0.184 | 0.000 | 0.000 | 1.000 | 0.388 | 8,916 |
| <i>CEO-switch</i> | 0.322 | 0.000 | 0.000 | 1.000 | 0.467 | 7,942 |

Descriptive statistics are for the 10,767 firm-year control observations over the period 1996 – 2004. Depending on data availability, there is some variation in the total number of firm-year observations for each variable.

Please refer to Table 4 for variable definitions.

Table 5: Descriptive Statistics (cont'd)**Panel B: Control sample (non-restatement firms): 1999 – 2004^(a)**

| | Mean | Median | Minimum | Maximum | Std. Dev. | N |
|-----------------------|-------|--------|---------|---------|-----------|-------|
| <i>bd-ind</i> | 0.653 | 0.667 | 0.100 | 1.000 | 0.171 | 7,451 |
| <i>dual-CEO</i> | 0.341 | 0.000 | 0.000 | 1.000 | 0.474 | 7,517 |
| <i>indep-chair</i> | 0.614 | 1.000 | 0.000 | 1.000 | 0.487 | 7,517 |
| <i>audit-indep</i> | 0.900 | 1.000 | 0.200 | 1.000 | 0.175 | 7,407 |
| <i>comp-indep</i> | 0.908 | 1.000 | 0.143 | 1.000 | 0.174 | 7,302 |
| <i>nom-indep</i> | 0.833 | 0.667 | 0.167 | 1.000 | 0.216 | 5,420 |
| <i>corpgov-indep</i> | 0.874 | 1.000 | 0.200 | 1.000 | 0.188 | 3,671 |
| <i>bd-size</i> | 9.450 | 9.000 | 1.000 | 28.000 | 2.914 | 7,451 |
| <i>interlock</i> | 0.010 | 0.000 | 0.000 | 0.500 | 0.034 | 7,411 |
| <i>other-boards</i> | 0.856 | 0.700 | 0.000 | 2.900 | 0.891 | 7,376 |
| <i>auditor-big6</i> | 0.978 | 1.000 | 0.000 | 1.000 | 0.147 | 6,896 |
| <i>auditor-switch</i> | 0.223 | 0.000 | 0.000 | 1.000 | 0.416 | 6,168 |
| <i>CEO-switch</i> | 0.326 | 0.000 | 0.000 | 1.000 | 0.469 | 5,596 |

Panel C: Restatement firms in the post-restatement period^(b)

| | Mean | Median | Minimum | Maximum | Std. Dev. | N |
|-----------------------|---------|--------|---------|---------|-----------|-----|
| <i>bd-ind</i> | 0.681* | 0.714 | 0.152 | 0.938 | 0.175 | 136 |
| <i>dual-CEO</i> | 0.294 | 0.000 | 0.000 | 1.000 | 0.457 | 136 |
| <i>indep-chair</i> | 0.743* | 1.000 | 0.000 | 1.000 | 0.439 | 136 |
| <i>audit-indep</i> | 0.912* | 1.000 | 0.333 | 1.000 | 0.154 | 135 |
| <i>comp-indep</i> | 0.919* | 1.000 | 0.250 | 1.000 | 0.159 | 132 |
| <i>nom-indep</i> | 0.841* | 1.000 | 0.222 | 1.000 | 0.215 | 115 |
| <i>corpgov-indep</i> | 0.875* | 1.000 | 0.222 | 1.000 | 0.181 | 92 |
| <i>bd-size</i> | 10.000* | 10.000 | 5.000 | 33.000 | 3.209 | 136 |
| <i>interlock</i> | 0.007 | 0.000 | 0.000 | 0.200 | 0.028 | 109 |
| <i>other-boards</i> | 0.978 | 0.905 | 0.000 | 2.846 | 0.640 | 114 |
| <i>auditor-big6</i> | 0.984 | 1.000 | 0.000 | 1.000 | 0.124 | 129 |
| <i>auditor-switch</i> | 0.233 | 0.000 | 0.000 | 1.000 | 0.424 | 129 |
| <i>CEO-switch</i> | 0.458* | 0.000 | 0.000 | 1.000 | 0.500 | 131 |

* Significant at the 1% level, based on a two-tailed z-test for the difference in means between the post-restatement period for 137 sample restatements and the control firms during a corresponding time period (1999 – 2004).

Please refer to Table 4 for variable definitions.

Table 5: Panel C (cont'd)

(a) Descriptive statistics are for the 7,517 firm-year control observations over the period 1999 – 2004. Depending on data availability, there is some variation in the total number of firm-year observations for each variable.

(b) Descriptive statistics are for the 137 sample restatements. Depending on data availability, there is some variation in the total number of observations for each variable.

Table 6

Pearson Correlations of Index Variables

Panel A: Pre-Restatement Period

| | <i>bd-ind</i> | <i>dual-CEO</i> | <i>indep-chair</i> | <i>audit-indep</i> | <i>comp-indep</i> | <i>nom-indep</i> | <i>corpgov-indep</i> | <i>bd-size</i> | <i>interlock</i> | <i>other-boards</i> | <i>Index-Pre</i> |
|----------------------|---------------|-----------------|--------------------|--------------------|-------------------|------------------|----------------------|----------------|------------------|---------------------|------------------|
| <i>bd-ind</i> | | | | | | | | | | | |
| <i>dual-CEO</i> | 0.04 | | | | | | | | | | |
| <i>indep-chair</i> | 0.26 *** | 0.00 | | | | | | | | | |
| <i>audit-indep</i> | 0.16 * | 0.18 * | -0.16 * | | | | | | | | |
| <i>comp-indep</i> | 0.33 *** | 0.00 | 0.13 * | 0.26 *** | | | | | | | |
| <i>nom-indep</i> | 0.39 *** | 0.06 | 0.04 | 0.24 ** | 0.16 | | | | | | |
| <i>corpgov-indep</i> | 0.44 *** | 0.01 | -0.06 | 0.30 * | 0.27 | 0.94 *** | | | | | |
| <i>bd-size</i> | -0.03 | -0.00 | -0.17 * | -0.05 | 0.13 | -0.11 | -0.09 | | | | |
| <i>interlock</i> | 0.19 ** | 0.10 | 0.04 * | 0.19 * | 0.28 *** | 0.15 | 0.04 | 0.01 | | | |
| <i>other-boards</i> | -0.25 ** | 0.05 | -0.27 *** | -0.02 | -0.07 | -0.08 | 0.03 | -0.03 | -0.03 | | |
| <i>Index-Pre</i> | 0.55 *** | 0.33 *** | 0.49 *** | 0.41 *** | 0.54 *** | 0.58 *** | 0.66 *** | 0.11 | 0.41 *** | 0.01 | |
| <i>G-Index-Pre</i> | 0.22 ** | -0.23 ** | 0.25 *** | -0.10 | 0.10 | -0.13 | -0.24 | -0.27 *** | -0.12 *** | -0.31 *** | -0.03 |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 4 for variable definitions.

Table 6: Pearson Correlations of *Index* Variables (cont'd)

Panel B: Post-Restatement Period

| | <i>bd-ind</i> | <i>dual-CEO</i> | <i>indep-chair</i> | <i>audit-indep</i> | <i>comp-indep</i> | <i>nom-indep</i> | <i>corpgov-indep</i> | <i>bd-size</i> | <i>interlock boards</i> | <i>other-boards</i> | <i>auditor-big6</i> | <i>auditor-switch</i> | <i>CEO-switch</i> | <i>Index-Post</i> |
|----------------------|---------------|-----------------|--------------------|--------------------|-------------------|------------------|----------------------|----------------|-------------------------|---------------------|---------------------|-----------------------|-------------------|-------------------|
| <i>bd-ind</i> | | | | | | | | | | | | | | |
| <i>dual-CEO</i> | -0.07 | | | | | | | | | | | | | |
| <i>indep-chair</i> | 0.22 | -0.03 | | | | | | | | | | | | |
| <i>audit-indep</i> | 0.21 | 0.12 | 0.01 | | | | | | | | | | | |
| <i>comp-indep</i> | 0.18 | 0.05 | 0.01 | 0.22 | | | | | | | | | | |
| <i>nom-indep</i> | 0.46 | 0.04 | 0.01 | 0.30 | 0.46 | | | | | | | | | |
| <i>corpgov-indep</i> | 0.39 | -0.01 | -0.13 | 0.22 | 0.52 | 0.93 | | | | | | | | |
| <i>bd-size</i> | -0.16 | -0.14 | -0.26 | -0.16 | 0.05 | 0.05 | 0.02 | | | | | | | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 4 for variable definitions.

Table 6: Panel B (cont'd)

| | <i>bd-ind</i> | <i>dual-CEO</i> | <i>indep-chair</i> | <i>audit-indep</i> | <i>comp-indep</i> | <i>nom-indep</i> | <i>corpgov-indep</i> | <i>bd-size</i> | <i>interlock</i> | <i>other-boards</i> | <i>auditor-big6</i> | <i>auditor-switch</i> | <i>CEO-switch</i> | <i>Index-Post</i> |
|-----------------------|---------------|-----------------|--------------------|--------------------|-------------------|------------------|----------------------|----------------|------------------|---------------------|---------------------|-----------------------|-------------------|-------------------|
| <i>interlock</i> | 0.05 | 0.10 | -0.16 | 0.06 | 0.45 | 0.06 | 0.08 | 0.12 | | | | | | |
| | | | * | | *** | | | | | | | | | |
| <i>other-boards</i> | -0.29 | 0.21 | -0.11 | -0.23 | -0.07 | -0.05 | 0.15 | 0.06 | -0.03 | | | | | |
| | *** | ** | | ** | | | | | | | | | | |
| <i>auditor-big6</i> | 0.15 | 0.08 | 0.21 | 0.20 | 0.23 | 0.16 | . | -0.17 | -0.02 | -0.14 | | | | |
| | * | | ** | ** | ** | * | | ** | | | | | | |
| <i>auditor-switch</i> | -0.12 | 0.04 | -0.13 | 0.11 | -0.10 | -0.13 | -0.14 | 0.07 | 0.12 | 0.01 | -0.23 | | | |
| | | | | | | | | | | | *** | | | |
| <i>CEO-switch</i> | 0.07 | 0.32 | 0.04 | 0.03 | 0.13 | 0.01 | -0.04 | 0.04 | 0.12 | -0.09 | 0.12 | 0.00 | | |
| | | *** | | | | | | | | | | | | |
| <i>Index-Post</i> | 0.45 | 0.31 | 0.24 | 0.30 | 0.44 | 0.64 | 0.58 | 0.01 | 0.31 | 0.05 | 0.21 | 0.04 | 0.37 | |
| | *** | *** | *** | *** | *** | *** | *** | | *** | | ** | | *** | |
| <i>G-Index-Post</i> | 0.22 | -0.24 | 0.20 | 0.13 | 0.13 | 0.17 | 0.18 | -0.34 | -0.01 | -0.25 | 0.09 | 0.10 | 0.00 | 0.16 |
| | ** | *** | ** | | *** | * | * | *** | | *** | | | | * |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 4 for variable definitions.

Table 7*Descriptive Statistics for Index Percentage, Index-Change, and Index-Change-Control***Panel A: Index Percentage in year t – 1**

| | Mean | <u>Index Percentage</u> | | |
|---------------------------------|----------|-------------------------|--------|------|
| | | Q1 | Median | Q3 |
| Restatement Firms (Sample) | .486 | .375 | .500 | .583 |
| Non-restatement Firms (Control) | .540 | .500 | .545 | .600 |
| (t-stat) | (-3.75)* | | | |
| N | 137 | | | |

* Significant at the 1% level, based on a two-tailed t-test for the difference in means between the *Index Percentage* among sample restatements in the pre-restatement period and a sample of the matched median *Index Percentage* values in the same industry-year in non-restatement firms (control sample).

Panel B: Index Percentage in years t – 1 and t + 2

| Year Relative to the Restatement | Mean | <u>Index Percentage</u> | | |
|----------------------------------|----------|-------------------------|--------|------|
| | | Q1 | Median | Q3 |
| Pre-restatement (t – 1) | .486 | .375 | .500 | .583 |
| Post-restatement (t + 2) | .580 | .455 | .583 | .667 |
| (t-stat) | (-5.08)* | | | |
| N | 137 | | | |

* Significant at the 1% level, based on a two-tailed t-test for the difference in means between years t – 1 and t + 2.

Panel C: Index-Change and Index-Change-Control

| | Mean | Q1 | Median | Q3 |
|-----------------------------|---------|------|--------|------|
| <i>Index-Change</i> | .331 | .000 | .167 | .500 |
| <i>Index-Change-Control</i> | .120 | .043 | .100 | .143 |
| (t-stat) | (3.72)* | | | |
| N | 137 | | | |

* Significant at the 1% level, based on a two-tailed t-test for the difference in means between *Index-Change* and *Index-Change-Control*.

Table 7: Panel C (cont'd)

Index-Change is calculated as $Index-Post / Index-Pre - 1$, where *Index-Pre* refers to the *Index* in the year preceding the restatement announcement ($t - 1$), and *Index-Post* refers to the *Index* two years following the restatement ($t + 2$).

To compute *Index-Change-Control* for each of the sample restatements, the median *Index-Change* over the prior three years is calculated for each industry-year in non-restatement firms (control sample), where an industry is defined by its 2-digit SIC code. To control for “normal” changes in the *Index* over a three-year period, each sample restatement is matched to the median *Index-Change* for the corresponding industry-year in non-restatement firms.

Table 8*Variable Definitions***Panel A: Primary Analysis****Dependent Variable:**

Index-Change $Index-Post / Index-Pre - 1$

Test Variables:

| | |
|-----------------------|--|
| <i>AAER</i> | 1 if the SEC issued an enforcement action (Accounting and Auditing Enforcement Release) or the company admitted that the misstatement was due to fraud/irregularities; zero, otherwise. |
| <i>SEC</i> | 1 if the restatement is attributed to the SEC; zero, otherwise. |
| <i>Auditor</i> | 1 if the restatement is attributed to the external auditor; zero, otherwise. |
| <i>Comp</i> | 1 if the restatement is attributed to the company management; zero, otherwise. |
| <i>Magnitude</i> | Restated net income less originally reported net income (summed over all restated periods) scaled by total assets at the year-end prior to the restatement announcement. |
| <i>Magnitude-incr</i> | Partitions the sample between income-increasing and income-decreasing restatements by assigning a zero to income-decreasing restatements. A negative sign expected for <i>Magnitude-incr</i> is equivalent to a positive sign for <i>Magnitude-decr</i> . |
| <i>Magnitude-decr</i> | Partitions the sample between income-increasing and income-decreasing restatements by assigning a zero to income-increasing restatements (or restatements with no effect on net income). A positive sign expected for <i>Magnitude-decr</i> is equivalent to a negative sign for <i>Magnitude-incr</i> . |
| <i>Qtrs</i> | Number of quarters for which net income is restated. |
| <i>SAB101</i> | 1 if the restatement results from SEC adoption of revenue recognition rules under Staff Accounting Bulletin No. 101 (SAB101); zero, otherwise. |
| <i>EITF</i> | 1 if the restatement results from guidance by a FASB Emerging Issues Task Force (EITF); zero, otherwise. |
| <i>Rev-Other</i> | 1 if the restatement results from any revenue-related issue other than SAB101 or EITF; zero, otherwise. |

Table 8: Panel A (cont'd)

| | |
|-----------------------------|--|
| <i>IPRD</i> | 1 if the restatement results from an SEC initiative to restate in-process research and development (IPR&D) charges; zero, otherwise. |
| <i>M-A</i> | 1 if the restatement results from improper accounting of mergers or acquisitions; zero, otherwise. |
| <i>Cost-Exp</i> | 1 if the restatement results from improper recognition of costs or expenses; zero, otherwise. |
| <i>CAR (0,1)</i> | Market-adjusted cumulative abnormal return (equally weighted index) over days 0 and 1, where day 0 is the restatement announcement date. |
| <i>CAR (0,1)-pos</i> | Partitions the sample between positive and negative market returns by assigning a zero to restatements with negative cumulative abnormal returns. A negative sign expected for <i>CAR (0,1)-pos</i> is equivalent to a positive sign for <i>CAR (0,1)-neg</i> . |
| <i>CAR (0,1)-neg</i> | Partitions the sample between positive and negative market returns by assigning a zero to restatements with positive cumulative abnormal returns. A positive sign expected for <i>CAR (0,1)-neg</i> is equivalent to a negative sign for <i>CAR (0,1)-pos</i> . |
| Control Variables: | |
| <i>Pre</i> | The governance level in the pre-restatement period, calculated as the fraction represented by the <i>Index</i> divided by the maximum <i>Index</i> for that firm-year, less the median governance level in the same industry-year in non-restatement firms (control sample). |
| <i>Gov-Control</i> | The median governance level in the pre-restatement period in the same industry-year in non-restatement firms (control sample). |
| <i>Firm-Size</i> | Total assets in billions at the year-end prior to the restatement announcement. |
| <i>Prior-Perf</i> | The change in ROA over the two years leading up to the restatement year, where ROA is defined as net income before extraordinary items and discontinued operations divided by total assets, as listed in the ExecuComp database. |
| <i>Index-Change-Control</i> | The median <i>Index-Change</i> over the prior three years in the same industry-year in non-restatement firms (control sample), where an industry is defined by its 2-digit SIC code. |

Table 8: Variable Definitions (cont'd)**Panel B: Supplementary Tests****Dependent Variables:**

| | |
|-----------------------------|---|
| <i>bd-ind-switch</i> | 1 if there is an increase in the value assigned to <i>bd-ind</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>dual-CEO-switch</i> | 1 if there is an increase in the value assigned to <i>dual-CEO</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>indep-chair-switch</i> | 1 if there is an increase in the value assigned to <i>indep-chair</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>audit-indep-switch</i> | 1 if there is an increase in the value assigned to <i>audit-indep</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>comp-indep-switch</i> | 1 if there is an increase in the value assigned to <i>comp-indep</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>nom-indep-switch</i> | 1 if there is an increase in the value assigned to <i>nom-indep</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>corpgov-indep-switch</i> | 1 if there is an increase in the value assigned to <i>corpgov-indep</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>bd-size-switch</i> | 1 if there is an increase in the value assigned to <i>bd-size</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>interlock-switch</i> | 1 if there is an increase in the value assigned to <i>interlock</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>other-boards-switch</i> | 1 if there is an increase in the value assigned to <i>other-boards</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>auditor-big6-switch</i> | 1 if there is an increase in the value assigned to <i>auditor-big6</i> ; -1 if there is a decrease; zero, otherwise. |
| <i>auditor-switch</i> | 1 if there is a change in auditor; zero, otherwise. |
| <i>CEO-switch</i> | 1 if there is a change in CEO; zero, otherwise. |
| <i>Partial-Index-Change</i> | $Partial-Index-Post / Partial-Index-Pre - 1$ |
| <i>Board-Index-Change</i> | $Board-Index-Post / Board-Index-Pre - 1$ |
| <i>ROA-Change</i> | $ROA_{post-restatement} - ROA_{pre-restatement}$ |
| <i>ROE-Change</i> | $ROE_{post-restatement} - ROE_{pre-restatement}$ |

Table 8: Panel B (cont'd)**Control Variables:**

| | |
|--------------------------|---|
| <i>Pre-bd-ind</i> | 1 if more than two-thirds of the board is comprised of independent directors in the pre-restatement period; zero, otherwise. |
| <i>Pre-dual-CEO</i> | 1 if the CEO is not also Chairman of the Board in the pre-restatement period; zero, otherwise. |
| <i>Pre-indep-chair</i> | 1 if the Chairman of the Board is an independent outside director in the pre-restatement period; zero, otherwise. |
| <i>Pre-audit-indep</i> | 1 if all audit committee members are independent directors in the pre-restatement period; zero, otherwise. |
| <i>Pre-comp-indep</i> | 1 if all compensation committee members are independent directors in the pre-restatement period; zero, otherwise. |
| <i>Pre-nom-indep</i> | 1 if all nominating committee members are independent directors in the pre-restatement period; zero, otherwise. |
| <i>Pre-corpgov-indep</i> | 1 if all corporate governance committee members are independent directors in the pre-restatement period; zero, otherwise. |
| <i>Pre-board-size</i> | 1 if the board size is less than the median of all firms (adjusted for firm size and time) in the pre-restatement period; zero, otherwise. |
| <i>Pre-interlock</i> | 1 if the board interlock is less than the median of all firms (adjusted for firm size and time) in the pre-restatement period; zero, otherwise. |
| <i>Pre-other-boards</i> | 1 if the mean number of other boards served by a director is less than the median of all firms (adjusted for firm size and time) in the pre-restatement period; zero, otherwise. |
| <i>Pre-Partial</i> | The governance level in the pre-restatement period, calculated as the fraction represented by the <i>Partial-Index</i> divided by the maximum <i>Partial-Index</i> for that firm-year, less the median governance level (as computed using the <i>Partial-Index</i>) in the same industry-year in non-restatement firms. |
| <i>Pre-Board</i> | The governance level in the pre-restatement period, calculated as the fraction represented by the <i>Board-Index</i> divided by the maximum <i>Board-Index</i> for that firm-year, less the median governance level (as computed using the <i>Board-Index</i>) in the same industry-year in non-restatement firms. |

Table 8: Panel B (cont'd)

| | |
|-------------------------------------|---|
| <i>Gov-Control-Partial</i> | The median governance level (as computed using the <i>Partial-Index</i>) in the pre-restatement period in the same industry-year in non-restatement firms. |
| <i>Gov-Control-Board</i> | The median governance level (as computed using the <i>Board-Index</i>) in the pre-restatement period in the same industry-year in non-restatement firms. |
| <i>Switch-Percent</i> | For each respective <i>Index</i> variable, the percentage rate of improvement in the same year among non-restatement firms. |
| <i>Partial-Index-Change-Control</i> | The median <i>Partial-Index-Change</i> over the prior three years in the same industry-year in non-restatement firms, where an industry is defined by its 2-digit SIC code. |
| <i>Board-Index-Change-Control</i> | The median <i>Board-Index-Change</i> over the prior three years in the same industry-year in non-restatement firms, where an industry is defined by its 2-digit SIC code. |
| <i>Pre-ROA</i> | ROA in the pre-restatement period, defined as net income before extraordinary items and discontinued operations divided by total assets (multiplied by 100), as listed in the ExecuComp database. |
| <i>Pre-ROE</i> | Return on equity (ROE) in the pre-restatement period, as listed in the ExecuComp database. |

Table 9

Univariate Correlations

Panel A: Pearson Correlations

| | <i>Index- Change</i> | <i>AAER</i> | <i>SEC</i> | <i>Auditor</i> | <i>Comp</i> | <i>Magnitude</i> | <i>Qtrs</i> | <i>SAB101</i> | <i>EITF</i> | <i>Rev- Other</i> | <i>IPRD</i> | <i>M-A</i> | <i>Cost- Exp</i> | <i>CAR (0,1)</i> | <i>Pre</i> | <i>Gov- Control</i> | <i>Firm- Size</i> | <i>Prior- Perf</i> |
|--------------------------|--------------------------|-------------|------------|----------------|-------------|------------------|-------------|---------------|-------------|-----------------------|-------------|------------|----------------------|----------------------|------------|-------------------------|-----------------------|------------------------|
| <i>Index- Change</i> | | | | | | | | | | | | | | | | | | |
| <i>AAER</i> | 0.09 | | | | | | | | | | | | | | | | | |
| <i>SEC</i> | 0.13 | 0.01 | | | | | | | | | | | | | | | | |
| <i>Auditor</i> | -0.01 | 0.18 | -0.12 | | | | | | | | | | | | | | | |
| | | ** | | | | | | | | | | | | | | | | |
| <i>Comp</i> | -0.02 | 0.08 | -0.38 | -0.14 | | | | | | | | | | | | | | |
| | | | *** | | | | | | | | | | | | | | | |
| <i>Magnitude</i> | 0.07 | 0.07 | 0.02 | -0.03 | 0.05 | | | | | | | | | | | | | |
| <i>Qtrs</i> | 0.01 | 0.06 | 0.19 | 0.09 | -0.05 | 0.02 | | | | | | | | | | | | |
| | | | ** | | | | | | | | | | | | | | | |
| <i>SAB101</i> | -0.14 | -0.16 | -0.13 | -0.09 | -0.08 | 0.03 | -0.08 | | | | | | | | | | | |
| | | * | | | | | | | | | | | | | | | | |
| <i>EITF</i> | -0.11 | -0.16 | -0.03 | 0.02 | -0.26 | 0.01 | 0.02 | -0.16 | | | | | | | | | | |
| | | * | | | *** | | | * | | | | | | | | | | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 9: Panel A (cont'd)

| | <i>Index- Change</i> | <i>AAER</i> | <i>SEC</i> | <i>Auditor</i> | <i>Comp</i> | <i>Magnitude</i> | <i>Qtrs</i> | <i>SAB101</i> | <i>EITF</i> | <i>Rev- Other</i> | <i>IPRD</i> | <i>M-A</i> | <i>Cost- Exp</i> | <i>CAR (0,1)</i> | <i>Pre</i> | <i>Gov- Control</i> | <i>Firm- Size</i> | <i>Prior- Perf</i> |
|--|--------------------------|-------------|-------------|----------------|-------------|------------------|-------------|---------------|-------------|-----------------------|-------------|--------------|----------------------|----------------------|-------------|-------------------------|-----------------------|------------------------|
| <i>Rev- Other</i> | 0.09 | 0.30 *** | -0.11 | 0.20 ** | 0.19 ** | 0.01 | 0.01 | -0.18 ** | -0.18 ** | | | | | | | | | |
| <i>IPRD</i> | -0.04 | -0.02 | 0.36 *** | -0.05 | -0.09 | 0.17 ** | -0.11 | -0.10 | -0.10 | -0.11 | | | | | | | | |
| <i>M-A</i> | -0.09 | 0.00 | 0.20 ** | 0.16 * | -0.12 | -0.17 ** | 0.07 | -0.14 | -0.07 | -0.15 * | -0.08 | | | | | | | |
| <i>Cost-Exp</i> | 0.16 * | 0.14 | 0.08 | -0.09 | -0.01 | -0.27 *** | 0.02 | -0.17 ** | -0.17 ** | 0.03 | -0.11 | -0.01 | | | | | | |
| <i>CAR (0,1)</i> | -0.06 | -0.07 | 0.13 | -0.20 ** | -0.19 ** | 0.19 ** | -0.12 | 0.06 | 0.16 * | -0.28 *** | 0.07 | 0.03 | -0.03 | | | | | |
| <i>Pre</i> | -0.54 *** | 0.12 | -0.07 | 0.06 | -0.06 | 0.02 | -0.05 | -0.06 | 0.14 | -0.05 | 0.07 | 0.05 | -0.05 | -0.03 | | | | |
| <i>Gov- Control</i> | -0.30 *** | -0.01 | -0.08 | -0.10 | 0.04 | -0.12 | -0.05 | 0.08 | 0.04 | -0.04 | -0.05 | 0.08 | 0.01 | 0.09 | -0.18 ** | | | |
| <i>Firm-Size</i> | 0.03 | 0.22 *** | -0.07 | -0.11 | 0.07 | -0.06 | -0.12 | 0.14 * | -0.13 | 0.02 | -0.11 | 0.03 | -0.08 | 0.13 | 0.07 | 0.10 | | |
| <i>Prior- Perf</i> | 0.05 | 0.01 | 0.07 | -0.02 | 0.06 | 0.76 *** | 0.10 | -0.00 | 0.04 | -0.00 | -0.03 | -0.24 *** | -0.16 * | 0.16 * | -0.14 | -0.07 | -0.09 | |
| <i>Index- Change - Control</i> | 0.10 | -0.01 | 0.08 | 0.12 | 0.00 | 0.09 | 0.11 | -0.11 | -0.04 | 0.00 | 0.01 | 0.00 | -0.04 | -0.05 | 0.24 *** | -0.66 *** | -0.00 | 0.06 |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 9: Univariate Correlations (cont'd)

Panel B: Spearman Correlations

| | <i>Index- Change</i> | <i>AAER</i> | <i>SEC</i> | <i>Auditor</i> | <i>Comp</i> | <i>Magnitude</i> | <i>Qtrs</i> | <i>SAB101</i> | <i>EITF</i> | <i>Rev- Other</i> | <i>IPRD</i> | <i>M-A</i> | <i>Cost- Exp</i> | <i>CAR (0,1)</i> | <i>Pre</i> | <i>Gov- Control</i> | <i>Firm- Size</i> | <i>Prior- Perf</i> |
|--------------------------|--------------------------|-------------|------------|----------------|-------------|------------------|-------------|---------------|-------------|-----------------------|-------------|------------|----------------------|----------------------|------------|-------------------------|-----------------------|------------------------|
| <i>Index- Change</i> | | | | | | | | | | | | | | | | | | |
| <i>AAER</i> | 0.10 | | | | | | | | | | | | | | | | | |
| <i>SEC</i> | 0.07 | 0.01 | | | | | | | | | | | | | | | | |
| <i>Auditor</i> | 0.03 | 0.18 | -0.12 | | | | | | | | | | | | | | | |
| | | ** | | | | | | | | | | | | | | | | |
| <i>Comp</i> | 0.06 | 0.08 | -0.38 | -0.14 | | | | | | | | | | | | | | |
| | | | *** | | | | | | | | | | | | | | | |
| <i>Magnitude</i> | 0.01 | -0.11 | 0.21 | -0.22 | -0.15 | | | | | | | | | | | | | |
| | | | ** | *** | * | | | | | | | | | | | | | |
| <i>Qtrs</i> | 0.03 | 0.08 | 0.20 | 0.10 | -0.04 | 0.14 | | | | | | | | | | | | |
| | | | ** | | | | | | | | | | | | | | | |
| <i>SAB101</i> | -0.14 | -0.16 | -0.13 | -0.09 | -0.08 | -0.06 | -0.05 | | | | | | | | | | | |
| | * | * | | | | | | | | | | | | | | | | |
| <i>EITF</i> | -0.14 | -0.16 | -0.03 | 0.02 | -0.26 | 0.01 | -0.01 | -0.16 | | | | | | | | | | |
| | * | * | | | *** | | | * | | | | | | | | | | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 9: Panel B (cont'd)

| | <i>Index- Change</i> | <i>AAER</i> | <i>SEC</i> | <i>Auditor</i> | <i>Comp</i> | <i>Magnitude</i> | <i>Qtrs</i> | <i>SAB101</i> | <i>EITF</i> | <i>Rev- Other</i> | <i>IPRD</i> | <i>M-A</i> | <i>Cost- Exp</i> | <i>CAR (0,1)</i> | <i>Pre</i> | <i>Gov- Control</i> | <i>Firm- Size</i> | <i>Prior- Perf</i> |
|--|--------------------------|-------------|-------------|----------------|-------------|------------------|-------------|---------------|-------------|-----------------------|-------------|------------|----------------------|----------------------|------------|-------------------------|-----------------------|------------------------|
| <i>Rev- Other</i> | 0.16 * | 0.30 *** | -0.11 | 0.20 ** | 0.19 ** | -0.26 *** | -0.02 | -0.18 ** | -0.18 ** | | | | | | | | | |
| <i>IPRD</i> | -0.00 | -0.02 | 0.36 *** | -0.05 | -0.09 | 0.32 *** | -0.10 | -0.10 | -0.10 | -0.11 | | | | | | | | |
| <i>M-A</i> | -0.08 | 0.00 | 0.20 ** | 0.16 * | -0.11 | 0.10 | 0.09 | -0.14 | -0.07 | -0.15 * | -0.08 | | | | | | | |
| <i>Cost-Exp</i> | 0.09 | 0.14 | 0.08 | -0.09 | -0.01 | -0.08 | 0.07 | -0.17 ** | -0.17 ** | 0.03 | -0.11 | -0.01 | | | | | | |
| <i>CAR (0,1)</i> | -0.03 | -0.09 | 0.10 | -0.12 | -0.20 ** | 0.23 *** | -0.12 | 0.04 | 0.13 | -0.26 *** | 0.10 | -0.02 | -0.03 | | | | | |
| <i>Pre</i> | -0.52 *** | 0.12 | -0.07 | 0.06 | -0.06 | -0.09 | -0.10 | -0.09 | 0.14 | -0.04 | 0.08 | 0.03 | -0.05 | -0.12 | | | | |
| <i>Gov- Control</i> | -0.17 ** | -0.03 | -0.04 | -0.08 | 0.05 | -0.01 | -0.01 | 0.04 | 0.02 | -0.01 | -0.09 | 0.07 | 0.06 | 0.14 * | -0.17 * | | | |
| <i>Firm-Size</i> | -0.08 | 0.10 | -0.08 | -0.18 ** | 0.07 | 0.12 | -0.15 * | 0.06 | -0.13 | -0.02 | -0.11 | 0.07 | -0.08 | 0.16 * | 0.13 | 0.21 ** | | |
| <i>Prior- Perf</i> | 0.03 | -0.13 | 0.15 * | -0.22 *** | 0.04 | 0.00 | 0.04 | -0.12 | -0.00 | -0.15 * | -0.09 | -0.02 | 0.04 | 0.04 | -0.12 | -0.04 | -0.02 | |
| <i>Index- Change - Control</i> | 0.11 | 0.07 | 0.04 | 0.15 * | 0.03 | 0.06 | 0.03 | -0.09 | -0.13 | -0.03 | 0.06 | 0.07 | -0.09 | -0.05 | 0.22 ** | -0.48 *** | 0.00 | 0.03 |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 10*Univariate Regression Results***Panel A: Index-Change on AAER**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.410 | (5.07) ^{***} |
| <i>Pre</i> | - | - 2.719 | (-9.70) ^{***} |
| <i>Gov-Control</i> | - | - 4.206 | (-5.21) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.183 | (-0.41) |
| <i>AAER</i> | + | 0.230 | (2.53) ^{**} |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 47% | |
| <i>F</i> -statistic | | 30.78 ^{***} | |

Panel B: Index-Change on SEC

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.483 | (5.13) ^{***} |
| <i>Pre</i> | - | - 2.604 | (-9.13) ^{***} |
| <i>Gov-Control</i> | - | - 4.230 | (-5.13) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.262 | (-0.57) |
| <i>SEC</i> | + | 0.085 | (0.87) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 28.17 ^{***} | |

^{**}, ^{***} Significant at the 5% and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel C: Index-Change on Auditor**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.515 | (5.19) ^{***} |
| <i>Pre</i> | - | - 2.627 | (-9.22) ^{***} |
| <i>Gov-Control</i> | - | - 4.256 | (-5.15) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.231 | (-0.51) |
| <i>Auditor</i> | + | - 0.041 | (-0.20) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted R^2 | | 44% | |
| <i>F</i> -statistic | | 27.84 ^{***} | |

Panel D: Index-Change on Comp

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.512 | (5.19) ^{***} |
| <i>Pre</i> | - | - 2.638 | (-9.26) ^{***} |
| <i>Gov-Control</i> | - | - 4.228 | (-5.12) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.226 | (-0.49) |
| <i>Comp</i> | - | - 0.048 | (-0.33) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted R^2 | | 44% | |
| <i>F</i> -statistic | | 27.95 ^{***} | |

*** Significant at the 1% level.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel E: Index-Change on Magnitude**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.500 | (5.14) ^{***} |
| <i>Pre</i> | - | - 2.628 | (-9.21) ^{***} |
| <i>Gov-Control</i> | - | - 4.225 | (-5.09) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.248 | (-0.54) |
| <i>Magnitude-incr</i> | - | 0.355 | (0.25) |
| <i>Magnitude-decr</i> | + | 0.123 | (0.45) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 22.19 ^{***} | |

Panel F: Index-Change on Qtrs

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.538 | (5.23) ^{***} |
| <i>Pre</i> | - | - 2.646 | (-9.28) ^{***} |
| <i>Gov-Control</i> | - | - 4.239 | (-5.14) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.200 | (-0.44) |
| <i>Qtrs</i> | + | - 0.006 | (-0.73) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 28.07 ^{***} | |

*** Significant at the 1% level.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel G: Index-Change on SAB101**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.547 | (5.36) ^{***} |
| <i>Pre</i> | - | - 2.654 | (-9.51) ^{***} |
| <i>Gov-Control</i> | - | - 4.230 | (-5.23) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.310 | (-0.69) |
| <i>SAB101</i> | - | - 0.281 | (-2.36) ^{**} |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 46% | |
| <i>F</i> -statistic | | 30.39 ^{***} | |

Panel H: Index-Change on EITF

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.514 | (5.19) ^{***} |
| <i>Pre</i> | - | - 2.621 | (-9.10) ^{***} |
| <i>Gov-Control</i> | - | - 4.248 | (-5.14) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.241 | (-0.53) |
| <i>EITF</i> | - | - 0.022 | (-0.18) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 27.83 ^{***} | |

^{**}, ^{***} Significant at the 5% and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel I: Index-Change on Rev-Other**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.482 | (5.11) ^{***} |
| <i>Pre</i> | - | - 2.618 | (-9.20) ^{***} |
| <i>Gov-Control</i> | - | - 4.219 | (-5.11) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.229 | (-0.50) |
| <i>Rev-Other</i> | + | 0.074 | (0.65) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted R^2 | | 44% | |
| <i>F</i> -statistic | | 28.01 ^{***} | |

Panel J: Index-Change on IPRD

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.526 | (5.20) ^{***} |
| <i>Pre</i> | - | - 2.622 | (-9.19) ^{***} |
| <i>Gov-Control</i> | - | - 4.269 | (-5.16) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.244 | (-0.53) |
| <i>IPRD</i> | - | - 0.065 | (-0.36) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted R^2 | | 44% | |
| <i>F</i> -statistic | | 27.88 ^{***} | |

*** Significant at the 1% level.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel K: *Index-Change* on *M-A***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.495 | (5.14) ^{***} |
| <i>Pre</i> | - | - 2.623 | (-9.21) ^{***} |
| <i>Gov-Control</i> | - | - 4.212 | (-5.07) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.224 | (-0.49) |
| <i>M-A</i> | | - 0.058 | (-0.42) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 27.90 ^{***} | |

Panel L: *Index-Change* on *Cost-Exp*

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.451 | (5.13) ^{***} |
| <i>Pre</i> | - | - 2.605 | (-9.28) ^{***} |
| <i>Gov-Control</i> | - | - 4.211 | (-5.18) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.202 | (-0.45) |
| <i>Cost-Exp</i> | | 0.232 | (2.04) ^{**} |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 46% | |
| <i>F</i> -statistic | | 29.73 ^{***} | |

^{**}, ^{***} Significant at the 5% and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel M: Index-Change on CAR (0,1)**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.468 | (5.06) ^{***} |
| <i>Pre</i> | - | - 2.669 | (-9.30) ^{***} |
| <i>Gov-Control</i> | - | - 4.129 | (-4.96) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.217 | (-0.48) |
| <i>CAR (0,1)-pos</i> | - | - 1.647 | (-1.11) |
| <i>CAR (0,1)-neg</i> | + | 0.066 | (0.13) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 44% | |
| <i>F</i> -statistic | | 22.56 ^{***} | |

Panel N: Index-Change on Firm-Size

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.579 | (5.37) ^{***} |
| <i>Pre</i> | - | - 2.668 | (-9.45) ^{***} |
| <i>Gov-Control</i> | - | - 4.446 | (-5.40) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.294 | (-0.65) |
| <i>Firm-Size</i> | | 0.005 | (1.78) [*] |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted <i>R</i> ² | | 45% | |
| <i>F</i> -statistic | | 29.28 ^{***} | |

*, *** Significant at the 10% and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 10: Univariate Regression Results (cont'd)**Panel O: Index-Change on Prior-Perf**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------|---------------|----------------------|------------------------|
| <i>Intercept</i> | | 2.522 | (5.22) ^{***} |
| <i>Pre</i> | - | - 2.673 | (-9.30) ^{***} |
| <i>Gov-Control</i> | - | - 4.289 | (-5.21) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.217 | (-0.48) |
| <i>Prior-Perf</i> | - | - 0.001 | (-0.96) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| Adjusted R^2 | | 44% | |
| <i>F</i> -statistic | | 28.24 ^{***} | |

*** Significant at the 1% level.

Please refer to Table 8 for variable definitions.

Table 11*Multivariate Regression Results
Full Index***Dependent Variable: Index-Change**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-------------------------------|---------------|---------------------|-------------------------|
| <i>Intercept</i> | | 2.352 | (4.98) ^{***} |
| <i>AAER</i> | + | 0.140 | (1.38) |
| <i>SEC</i> | + | 0.185 | (1.51) |
| <i>Auditor</i> | + | 0.062 | (0.28) |
| <i>Comp</i> | - | - 0.079 | (-0.75) |
| <i>Magnitude-incr</i> | - | 0.591 | (0.31) |
| <i>Magnitude-decr</i> | + | 1.471 | (3.01) ^{***} |
| <i>Qtrs</i> | + | - 0.010 | (-1.18) |
| <i>SAB101</i> | - | - 0.343 | (-2.61) ^{**} |
| <i>EITF</i> | - | 0.018 | (0.14) |
| <i>Rev-Other</i> | + | - 0.115 | (-0.92) |
| <i>IPRD</i> | - | - 0.300 | (-1.18) |
| <i>M-A</i> | | - 0.213 | (-1.39) |
| <i>Cost-Exp</i> | | 0.204 | (1.65) |
| <i>CAR (0,1)-pos</i> | - | - 2.609 | (-1.78) [*] |
| <i>CAR (0,1)-neg</i> | + | - 0.165 | (-0.31) |
| <i>Pre</i> | - | - 2.988 | (-10.19) ^{***} |
| <i>Gov-Control</i> | - | - 3.886 | (-4.84) ^{***} |
| <i>Firm-Size</i> | | 0.005 | (1.76) [*] |
| <i>Prior-Perf</i> | - | - 0.005 | (-2.91) ^{***} |
| <i>Index-Change-Control</i> | + | - 0.197 | (-0.44) |
| Model Statistics | | | |
| <i>N</i> | | 137 | |
| <i>Adjusted R²</i> | | 51% | |
| <i>F-statistic</i> | | 8.05 ^{***} | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 12

Multivariate Regression Results
Index Components

Panel A: Dependent Variable: *bd-ind-switch*

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.045 | (0.11) |
| <i>AAER</i> | + | - 0.023 | (-0.25) |
| <i>SEC</i> | + | 0.032 | (0.28) |
| <i>Auditor</i> | + | 0.224 | (1.10) |
| <i>Comp</i> | - | 0.031 | (0.32) |
| <i>Magnitude-incr</i> | - | - 1.919 | (-1.10) |
| <i>Magnitude-decr</i> | + | 0.250 | (0.56) |
| <i>Qtrs</i> | + | - 0.007 | (-0.86) |
| <i>SAB101</i> | - | - 0.099 | (-0.80) |
| <i>EITF</i> | - | - 0.180 | (-1.43) |
| <i>Rev-Other</i> | + | 0.094 | (0.81) |
| <i>IPRD</i> | - | 0.181 | (0.79) |
| <i>M-A</i> | | 0.099 | (0.71) |
| <i>Cost-Exp</i> | | - 0.059 | (-0.52) |
| <i>CAR (0,1)-pos</i> | - | 0.808 | (0.59) |
| <i>CAR (0,1)-neg</i> | + | - 0.063 | (-0.13) |
| <i>Pre-bd-ind</i> | - | - 0.424 | (-5.24) ^{***} |
| <i>Firm-Size</i> | | 0.001 | (0.40) |
| <i>Prior-Perf</i> | - | - 0.000 | (-0.27) |
| <i>Switch-Percent</i> | + | 1.914 | (0.80) |
| Model Statistics | | | |
| <i>N</i> | | 136 | |
| Adjusted <i>R</i> ² | | 16% | |
| <i>F</i> -statistic | | 2.40 ^{***} | |

*** Significant at the 1% level.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel B: Dependent Variable: *dual-CEO-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|-------------|-------------|
| <i>Intercept</i> | | - 0.419 | (-0.62) |
| <i>AAER</i> | + | 0.091 | (0.93) |
| <i>SEC</i> | + | - 0.081 | (-0.66) |
| <i>Auditor</i> | + | - 0.204 | (-0.95) |
| <i>Comp</i> | - | - 0.119 | (-1.16) |
| <i>Magnitude-incr</i> | - | 0.077 | (0.04) |
| <i>Magnitude-decr</i> | + | 0.397 | (0.85) |
| <i>Qtrs</i> | + | - 0.010 | (-1.23) |
| <i>SAB101</i> | - | 0.116 | (0.85) |
| <i>EITF</i> | - | 0.213 | (1.61) |
| <i>Rev-Other</i> | + | - 0.007 | (-0.05) |
| <i>IPRD</i> | - | 0.078 | (0.32) |
| <i>M-A</i> | | 0.321 | (2.13)** |
| <i>Cost-Exp</i> | | 0.073 | (0.61) |
| <i>CAR (0,1)-pos</i> | - | - 0.608 | (-0.44) |
| <i>CAR (0,1)-neg</i> | + | - 0.714 | (-1.36) |
| <i>Pre-dual-CEO</i> | - | - 0.856 | (-9.70)*** |
| <i>Firm-Size</i> | | - 0.004 | (-1.65) |
| <i>Prior-Perf</i> | - | - 0.002 | (-1.04) |
| <i>Switch-Percent</i> | + | 5.343 | (1.01) |
| Model Statistics | | | |
| <i>N</i> | | 136 | |
| Adjusted <i>R</i> ² | | 41% | |
| <i>F</i> -statistic | | 5.86*** | |

, * Significant at the 5% and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel C: Dependent Variable: *indep-chair-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.510 | (4.48) ^{***} |
| <i>AAER</i> | + | 0.132 | (1.65) |
| <i>SEC</i> | + | 0.060 | (0.61) |
| <i>Auditor</i> | + | - 0.017 | (-0.10) |
| <i>Comp</i> | - | - 0.046 | (-0.55) |
| <i>Magnitude-incr</i> | - | - 4.459 | (-2.91) ^{***} |
| <i>Magnitude-decr</i> | + | 0.633 | (1.59) |
| <i>Qtrs</i> | + | 0.009 | (1.36) |
| <i>SAB101</i> | - | - 0.149 | (-1.39) |
| <i>EITF</i> | - | - 0.017 | (-0.16) |
| <i>Rev-Other</i> | + | - 0.201 | (-2.02) ^{**} |
| <i>IPRD</i> | - | - 0.050 | (-0.25) |
| <i>M-A</i> | | 0.052 | (0.43) |
| <i>Cost-Exp</i> | | - 0.057 | (-0.57) |
| <i>CAR (0,1)-pos</i> | - | - 2.243 | (-1.96) [*] |
| <i>CAR (0,1)-neg</i> | + | 1.024 | (2.38) ^{**} |
| <i>Pre-indep-chair</i> | - | - 0.631 | (-7.65) ^{***} |
| <i>Firm-Size</i> | | - 0.001 | (-0.28) |
| <i>Prior-Perf</i> | - | - 0.001 | (-0.88) |
| <i>Switch-Percent</i> | + | 0.577 | (2.79) ^{***} |
| Model Statistics | | | |
| <i>N</i> | | 136 | |
| Adjusted <i>R</i> ² | | 52% | |
| <i>F</i> -statistic | | 8.78 ^{***} | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel D: Dependent Variable: *audit-indep-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|-------------|-------------|
| <i>Intercept</i> | | 0.317 | (2.48)** |
| <i>AAER</i> | + | - 0.095 | (-0.85) |
| <i>SEC</i> | + | 0.128 | (0.99) |
| <i>Auditor</i> | + | 0.349 | (1.34) |
| <i>Comp</i> | - | 0.025 | (0.23) |
| <i>Magnitude-incr</i> | - | 1.411 | (0.73) |
| <i>Magnitude-decr</i> | + | 0.940 | (2.00)** |
| <i>Qtrs</i> | + | 0.014 | (1.71)* |
| <i>SAB101</i> | - | - 0.015 | (-0.11) |
| <i>EITF</i> | - | 0.140 | (1.04) |
| <i>Rev-Other</i> | + | 0.015 | (0.12) |
| <i>IPRD</i> | - | - 0.056 | (-0.22) |
| <i>M-A</i> | | - 0.192 | (-1.25) |
| <i>Cost-Exp</i> | | 0.112 | (0.81) |
| <i>CAR (0,1)-pos</i> | - | - 1.154 | (-0.83) |
| <i>CAR (0,1)-neg</i> | + | - 0.210 | (-0.38) |
| <i>Pre-audit-indep</i> | - | - 0.695 | (-7.65)*** |
| <i>Firm-Size</i> | | 0.008 | (2.33)** |
| <i>Prior-Perf</i> | - | - 0.003 | (-1.85)* |
| Model Statistics | | | |
| <i>N</i> | | 119 | |
| Adjusted <i>R</i> ² | | 37% | |
| <i>F</i> -statistic | | 4.80*** | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel E: Dependent Variable: *comp-indep-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.449 | (3.92) ^{***} |
| <i>AAER</i> | + | 0.081 | (0.84) |
| <i>SEC</i> | + | 0.121 | (1.05) |
| <i>Auditor</i> | + | - 0.325 | (-1.45) |
| <i>Comp</i> | - | - 0.033 | (-0.36) |
| <i>Magnitude-incr</i> | - | 0.479 | (0.28) |
| <i>Magnitude-decr</i> | + | 0.691 | (0.73) |
| <i>Qtrs</i> | + | 0.004 | (0.63) |
| <i>SAB101</i> | - | - 0.163 | (-1.42) |
| <i>EITF</i> | - | - 0.143 | (-1.24) |
| <i>Rev-Other</i> | + | - 0.011 | (-0.10) |
| <i>IPRD</i> | - | - 0.276 | (-1.29) |
| <i>M-A</i> | | - 0.313 | (-2.22) ^{**} |
| <i>Cost-Exp</i> | | - 0.200 | (-1.58) |
| <i>CAR (0,1)-pos</i> | - | - 0.220 | (-0.18) |
| <i>CAR (0,1)-neg</i> | + | 0.219 | (0.47) |
| <i>Pre-comp-indep</i> | - | - 0.496 | (-5.59) ^{***} |
| <i>Firm-Size</i> | | 0.001 | (0.26) |
| <i>Prior-Perf</i> | - | - 0.003 | (-1.09) |
| Model Statistics | | | |
| <i>N</i> | | 111 | |
| Adjusted <i>R</i> ² | | 24% | |
| <i>F</i> -statistic | | 2.91 ^{***} | |

^{**}, ^{***} Significant at the 5% and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel F: Dependent Variable: *nom-indep-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.485 | (1.56) |
| <i>AAER</i> | + | - 0.101 | (-0.54) |
| <i>SEC</i> | + | - 0.203 | (-0.97) |
| <i>Auditor</i> | + | - 0.682 | (-0.82) |
| <i>Comp</i> | - | - 0.224 | (-1.42) |
| <i>Magnitude-incr</i> | - | 0.394 | (0.13) |
| <i>Magnitude-decr</i> | + | 2.770 | (0.64) |
| <i>Qtrs</i> | + | - 0.001 | (-0.10) |
| <i>SAB101</i> | - | - 0.216 | (-1.04) |
| <i>EITF</i> | - | - 0.171 | (-0.82) |
| <i>Rev-Other</i> | + | 0.171 | (0.78) |
| <i>IPRD</i> | - | 0.001 | (0.00) |
| <i>M-A</i> | | - 0.122 | (-0.39) |
| <i>Cost-Exp</i> | | - 0.135 | (-0.66) |
| <i>CAR (0,1)-pos</i> | - | 0.939 | (0.48) |
| <i>CAR (0,1)-neg</i> | + | - 1.947 | (-1.79) [*] |
| <i>Pre-nom-indep</i> | - | - 0.731 | (-5.59) ^{***} |
| <i>Firm-Size</i> | | 0.008 | (1.82) [*] |
| <i>Prior-Perf</i> | - | 0.002 | (0.33) |
| Model Statistics | | | |
| <i>N</i> | | 72 | |
| Adjusted <i>R</i> ² | | 31% | |
| <i>F</i> -statistic | | 2.64 ^{***} | |

*, *** Significant at the 10% and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel G: Dependent Variable: *corpgov-indep-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.674 | (3.24) ^{***} |
| <i>AAER</i> | + | - 0.283 | (-1.40) |
| <i>SEC</i> | + | - 0.360 | (-1.24) |
| <i>Comp</i> | - | 0.142 | (0.66) |
| <i>Magnitude-incr</i> | - | - 5.989 | (-0.87) |
| <i>Magnitude-decr</i> | + | 0.553 | (0.10) |
| <i>Qtrs</i> | + | 0.010 | (0.62) |
| <i>SAB101</i> | - | - 0.080 | (-0.28) |
| <i>EITF</i> | - | - 0.369 | (-1.53) |
| <i>Rev-Other</i> | + | 0.045 | (0.18) |
| <i>IPRD</i> | - | 1.240 | (1.12) |
| <i>M-A</i> | | - 0.345 | (-0.83) |
| <i>Cost-Exp</i> | | - 0.040 | (-0.14) |
| <i>CAR (0,1)-pos</i> | - | 3.378 | (0.94) |
| <i>CAR (0,1)-neg</i> | + | - 0.546 | (-0.31) |
| <i>Pre-corpgov-indep</i> | - | - 0.814 | (-4.04) ^{***} |
| <i>Firm-Size</i> | | 0.004 | (1.06) |
| <i>Prior-Perf</i> | - | - 0.012 | (-1.38) |
| Model Statistics | | | |
| <i>N</i> | | 36 | |
| Adjusted <i>R</i> ² | | 54% | |
| <i>F</i> -statistic | | 3.43 ^{***} | |

*** Significant at the 1% level.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel H: Dependent Variable: *bd-size-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|-------------|-------------|
| <i>Intercept</i> | | 0.673 | (1.82)* |
| <i>AAER</i> | + | 0.029 | (0.31) |
| <i>SEC</i> | + | - 0.129 | (-1.04) |
| <i>Auditor</i> | + | 0.029 | (0.14) |
| <i>Comp</i> | - | 0.023 | (0.23) |
| <i>Magnitude-incr</i> | - | 2.868 | (1.60) |
| <i>Magnitude-decr</i> | + | - 1.098 | (-2.37)** |
| <i>Qtrs</i> | + | - 0.007 | (-0.87) |
| <i>SAB101</i> | - | 0.159 | (1.21) |
| <i>EITF</i> | - | - 0.065 | (-0.49) |
| <i>Rev-Other</i> | + | 0.104 | (0.86) |
| <i>IPRD</i> | - | - 0.190 | (-0.80) |
| <i>M-A</i> | | - 0.123 | (-0.84) |
| <i>Cost-Exp</i> | | 0.048 | (0.40) |
| <i>CAR (0,1)-pos</i> | - | 1.367 | (1.02) |
| <i>CAR (0,1)-neg</i> | + | - 0.131 | (-0.26) |
| <i>Pre-bd-size</i> | - | - 0.610 | (-7.28)*** |
| <i>Firm-Size</i> | | 0.001 | (0.57) |
| <i>Prior-Perf</i> | - | 0.002 | (1.24) |
| <i>Switch-Percent</i> | + | - 4.543 | (-1.50) |
| Model Statistics | | | |
| <i>N</i> | | 134 | |
| Adjusted <i>R</i> ² | | 31% | |
| <i>F</i> -statistic | | 4.15*** | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel I: Dependent Variable: *interlock-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 0.794 | (4.60) ^{***} |
| <i>AAER</i> | + | 0.032 | (0.55) |
| <i>SEC</i> | + | 0.034 | (0.51) |
| <i>Auditor</i> | + | - 0.083 | (-0.52) |
| <i>Comp</i> | - | - 0.021 | (-0.35) |
| <i>Magnitude-incr</i> | - | 1.234 | (1.21) |
| <i>Magnitude-decr</i> | + | - 1.676 | (-1.48) |
| <i>Qtrs</i> | + | - 0.010 | (-2.20) ^{**} |
| <i>SAB101</i> | - | - 0.027 | (-0.38) |
| <i>EITF</i> | - | 0.048 | (0.65) |
| <i>Rev-Other</i> | + | 0.063 | (0.89) |
| <i>IPRD</i> | - | - 0.082 | (-0.61) |
| <i>M-A</i> | | - 0.073 | (-0.84) |
| <i>Cost-Exp</i> | | - 0.002 | (-0.03) |
| <i>CAR (0,1)-pos</i> | - | - 0.161 | (-0.19) |
| <i>CAR (0,1)-neg</i> | + | 0.102 | (0.34) |
| <i>Pre-interlock</i> | - | - 0.619 | (-8.79) ^{***} |
| <i>Firm-Size</i> | | - 0.001 | (-0.95) |
| <i>Prior-Perf</i> | - | 0.002 | (1.30) |
| <i>Switch-Percent</i> | + | - 2.154 | (-0.87) |
| Model Statistics | | | |
| <i>N</i> | | 115 | |
| Adjusted <i>R</i> ² | | 46% | |
| <i>F</i> -statistic | | 6.02 ^{***} | |

^{**}, ^{***} Significant at the 5% and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel J: Dependent Variable: *other-boards-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-------------------------|---------------|-------------|-------------|
| <i>Intercept</i> | | 0.126 | (1.10) |
| <i>AAER</i> | + | - 0.216 | (-1.91)* |
| <i>SEC</i> | + | 0.103 | (0.86) |
| <i>Auditor</i> | + | 0.343 | (0.73) |
| <i>Comp</i> | - | 0.100 | (1.00) |
| <i>Magnitude-incr</i> | - | 3.562 | (2.05)** |
| <i>Magnitude-decr</i> | + | - 0.952 | (-1.25) |
| <i>Qtrs</i> | + | - 0.002 | (-0.25) |
| <i>SAB101</i> | - | 0.168 | (1.41) |
| <i>EITF</i> | - | - 0.171 | (-1.43) |
| <i>Rev-Other</i> | + | - 0.058 | (-0.45) |
| <i>IPRD</i> | - | - 0.125 | (-0.56) |
| <i>M-A</i> | | - 0.136 | (-0.93) |
| <i>Cost-Exp</i> | | 0.359 | (2.73)*** |
| <i>CAR (0,1)-pos</i> | - | - 0.435 | (-0.31) |
| <i>CAR (0,1)-neg</i> | + | 0.212 | (0.36) |
| <i>Pre-other-boards</i> | - | - 0.463 | (-5.55)*** |
| <i>Firm-Size</i> | | - 0.001 | (-0.53) |
| <i>Prior-Perf</i> | - | 0.005 | (1.91)* |
| Model Statistics | | | |
| <i>N</i> | | 101 | |
| Adjusted R^2 | | 35% | |
| <i>F</i> -statistic | | 3.99*** | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel K: Dependent Variable: *auditor-big6-switch***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--------------------------------|---------------|----------------------|-------------------------|
| <i>Intercept</i> | | 0.031 | (1.26) |
| <i>AAER</i> | + | - 0.029 | (-1.71) [*] |
| <i>SEC</i> | + | - 0.021 | (-0.99) |
| <i>Auditor</i> | + | 0.004 | (0.12) |
| <i>Comp</i> | - | - 0.015 | (-0.89) |
| <i>Magnitude-incr</i> | - | - 0.701 | (-2.30) ^{**} |
| <i>Magnitude-decr</i> | + | 1.112 | (14.35) ^{***} |
| <i>Qtrs</i> | + | 0.002 | (1.16) |
| <i>SAB101</i> | - | - 0.013 | (-0.58) |
| <i>EITF</i> | - | - 0.050 | (-2.29) ^{**} |
| <i>Rev-Other</i> | + | - 0.006 | (-0.29) |
| <i>IPRD</i> | - | 0.024 | (0.61) |
| <i>M-A</i> | | 0.012 | (0.46) |
| <i>Cost-Exp</i> | | 0.002 | (0.10) |
| <i>CAR (0,1)-pos</i> | - | 0.075 | (0.33) |
| <i>CAR (0,1)-neg</i> | + | - 0.088 | (-0.99) |
| <i>Firm-Size</i> | | 0.000 | (0.70) |
| <i>Prior-Perf</i> | - | - 0.004 | (-12.16) ^{***} |
| <i>Switch-Percent</i> | + | - 4.230 | (-1.13) |
| Model Statistics | | | |
| <i>N</i> | | 129 | |
| Adjusted <i>R</i> ² | | 66% | |
| <i>F</i> -statistic | | 14.91 ^{***} | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel L: Dependent Variable: *auditor-switch***

| Independent Variables | Expected Sign | Coefficient | Chi-Square |
|-------------------------|---------------|-------------|------------|
| <i>Intercept</i> | | - 0.666 | (0.34) |
| <i>AAER</i> | + | - 0.448 | (0.58) |
| <i>SEC</i> | + | - 0.027 | (0.00) |
| <i>Auditor</i> | + | - 0.784 | (0.38) |
| <i>Comp</i> | - | 0.069 | (0.01) |
| <i>Magnitude-incr</i> | - | 7.953 | (0.46) |
| <i>Magnitude-decr</i> | + | - 4.159 | (1.40) |
| <i>Qtrs</i> | + | - 0.031 | (0.42) |
| <i>SAB101</i> | - | - 13.620 | (0.00) |
| <i>EITF</i> | - | - 0.055 | (0.01) |
| <i>Rev-Other</i> | + | 0.213 | (0.10) |
| <i>IPRD</i> | - | - 1.877 | (1.09) |
| <i>M-A</i> | | 0.239 | (0.09) |
| <i>Cost-Exp</i> | | - 0.226 | (0.11) |
| <i>CAR (0,1)-pos</i> | - | 5.608 | (0.55) |
| <i>CAR (0,1)-neg</i> | + | - 0.026 | (0.00) |
| <i>Firm-Size</i> | | - 0.036 | (1.53) |
| <i>Prior-Perf</i> | - | 0.015 | (1.36) |
| <i>Switch-Percent</i> | + | 0.477 | (0.01) |
| Model Statistics | | | |
| <i>N</i> | | 129 | |
| <i>Chi-Square</i> | | 20.40 | |

Please refer to Tables 4 and 8 for variable definitions.

Table 12: Multivariate Regressions: *Index* Components (cont'd)**Panel M: Dependent Variable: *CEO-switch***

| Independent Variables | Expected Sign | Coefficient | Chi-Square |
|-------------------------|---------------|---------------------|-----------------------|
| <i>Intercept</i> | | 0.865 | (0.17) |
| <i>AAER</i> | + | 1.536 | (7.82) ^{***} |
| <i>SEC</i> | + | 0.241 | (0.13) |
| <i>Auditor</i> | + | 1.815 | (1.63) |
| <i>Comp</i> | - | - 0.007 | (0.00) |
| <i>Magnitude-incr</i> | - | 17.217 | (1.42) |
| <i>Magnitude-decr</i> | + | 7.287 | (0.71) |
| <i>Qtrs</i> | + | - 0.036 | (0.73) |
| <i>SAB101</i> | - | - 0.465 | (0.45) |
| <i>EITF</i> | - | 0.210 | (0.10) |
| <i>Rev-Other</i> | + | - 0.695 | (1.02) |
| <i>IPRD</i> | - | 0.167 | (0.01) |
| <i>M-A</i> | | - 0.540 | (0.41) |
| <i>Cost-Exp</i> | | 0.291 | (0.19) |
| <i>CAR (0,1)-pos</i> | - | 0.077 | (0.00) |
| <i>CAR (0,1)-neg</i> | + | - 4.461 | (1.94) |
| <i>Firm-Size</i> | | - 0.000 | (0.00) |
| <i>Prior-Perf</i> | - | - 0.049 | (3.22) [*] |
| <i>Switch-Percent</i> | + | - 4.718 | (0.55) |
| Model Statistics | | | |
| <i>N</i> | | 131 | |
| <i>Chi-Square</i> | | 34.78 ^{**} | |

^{*}, ^{**}, ^{***} Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Tables 4 and 8 for variable definitions.

Table 13*Multivariate Regression Results
Sub-Indices***Panel A: Dependent Variable: *Partial-Index-Change***

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|--|---------------|---------------------|------------------------|
| <i>Intercept</i> | | 1.847 | (4.10) ^{***} |
| <i>AAER</i> | + | 0.275 | (1.89) [*] |
| <i>SEC</i> | + | 0.174 | (0.97) |
| <i>Auditor</i> | + | 0.218 | (0.65) |
| <i>Comp</i> | - | 0.092 | (0.61) |
| <i>Magnitude-incr</i> | - | - 0.158 | (-0.06) |
| <i>Magnitude-decr</i> | + | 1.258 | (1.82) [*] |
| <i>Qtrs</i> | + | 0.006 | (0.49) |
| <i>SAB101</i> | - | - 0.414 | (-2.21) ^{***} |
| <i>EITF</i> | - | - 0.204 | (-1.07) |
| <i>Rev-Other</i> | + | - 0.090 | (-0.49) |
| <i>IPRD</i> | - | - 0.160 | (-0.45) |
| <i>M-A</i> | | - 0.326 | (-1.51) |
| <i>Cost-Exp</i> | | - 0.080 | (-0.43) |
| <i>CAR (0,1)-pos</i> | - | - 1.853 | (-0.90) |
| <i>CAR (0,1)-neg</i> | + | 0.605 | (0.74) |
| <i>Pre-Partial</i> | - | - 2.368 | (-7.82) ^{***} |
| <i>Gov-Control-Partial</i> | - | - 2.953 | (-3.62) ^{***} |
| <i>Firm-Size</i> | | 0.006 | (1.50) |
| <i>Prior-Perf</i> | - | - 0.005 | (-2.08) ^{**} |
| <i>Partial-Index-Change- Control</i> | + | 0.052 | (0.21) |
| Model Statistics | | | |
| <i>N</i> | | 128 | |
| <i>Adjusted R²</i> | | 36% | |
| <i>F-statistic</i> | | 4.52 ^{***} | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 13: Multivariate Regressions: Sub-Indices (cont'd)**Panel B: Dependent Variable: Board-Index-Change**

| Independent Variables | Expected Sign | Coefficient | t-statistic |
|-----------------------------------|---------------|-------------|-------------|
| <i>Intercept</i> | | 0.724 | (1.61) |
| <i>AAER</i> | + | 0.091 | (0.91) |
| <i>SEC</i> | + | 0.122 | (0.99) |
| <i>Auditor</i> | + | 0.028 | (0.13) |
| <i>Comp</i> | - | 0.003 | (0.03) |
| <i>Magnitude-incr</i> | - | 0.853 | (0.46) |
| <i>Magnitude-decr</i> | + | 0.761 | (1.57) |
| <i>Qtrs</i> | + | 0.005 | (0.64) |
| <i>SAB101</i> | - | - 0.197 | (-1.52) |
| <i>EITF</i> | - | - 0.021 | (-0.16) |
| <i>Rev-Other</i> | + | 0.124 | (1.01) |
| <i>IPRD</i> | - | - 0.199 | (-0.81) |
| <i>M-A</i> | | - 0.159 | (-1.07) |
| <i>Cost-Exp</i> | | - 0.037 | (-0.29) |
| <i>CAR (0,1)-pos</i> | - | - 2.560 | (-1.79)* |
| <i>CAR (0,1)-neg</i> | + | 0.795 | (1.51) |
| <i>Pre-Board</i> | - | - 2.115 | (-9.07)*** |
| <i>Gov-Control-Board</i> | - | - 1.008 | (-1.33) |
| <i>Firm-Size</i> | | 0.003 | (1.06) |
| <i>Prior-Perf</i> | - | - 0.004 | (-1.91)* |
| <i>Board-Index-Change-Control</i> | + | 0.266 | (0.79) |
| Model Statistics | | | |
| <i>N</i> | | 133 | |
| <i>Adjusted R²</i> | | 41% | |
| <i>F-statistic</i> | | 5.54*** | |

*, *** Significant at the 10% and 1% levels, respectively.

Please refer to Table 8 for variable definitions.

Table 14*Performance Analysis***Panel A: Dependent Variable: ROA-Change**

| Independent Variables | Coefficient | t-statistic |
|--|-------------|-------------|
| <i>Intercept</i> | - 0.119 | (-0.04) |
| <i>Index-Change-pos</i> ^(a) | 1.072 | (0.57) |
| <i>Index-Change-neg</i> ^(b) | 8.151 | (0.75) |
| <i>AAER</i> | - 0.976 | (-0.38) |
| <i>SEC</i> | 2.149 | (0.68) |
| <i>Auditor</i> | - 9.338 | (-1.69)* |
| <i>Comp</i> | 0.458 | (0.17) |
| <i>Magnitude-incr</i> | -64.962 | (-1.39) |
| <i>Magnitude-decr</i> | 8.311 | (1.15) |
| <i>Qtrs</i> | 0.403 | (1.95)* |
| <i>SAB101</i> | 1.923 | (0.59) |
| <i>EITF</i> | 2.651 | (0.77) |
| <i>Rev-Other</i> | - 8.827 | (-2.69)*** |
| <i>IPRD</i> | - 1.339 | (-0.20) |
| <i>M-A</i> | - 5.768 | (-1.55) |
| <i>Cost-Exp</i> | - 0.658 | (-0.19) |
| <i>CAR (0,1)-pos</i> | 14.087 | (0.39) |
| <i>CAR (0,1)-neg</i> | 24.494 | (1.81)* |
| <i>Pre-ROA</i> | - 0.516 | (-3.40)*** |
| <i>Firm-Size</i> | - 0.048 | (-0.69) |
| Model Statistics | | |
| <i>N</i> | 131 | |
| <i>Adjusted R²</i> | 22% | |
| <i>F-statistic</i> | 2.95*** | |

*, ***, Significant at the 10% and 1% levels, respectively.

(a) *Index-Change-pos* partitions the sample between restatement firms with an increase in *Index-Change* and restatement firms with no change to or a decrease in *Index-Change* by assigning a zero to sample restatements with no change to or a decrease in *Index-Change*.

(b) *Index-Change-neg* partitions the sample between restatement firms with an increase in *Index-Change* and restatement firms with no change to or a decrease in *Index-Change* by assigning a zero to sample restatements with an increase in *Index-Change*.

Please refer to Table 8 for variable definitions.

Table 14: Performance Analysis (cont'd)**Panel B: Dependent Variable: ROE-Change**

| Independent Variables | Coefficient | t-statistic |
|--|-------------|-------------|
| <i>Intercept</i> | 2.546 | (0.30) |
| <i>Index-Change-pos</i> ^(a) | - 0.044 | (-0.01) |
| <i>Index-Change-neg</i> ^(b) | 100.725 | (2.90)*** |
| <i>AAER</i> | - 2.397 | (-0.31) |
| <i>SEC</i> | 21.596 | (2.34)** |
| <i>Auditor</i> | - 24.354 | (-1.49) |
| <i>Comp</i> | 4.096 | (0.55) |
| <i>Magnitude-incr</i> | - 162.511 | (-1.23) |
| <i>Magnitude-decr</i> | - 23.240 | (-1.14) |
| <i>Qtrs</i> | 0.610 | (1.01) |
| <i>SAB101</i> | 8.378 | (0.90) |
| <i>EITF</i> | 22.780 | (2.32)** |
| <i>Rev-Other</i> | - 7.314 | (-0.78) |
| <i>IPRD</i> | - 11.144 | (-0.61) |
| <i>M-A</i> | - 8.299 | (-0.76) |
| <i>Cost-Exp</i> | - 2.489 | (-0.25) |
| <i>CAR (0,1)-pos</i> | - 35.940 | (-0.35) |
| <i>CAR (0,1)-neg</i> | 73.305 | (1.91)* |
| <i>Pre-ROE</i> | - 1.046 | (-11.62)*** |
| <i>Firm-Size</i> | 0.093 | (0.48) |
| Model Statistics | | |
| <i>N</i> | 124 | |
| <i>Adjusted R²</i> | 54% | |
| <i>F-statistic</i> | 8.61*** | |

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

(a) *Index-Change-pos* partitions the sample between restatement firms with an increase in *Index-Change* and restatement firms with no change to or a decrease in *Index-Change* by assigning a zero to sample restatements with no change to or a decrease in *Index-Change*.

(b) *Index-Change-neg* partitions the sample between restatement firms with an increase in *Index-Change* and restatement firms with no change to or a decrease in *Index-Change* by assigning a zero to sample restatements with an increase in *Index-Change*.

Please refer to Table 8 for variable definitions.

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