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Did the 1999 NYSE and NASDAQ Listing Standard Changes on Audit Committee Composition Benefit Investors?

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ABSTRACT: In December 1999, the SEC instituted a new listing standard for NYSE and NASDAQ firms. Listed firms were now required to maintain fully independent audit committees with at least three members. In July 2002, the U.S. Congress legislated these standards through the Sarbanes-Oxley Act. Our research question is whether all investors benefited from the 1999 new rule. Using both an event study and a difference-in-differences methodology, we find no evidence of higher market value or better financial reporting quality resulting from this rule.

Keywords: audit committee independence; exchange listing standards; securities regulation.

I. INTRODUCTION

On December 14, 1999, the Securities and Exchange Commission (SEC), in response to a call from then Chairman Arthur Levitt (1998) to "empower audit committees . . . as the ultimate guardian of investor interests and corporate accountability," approved new audit committee standards for firms listed on the New York Stock Exchange (NYSE) and NASDAQ. The new rule requires listed firms to maintain audit committees with at least three directors, "all of whom have no relationship to the company that may interfere with the exercise of their independence from management and the company" (SEC 1999a, 1999b, 1999c). The rule became effective from December 31, 1999 onward.

The 1999 regulation is consistent with an entrenchment theory of corporate governance, which suggests that management seeks to insulate itself from oversight by maintaining smaller and/or less independent audit committees. Under this view, market forces alone are unable to shift audit committees to their value-maximizing composition; hence, the regulation forces non-compliant firms to move to more optimal audit committee structures. A competing view of corporate governance is that audit committee composition is determined endogenously by the firm to maximize its firm value. Under this view, firms trade off independence, knowledge, and time constraints when comprising audit committees. These trade-offs result in firms optimally creating committees that may not conform to the new regulation.

Our research question is to examine whether investors actually benefited by requiring *all* firms to move to this size/independence standard audit committee structure. Although the rule change is over 15 years old, our research question is relevant today. In 2002, Congress legislated the 1999 audit committee size/independence requirements into Section 301 of the Sarbanes-Oxley Act of 2002 (SOX). More recently, the Public Company Accounting Oversight Board's (PCAOB) website tied audit committees' effectiveness to (among other things) the audit committee independence requirements imposed under SOX. Thus, today's regulatory environment accepts the premise that this audit committee structure produces value-enhancing results for all firms. Yet, to date, it has not been established empirically if the fundamental requirements of audit committee size and/or director independence produced their intended effects on non-compliant firms.

The 1999 exchange rules provide a good setting for examining this research question. Our primary analysis is based on an event study encompassing the dates leading to enactment of the regulation. This methodology should yield *relatively clean*

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results. First, unlike subsequent corporate governance laws, for example, SOX or the Dodd-Frank Act of 2010, which encompass many goals and disparate rules, the 1999 regulation is relatively contained; that is, it relates to changes in the board's standing audit committee only. Thus, there is little ambiguity as to which sections of the regulation the market is reacting. Second, unlike the passage of SOX or the Dodd-Frank Act, there was little to no political jockeying or uncertainty as to how the 1999 audit committee rule would evolve. The SEC and the exchanges were concordant on the changes to the listing standards and, together, they worked on submitting these changes to the SEC for final approval.[1] Third, the 1999 rule changes preceded the passage of SOX and the accounting scandals of Enron and WorldCom by at least 20 months. Thus, in many ways, the 1999 change to audit committee standards can be viewed as a "stand-alone" corporate governance event. Fourth, the 1999 rule is a plausible exogenous event in the sense that although it did not evolve randomly (i.e., there were economic events that caused the SEC to propose these rules), there was not one particular firm or group of firms that triggered the rule change.[2] Fifth, the rule is fairly straightforward—all listed NYSE or NASDAQ/AMEX firms falling under the rule must maintain a minimum three-person, fully independent audit committee by a certain date. Thus, we can easily identify firms in and out of compliance with the rule prior to the first event date.

Our event study results are inconsistent with investors placing a positive value on firms moving to full audit committee independence and/or placing at least three members on their audit committees. We find, on average, no statistically significant cumulative abnormal stock returns over the specific event dates leading up to and including the approval by the SEC of the new listing requirements. Thus, the market assigned no overall net benefit or cost to compliance. We find no evidence of a differential market reaction to whether the firm's audit committee was in or out of compliance with the 100 percent audit committee independence compliance and/or the minimum three-person requirement prior to the formation of the Blue Ribbon Committee. This suggests that the market placed no premium on firms being forced to move to compliance. We find no evidence that out-of-compliance firms with higher earnings management (financial reporting quality) or restatements (audit quality) prior to the proposed changes earned higher returns than out-of-compliance firms with better financial reporting quality. This latter result is salient because the SEC's stated objective of instituting the 1999 changes was to reduce both earnings management and restatements (Levitt 1998).

Overall, our findings are consistent with the view that mandating a fully independent audit committee with at least three outside directors is not, on average, value-enhancing. However, the empirical results also are consistent with alternative explanations. One possibility is that the market anticipated (to some extent) the advent of the new rules prior to our first recorded event—SEC Chairman Arthur Levitt's speech approximately 15 months prior to its approval—thus muting the surprise required for an event study to pick up abnormal returns over our time period. Several tests in this paper rule out this explanation. A second possible explanation is that the required changes in the listing standards, although enacted, were not binding and, therefore, could be ignored by firms choosing to remain out of compliance. We examine this possibility and present results inconsistent with this explanation. A third alternative explanation is that out-of-compliance firms achieved compliance by merely shifting their extant independent board members around to gain compliance. This explanation is consistent with Romano's (2005) assertion that the provisions in SOX are merely window-dressing, thus rendering the purpose of that regulation to be ineffective. While it is difficult for us to directly test this possibility, we do present some evidence inconsistent with firms mainly achieving compliance through window-dressing.

Event studies, however, have several empirical drawbacks, including the assumption of a semi-strong efficient market during our sample time period. Or the market, although efficient, may underestimate the net benefits of the new listing standard. To assuage these concerns, we also estimate difference-in-differences regressions to assess changes in financial reporting quality surrounding the phase-in period of the 1999 rule change (see Coates and Srinivasan 2014; Leuz and Wysocki 2016). Consistent with the market return results, we find no evidence that requiring firms to maintain 100 percent independent and/or three-person audit committees produced tangible benefits to shareholders.

Overall, our findings are inconsistent with an entrenchment theory of corporate governance as it relates to mandating all firms to maintain minimum size/fully independent audit committees.

Our paper makes contributions to several literatures. First, our findings are consistent with the view that not all regulations produce their desired effects. Our "no result" result is similar to Battalio, Hatch, and Loughran (2011) and Lennox (2016), who find no net benefits or costs to the Securities Act Amendments of 1964 or to the PCAOB's restrictions on auditor-provided tax

[1] The SEC received 25 comment letters on the proposed rule change. Twenty-two letters favored the proposal, but offered some modifications, for example, the determinants of what constitutes a "significant business relationship" as it pertained to the independence of audit committee members. Three letters opposed the proposal, primarily on the premise that boards and firms should have more flexibility in determining their audit committee structures. See SEC Release No. 34-42233 (at: http://www.sec.gov/rules/sro/ny9939o.htm) for a description of the comment letters.

[2] Several studies (for example, Duchin, Matsusaka, and Ozbas 2010; Armstrong, Core, and Guay 2014; Chen, Cheng, and Wang 2015) use the 1999 rule change as an instrumental variable for subsequent changes in board independence, thus treating the rule change as an exogenous event. Our research question differs from theirs in that we assess the net benefits of this specific listing standard change, whereas these studies evaluate associations between changes in board independence and firm performance, earnings management, or financial transparency.

services, respectively. This contribution is important because under Presidential Executive Order 13563 (The White House, Office of the Press Secretary 2011, Sections 6, 6(b)), all U.S. agencies, including the SEC, are required to perform periodically a "retrospective [cost-benefit] analysis of existing rules," with an eye toward modifying, expanding, or repealing them to make them "more effective or less burdensome in achieving the regulatory objectives."[3] One possible modification that the SEC could consider would be to recommend to Congress a change in SOX's current mandate on audit committee size and independence toward a disclosure requirement about audit committee composition. This would be analogous with firms being required to disclose whether the audit committee has a financial expert (SOX Section 407) or which audit committee directors serve on audit committees of more than three companies (NYSE Manual Section 303A.07(a)).

Second, recent papers examining associations between financial reporting quality and audit committee characteristics have moved away from examining the independence/size characteristics placed in the extant regulations toward more nuanced director characteristics, such as financial expertise (DeFond, Hann, and Hu 2005), industry expertise (Cohen, Hoitash, Krishnamoorthy, and Wright 2014), legal knowledge (Krishnan, Wen, and Zhao 2011), or social ties (Bruynseels and Cardinaels 2014; Cohen, Gaynor, Krishnamoorthy, and Wright 2017). Because audit committee director independence is a requirement since the implementation of the 1999 rule, all of these studies' conclusions and policy implications relate to independent directors only. However, our paper's main conclusion is that requiring all firms to adopt fully independent audit committees is not value-enhancing to all non-complying firms. Thus, our paper contributes to the dialogue surrounding policy implications of audit committee director characteristics by considering the fundamental issue of how independence itself contributes to financial reporting quality. It also has implications for how researchers should incorporate these two factors into theoretical and empirical studies related to corporate governance mechanisms.

The next section describes the 1999 exchange-listing standard changes. Section III reviews prior literature. Section IV describes the data. Sections V and VI contain the event study results. Difference-in-differences results are presented in Section VII. Section VIII has robustness tests, and Section IX concludes and presents suggestions for related future research.

II. 1999 CHANGES IN NYSE AND NASDAQ LISTING STANDARDS REGARDING AUDIT COMMITTEES

Before the 1999 rule change, large U.S. exchange-listed companies were required to have a standing audit committee with a majority of its members being "independent" of management. However, no definition of independence was given, and firms frequently had affiliated directors sitting on their audit committees (Klein 1998).

On December 14, 1999, the SEC approved new audit committee standards for firms listed on the NYSE and the NASDAQ. The new rule requires listed firms to maintain audit committees with at least three directors, "all of whom have no relationship to the company that may interfere with the exercise of their independence from management and the company."[4] The rule also contains definitions of director independence. Excluded from independence is a director who is a current employee, an immediate family member of an executive officer, a former employee of the firm within the last three years, or a director with a board compensation committee cross-link. In addition, the NASDAQ deemed any director receiving non-director compensation from the firm in excess of $60,000 or whose employer receives at least $200,000 in the past three years as being non-independent. All of these definitions are for the audit committee only—they do not apply to the entire board or to any other board committee.

Most of the new guidelines reflect the sentiments and recommendations of the Blue Ribbon Committee Report (see SEC 1999c), which describes the audit committee's "job" as "clearly one of oversight and monitoring" the firm's financial reporting (Blue Ribbon Committee [BRC] 1999, 7). With respect to the 100 percent independence standard, the SEC ties audit committee director independence to an ability to "objectively evaluate the propriety of management's accounting, internal control, and financial reporting practices" (SEC 1999c). Fama and Jensen (1983) reflect these sentiments by proposing that outside board members are best placed to carry out tasks involving agency problems between internal managers and shareholders.

As for the minimum three-director requirement, neither the BRC (1999) Report nor the SEC Releases offer a rationale for choosing the number three. Historically, in a consent decree between Killearn Properties Inc. and the SEC, Killearn Properties agreed to form an audit committee of three outside directors (Birkett 1986). The consent decree, however, is silent on how or why this number was reached.

[3] In addition, the U.S. Courts and the SEC have adopted a cost-benefit framework for evaluating new security regulations. See *Business Roundtable and Chamber of Commerce of the United States v. Securities and Exchange Commission* (647 F. 3d 1148, D.C. Cir. 2011) and SEC (2012).

[4] See Release Nos. 34-42231, 34-42232, and 34-42233 (SEC 1999a, 1999b, 1999c). In November 1998, the AMEX was merged into the NASD, creating The NASDAQ-AMEX Market Group. Hence, the regulatory change for the NASD in 1999 incorporated those made to the AMEX and to the NASDAQ.

The phase-in period for compliance to the new listing standard was 18 months from December 14, 1999. However, the SEC allowed the exchanges to carve out certain exceptions, opt-outs, and grandfathering provisions that may affect a firm's timing or even its overall compliance with the new listing standards.

The NYSE standard excludes foreign companies if their audit committee structure is consistent with their country's listing standards. It also gave listed companies with less than three members on their audit committees 18 months to "recruit the requisite members," and "grandfathered" in all currently qualified audit committee members until they are "re-elected or replaced" (SEC 1999c).

The NASDAQ standard excludes companies with revenues less than $25 million. (To be listed on the NYSE, companies must have at least $100 million of revenues.) Both the NYSE and NASDAQ allow an opt-out feature, that is, a firm may appoint to the audit committee "one director who is not independent ... if the board, under exceptional and limited circumstances determines that membership on the committee by the individual is required by the best interests of the corporation and its shareholders" (SEC 1999a). We manually check the proxy statements of our sample of firms in the year beginning in June 2001, the compliance date, to determine whether any firms used the opt-out. We find that 2 percent of the sample firms, including Apple Computer, Costco Wholesale, and Atwood Oceanics, were intentionally non-compliant with the independence standard. They cite experience and expertise for this decision. As a robustness test, we redo all of our analyses without these intentionally non-compliant firms and find no difference in empirical results.

III. PREVIOUS EMPIRICAL LITERATURE

There is a large literature of cross-sectional empirical papers examining links between audit committee composition and financial reporting quality. This section discusses those papers most closely associated with our study. The main criticism of these papers is that audit committee size and director independence may be endogenously determined and, thus, observed associations or non-associations may be influenced by the sample selected, the time period studied, omitted correlated variables, or even reverse causality. The mixed results from these papers support that view.

The purpose of this literature review is not to resolve the dissimilar results found in these papers. Instead, it is to demonstrate endogeneity concerns arising from cross-sectional empirical tests of connections between financial reporting quality and audit committee composition. If audit committee structure is endogenously determined, then (1) it might be better to allow all firms to choose their optimal audit committee characteristics, and (2) it validates our choice of using the 1999 "exogenous" rule change as an appropriate setting for a relatively clean empirical test.

Audit Committee Independence and Financial Reporting Quality

Beasley and Salterio (2001), Klein (2002a), and Larcker, Richardson, and Tuna (2007) posit an endogenous choice of audit committee composition and identify ties between audit committee independence and board and firm characteristics. Armstrong et al. (2014) document linkages between changes in board independence and changes in financial transparency. If firm characteristics also are related to an output variable, then it is unclear whether the association (or causality) is between audit committee independence and the output variable, or through these other variables.

Perhaps because of this criticism, inferences drawn from cross-sectional studies are mixed. Some papers conclude that fully independent audit committees are associated with lower likelihoods of a firm committing financial fraud (e.g., McMullen and Raghunandan 1996; Abbott, Park, and Parker 2000; Beasley, Carcello, Hermanson, and Neal 2009), having an accounting restatement (e.g., Abbott, Parker, and Peters 2004), or engaging in aggressive earnings management (Bédard, Chtourou, and Courteau 2004).[5] Other papers (e.g., Agrawal and Chadha 2005; Beasley et al. 2009; Klein 2002b) find no empirical associations between 100 percent independent audit committees and these variables.

Similar mixed inferences are found for papers treating audit committee independence as a continuous variable, that is, measuring independence in percentage terms. For example, Carcello and Neal (2000, 2003), Klein (2002b), Bédard et al. (2004), and Vafeas (2005) find that greater independence leads to better financial reporting outcomes. In contrast, Xie, Davidson, and DaDalt (2003), Felo, Krishnamurthy, and Solieri (2003), Yang and Krishnan (2005), and Larcker et al. (2007) find no significant associations.

[5] Other studies find a positive association between completely independent audit committees and other accounting outcomes, for example, audit fees (Abbott, Parker, Peters, and Raghunandan 2003), auditor resignations (Lee, Mande, and Ortman 2004), and the likelihood of an auditor dismissal after the receipt of the going concern report (Bronson, Carcello, Hollingsworth, and Neal 2009).

Audit Committee Size and Financial Reporting Quality

Linck, Netter, and Yang (2008) present evidence that board size varies across board and firm characteristics, a finding consistent with board size being endogenously determined. If audit committee size is similarly determined, then cross-sectional tests between audit committee size and financial reporting quality suffer from endogeneity issues. Consistent with this observation, inferences from the following papers yield mixed conclusions.

Beasley et al. (2009) find a negative association between financial fraud and having an audit committee of at least three members. Abbott et al. (2004) and Bédard et al. (2004) find no relation between an audit committee with three or more directors and restatements or aggressive earnings management, respectively. Yang and Krishnan (2005), Davidson, Goodwin-Stewart, and Kent (2005), and Lin, Li, and Yang (2006) report negative relations between audit committee size and financial reporting outcomes, while no association between the two is found by Beasley (1996), Xie et al. (2003), and Farber (2005).

IV. BOARD AND AUDIT COMMITTEE DATA

The changes to the listing standards began with a speech by then-SEC Chairman Arthur Levitt on September 28, 1998. From the RiskMetrics Directors' database, we have 1,472 distinct firms with required board and audit committee data immediately prior to Levitt's (1998) speech date. From this initial sample, we exclude financial firms (Standard Industrial Classification [SIC] codes 6000 through 6999) because their board and audit committee compositions are subject to their own regulatory environment. After further eliminating firms without the required CRSP and Compustat data, we have a usable final sample of 1,122 distinct firms.

We align each sample year with Levitt's (1998) speech, i.e., each year runs from September 29 of year $t-1$ through September 28 of year t. In the year ending prior to Levitt's speech (designated 1998), 82.7 percent of the firms had a standing audit committee with at least three members (composed of independent and non-independent directors);[6] 52.1 percent of audit committees were composed of independent directors only (albeit various committee sizes). Less than one-half of the firms—40.8 percent—were in full compliance with the new listing standard, i.e., they had a fully independent audit committee with at least three members. Thus, many firms needed to either shift their board members around or add new independent board members to eventually comply with the new regulation.

V. EVENT STUDY APPROACH

Event Study Market Return Approach

We use an event study approach to evaluate the market's assessment of the net costs or benefits to shareholders of the 1999 regulation. This methodology has been used to assess the market impact of other major securities regulations, for example, the Private Securities Litigation Reform Act (PSLRA) of 1995 (Johnson, Kasznik, and Nelson 2000; Ali and Kallapur 2001), SOX (Jain and Rezaee 2006; Zhang 2007; Chhaochharia and Grinstein 2007; Li, Pincus, and Rego 2008), and regulations affecting executive pay or proxy access (Larcker, Ormazabal, and Taylor 2011; Akyol, Lim, and Verwijmeren 2012).

In order for an event study to be an appropriate methodology to evaluate the net costs or benefits of a regulation (or any event), four underlying assumptions of the methodology must be satisfied. Our setting appears to satisfy each of these assumptions.

The first assumption is that the market must be aware of the event dates. As we show in the next section, all events used in this study are accompanied by a news announcement, an SEC news release, or were published in the SEC Digest on the date of the event.[7] Second, the new regulation must be unanticipated by the market. To determine this, we examine both the SEC

[6] In 1998, there was no legal or regulatory definition of an independent director. Instead, the stock exchanges gave boards discretion to determine whether a director could be classified as independent. From the BRC (1999) Report date through the enactment date of SOX, the characteristics determining an audit committee independent director were a moving target. Following Coles, Daniel, and Naveen (2008) and Duchin et al. (2010), we use the classification of independent directors in the RiskMetrics database. RiskMetrics considers any director as being independent of management if that director (a) never worked for the company, (b) never personally (or through employer) received professional compensation from the company, (c) is not on a board interlock with any executive of the firm, and (d) if a family member does not currently work for the firm. In some ways, these requirements are more stringent than those eventually adopted by the SEC or SOX. On (a), SOX is silent on past employment; the 1999 listing standards consider prior employment greater than three years ago to not hinder independence. On (b), the NASDAQ listing standard allows independent directors to receive $60,000 of professional compensation from the firm; the NYSE listing standard leaves the amount of compensation up to the discretion of the board. In other ways, RiskMetrics requirements are less stringent than those eventually instituted by the SEC or SOX. SOX, for example, considers directors holding at least 10 percent of the firm's equity as not being independent, whereas RiskMetrics does not use stock ownership as an independence characteristic.

[7] Event #3 is from the BRC (1999) Report. The Report states that the BRC announced a request for public recommendations. We are unable to find this announcement in Lexis-Nexis. We present our main results without this event in one of our robustness tests.

website and Lexis-Nexis for the full year prior to Levitt's (1998) speech to find evidence of any announcements, discussions, or speeches by SEC, NYSE, or NASDAQ personnel suggesting that any of these parties would propose changes in audit committee listing standards. We also look for outside groups, for example, the American Institute of Certified Public Accountants (AICPA), making similar suggestions or proposals. We come up with only one reference, a speech by SEC Commissioner Levitt on March 12, 1998 on director responsibilities, in which he spoke of the duty of directors in general, and audit committees specifically, to ask difficult questions (SEC 1998c). Instead, we find numerous references and speeches related to international accounting standards and the importance of auditor independence in the financial reporting system. Third, the events should be relatively "clean," that is, they should be self-contained and the direction of the market reaction should be relatively unambiguous. The scope of the audit committee regulation is fairly narrow and there is little to no uncertainty on whether it would be enacted. Fourth, since the regulation is new to the market, the market needs a contextual base to evaluate its effectiveness. On December 20, 1974, the SEC issued Accounting Series Release No. 165, *Notice of Amendments to Require Increased Disclosure of Relationships between Registrants and Their Independent Public Accountants,* which stated, in part: "Disclosure is required of the existence and composition of the audit committee of the board of directors . . . This disclosure will make stockholders aware of the existence and composition of the committee. If no audit or similar committee exists, the disclosure of that fact is expected to highlight its absence" (SEC 1974). Thus, investors had 25 years of flexible audit committee composition standards to assess their impact on financial reporting quality.[8]

Overall, we conclude that the regulatory setting we use is well suited for an analysis using an event study approach.

Event Dates Leading Up to Regulatory Changes: Daily and Overall Abnormal Returns

We compile a list of events leading up to the listing standard changes by searching the SEC website and Lexis-Nexis for announcements and notices of filings; we supplement this search with the list of press releases contained in the BRC (1999) Report. Unlike previous studies that examine share price reactions around legislative events (e.g., Zhang 2007; Li et al. 2008; Larcker et al. 2011), there were few negotiations and no input from Congress or the Executive branch of the U.S. government. There are eight events in all, spanning from September 28, 1998 to December 14, 1999.[9]

Using the Schipper and Thompson (1983) abnormal return framework, we estimate a Fama and French (1992) three-factor model with an added dummy variable, D_{kt}, equal to 1 for days [0, +1], in which day 0 is one of the eight event dates, and equal to 0 for all non-event days.[10] The regression uses panel data encompassing all 1,122 firms in our sample over the 504 trading days spanning from January 1, 1998 through December 31, 1999. Specifically:

$$R_{pt} = \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \gamma_k D_{kt} + \varepsilon_t \quad (1)$$

R_{pt} is the vector of cross-sectional returns on day t minus the risk-free rate (R_{ft}) weighted by the estimated covariance matrix of residuals on day t.[11] R_{mt} is the CRSP value-weighted market index for day t; SMB_t and HML_t are the Fama-French factors Small minus Big portfolio returns and High minus Low (value minus growth) portfolio returns, respectively, as provided on Ken French's website (see: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/). γ_k is the coefficient on D_{kt}; it measures overall market reaction for each event k. ε_t is the error term, which is assumed to be normally and independently distributed. To extrapolate from the effects that a U.S. regulation has on all U.S.-traded firms, we alternatively use the Standard & Poor's (S&P)/Toronto Stock Exchange (TSX) Composite Index of the Canadian market (see Zhang 2007) and find similar results (not tabulated).

Table 1 presents a description of the eight event dates, along with the sources we use to locate the date, the two-day abnormal return around the event date, and its corresponding t-statistic. The process began on September 28, 1998 (Event #1) when Chairman Levitt delivered a speech expressing concern about the quality of financial reporting in the U.S. In his speech,

[8] In 1978, the NYSE amended its listing standards to require all listed companies to maintain an audit committee composed solely of directors deemed (by the board) to be independent of management. The NASDAQ and AMEX followed suit in 1989 and 1993, respectively, although neither exchange required the committee to be fully independent of management. None of the exchanges mandated a minimum number of directors.

[9] We exclude news stories and speeches on the merits or demerits of the proposed regulations expressed by individuals, organizations, or SEC personnel during this time period. A search of Lexis-Nexis using the search string "audit committee and blue ribbon committee" produces over 30 articles during this time period. The SEC website contains transcripts from 19 speeches by SEC Commissioners, the Chief Accountant, and other SEC officials over the same time period.

[10] Other papers using variants of Schipper and Thompson (1983) to examine overall market effects of adopting a new regulation include Chhaochharia and Grinstein (2007) and Akyol et al. (2012). We also use days −1 through +1 as the event period. The results and conclusions reported in this paper are robust to including the day prior to the announcement date. However, we are unable to find any public leakage of any of the eight announcements prior to day 0 and, therefore, we believe that using the two-day window [0, +1] is a more accurate depiction of the stock market reaction.

[11] Because Equation (1) is estimated over the full time period and because the vector of individual firm returns is weighted by the covariance matrix of residuals, we are able to account for the cross-sectional correlations among firms over the full time period (including both event and non-event days). Thus, the reported standard errors of the parameter estimates are more efficient than using a straight ordinary least squares (OLS) estimation.

TABLE 1

Description of Events and Abnormal Returns

Event	Description	Date	Source	Average Abnormal Return (%)	t-stat.
#1	SEC Chairman Arthur Levitt announces formation of the BRC	9/28/1998	SEC and News	−0.095	−0.52
#2	SEC, NYSE, and NASD announce who will be on the BRC	10/6/1998	SEC	0.439**	2.37
#3	BRC announces request for public comments on recommendations	11/4/1998	BRC	−0.066	−0.36
#4	Public hearing held on recommendations in New York City	12/9/1998	News and BRC	−0.152	−0.83
#5	BRC Report released	2/8/1999	SEC and News	0.113	0.61
#6	SEC obtains board approval to file proposed exchange rule changes	9/2/1999	SEC	−0.034	−0.19
#7	SEC Notices of Filing of proposed rule changes amending audit committee requirements of listed companies on NYSE and NASDAQ	10/6/1999	SEC and SEC ND	−0.071	−0.39
#8	Rule changes approved by SEC for NYSE and NASDAQ	12/14/1999	SEC ND	0.283	1.54
	All Eight Events			0.048	0.73

***, **, * Denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tailed), respectively.

Levitt announced that the "NYSE and NASD will sponsor an eleven-member 'blue ribbon' panel drawn from the various constituencies of the financial community to make recommendations on strengthening the role of audit committees in overseeing the corporate financial reporting process" (SEC 1998a). The mandate of the panel, co-chaired by John Whitehead and Ira Millstein, was to issue a report within 90 days with a list of recommendations for improving audit committee effectiveness.[12] The names of the remaining nine members of the panel were announced on October 6, 1998 (Event #2). The announcement emphasized that the panel is composed of "corporate and industry leaders" (SEC 1998b).[13] A call for public comments on possible recommendations by the panel was announced on November 4, 1998 (Event #3). This announcement capped the comment period to December 1, 1998, provided information about the forthcoming December 9, 1998 public hearing (Event #4), and contained a list of topics to be considered, including the question "Should each member of an audit committee be required to be independent?" (BRC 1999).

The BRC Report was released on February 8, 1999 (see Table 1, Event #5). The Report contains ten separate recommendations. The first seven recommendations are proposed changes in NASDAQ and NYSE listing requirements. Recommendation 1 deals with the definition of an independent audit committee director. Recommendations 2 and 3 provide for audit committees to have at least three directors, all of whom are independent, as defined in Recommendation 1. Recommendations 4 through 7 deal with the existence, disclosure, and details of an audit committee charter. Recommendation 8 and part of 10 are directed toward the Audit Standards Board (ASB) of the AICPA. Recommendation 8 requires the company's auditor to discuss the auditor's judgments about the quality of the company's accounting principles with the audit committee, and Recommendation 10 extends this to auditor quarterly reviews. Recommendation 9 and part of 10 target the SEC. Recommendation 9 requires 10-K filings to contain a letter from the audit committee disclosing several mandated details about the audit process. Recommendation 10 recommends a Statement on Auditing Standards (SAS) 71 financial review for all quarterly (10-Q) statements.[14]

On September 2, 1999 (see Table 1, Event #6), the SEC obtained board approval to file proposed rule changes to audit committee standards for NYSE and NASDAQ listed companies. Dual Notices of Filing of proposed changes were made on October 6, 1999 (Event #7). The proposed changes were virtually identical to those contained in Recommendations 1 through 7,

[12] John Whitehead is a former Deputy Secretary of State and a retired Co-Chairman and Senior Partner of Goldman Sachs. Ira Millstein is a senior partner of Weil Gotshal & Manges, a large corporate law firm.

[13] The nine additional members were three persons from large corporations, two persons from Big 4 accounting firms, the CEOs from the NYSE and NASD, respectively, the CEO of TIAA-CREF, and a former controller general of the U.S.

[14] An SAS 71 review consists principally of applying analytical procedures to financial data and making inquiries of the company's officers responsible for financial and accounting matters. It was superseded in November 2002 by SAS 100, which ratcheted up the requirements. In December 2003, the PCAOB issued Auditing Standard 1, which further refined the standards used in an interim financial review.

with two key exceptions. The NASDAQ provided for a limited opt-out of the 100 percent independence requirement, and also allowed companies with sales less than $25 million to establish and maintain an audit committee of at least two members, a majority of whom are independent. The SEC approved the NYSE and NASDAQ rule changes on December 14, 1999 (Event #8).

The overall average abnormal return for the eight events in Table 1 is 0.48 percent (t-statistic = 0.73). None of the events, with the exception of Event #2, garnered a statistically significant market reaction. When we use the Canadian market index (untabulated), we find a cumulative abnormal return of −0.16 percent (t-statistic = −0.93). In summary, the overall market reaction to the regulatory process is not significantly different than zero.

VI. EVENT STUDY HYPOTHESES, TESTS, AND RESULTS

Hypotheses

The maintained assumption behind an event study methodology surrounding the adoption of a new regulation is that each firm's cumulative abnormal return (CAR) is a reflection of the market's assessment of that firm's net benefit (positive CAR) or net cost (negative CAR) of adoption. Since the ruling directly affects only firms out of compliance, we expect differential market reactions between firms in and out of compliance. Under an entrenchment hypothesis, firms create audit committees to benefit management at the expense of their shareholders. Thus, forcing firms out of a suboptimal committee composition via the new regulation will be, on average, beneficial, resulting in a prediction of higher abnormal stock returns for non-complying firms. In contrast, an optimization hypothesis predicts that firms set up audit committees to maximize firm value. Under this hypothesis, forcing firms into compliance will be, on average, non-beneficial, resulting in a prediction of lower abnormal stock returns for firms initially out of compliance.

However, there may be cross-sectional variations of benefits or costs to compliance that should be reflected in the data. According to the SEC and the BRC (1999) Report, the major expected benefit from having firms adopt the 1999 listing standards is an improvement in their financial reporting quality.[15] This benefit strongly implies that non-compliers with weaker financial reporting quality should, on average, earn higher abnormal returns than non-compliers with stronger financial reporting quality. There may also be direct and indirect costs of compliance. For example, non-compliant firms may have to increase their board size to accommodate a larger and/or more independent audit committee, thus incurring search costs (e.g., see Nguyen and Nielsen 2010). Thus, non-compliers with needs to expand their board size should, on average, earn lower abnormal returns than firms already in compliance. In Section VI, we consider several direct and indirect compliance costs.

Research Design

We first test for significant differences in stock returns between firms in and out of compliance in 1998. Specifically, we estimate the following two regressions:

$$CAR_i = \alpha + \beta_1 OOC_i + \sum Controls + \varepsilon_i \tag{2a}$$

$$CAR_i = \alpha + \beta_1 AudInd_i + \beta_2 AudSize_i + \sum Controls + \varepsilon_i \tag{2b}$$

The dependent variable, CAR_i, is firm i's eight-event cumulated abnormal return over days $[0, +1]$, accumulated over the events in Table 1. In Equation (2a), OOC_i is an indicator for firms out of compliance with the dual requirements of full independence and the minimum number of directors. In Equation (2b), we separate out the individual compliance parameters—$AudInd_i$ is an indicator for firms out of compliance with the 100 percent independent audit committee requirement, and $AudSize_i$ is an indicator for firms out of compliance with the minimum three-director audit committee requirement.

To allow for variations in benefits and costs associated with eventual compliance, we add benefit and cost variables, along with their interactions with initial compliance into our specifications. Specifically:

$$CAR_i = \alpha + \beta_1 OOC_i + \sum \beta_2 Benefit_i + \sum \beta_3 OOC_i \times Benefit_i + \sum \beta_4 Cost_i + \sum \beta_5 OOC_i \times Cost_i + \sum Controls + \varepsilon_i \tag{3a}$$

[15] The same benefit was espoused for the passage of SOX. Li et al. (2008) and Zhang (2007) examine market reactions around the adoption of SOX. Li et al. (2008) find evidence of a positive association between the stock market reaction and the amount of discretionary accruals (earnings management) for their sample of firms, thus concluding that SOX was perceived as being beneficial in curbing earnings management. Zhang (2007) finds the opposite result. Neither study, however, considers whether a firm was in or out of compliance with SOX standards.

$$CAR_i = \alpha + \beta_1 AudInd_i + \beta_2 AudSize_i + \sum \beta_3 Benefit_i + \sum \beta_4 AudInd_i \times Benefit_i + \sum \beta_5 AudSize_i \times Benefit_i + \sum \beta_6 Cost_i + \sum \beta_7 AudInd_i \times Cost_i + \sum \beta_8 AudSize_i \times Cost_i + \sum Controls + \varepsilon_i \quad (3b)$$

The interactive terms measure the extent to which the market values the perceived benefit or cost of compliance. Significantly positive coefficients on β_3 in Equation (3a) and β_4 and β_5 in Equation (3b) are consistent with the 1999 regulation producing anticipated benefits; significantly negative coefficients on β_5 in Equation (3a) and β_7 and β_8 in Equation (3b) are consistent with the expectation that non-compliers bear substantive compliance costs.

All independent variables are taken prior to Levitt's (1998) speech. By using publicly available data prior to the initial event date, we avoid a look-ahead bias in our tests. Thus, all variables used in our analyses are available to the market throughout the event period.

To estimate Equations (2a) through (3b), we use the Sefcik and Thompson (1986) portfolio-weighting procedure. This procedure produces the same parameters as estimating an OLS cross-sectional regression of abnormal returns on firm characteristics. The difference between the two methods is that under the Sefcik and Thompson (1986) methodology, the standard errors of the estimates fully incorporate the cross-correlations among the firm characteristics, thus improving the efficiency of the estimates. See Appendix A for details of this procedure.

Benefit and Cost Variables

Benefit Variables

There are many possible benefits associated with moving a firm toward a three-person fully independent audit committee. The primary benefit articulated by Levitt (1998), the BRC (1999) Report, and the SEC (1999a, 1999b, 1999c) is an improvement in financial reporting quality after compliance, with Levitt (1998) citing earnings restatements and earnings management as two examples of poor financial reporting quality. Financial restatements typically involve violations of generally accepted accounting principles (GAAP). Some studies regard restatements as indicators of poor financial reporting quality (Cohen et al. 2014). Other studies treat restatements as measures of poor audit quality, leading to lower financial reporting quality (DeFond and Zhang 2014; Lennox 2016). Earnings management captures management's ability to manipulate income generally within GAAP.

If non-compliant firms with relatively poor financial reporting quality benefit most from the 1999 rules, then the coefficients β_3 in Equation (3a) and β_4 and β_5 in Equation (3b) will be significantly positive for firms with restatements or with higher earnings management in the time period before Event #1.

We use the database compiled by Andrew Leone from the United States Government Accountability Office (GAO 2002) to separate fraud-based restatements from error-based restatements.[16] *Restatement* is an earnings restatement announced by the firm from 1996 through 1998. *Fraud* is an announced fraud-based restatement. Earnings management, *EM,* is the absolute value of adjusted discretionary accruals, based on an expected accruals quality specification from McNichols (2002) and Francis, LaFond, Olsson, and Schipper (2005). This measure adds sales and property, plant, and equipment (PP&E) to the Dechow and Dichev (2002) cash flow model. To account for the volatility of the earnings process, we subtract the median abnormal accrual from a portfolio of firms with similar levels of past five-year accrual volatility (see Kasznik 1999; Klein 2002b). See Appendix B for details on how *EM* is calculated.[17]

Cost Variables

We consider several direct and indirect costs of compliance. First, we locate a group of firms that must change its board composition to gain compliance with the 1999 regulation. In 1998, NYSE and NASDAQ listing standards allowed firms to maintain boards with two independent directors only. For our sample, 11.5 percent of firms had a board with just two independent directors in 1998. For these firms, compliance with the new 1999 rule would entail, at a minimum, the addition of one new independent director. Consistent with this observation, the percentage of firms with only two independent directors on its board drops to 2.7 percent in 2002 ($p < 0.001$), with an average increase in total board size of 0.83 directors between 1998

[16] This dataset is used in Hennes, Leone, and Miller (2008) and has been updated by Andrew Leone.

[17] Finding an appropriate measure of earnings management, as represented by abnormal accruals, is difficult and imprecise. There are many abnormal accrual measures, each with its positive and negative statistical and economic characteristics. See Dechow, Ge, and Schrand (2010) for an excellent discussion of these issues. As robustness tests, we use other abnormal accrual specifications, for example, the adjusted Jones model and the Dechow and Dichev (2002) model. We also match-adjust by past and by current earnings, by the ten-year total accrual volatility; we also use non-matched adjusted accruals. The results reported in this paper are consistent with each of these individual specifications (untabulated).

and 2002. In contrast, boards with three or more independent directors in 1998 reduced their board size, on average, by −0.24 directors by 2002. The difference, 1.065, is significantly different from zero at the 0.001 level.

Two direct costs associated with increasing the number of independent directors from two to a minimum of three members are search costs (Nguyen and Nielsen 2010) and higher independent director compensation costs (Linn and Park 2005). However, there also may be substantive indirect costs that would be reflected in the firm's stock price. Fama and Jensen (1983) posit that a board's function is both to monitor and to provide advice to upper management, with different firms requiring different levels of monitoring and advice. If a two-independent-directors board endogenously maximizes these board functions for a particular firm, then forcing that firm away from this board structure may result in indirect costs from compliance via a loss of firm value. *Ind2* is an indicator for whether the firm's board has only two independent directors in 1998.

Second, we consider firm size. Prior research finds a negative association between firm size and SOX compliance costs (e.g., Chhaochharia and Grinstein 2007; Gao, Wu, and Zimmerman 2009; Iliev 2010). *Size* is the natural log of the market value of the firm's equity in 1998.[18]

Third, if firms select audit committee independence to maximize firm value, then forcing a non-compliant firm with an optimal committee structure into a suboptimal committee composition would result in that firm incurring indirect compliance costs. We follow Bryan, Liu, Tiras, and Zhuang (2013) and use the inverse Mills ratio from Klein's (2002a) probit selection model to determine whether it is optimal or suboptimal for boards to have 100 percent audit committee independence.[19] We use the inverse Mills ratios to classify firms as being in or out of equilibrium with respect to 100 percent independence (see Appendix C for a fuller description of the methodology). The dummy variable, $OptimalAudInd_i$, is equal to 1 if firm i optimally chose its audit committee independence. We include these three variables as our cost variables in Equations (3a) and (3b), and predict negative coefficients on β_5 in Equation (3a) and β_7 and β_8 in Equation (3b).

Control Variables

To control for the Fama and French (1992) risk factors associated with market returns, we include the firm's book-to-market ratio (*Book-to-Market* is book value of equity divided by market value of equity).

Although we cannot account for all other corporate governance mechanisms, we include several important variables as alternative corporate governance controls in our equations. *Financial Expert* is an indicator for whether the audit committee has at least one accounting expert on its audit committee. We follow Cohen et al. (2014) in creating this variable. *Busy AC* is a binary variable indicating whether a majority of independent directors serve on more than three boards. *AC Ownership* is the percent of firm stock owned by all audit committee members. *AC Tenure* is the average tenure each member has served on the board. *CEO Duality* is a binary variable for whether the CEO also chairs the board.

We control for the trading exchange of the firm's equity by include *NYSE,* a binary variable indicating if the firm's equity is traded on the NYSE or on the AMEX/NASD. Controlling for stock exchange is important for three reasons: (1) NYSE and AMEX/NASD had certain differences in the final 1999 rule change (e.g., definition of independent director), (2) there may be differences in firm characteristics according to listed exchanges (e.g., differences in initial and continuing numerical listing standards), and (3) there may be differences in enforcement among exchanges. We also control for auditor type with *Big Five,* a binary variable indicating whether the firm's external auditor is today's Big 4 plus Arthur Anderson or a smaller audit firm.

Empirical Results

Descriptive Statistics

Table 2, Panel A presents temporal data on audit committee (board) independence and size. The percentage of firms with an audit committee of at least three members increased from 82.7 percent in 1998 to 95.9 percent in 2002 (p-value < 0.001). The percentage of firms with a fully independent audit committee rose from 52.1 percent in 1998 to 70.8 percent in 2002 (p-value < 0.001). Full compliance changed from 40.8 percent in 1998 to 67.3 percent in 2002 (p-value < 0.001). The fact that not all firms became fully compliant in 2002 is consistent with other papers examining trends in audit committee independence around or including this time period (e.g., Chhaochharia and Grinstein 2007; Duchin et al. 2010).

[18] Alternatively, we substitute *Size_200,* an indicator for firms with market capitalizations of at least $200 million in 1998, in our regression analyses. We choose $200 million as a cutoff in response to the BRC (1999) Report, which proposed an exemption from audit committee independence/minimum size rules for all firms with market capitalizations less than $200 million (see Recommendations 1–3). The final exchange rules did not include this recommendation. Instead, the NASDAQ excluded firms with market capitalization less than $25 million; the NYSE has no size cutoffs. Using *Size_200* instead of *Size* in the regressions yields the same inferences on the compliance variables, the interactive variables, and on *Size*.

[19] We are unaware of an analytical or empirical study that models equilibrium audit committee size and, therefore, do not examine firms being in or out of optimality with respect to audit committee size.

TABLE 2

Audit Committee and Board Composition Changes Over Time

Panel A: Yearly Characteristics

	1998	1999	2000	2001	2002	2002–1998 p-value
Audit Committee Characteristics						
Audit Committee Size						
Mean	3.597	3.580	3.626	3.667	3.813	0.004
Median	3.000	3.000	3.000	3.000	4.000	0.001
Audit Committee Size $\geq$ 3 (% of firms)						
Mean	0.827	0.828	0.857	0.912	0.959	0.000
Median	1.000	1.000	1.000	1.000	1.000	0.000
Audit Committee Independence (%)						
Mean	0.808	0.829	0.865	0.883	0.903	0.000
Median	1.000	1.000	1.000	1.000	1.000	0.000
100% Independent Audit Committee (% of firms)						
Mean	0.521	0.559	0.639	0.673	0.708	0.000
Median	1.000	1.000	1.000	1.000	1.000	0.000
Full Compliance to Regulation (% of firms)						
Mean	0.408	0.437	0.535	0.600	0.673	0.000
Median	0.000	0.000	1.000	1.000	1.000	0.000
Board Characteristics						
Board Size						
Mean	9.268	9.293	9.278	9.281	9.460	0.126
Median	9.000	9.000	9.000	9.000	9.000	0.231
Board Independence (%)						
Mean	0.597	0.612	0.632	0.643	0.675	0.000
Median	0.625	0.636	0.667	0.667	0.700	0.000

Panel B: Changes by Compliant/Non-Compliant in 1998

	Compliant	Non-Compliant	Diff. (p-value)
Change in Audit Committee Independence (%) from 1998 to 2002			
OOC	−0.041	0.169	<0.001
AudInd	−0.045	0.214	<0.001
AudSize	0.083	0.071	0.637
Change in Audit Committee Size (#) from 1998 to 2002			
OOC	0.023	0.110	0.257
AudInd	0.249	−0.109	<0.001
AudSize	−0.106	1.178	<0.001

Panel C: Change in Number of Independent Directors by Compliant/Non-Compliant in 1998

1998 Independent Directors	Compliant		Non-Compliant		Diff. (p-value)
2	—		1.859	(n = 64)	—
3	1.429	(n = 21)	1.238	(n = 63)	0.560
4	0.704	(n = 27)	1.113	(n = 71)	0.246
5	0.692	(n = 52)	0.964	(n = 84)	0.283
6	0.400	(n = 50)	0.417	(n = 72)	0.954
7	0.309	(n = 55)	0.554	(n = 65)	0.370
8 or More	−0.581	(n = 179)	−0.323	(n = 93)	0.322

(continued on next page)

American Accounting Association

TABLE 2 (continued)

Panel D: Change in Percent of Firms with at Least One Financial Expert on its Audit Committee by Compliant/Non-Compliant in 1998

	Change in Audit Committee Financial Expertise from 1998 to 2002		
	Compliant	Non-Compliant	Diff. (p-value)
OOC	0.102	0.129	0.420
AudInd	0.113	0.122	0.776
AudSize	0.118	0.116	0.978

This table presents audit committee and board of director characteristics by year from 1998 through 2002 for the sample of 1,122 firms. The p-values are for t-tests for the means and Wilcoxon tests for the medians.

Variable Definitions:
Audit Committee Size = number of directors on audit committee;
Board Size = number of directors on board;
Audit Committee Independence = the percentage (expressed in decimal form) of independent directors sitting on the audit committee;
Board Independence = the percentage (expressed in decimal form) of independent directors sitting on the firm's board of directors;
Audit Committee Size ≥ 3 = percentage (expressed in decimal form) of audit committees with at least three directors;
100% Independent Audit Committee = percentage (expressed in decimal form) of audit committees that are fully independent;
Full Compliance to Regulation = percentage (expressed in decimal form) of audit committees that are both fully independent and have at least three directors;
OOC = binary variable representing if the firm's audit committee is out of compliance with the 1999 rule prior to Event #1 (September 28, 1998);
AudInd = binary variable representing if the firm's audit committee is out of compliance with full independence prior to Event #1 (September 28, 1998); and
AudSize = binary variables representing if the firm's audit committee is out of compliance with having at least three directors prior to Event #1 (September 28, 1998).

Table 2, Panel B presents mean changes in independence and audit committee size between 1998 and 2002 for firms in and out of compliance in 1998. The panel is consistent with the regulation having a tangible effect on audit committee structure over the transition period. Firms out of compliance with full independence have, on average, a 21.4 percent increase in audit committee independence, compared to a mean reduction of −4.5 percent for firms already in compliance (difference is significant at 0.001 level).[20] Firms out of compliance with the minimum size rule increased audit committee size, on average, by 1.178 members from 1.930 in 1998 to 3.109 in 2002. In contrast, compliant firms reduced audit committee size by −0.106 directors, from 4.080 in 1998 to 3.974 in 2002. The difference between 1.178 and −0.106 is significantly different from zero at the 0.001 level.

Table 2, Panel C presents mean changes in independent directors at the board level between 1998 and 2002 by the number of independent directors already sitting on the board in 1998. The purpose of this table is to examine whether non-compliant firms were more likely to shift existing independent directors onto the audit committee or to go outside and recruit new independent directors. Because there were other board composition changes occurring over the same time period, we compare non-compliant firms with firms already in compliance in 1998. Consistent with the shift toward more independent boards (Panel A), we observe an increase in the number of independent board directors over time. However, this increase is greatest for non-compliant firms with five or fewer independent directors in 1998, suggesting that the increase in board independence was felt most sharply by boards with fewer independent directors.[21] We also find no difference in the change in the number of independent directors between compliers and non-compliers after controlling for the initial number of independent directors. In

[20] The mean reduction of 4.5 percent in audit committee independence is driven by a few firms that fell out of compliance between 1998 and 2002. Of the 585 firms with 100 percent audit committee independence in 1998, eight firms explicitly used the opt-out clause of intentional non-compliance in 2002. Of these eight firms, five retained a former executive officer as an audit committee member, citing their expertise as reason to override the rule. Because opt-out firms may not benefit or bear indirect costs from the rule changes relative to firms that did comply, we rerun all the analyses excluding these firms to mitigate concerns of these firms biasing our results. Our main results are unchanged when excluding opt-out firms. We also note that several changes in compliance are artifacts of slightly different definitions of director independence between the stock exchanges and RiskMetrics (see footnote 6).

[21] In a similar vein, Armstrong et al. (2014) use a sample of 453 firms that are non-compliant with the 2003 listing standard change requiring all firms to have a majority-independent board of directors. Of these non-compliant firms, 68 percent increased their board size to gain compliance by the end of the transition period.

tandem, these findings are inconsistent with boards primarily shifting independent directors around to achieve compliance with the 1999 listing standard change.

In Table 2, Panel D, we present changes in the number of financial experts on the audit committee between 1998 and 2002. If firms moved existing independent directors around to gain compliance with the 1999 rule, then we expect to see little to no increase in the number of qualified directors sitting on the audit committee. This assertion is based on the assumption that boards are most likely to place directors with financial expertise on the audit committee. Consistent with Panel C, we see little to no evidence that non-compliant firms gained compliance by moving existing independent directors around. Specifically, we note that both compliant and non-compliant firms showed similar increases in placing financial experts on their audit committees, a phenomenon consistent with all firms seeking improvements in audit committee quality.

Table 3 contains summary statistics on the control variables. The average market value of equity is $6.4 billion, which is larger than the median firm size of $1.2 billion, suggesting that our sample is positively skewed by the addition of some large firms. The mean and median values are substantially greater than the $1.7 billion ($132 million) mean (median) we calculate (untabulated) for the full Compustat/CRSP universe (financial firms excluded). The mean and median book-to-market ratios are 0.51 and 0.44, comparable to 0.51 and 0.43 for the Compustat/CRSP sample (untabulated). Consistent with our sample being skewed toward larger firms, over 98 percent of firms have a Big 5 external auditor. The majority of firms (70 percent) have stock traded on the NYSE, followed by firms with stock traded on the NASDAQ (27 percent) and the AMEX (3 percent). Of the board governance variables, we note that only 38.1 percent of firms had at least one accounting financial expert on their audit committee in 1998.

Regression Results for Equations (2a) to (3b)

Table 4 presents regression results. Columns (1) and (2) examine differences by whether the firm was in compliance in 1998. In Column (1), the coefficient on *OOC* is insignificantly negative at the 0.10 level. The coefficients on *AudInd* and *AudSize* in Column (2) are insignificantly different from zero. These findings suggest that, *ceteris paribus,* the market placed little to no net benefit (or cost) on the 100 percent independence or on the minimum three-person requirement.

Columns (3) to (6) of Table 4 test whether the market reaction surrounding non-compliant firms depends on the perceived benefits of ultimate compliance. The key variables are the interactive terms between the benefits (*Fraud, Restatement, EM*) and the initial compliance variables (*OOC* in Columns (3) and (4); *AudSize* and *AudInd* in Columns (5) and (6)). All coefficients on the interactive terms are statistically insignificant at conventional levels. Thus, the market did not react more positively (or negatively) to whether out-of-compliance firms had better or poorer financial reporting.

In Columns (7) to (10) of Table 4, we add the cost variables and their interactive terms to our estimations. For all specifications, the coefficient on *Ind2* is significantly negative, consistent with investors placing a net cost on firms with only two independent directors. To further examine the source of this cost, we interact *Ind2* with *Fraud, Restatement,* and *EM*. The coefficients on these interactive terms are insignificantly different from zero, suggesting that the perceived net costs from moving away from two independent directors are not related to financial reporting concerns, but to other factors, for example, search costs (Nguyen and Nielsen 2010), higher director compensation costs (Linn and Park 2005), or indirect costs of moving away from an optimal board structure (Fama and Jensen 1983).

For all specifications, the coefficient on *Size* is insignificantly different from zero. Similarly, interacting *Size* with the compliance variables yields insignificant coefficients. These results are inconsistent with firm size being associated with compliance costs.

If the market perceives the firm's audit committee independence as being endogenously determined in an optimal way, then the coefficient on the interactive term, $AudInd \times OptimalAudInd$ will be negative, as this represents the group of firms the regulation will be forcing out of equilibrium. This does not appear to be the case. The coefficients on *OptimalAudInd* and $AudInd \times OptimalAudInd$ are insignificantly different from zero. These findings support the view that the market is indifferent to whether the firm's audit committee was in or out of compliance with the 100 percent independence rule.

All inferences from the regression results hold after controlling for other corporate governance, exchange, and auditor effects. Most control variables in Table 4 are insignificantly different from zero. The exceptions are *Busy AC* in Columns (9) and (10) and *NYSE,* the latter being significantly positive in all specifications.

In summary, we find no evidence that the market placed any net benefit on firms moving to having audit committees with 100 percent independent directors and/or with at least three members. In contrast, there is some evidence of a direct cost to compliance. Specifically, the market reaction to firms with only two independent directors in 1998 is significantly lower than to their counterparts. Overall, our event study findings are inconsistent with an entrenchment theory of corporate governance with respect to moving non-compliant firms to maintaining an audit committee with at least three independent directors. Instead, they are consistent with a market theory of corporate governance, suggesting that, on average, firms endogenously choose audit committee structures to maximize firm value.

TABLE 3

Descriptive Statistics

Variable	Mean	25th Pctl.	50th Pctl.	75th Pctl.	Std. Dev.
Benefit and Cost Variables					
MarketCap ($ mm)	6,366.790	433.547	1,150.250	3,717.860	21,388.870
Size	7.202	6.072	7.048	8.221	1.611
Book-to-Market	0.511	0.257	0.443	0.655	0.445
EM	0.010	−0.029	−0.008	0.026	0.071
Restatement	0.012	0.000	0.000	0.000	0.107
Fraud	0.006	0.000	0.000	0.000	0.079
OptimalAudInd	0.508	0.000	1.000	1.000	0.500
Governance Controls					
Financial Expert	0.381	0.000	0.000	1.000	0.486
CEO Duality	0.702	0.000	1.000	1.000	0.457
Busy AC	0.036	0.000	0.000	0.000	0.186
AC Ownership	0.015	0.000	0.002	0.006	0.077
AC Tenure	8.431	5.000	7.464	10.667	4.928
NYSE	0.699	0.000	1.000	1.000	0.459
Big Five	0.982	1.000	1.000	1.000	0.132
Additional Controls for Reporting Quality					
Firm Age	20.102	8.000	20.000	32.000	12.074
Sales Growth	0.127	−0.013	0.071	0.193	0.393
Loss	0.194	0.000	0.000	0.000	0.396
Leverage	0.273	0.120	0.276	0.385	0.196
Restructuring	0.011	0.000	0.000	0.000	0.103
Litigation	0.230	0.000	0.000	0.000	0.421
CFO	0.110	0.062	0.104	0.160	0.104
No Intangibles	0.563	0.000	1.000	1.000	0.496
Capital Intensity	0.367	0.179	0.308	0.546	0.236

This table presents descriptive statistics for the sample prior to Event #1. These variables are measured on the last day of the firm's fiscal year prior to the Levitt speech. The sample consists of 1,122 distinct firms.
See Table 2 for other variable definitions.

Variable Definitions:
MarketCap = market value of equity, measured as price times the number of shares of common stock;
Size = natural log transformation of *MarketCap;*
Book-to-Market = the book value of equity divided by the market value of equity;
EM = earnings management (see Appendix B);
Restatement = indicator if firm recorded an earnings restatement from 1996 through 1998;
Fraud = indicator if the restatement was fraud-related;
OptimalAudInd = indicator if firm's audit committee independence was chosen in an optimal way (see Appendix C);
Financial Expert = indicator if firm has an accounting financial expert on its audit committee;
CEO Duality = indicator if CEO is also the Chair of the Board of Directors;
Busy AC = indicator if majority of independent directors on audit committee serve on more than three boards;
AC Ownership = percent of firm's stock owned by all audit committee members;
AC Tenure = average tenure each member has served on the board;
NYSE = indicator if firm is listed on the New York Stock Exchange;
Big Five = indicator if firm is audited by a Big 5 auditor (Arthur Andersen, Ernst & Young, Deloitte, KPMG, and PricewaterhouseCoopers);
Firm Age = natural log of the number of years the firm has Compustat data;
Sales Growth = change in revenues from year $t-1$ to year t divided by revenues in year $t-1$;
Loss = indicator whether the firm had net losses in either of the last two years;
Leverage = total liabilities divided by total assets;
Restructuring = indicator if firm was involved in a restructuring (coded as 1 if following Compustat data are non-zero: 376, 377, 378, or 379);
Litigation = indicator if firm is in a litigious industry (coded as 1 if firm's SIC codes are 2833 to 2836, 3570 to 3577, 3600 to 3674, 5200 to 5961, and 7370);
CFO = cash flows from operations divided by total assets;
No Intangibles = indicator if the company has no intangible assets (coded as 1 if Compustat XAD + XRD = 0); and
Capital Intensity = PP&E divided by total assets.

TABLE 4

Cross-Sectional Regressions of Cumulative Abnormal Returns on Non-Compliance, Financial Reporting Quality, and Costs of Compliance

	By Compliance		By Compliance and Benefits				By Compliance, Benefits, and Costs			
	(1)	(2)	(3) Restate-ment	(4) Fraud Only	(5) Restate-ment	(6) Fraud Only	(7) Restate-ment	(8) Fraud Only	(9) Restate-ment	(10) Fraud Only
Intercept	0.038	0.015	0.011	0.012	−0.007	−0.010	0.144	0.137	0.021	0.016
	[0.271]	[0.281]	[0.268]	[0.267]	[0.279]	[0.278]	[0.306]	[0.306]	[0.319]	[0.319]
OOC	−0.044		−0.034	−0.035			−0.106	−0.100		
	[0.051]		[0.050]	[0.050]			[0.247]	[0.248]		
AudInd		0.010			0.018	0.017			0.112	0.111
		[0.049]			[0.049]	[0.049]			[0.246]	[0.246]
AudSize		−0.015			−0.012	−0.010			0.291	0.293
		[0.086]			[0.085]	[0.085]			[0.418]	[0.419]
EM			0.237	0.216	0.204	0.189	0.184	0.166	0.215	0.197
			[0.826]	[0.828]	[0.778]	[0.780]	[0.826]	[0.827]	[0.780]	[0.781]
OOC × *EM*			0.112	0.169			−0.239	−0.210		
			[1.007]	[1.013]			[1.095]	[1.105]		
AudInd × *EM*					0.320	0.405			−0.134	−0.086
					[0.955]	[0.959]			[1.053]	[1.062]
AudSize × *EM*					−0.062	−0.080			−0.470	−0.457
					[1.315]	[1.312]			[1.338]	[1.334]
Restatement (Fraud)			0.289	0.691	0.318	0.722	0.293	0.678	0.284	0.707
			[0.444]	[0.820]	[0.443]	[0.820]	[0.444]	[0.820]	[0.444]	[0.820]
*OOC***Restatement (Fraud)*			−0.753	−1.304			−0.599	−1.076		
			[0.592]	[0.946]			[0.689]	[1.134]		
AudInd × *Restatement* (*Fraud*)					−0.885	−1.442			−0.699	−1.180
					[0.668]	[0.988]			[0.748]	[1.136]
AudSize × *Restatement* (*Fraud*)					−0.592	−1.159			−0.229	−0.621
					[0.820]	[1.345]			[0.874]	[1.625]
Ind2							−0.148*	−0.145*	−0.196**	−0.194**
							[0.087]	[0.087]	[0.097]	[0.097]
Ind2 × *EM*							1.913	1.900	1.980	1.962
							[1.354]	[1.364]	[1.381]	[1.388]
Ind2 × *Restatement* (*Fraud*)							−0.511	−0.419	−0.571	−0.543
							[0.835]	[1.049]	[0.820]	[1.083]
OOC × *Size*							0.013	0.012		
							[0.031]	[0.031]		
AudInd × *Size*									−0.016	−0.016
									[0.030]	[0.030]
AudSize × *Size*									−0.038	−0.038
									[0.059]	[0.059]
OptimalAudInd									−0.090	−0.092
									[0.073]	[0.073]
AudInd × *OptimalAudInd*									0.098	0.099
									[0.118]	[0.118]
Financial Expert	−0.025	−0.024	−0.021	−0.027	−0.022	−0.027	−0.026	−0.031	−0.028	−0.032
	[0.049]	[0.050]	[0.049]	[0.050]	[0.049]	[0.050]	[0.049]	[0.049]	[0.049]	[0.050]
CEO Duality	0.018	0.020	0.018	0.018	0.019	0.019	0.021	0.021	0.023	0.024
	[0.056]	[0.056]	[0.056]	[0.056]	[0.056]	[0.056]	[0.057]	[0.057]	[0.056]	[0.056]
Busy AC	−0.183	−0.180	−0.180	−0.180	−0.178	−0.178	−0.192	−0.193	−0.201*	−0.201*
	[0.119]	[0.119]	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]
AC Ownership	0.112	0.074	0.104	0.108	0.060	0.064	0.069	0.073	0.029	0.033
	[0.252]	[0.251]	[0.252]	[0.252]	[0.250]	[0.250]	[0.249]	[0.248]	[0.244]	[0.243]

(continued on next page)

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TABLE 4 (continued)

	By Compliance		By Compliance and Benefits				By Compliance, Benefits, and Costs			
	(1)	(2)	(3) Restate-ment	(4) Fraud Only	(5) Restate-ment	(6) Fraud Only	(7) Restate-ment	(8) Fraud Only	(9) Restate-ment	(10) Fraud Only
AC Tenure	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
NYSE	0.196*	0.202**	0.195*	0.203**	0.200**	0.209**	0.183*	0.189*	0.189*	0.194*
	[0.102]	[0.100]	[0.102]	[0.103]	[0.100]	[0.101]	[0.102]	[0.103]	[0.100]	[0.101]
Big Five	−0.050	−0.048	−0.046	−0.048	−0.044	−0.045	−0.077	−0.078	−0.055	−0.056
	[0.180]	[0.183]	[0.181]	[0.181]	[0.183]	[0.183]	[0.182]	[0.182]	[0.182]	[0.182]
Size	−0.009	−0.010	−0.007	−0.007	−0.008	−0.008	−0.018	−0.017	0.000	0.000
	[0.025]	[0.025]	[0.024]	[0.024]	[0.025]	[0.025]	[0.030]	[0.030]	[0.030]	[0.030]
Book-to-Market	−0.098	−0.099	−0.091	−0.091	−0.093	−0.093	−0.102	−0.101	−0.107	−0.107
	[0.096]	[0.096]	[0.098]	[0.098]	[0.098]	[0.098]	[0.099]	[0.099]	[0.099]	[0.099]

***, **, * Denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tailed), respectively.
This table presents regression coefficients and standard errors [in brackets] for regressions of abnormal stock returns on non-compliance, financial reporting quality, and costs of compliance. The sample consists of 1,122 distinct firms, covering 504 days from January 1, 1998 through December 31, 1999.
See Tables 2 and 3 for variable definitions.

Possible Alternative Explanation: Rigor of Enforcement

Our findings are consistent with the market viewing the new audit committee regulations as providing little to no value to shareholders. However, an alternative explanation is that the enforcement of the new standards will be lax, resulting in the market being unsure of whether out-of-compliance firms will change their audit committees to adhere to the new regulations. That is, moving out-of-compliance firms into compliance, in fact, may be value-enhancing, but if the exchanges are lax in enforcing the new rules, then the market will treat the passage of the regulation as a non-event.

We have several reasons to believe this may be a plausible explanation. As Table 2, Panel A illustrates, in 2002 (prior to SOX), only 67.3 percent of firms in our sample were compliant with the dual regulation of independence and size; 70.8 percent had a fully independent audit committee; and 95.9 percent had at least three directors on their audit committees. Thus, many firms did not achieve compliance within the 18-month transition period. Further, the enforcement of listing standards falls to the exchanges themselves. If a firm is in violation of a listing standard, then the exchange has the option to delist that firm. The delisting process, however, can encompass many steps and could last for several years.[22]

To examine this alternative explanation, we redo our event study analysis, but instead of using the events leading up to the passage of the 1999 regulation, we use the dates leading up to the passage of SOX as our event dates. As previously stated, the audit committee independence/size rules in the 1999 listing standard became part of federal law under SOX in 2002.[23] We propose that firms have less flexibility in violating SOX requirements, since violators would now be subject to both SEC enforcement actions and shareholder class action suits. Thus, if enforcement is behind our insignificant results on compliance, then we should observe significantly positive coefficients on firms out of compliance prior to SOX.

One econometric problem with doing an event study around the passage of SOX is identifying which dates to use. Zhang (2007) and Li et al. (2008), for example, have few overlapping dates in their event studies. To account for this difficulty without entering the fray as to which dates are appropriate, we use their event dates separately in two separate sets of regression analyses. Table 5, Panel A contains the event dates for both papers. We define *OOC, AudInd,* and *AudSize* relative to E1 for each estimation.

Table 5, Panel B has the regression results. *CAR* is the two-day abnormal return accumulated around the eight (17) dates from Li et al. (2008) (Zhang 2007). Using the Li et al. (2008) dates, we find, at the 0.10 levels, significantly negative coefficients on *OOC* in Column (1) and on *AudInd* in Column (2), as well as an insignificant coefficient on *AudSize* in Column

[22] Using the NASDAQ as an example, if a firm is in violation of a listing standard, then the NASDAQ will send a letter to the firm concerning the violation. The firm can either remedy the violation or it can request a hearing with the exchange. The hearing usually results in a recommendation to the firm about a time frame to amend the violation, which could result in the firm remaining in violation for a significant amount of time.

[23] The SEC finalized Section 301 on April 25, 2003, giving firms until the earlier of their first annual shareholders meeting after January 15, 2004 or October 31, 2004 to fully comply (see SEC Release Nos. 33-8220 and 34-47654 at: https://www.sec.gov/rules/final/33-8220.htm).

TABLE 5

Non-Compliance with SOX

Panel A: Event Dates Leading Up to SOX: All Dates are for the Year 2002

Li, Pincus and Rego (2008)		Zhang (2007)	
		E1	Jan. 17
		E2	Feb. 2
		E3	Feb. 13
		E4	Feb. 28
		E5	Mar. 7
		E6	Mar. 26
		E7	Apr. 11
		E8	Apr. 16
		E9	Apr. 24, Apr. 25
		E10	May 8
		E11	June 11
		E12	June 18
E1	June 25	E13	June 25
E2	June 26, June 27		
E3	July 8, July 9, July 10, July 11, July 12	E14	July 8, July 9, July 10, July 11, July 12
E4	July 15, July 16, July 17	E15	July 15, July 16
		E16	July 18, July 19, July 20, July 23
E5	July 24	E17	July 24, July 25
E6	July 25, July 26		
E7	July 29, July 30		
E8	Aug. 14, Aug. 15		

Panel B: Regression Results on Non-Compliance with Audit Committee Requirements in SOX

	Using Li et al. (2008) Dates		Using Zhang (2007) Dates	
Portfolios	**(1)**	**(2)**	**(3)**	**(4)**
Constant	−0.024	−0.025	−0.013	−0.015
	[0.056]	[0.056]	[0.051]	[0.050]
OOC	−0.075*		0.023	
	[0.042]		[0.035]	
AudInd		−0.080*		0.012
		[0.042]		[0.039]
AudSize		−0.030		0.076
		[0.091]		[0.056]

***, **, * Denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tailed), respectively. Standard errors are in brackets.

Variable Definitions:
OOC = indicator representing if the audit committee is out of compliance with both the 100 percent independent and three-person minimum requirement prior to E1;
AudInd = indicator representing if the audit committee is out of compliance with the 100 percent independence rule prior to E1; and
AudSize = indicator representing if the audit committee is out of compliance with the minimum three-person requirement prior to E1.

(2). Using the Zhang (2007) dates, all coefficients are insignificantly different from zero. These findings, among other interpretations, support the view that our regression results for the dates leading up to the 1999 regulation are not due to enforcement issues. That is, under both enforcement regimes, we find no evidence of positive shareholder reaction for firms that are out of compliance prior to the passage of the new audit committee composition regulations.

VII. DIFFERENCE-IN-DIFFERENCES REGRESSIONS

In this section, we take a different approach to assessing the benefits of firms changing their audit committee structures to adhere to the new 1999 regulation. Instead of using market returns as our metric of net benefits or costs, we estimate difference-

in-differences (DiD) regressions for several output variables over pre- and post-transition time periods. An advantage of using this approach is that we need not assume the market fully understood the *ex post* implications of the regulatory changes over the time period leading up to the listing standard's adoption. Instead, we measure whether desired changes, for example, less earnings management or fewer restatements, are seen after the implementation of the 1999 rules. A disadvantage of this approach is that it relies on the assumption that the change in outcome variable is attributable to the regulation itself. We discuss this more fully below.

Difference-in-Differences Methodology

We estimate the following models of accounting restatements, fraudulent restatements, and earnings management:

$$Pr(Restatement_i = 1) = \gamma_0 + \gamma_1 OOC_i + \gamma_2 Post + \gamma_3 OOC_i \times Post + Controls + \mu_i \quad (4)$$

$$Pr(Fraud_i = 1) = \gamma_0 + \gamma_1 OOC_i + \gamma_2 Post + \gamma_3 OOC_i \times Post + Controls + \mu_i \quad (5)$$

$$EM_i = \gamma_0 + \gamma_1 OOC_i + \gamma_2 Post + \gamma_3 OOC_i \times Post + Controls + \mu_i \quad (6)$$

The dependent variables are whether the firm had a restatement, a fraudulent restatement, and our measure of discretionary accruals. For Equations (4) to (6), out-of-compliance firms ($OOC = 1$) comprise the treatment group, and firms already in compliance ($OOC = 0$) are the control sample. We also break *OOC* into *AudInd* and *AudSize* and report results with these two variables replacing *OOC*.

Similar to Lennox (2016), who does DiD regressions surrounding the enactment of a PCAOB ruling, we divide our timeline into a transition period, a pre-transition period, and a post-transition period. The three key dates surrounding the 1999 listing standard rule change are September 28, 1998, the Levitt speech date; December 31, 1999, the enactment date; and June 30, 2001, the final date to gain compliance. Based on these dates, we designate the transition period to be from September 28, 1998 to June 30, 2001 and exclude data from this period. The year ending prior to September 28, 1998 is in the pre-transition period, and the year beginning on June 30, 2001 is in the post-transition window. *Post* is a binary variable equal to 1 for post-transition dates, and 0 for pre-transition dates.

All dependent variables are measured over the pre- and post-transition periods. *OOC* is the compliance/non-compliance indicator in the pre-transition period. We include the alternative corporate governance measures from the event study as control variables. We also add an array of firm characteristics related to *EM,* restatements, and fraud-related restatements as additional control variables (see Cohen et al. [2014] for these variables). Summary statistics on these control variables are shown in the bottom of Table 3.

Assumptions Underlying Difference-in-Differences Regressions

In order for a DiD regression to be an appropriate methodology, several underlying assumptions must be satisfied. The first assumption is that the treatment group is subject to the listing standard, but the control group is not. Defining our treatment/control groups by compliance/non-compliance in 1998 ensures that this assumption is valid. Second, the pre- and post-transition periods should be balanced in terms of having the same firms in both periods (Atanasov and Black 2016). We limit our analyses to the 920 firms with required data in both time periods. Of these firms, 536 are out of compliance and 384 are in compliance on September 28, 1998. Third, the treatment, e.g., the 1999 regulation, should have a significant effect on the treatment group. As we showed in Table 2, Panel B, firms not complying with full independence in 1998 significantly increased their audit committee independence by 2002, and firms not in compliance with size significantly increased their audit committee size over the same time period. Fourth, the outcome variables for the treatment and control groups should exhibit parallel trends over the pre-transition period (Atanasov and Black 2016; Lennox 2016). To verify if this assumption is met in the data, we estimate the following regressions for each of the outcome variables:

$$Outcome\ Variable_i = \alpha + \beta T + \gamma(T \times OOC_i) + \varepsilon_i \quad (7)$$

$$Outcome\ Variable_i = \alpha + \beta T + \gamma(T \times AudInd_i) + \varepsilon_i \quad (8)$$

$$Outcome\ Variable_i = \alpha + \beta T + \gamma(T \times AudSize_i) + \varepsilon_i \quad (9)$$

T is a time-trend variable from 1996 through 1998. The test variable is the interactive term, for example, $T \times OOC$ in Equation (7); if there are parallel trends between treatment and control groups, then the coefficient, γ, will be insignificantly different from zero. Table 6 contains the coefficients and standard errors for *Restatement, Fraud,* and *EM*. In Panel A, γ is insignificantly

TABLE 6

Parallel Trend Tests

Panel A: *OOC*

	Restatement	***Fraud***	***EM***
Constant	−4.052***	−4.516***	0.002
	[0.426]	[0.579]	[0.005]
T	0.326**	0.168	0.002
	[0.155]	[0.214]	[0.002]
T × *OOC*	−0.137	0.024	0.001
	[0.120]	[0.168]	[0.001]
Observations	2,327	2,327	2,327
(Pseudo) R^2	0.006	0.001	0.001

Panel B: *AudInd*

	Restatement	***Fraud***	***EM***
Constant	−4.038***	−4.514***	0.002
	[0.430]	[0.580]	[0.005]
T	0.332**	0.191	0.003
	[0.147]	[0.213]	[0.002]
T × *AudInd*	−0.208*	−0.019	−0.000
	[0.125]	[0.165]	[0.001]
Observations	2,327	2,327	2,327
(Pseudo) R^2	0.010	0.001	0.001

Panel C: *AudSize*

	Restatement	**Fraud**	**EM**
Constant	−4.068***	−4.515***	0.002
	[0.424]	[0.578]	[0.005]
T	0.248	0.171	0.002
	[0.154]	[0.204]	[0.002]
T × *AudSize*	0.047	0.069	0.005***
	[0.163]	[0.216]	[0.002]
Observations	2,327	2,327	2,327
(Pseudo) R^2	0.003	0.002	0.001

***, **, * Denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tailed), respectively.
Standard errors are in brackets. *T* is a time-trend variable for 1995 through 1998.
The other variables are defined in Tables 2 and 3.

different from zero for each outcome variable, supporting parallel trends in the pre-event period. In Panel B, γ is insignificantly different from zero for the regressions on *Fraud* and *EM,* but weakly significant for the regression on *Restatement*. In Panel C, γ is insignificantly from zero for the regressions on *Restatement* and *Fraud*. We cannot, however, rule out parallel trends for *EM* and, therefore, caution the reader in interpreting the DiD relating audit committee size to earnings management. Fifth, the event should be a stand-alone event both in the transition period and the post-transition period. That is, other regulations or economic events should not be related to the outcome variables. This assumption most likely is not met by the time period we are studying (which is why our main analysis uses an event study approach). Over the transition period, the SEC initiated Reg FD, increasing the flow of private information to the public and most likely affecting financial reporting quality. After June 30, 2001, the beginning of our post-transition period, the Enron/WorldCom scandals were revealed, resulting in Congress passing SOX on July 31, 2002. To minimize the effects of the post-transition period scandals, we limit our post-event period to a one-year period from June 30, 2001 to June 29, 2002.

Empirical Results

Table 7 presents the DiD results. Columns (1) and (2) present the logistic results on restatements. Consistent with the GAO (2002), we observe an increase in restatements in the post-transition period. However, the insignificant coefficients on *Post* × *OOC* in Column (1) and the insignificant coefficients on *Post* × *AudInd* and *Post* × *AudSize* in Column (2) are consistent with the overall rise in restatements being unrelated to whether the firm was in or out of compliance with the audit committee composition rules in 1998. In Columns (3) and (4), we replace all restatements with only those that are fraud-related. The inferences are the same—we find no evidence of a difference in the number of fraud-related restatements between the pre- and post-transition period by whether the firm was in or out of compliance in 1998. In addition, none of the corporate governance control variables, most notably, *Financial Expert,* are significantly different from zero. Consistent with prior research, restatements and fraud-related restatements are significantly related to firm size and a reported accounting loss in the violation year. Fraud-related restatements are also significantly related to leverage and whether the firm had a restructuring charge in the violation year.

One possible explanation for the insignificant coefficients on our logistic models is that the empirical models do not adequately differentiate firms with restatements from firms without restatements, i.e., the logit regressions have little explanatory power. To assess the explanatory power of our logistic regressions in Table 7, we present the area under the ROC curves for Columns (1) through (4). Area under the ROC curves range from 0.691 to 0.793 for our restatement and fraud models. A value over 0.70 is considered acceptable model discrimination (Hosmer and Lemeshow 2000), and other studies predicting restatements report similar ROC values as ours (Price, Sharp, and Wood 2011; Cao, Myers, and Omer 2012).

In Table 7, Columns (5) and (6), our output variable is *EM*. Similar to our findings on restatements, there is no evidence of a difference in earnings management for out-of-compliance firms between the pre- and post-transition period. Consistent with prior studies, *EM* is positively associated with leverage, accounting losses, CFO, and whether the firm is in a litigious industry. *EM* is negatively associated with firm size and capital intensity.

In summary, the DiD results are consistent with our event study findings.

VIII. UNTABULATED EVENT STUDY ROBUSTNESS AND ADDITIONAL TESTS

We examine the robustness of our event study results to (1) contemporaneous earnings announcements on any of the eight event dates, (2) the inclusion of Event #3, and (3) the inclusion of past stock returns or earnings management.

We drop the 148 firms (13.2 percent of the sample) that had an earnings announcement on any event date window because our cross-sectional regression methodology over the cumulative dates does not allow for the inclusion of a separate earnings announcement indicator. Without these firms, the signs and magnitudes of the coefficients remain consistent with those reported in Table 4.

We redo the event study analysis excluding Event #3. We remove this event for two reasons. First, the announcement is taken from the BRC (1999), and may not have been known to many investors. Second, November 4, 1998 was the Wednesday following a mid-term election, thereby containing news about the newly elected U.S. Congress that could impact individual share prices. The inferences between the seven-event-date and eight-event-date regressions are very similar. We, therefore, conclude that our main statistical results and inferences are fairly robust to the inclusion (exclusion) of earnings announcements, news dissemination, and the news emanating from the 1998 U.S. congressional election results.

We address possible associations between past firm performance or past earnings management and current corporate governance structures (Hermalin and Weisbach 1998) by adding prior-year (1997) return on assets (*ROA*) and *EM* to Equations (2a) through (3b). We also interact each variable with *OOC, AudInd,* and *AudSize*. None of the coefficients are significantly different from zero. Although not a perfect test, these results alleviate concerns about our findings picking up correlations (for example, current reversals) of past performance or earnings management.

Last, we redo the analyses in Table 4 separately for each of the eight events in Table 1. We find weak evidence that out-of-compliance firms earn lower CARs around Event #2, and some evidence that the CAR for non-compliant firms is more positive around Event #8. However, when we segment the dates by periods, for example, early versus later dates (Events 1–3 versus Events 4–8), or pre- and post-BRC (1999) Report date (Events 1–5 versus Events 6–8), our implications remain the same.

IX. SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

In December 1999, the SEC instituted a new listing standard for NYSE and NASDAQ firms. Listed firms were now required to maintain fully independent audit committees with at least three members. In July 2002, the U.S. Congress legislated these standards through the Sarbanes-Oxley Act. Our research question is whether investors benefited from the 1999 new rule. Using both an event study and a difference-in-differences methodology, we find no evidence of higher market value or better financial reporting quality resulting from this rule. These findings are inconsistent with an entrenchment view of corporate

TABLE 7

Difference-in-Differences Tests

	Restatement		*Fraud*		*EM*	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	−4.247***	−4.548***	−6.419***	−7.272***	0.006	0.004
	[0.704]	[0.745]	[1.380]	[1.497]	[0.022]	[0.023]
OOC	−0.071		−0.199		−0.004	
	[0.329]		[0.506]		[0.004]	
AudInd		−0.270		−0.261		−0.006
		[0.341]		[0.532]		[0.004]
AudSize		0.716*		1.025		−0.005
		[0.406]		[0.660]		[0.007]
Post	1.280***	1.314***	0.533	0.665*	−0.004	−0.004
	[0.276]	[0.270]	[0.382]	[0.403]	[0.005]	[0.005]
Post × *OOC*	−0.342		−0.188		0.000	
	[0.354]		[0.523]		[0.007]	
Post × *AudInd*		−0.263		−0.606		−0.003
		[0.363]		[0.569]		[0.006]
Post × *AudSize*		−0.619		−0.162		0.010
		[0.410]		[0.591]		[0.012]
Financial Expert	−0.069	−0.054	−0.296	−0.257	−0.002	−0.002
	[0.185]	[0.187]	[0.297]	[0.304]	[0.003]	[0.003]
CEO Duality	0.010	0.014	0.285	0.310	−0.000	−0.000
	[0.204]	[0.205]	[0.358]	[0.368]	[0.004]	[0.004]
Busy AC	−1.192	−1.257*	−0.991	−1.134	0.004	0.003
	[0.730]	[0.714]	[0.991]	[0.913]	[0.008]	[0.008]
AC Ownership	−1.487	−1.015	−10.044	−8.277	−0.027	−0.024
	[3.011]	[2.693]	[12.882]	[11.421]	[0.027]	[0.027]
AC Tenure	−0.024	−0.022	−0.029	−0.027	0.000	0.001
	[0.024]	[0.024]	[0.042]	[0.042]	[0.000]	[0.000]
NYSE	−0.057	−0.042	−0.121	−0.041	−0.017***	−0.017***
	[0.233]	[0.239]	[0.423]	[0.450]	[0.005]	[0.005]
Big Five	−0.238	−0.234	−0.500	−0.487	0.009	0.009
	[0.331]	[0.333]	[0.593]	[0.600]	[0.009]	[0.009]
Size	0.187***	0.205***	0.309***	0.351***	−0.003*	−0.003*
	[0.060]	[0.061]	[0.099]	[0.100]	[0.002]	[0.002]
Leverage	0.631	0.722	2.431***	2.694***	0.054***	0.054***
	[0.514]	[0.503]	[0.676]	[0.631]	[0.016]	[0.016]
Loss	0.598***	0.582***	0.889***	0.818***	0.048***	0.047***
	[0.212]	[0.215]	[0.305]	[0.312]	[0.006]	[0.006]
Firm Age	−0.001	0.002	0.001	0.008		
	[0.009]	[0.009]	[0.013]	[0.013]		
Sales Growth	0.262	0.275	0.365	0.392		
	[0.248]	[0.249]	[0.359]	[0.362]		
Restructuring	−0.061	−0.068	0.689**	0.721**		
	[0.213]	[0.214]	[0.309]	[0.319]		
Litigation					0.015***	0.015***
					[0.005]	[0.005]
CFO					0.148***	0.148***
					[0.047]	[0.047]
No Intangibles					−0.001	−0.001
					[0.004]	[0.004]
Capital Intensity					−0.021**	−0.020**
					[0.010]	[0.010]
Book-to-Market					−0.004	−0.004
					[0.010]	[0.010]

(continued on next page)

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TABLE 7 (continued)

	Restatement		*Fraud*		*EM*	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Observations	1,840	1,840	1,840	1,840	1,498	1,498
(Pseudo) R^2	0.062	0.069	0.118	0.139	0.126	0.128
ROC Area	0.691	0.702	0.752	0.793		

***, **, * Denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tailed), respectively.

Variable Definitions:
Post = binary variable equal to 1 for the post-transition period (July 2001–June 2002), and 0 for the pre-transition period (September 1997–September 1998).

governance with respect to independence/size, but are consistent with a market view of firms endogenously choosing optimal audit committee size and/or director independence.

One suggestion for future research would be to determine the efficacy of other extant securities rules and regulations. Lennox (2016), for example, examines a PCAOB 2005 rule restricting auditors' tax services in order to strengthen auditor independence and improve audit quality, and finds a similar "no result" result as we do. The 2003 NYSE and NASDAQ listing standard changes requiring fully independent compensation and nominating committees might be an area of future inquiry.

Finally, in 2011, a U.S. Executive Order was issued that mandated all federal agencies to conduct cost-benefit analyses of existing rules and regulations. Our findings suggest that the SEC (and the U.S. Congress through SOX) may wish to reevaluate its economic rationale behind mandating all firms to adopt fully independent three-person audit committees.

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APPENDIX A

Sefcik and Thompson (1986) Cross-Section Regression Approach

The procedure involves three steps. First, form a J by P matrix, F, having a column of 1s and P-1 firm characteristics. These characteristics could be compliant with the regulation or firm size or earnings management, for example. This matrix is:

$$F = [1, f_{2j}, \ldots, f_{Pj}] \tag{A1}$$

where f_{pj} is the pth firm characteristic for firm j.

Second, create a J by P matrix of weights equal to $(\mathrm{F}'\mathrm{F})^{-1}\mathrm{F}'$ and create P portfolios of returns:

$$R_{pt} = W_p R_{jt} \tag{A2}$$

where W_p is the pth row of the $(\mathrm{F}'\mathrm{F})^{-1}\mathrm{F}'$ matrix and R_{it} is the J vector of an individual firm's security returns on day t.

Third, estimate P portfolio time-series regressions of the form:

$$R_{pt} = \alpha_p + \beta_{p1}(R_{mt} - R_{ft}) + \beta_{p2}SMD_t + \beta_{p3}HML_t + g_{pk}D_{kt} + \varepsilon_{pt} \tag{A3}$$

where R_{pt} is portfolio p of weighted firms on day t and the other variables are defined in Equation (1).

The estimate g_{pk} in each of the p regressions reflects the effect of the pth firm characteristic on the market reaction to the event D_{kt}. Sefcik and Thompson (1986) refer to the p regressions as a "stacked system" and liken the approach to Zellner's Seemingly Unrelated Regression framework.

APPENDIX B

Measuring Earnings Management (EM)

We assume the following accruals expectation model is:

$$TCA_{it}/TA_{it-1} = \beta_0 + \beta_1[1/TA_{it-1}] + \beta_2[CFO_{it-1}/TA_{it-1}] + \beta_3[CFO_{it}/TA_{it-1}] + \beta_4[CFO_{it+1}/TA_{it-1}] + \beta_5[\Delta REV_{it}/TA_{it-1}] + \beta_6[PPE_{it}/TA_{it-1}] + \varepsilon_{it} \tag{B1}$$

where TCA is total current accruals, calculated as Δcurrent assets minus Δcurrent liabilities minus Δcash plus Δshort-term debt; TA is total assets; CFO is cash flows from operations, ΔREV is annual change in revenues; and PPE is gross property, plant, and equipment. Equation (B1) is estimated for each two-digit SIC industry and year with a minimum of five observations. AAC is the absolute value of the firm's actual total current accrual minus the fitted accrual from Equation (B1). Following Kasznik (1999) and Klein (2002b), we adjust each firm's AAC by the median absolute value of AAC for a portfolio of Compustat firms that are in the same percentile of the standard deviation of total accruals. That is:

$$EM_i = AAC_{it} - Median\ AAC_{itp} \tag{B2}$$

where p is the portfolio of matched firms.

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APPENDIX C
Optimal versus Suboptimal Audit Committee Independence

We follow Bryan et al. (2013) and use the inverse Mills ratio from a probit selection model to determine whether it is optimal or suboptimal for boards to have 100 percent audit committee independence. First, we estimate the determinants of fully independent audit committees by estimating a variation of Klein's (2002a) model. Specifically:

$$Pr(100\%AudInd_i = 1) = \beta_0 + \beta_1 ln(BdSize)_i + \beta_{2\%}\%IndDir_i + \beta_3 M/B_i + \beta_4 Losses_i + \beta_5 Leverage_i + \beta_6 CEOonCC_i + \beta_7 5\%BlockonAC_i + \beta_8 IndDirOwn_i + \beta_9 ln(Assets)_i + \beta_{10} ln(1 + \#Analysts)_i + \varepsilon_i \quad (C1)$$

where *i* indicates firm *i; ln* is the natural log transformation; *100%AudInd* is a dummy indicating if a firm has a fully independent audit committee; *BdSize* is the number of board directors; *%IndDir* is the percentage of independent directors on the board; *M*/*B* is the market value of equity divided by the book value of equity; *Losses* is a dummy indicating if the firm incurred accounting losses in the last two consecutive years; *Leverage* is total liabilities divided by total assets; *CEOonCC* is an indicator if the CEO is the Chair of the compensation committee; *5%BlockonAC* is an indicator if at least one 5 percent outside blockholder sits on the audit committee; *IndDirOwn* is the percentage of total beneficial ownership by independent directors; *Assets* is the firm's total assets; and *#Analysts* is the number of analysts covering the firm (from the I/B/E/S database). The first nine independent variables are from Klein's (2002a) model. *#Analysts* is a proxy for the firm's information processing costs to independent directors, which has been shown to be inversely associated with the optimal proportion of independent directors (Duchin et al. 2010; Armstrong et al. 2014). Equation (C1) is estimated over the full year prior to the Levitt speech.

The coefficients and standard errors for our estimation of Equation (C1) are:

	Constant	***ln(BdSize)***	***%IndDir***	***M/B***	***Losses***	***Leverage***
Coefficient	−0.560*	−0.568***	4.136***	−0.005	−0.016	−0.075
Std. Error	(0.329)	(0.176)	(0.265)	(0.005)	(0.211)	(0.236)

	CEOonCC	***5%BlockonAC***	***IndDirOwn***	***ln(FirmSize)***	***ln(1+#Analyst)***	**Pseudo R^2**
Coefficient	0.014	−1.026***	0.590	−0.071	−0.017	0.263
Std. Error	(0.282)	(0.264)	(1.367)	(0.043)	(0.049)	

All coefficients have signs consistent with predictions in Klein (2002a) except *ln*(*BdSize*) and *IndDirOwn*. The coefficient on *IndDirOwn* is not significant, in contrast to Klein (2002a).

The inverse Mills ratio for firms with fully independent audit committees ($100\%AudInd_i = 1$) is defined as $\varphi(\beta'X)/\Phi(\beta'X)$; the ratio for firms with less than fully independent audit committees ($100\%AudInd_i = 0$) is defined as $-\varphi(\beta'X)/\{1 - \Phi(\beta'X)\}$, where $\beta'X$ is the fitted value from Equation (C1) and $\varphi(\cdot)$ and $\Phi(\cdot)$ denote standard normal cdf and pdf, respectively. The inverse Mills ratio is equivalent to the residuals from a probit regression and can be interpreted as the deviation from the optimal selection model (see Bryan et al. 2013). By construction, greater deviation from the optimal produces higher (more positive) values for firms with fully independent audit committees ($100\%AudInd_i = 1$) and lower (more negative) values for firms without ($100\%AudInd_i = 0$). Among the firms with fully independent audit committees ($100\%AudInd_i = 1$), those with an inverse Mills ratio below the group median are defined as having an optimal fully independent audit committee, and those with an inverse Mills ratio above the group median are defined as suboptimal (i.e., better off having a fully independent audit committee). For firms with less than fully independent audit committees ($100\%AudInd_i = 0$), those above the group median are defined as optimal and those below the group median are defined as suboptimal (i.e., better off not having a fully independent audit committee).

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