

Director Independence and Insider Trading

M.D. Beneish[∇], C.D. Marshall⁺, J. Yang[∇]

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Abstract

While prior work establishes criteria for assessing director independence by scrutinizing outside directors' professional and social connections, we examine the conditions under which outside directors' trading and ratification decisions are incrementally useful in assessing their independence. Because crises test the independence of boards, we investigate the CEO replacement decision in firms caught intentionally misreporting earnings. We predict and find that outside directors' selling that emulates selling by the CEO and inside directors makes them less willing to replace the CEO. Our findings derive from opportunistic rather than routine selling, and from collusive selling involving inside and outside board members rather than from selling by outside directors alone. We also predict and find that outside directors who ratify one or more value-destroying mergers in the misreporting period are less effective monitors. These results are robust to alternative measurements of opportunistic selling and to a comprehensive set of controls for the CEO replacement decision.

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[∇]Kelley School of Business, Indiana University, ⁺ Robins School of Business, University of Richmond. Corresponding Author: Kelley School of Business, Indiana University. Email: dbeneish@indiana.edu, Phone: 812-855-2628. Some of the results in the paper were previously circulated under the title "Why Do CEOs Survive Corporate Storms? Collusive Directors, Costly Replacement, and Legal Jeopardy." We have benefited from comments and suggestions by Mark Bagnoli, Jesse Fried, Nandini Gupta, Charles Hadlock, Dasol Kim, Todd Milbourn, Brian Miller, Shawn Mobbs, Adam Pritchard, Charles Trzcinka, Susan Watts, Xiaoyun Yu, and seminar participants at Indiana University, Purdue University, the American Law and Economics Association Annual Meeting 2012, and the 7th Corporate Finance Conference at Washington University in St. Louis. We thank Peter Demerjian for generously providing us with data on managerial ability, Andy Leone for data distinguishing innocuous from severe restatements within the GAO database, Hannah Bolte for her editorial help, and Jerry Chen, Craig Eich, Daniel Sungyeon Kim, and Hong-Kee Sul for their help on data collection.

I. Introduction

A central theme in corporate governance research is assessing the monitoring effectiveness of boards of directors. Because boards' deliberations are not observable, researchers relate measures of the level of board independence with observable outcomes of decisions where potential agency conflicts are more acute (e.g., CEO turnover, CEO compensation, and corporate restructuring).¹ Tests in prior studies are thus joint tests of monitoring effectiveness and of the validity of the board independence measure. As a consequence, the literature has examined increasingly more detailed classifications of director independence, and controlled for characteristics of CEOs (e.g., duality, founder status) that influence the board's monitoring ability.

The proxy for board independence has evolved through time. Early studies used the percentage of directors that were not internal managers: these outside directors were assumed not to collude with management to expropriate shareholder wealth because of reputational incentives (Fama and Jensen 1983). Subsequent studies have provided evidence that a subset of these outside directors are misclassified as independent. An independence assessment now includes an evaluation of where each outside director works (e.g., are they affiliated with significant customers or suppliers?), who appointed them (e.g., are they co-opted?), whether they cross-serve on boards (e.g., are they interlocked?), whether they are too "busy" (e.g., do they have sufficient time to monitor?) and whom they know (e.g., are they socially connected to the CEO?).

In this paper, we continue the practice but, rather than placing outside directors' professional and social life under a magnifying glass, we focus on outside directors' trading actions

¹ The underlying notion is that more independent boards are both more able and more willing to monitor the CEO. Researchers have recognized that board composition is endogenously determined, and shown both analytically and empirically that more independent boards are more likely to remove poorly performing CEOs (e.g., Weisbach 1988; Hermalin and Weisbach 1988), protect the wealth of shareholders in corporate restructuring transactions (e.g., Byrd and Hickman 1992; Brickley, Coles, and Terry 1994; Cotter, Shivdasani, and Zenner 1997), reduce the likelihood of financial statement fraud (e.g., Beasley 1996), and less likely to overpay CEOs (e.g., Core, Holthausen, and Larcker 1999).

and their ratification decisions. Outside directors are insiders from the standpoint of Section 16(a) of the Security and Exchange Act so their trading is directly observable in Form 4 and 5 filings with the SEC. We propose that opportunistic (or abnormal) selling by outside directors in advance of the revelation of bad news can impair their independence. Specifically, opportunistic selling by outside directors that emulates contemporaneous opportunistic selling by the CEO and other executive directors, suggests that these outside directors are (or appear to be) aligned with the CEO and other board insiders.² Ratification decisions are also observable, and we propose that outside directors who ratified value-destroying mergers in the period preceding the revelation of bad news will be similarly perceived as aligned with the CEO.

We predict that contemporaneous opportunistic selling and the ratification of value-destroying mergers make outside directors less willing to replace the CEO, because these actions suggest that outside directors are aligned with the CEO. Prior research on the theory of the firm and director turnover (Jensen 1993; Mace 1986; Farrell and Whidbee 2000) suggests that aligned directors are more likely to lose their board seats if the CEO is fired. We argue that aligned directors are unwilling to fire the CEO in order to retain their board seats. We propose this as the principal mechanism by which collusive selling and ratification of value-destroying mergers of outside directors reduce their monitoring effectiveness. A secondary mechanism is the expectation of regulatory, litigation, and reputational penalties. Outside directors prefer to avoid adverse publicity from the media, plaintiff's bar, or regulatory authorities. Thus, they have weaker

²In the remainder of the paper, we use the following interchangeably: (1) outside and non-executive directors, (2) inside and executive directors, and (3) opportunistic and abnormal insider selling. We further designate contemporaneous opportunistic selling by outside and inside directors as collusion or collusive selling. We believe the term collusion captures the phenomenon we observe: board members benefit through their selling to the detriment of a non-zero subset of shareholders and collusion can be implicit and need not be based on an actual agreement [e.g., conscious parallelism in oligopoly pricing]. Closer to the point of our paper, it can involve “misrepresenting the independence of the relationship between the colluding parties.” [<http://definitions.uslegal.com/c/collusion/>, accessed August 2012]

incentives to replace the CEO because CEO replacement may draw attention to their own opportunistic selling or to their ratification of economically deficient investments.

We test these propositions by investigating CEO retention in a sample of 427 misreporting firms that restate to correct financial statement fraud and irregularities in the period of 1993–2007. The context is propitious to such an evaluation because it combines poor performance, deliberate financial reporting manipulation, and insider trading. To explain, CEOs at firms that intentionally misreport earnings (often, to cover up bad performance) are either guilty of wrongdoing or guilty of ignorance. Failure to avoid bad performance and to prevent accounting irregularity provides strong incentive for outside directors to fire the CEO in order to rebuild the firm's and their own personal reputation. Prior work has indeed documented higher rates of forced CEO turnover in such firms relative to forced CEO turnover in the population. In addition, prior work has documented that CEOs, other top executives, and outside directors of misreporting firms often avoid losses by selling their firms' stock before the delinquent accounting is discovered (e.g., Beneish 1999; Li and Zhang 2006; Leone and Liu 2010; Ravina and Sapienza 2010). These studies have inferred that both executive and non-executive directors are aware of the misreporting.

Empirical leverage for our analyses comes from four sources. First, we measure opportunistic or abnormal selling. This is important, because we are interested in selling that is information-motivated rather than selling that occurs for liquidity, diversification, or tax reasons. Thus, we use proxies motivated by reference to legal decisions that have established that insider trading in suspicious amounts or at suspicious times is probative of intent to deceive (e.g., Ke, Huddart, and Petroni 2003; Beneish, Press, and Vargus 2012). We also follow Cohen, Malloy, and Pomorski (2012)'s method to classify trades as opportunistic or routine. Second, we draw on existing research to construct what is, to our knowledge, the most comprehensive empirical model

of the CEO retention decision. The model includes proxies for the costs of replacing CEOs (e.g., founder, managerial ability, the existence of possible successor on the board) and for the costs of retaining CEOs (e.g., AAER, litigation, settlement costs), in addition to several firm characteristics (e.g., prior performance, restatement severity) and corporate governance characteristics including board independence, board size, director age as well as the degree of social connectedness to the CEO and the level of information asymmetry between inside and outside board members. Third, following Karpoff, Lee, and Martin (2008a) we investigate CEOs in periods before, during and after the misreporting period, and are thus less likely to either miss the ousting of a CEO who is directly or indirectly responsible for its occurrence or to incorrectly attribute turnover to questionable accounting. Fourth, we analyze both a CEO Retention measure and an Adjusted CEO Retention measure. The CEO Retention measure is equivalent to one minus the CEO Turnover variable studied in prior work. The Adjusted CEO Retention measure takes into account situations in which we posit the CEO resignation is a window dressing exercise. We believe that founder-CEOs who resign from the CEO post but remain as board chairs are effectively retaining their leadership role in the firm. As such, we view these instances as misclassified CEO Turnover.³

Our analyses reveal the following. In terms of retention frequencies, we find that (230 out of 427) 54% of CEOs associated with intentional misreporting retain their jobs for at least one year after the market discovers the misreporting. This retention rate is in line with prior research. Further, the retention rate increases to 57% if we consider *leadership* rather than CEO changes.

³ Evans, Nagarajan, and Schloetzer (2010) study a similar phenomenon. They characterize a person who was removed from the CEO post but retained on the board for an extended period as “Retention Light.” They show that Retention Light firms are more likely (than CEO-exit firms) to select a CEO with relatively weak bargaining power. Moreover, Retention Light involving a non-founder CEO is negatively correlated with post-turnover financial performance. Their evidence suggests that firms which retain “light” have weaker governance, consistent with our suggestion that some founder CEO resignations are window-dressing exercises.

That is, in 14 firms, the founder/chairman gives up the CEO hat but remains on the board (usually as chair), effectively retaining command over the strategy and management of the firm. In terms of collusive actions, our results suggest the following. First, when outside directors emulate opportunistic selling by board insiders they are 15.1% more likely to retain the CEO. This result obtains for opportunistic rather than for routine selling, and for collusive selling involving inside and outside board members rather than from selling by outside directors alone. Second, we find that directors are 13.3% more likely to retain the CEO when they have ratified a merger during the testing period that resulted in a loss of shareholder wealth.

Our analyses incorporate a comprehensive list of controls and we find evidence consistent with prior literature: CEOs are more likely to retain their jobs in firms with less adverse performance, less severe accounting violations, and governance characteristics indicating less effective internal monitoring mechanisms (e.g., CEO and Chairman duality, large boards). Our results are robust to controlling for year and industry fixed effects. These results are also robust to incorporating the effects of sample selection: we estimate a Heckman selection model where restating firms are distinguished from the COMPUSTAT population using a model that captures risk, profitability, growth, and pricing characteristics.

The remainder of the paper appears in four sections. In section 2 we present our empirical predictions. Section 3 describes the data. Section 4 presents the results of our empirical tests, and Section 5 concludes.

2. Empirical Framework

Boards of directors can advise and monitor (hire, fire, and reward) top management. They consist of both insiders and outsiders, with outsiders performing tasks where agency problems are significant (compensation committee, audit committee, and nominating/governance committee). A

wave of financial scandals has raised questions as to whether boards are able to prevent managerial wrongdoing (U.S. Senate Committee on Governmental Affairs 2002). We consider whether outside directors' actions regarding the retention or dismissal of the CEO are consistent with their incentives to minimize employment and litigation losses. Outside directors can convey their determination to ensure future financial reporting quality by removing CEOs and/or CFOs either because these managers were involved in the questionable accounting or because they failed to effectively oversee the firm's accounting practices. Indeed, directors could lay the blame on CEOs, suggesting the latter controlled the flow of financial information to the board so as to prevent detection, and could emerge from an accounting crisis unscathed. Given these potential benefits and the large costs borne by shareholders, why do directors retain the CEO?⁴

Evidence in prior work on directors' employment losses after accounting scandals and litigation is mixed. For example, Agrawal, Jaffe, and Karpoff (1999) find no evidence of increased director turnover in fraud firms, while Srinivasan (2005) documents that outside directors (mainly those serving on the audit committee) are more likely to leave the board of the restating firm and to subsequently lose director seats at other firms. Helland (2006) finds that outside directors of firms that are sued actually experience an increase in the number of other board seats held following a lawsuit. In contrast, Fich and Shivdasani (2007) show that even though outside directors do not face abnormal turnover on the board of the sued firm, they experience a significant decline in other board seats held. Thus, it is unclear whether instances of financial fraud and litigation have adverse employment consequences on outside directors.

⁴ The revelation of restatements and fraud is associated with significantly adverse abnormal returns (Beneish 1999, -20% over three days (-1, +1); Karpoff, Lee, and Martin 2008b, -25% on the first trigger event and -51% across all events). In addition, firms that announce restatements due to irregularities lose 15–25% of their value in three months (Badertscher, Collins, and Lys 2008) and six months (Hennes, Leone, and Miller 2008) after the restatement becomes public.

There is some evidence of lost employment for the subset of outside directors viewed as aligned with the CEO. Farrell and Whidbee (2000) provide evidence of increased outside director turnover following *forced CEO succession*, especially among those directors who are closely aligned with the outgoing CEO. This suggests that outside directors who are aligned or connected are more likely to be replaced by an incoming CEO, consistent with “Mace (1986) and Jensen’s (1993) argument that directors have little incentive to remove a poorly performing CEO because they are faced with a higher probability of leaving the current board.” (page 599).⁵ As a result, we propose that two observable outside directors’ actions [collusive insider selling and merger ratifications] are indicative of their degree of alignment with current CEO, and influence their willingness to dismiss the CEO.

2.1 Abnormal or Opportunistic Insider Selling

2.1.1 Measuring Abnormal or Opportunistic Insider Selling

Prior research typically summarizes insider trading activity using a measure of net shares traded or net value transacted in a given period.⁶ These measures generally capture the direction of trading activity [e.g., net buying, net selling, or no trading], but do not distinguish information-motivated trading from diversification-, tax-, or liquidity-motivated trading. Perhaps as a consequence, many studies that examine insider trading activity suggest that insider open market purchases are informative but that insider open market sales are not (e.g., Lakonishok and Lee 2001; Jeng, Metrick, and Zeckhauser 2003). To explain, open market purchases are rare because there are many ways for an insider to accumulate shares (e.g., initial allocation, option exercises, stock awards). Thus, it is likely that open market purchases reflect private information, given the

⁵ Hermalin and Weisbach (1988) examine changes in board composition over 13 years for a sample of 142 firms and find no evidence of increased turnover of outside directors following CEO turnover absent external pressures.

⁶ Early insider trading research uses insider consensus on the direction of trading to infer the signal about future prospects metrics (Lorie and Niederhoffer 1968; Jaffe 1974; Finnerty 1976; Madden 1979). Insider consensus is no longer widely used because it ignores the magnitude of shares traded. For example, a firm would not be a consensus-selling firm if the CEO sold 20 million shares while the CFO purchased 200 shares.

availability of stock acquisition alternatives. On the other hand, selling on the open market is the main manner in which an insider can diversify and obtain liquidity, making it difficult to assess whether open market sales are informative. Indeed, studies that have attempted to identify information-motivated selling provide evidence that such insider sales are informative, often more so than insider purchases, and even after the SEC's adoption of rule 10b5-1 in October 2000 (Beneish and Vargus 2002; Jagolinzer 2009; Beneish, Press and Vargus 2012; Cohen, Malloy and Pomorski 2012).

We consider all transactions that are not options related. That is, in addition to open market purchases and sales (transaction codes "P" and "S"), we analyze bona fide gifts ("G") following the evidence in Yermack (2009), and also consider other acquisition or disposition ("J").⁷ Our results are similar whether we use open market transactions only (67% of all insider transactions reported by Thompson) or all non-option related transactions (80.1% of all transactions).

Our testing period begins one year prior to the later of the start of the misreporting period and the start of the tenure of the CEO who is accountable for the misreporting; it ends at the earlier of the end of the restatement period and the beginning of the CEO's tenure.⁸ We need to study information-driven trades in the testing period to determine whether outside directors are connected or aligned with the CEO and inside directors via their insider selling. By outside directors we mean directors who are not currently (nor have ever been) top officers of the company during our sample period. Our inside directors include directors who have at least one of the

⁷ Yermack (2009) provides evidence of opportunism in the timing of gifts of stock to a foundation or to charity. Because these gifts represent information-motivated disposals, we also consider gifts as part of selling by insiders.

⁸ If a CEO leaves office in the 18-month period around the restatement announcement date (-6, +12), we treat the CEO as accountable and dismissed. In addition, because the 18-month period is arbitrary, we checked all CEOs "terminated" and "resigned" outside the (-6, +12) months window by reading 8-K filings or searching Factiva to see whether the dismissal was restatement related. In the affirmative, we also coded those CEOs as accountable and dismissed. In cases where multiple CEOs' tenures overlap the restatement period, we designate as accountable the CEO who has the largest overlap and who has departed closest to the announcement date. We identify CFO turnover in a similar manner.

following titles: CEO, President, CFO, COO, CIO, and CTO. We do not include officers who are not directors because they do not have as much influence on the CEO turnover decision.

To isolate information-motivated selling, we consider three measures of abnormal selling. One measure compares trading in the testing period by board members to their trading in a prior period.⁹ This measure is motivated by reference legal decisions that have established that insider selling in suspicious amounts or at suspicious times is probative of bad faith and intent to deceive or defraud investors (*scienter*). However, the inference of *scienter* can be nullified by showing that such selling is “*consistent in timing and amount with a past pattern of sales*” (Freeman v. Decio 1978). This court-defined rule has been reaffirmed in insider trading litigation cases throughout our sample period (e.g., Apple Computer Securities Litigation 1989; Provenz v. Miller 1996; Wenger v. Lumisys, Inc., 1998; Blockbuster, Inc., Securities Litigation 2004). As a result, we view selling in the testing period that exceeds any selling in a prior period as abnormal. In essence, net selling (net shares traded, *NST*) can be computed as follows, over a given period T:

$$NST_{i,T} = \sum_{t=1}^T (\text{Shares Purchased}_{i,t} - \text{Shares Sold}_{i,t}),$$

where the sum is over each firm’s CEO, inside directors [including the CEO] and outside directors. To categorize any of these groups within firm *i* as an abnormal seller, we require each group to be a net seller in the testing period, and that their net selling exceeds their net shares traded in the prior period:

$$\text{Abnormal Selling} = 1 \text{ if } NST_{\text{Testing}} < 0 \text{ and } NST_{\text{Testing}} < NST_{\text{Prior}}, \text{ and } 0 \text{ otherwise.}$$

The second measure is the classification of trades as opportunistic or routine proposed by

⁹ To determine whether these net sellers during the testing period are *abnormal* sellers, we assess whether they sell more in the testing period than in two benchmark periods: (1) the period of equal length that immediately precedes the testing period, and (2) the two-year period preceding the beginning of the testing period.

Cohen, Malloy, and Pomorski (2012). If an insider trades in the same month of the year (e.g., in the month following bonus grant) for at least three years prior to our testing period, we classify the insider's trades in that month as routine trades. The insider's trades in all other months are classified as opportunistic trades. We then aggregate the trades of all insiders in each of the three categories: outside directors, the CEO, and inside directors including the CEO. Cohen, Malloy, and Pomorski provide evidence that routine selling is likely driven by liquidity or diversification motives, whereas opportunistic trades are likely information-driven. They show that only opportunistic inside trades are profitable and that these opportunistic trades predict future news announcements such as analyst recommendations, analyst forecasts, management forecasts, and earnings announcements. They further show that opportunistic selling drops following waves of SEC insider trading enforcement.

Our third measure is based on the insider trading intensity (*ITI*) measure proposed by John and Lang (1991). John and Lang suggest three alternative ratio computations that divide the difference between purchases and sales by their sum (e.g., $[\text{purchases}-\text{sales}]/[\text{purchases}+\text{sales}]$). The three alternative computations are (1) $(NP-NS)/(NP+NS)$ where $NP(NS)$ is the number of purchase (sales) transactions by insiders, (2) $(NSP-NSS)/(NSP+NSS)$ where $NSP(NSS)$ is the number of shares purchased (sold) by insiders, and (3) $(VSP-VSS)/(VSP+VSS)$ where $VSP(VSS)$ is the value of shares purchased (sold) by insiders, all in the testing period.

2.1.2 Collusive Abnormal Insider Selling

We consider the role of directors' equity incentives by examining whether outside directors opportunistically sell their equity contingent wealth during the period over which earnings are misreported. There is evidence that CEOs and outside directors sell their equity contingent wealth during periods in which earnings are overstated, and profit by doing so in

advance of the public discovery (e.g., Beneish 1999; Li and Zhang 2006; Leone and Liu 2010, Ravina and Sapienza 2010). In the absence of trading on their own account, outside directors have incentives to replace the CEO when they observe the CEO and other executive directors avoiding losses by opportunistically selling before the revelation of the questionable accounting. However, if their own opportunistic selling emulates contemporaneous opportunistic selling by the CEO and other executive directors, outside directors have incentives to retain the CEO because their contemporaneous opportunistic trading suggests that they are aligned (or at a minimum, they would appear as aligned to an outside observer) with the CEO and other board insiders. Thus, we argue that directors who are aligned and, simply expect to be perceived as aligned with the CEO, are unwilling to fire the CEO because they are more likely to lose their board seat especially if the new CEO is hired from outside the firm (Farrell and Whidbee 2000). We view the CEO and outside directors' abnormal selling as a form of collusion and, in alternative form, predict that:

H₁. All else equal, the probability a CEO is retained for at least one year after the public discovers financial misreporting is higher if the accountable CEO, executive directors, and (conventionally independent) non-executive directors engage in abnormal insider selling over our testing period.

We test this hypothesis with measures of net selling, abnormal selling, opportunistic selling, and routine selling. Our measures examine three combinations of collusive trading between outside directors, the CEO, and inside directors. The three measures identify collusive insider selling with 1 (0 otherwise) if the members in each of the following sets are net sellers or abnormal net sellers: [outside directors, CEO]; [outside directors, inside directors]; [outside directors, CEO, non-CEO inside directors].

2.2 Value-Destroying Mergers

It is difficult to establish a link between outside directors and accounting manipulations. However, it is possible that firms engage in value-destroying mergers to gain degrees of freedom in manipulating earnings and provide the appearance of success (Jensen 2005; Schilit 2010). If this delays price declines and sustains overvaluation, the ratification of such mergers allows directors to sell their stock and thus suggests an additional degree of connectedness between directors and the CEO. In addition, a large literature has documented that many acquisitions occur for the benefit of managers (e.g., Jensen 1986; Shleifer and Vishny 1988; Morck, Shleifer, and Vishny 1990; Grinstein and Hribar 2004; Harford and Li 2007) or because managers overestimate their ability to manage the target company and overpay for acquisitions (e.g., Roll 1986; Moeller, Schlingemann, and Stulz 2004).¹⁰ Although hubris is unlikely to apply, the private benefit explanation plausibly applies as directors who ratify mergers stand to benefit from higher compensation (e.g., Certo, Dalton, Dalton, and Lester 2007). Furthermore, there is evidence suggesting that outside directors are better-off going along with insider decisions as dissent can cost them their board seat (Agrawal and Chen 2011; Marshall 2011). For these reasons, we view directors who ratify value-destroying mergers during the testing period as aligned (and potentially colluding) with the CEO. In alternative form, we predict that:

H₂. All else equal, the probability a CEO is retained for at least one year after the public discovers financial misreporting is higher if value-destroying mergers occurred during our testing period.

¹⁰ This body of research shows that the wealth impact of an acquisition depends on the characteristics of the target (e.g., public vs. private), of the transaction (e.g., tender offer vs. merger, form of payment), and of the bidder (size, industry). In particular, acquisitions with the following characteristics are more likely to destroy value: (1) mergers (as opposed to tender offers — See Jensen and Ruback 1983; Bruner 2002; Moeller, Schlingemann, and Stulz 2004 for reviews), (2) public targets (as opposed to private targets — Fuller, Netter, and Stegemoller 2002; Moeller, Schlingemann, and Stulz 2004), (3) stock payment — acquisitions paid for with equity signal that the equity of the bidder is overvalued (Travlos 1987; Fuller, Netter, and Stegemoller 2002; Moeller, Schlingemann, and Stulz 2004), (4) large bidders (Moeller, Schlingemann, and Stulz 2004), and (5) bidders making diversifying acquisitions — unless the bidders operate in sin industries (Shleifer and Vishny 1988; Morck, Shleifer, and Vishny 1990; Beneish, Jansen, Lewis, and Stuart 2008).

We test this hypothesis by assessing whether the board ratified one or more value-destroying mergers over the intersection of the CEO tenure and the restatement period. We identify mergers using SDC Platinum, and assess the bidder wealth effect at announcement using CRSP data to compute three-day announcement abnormal returns relying on the market model as frequently done in prior studies.

2.3 Elements of the CEO Replacement Decision Drawn from Prior Research

We draw on the intuition in prior work that has examined CEO turnover. We include in the model proxies for the firm's economic costs of replacing the CEO, for the firm's expected costs of litigation associated with retaining the CEO, for characteristics of the restatement, and for financial and governance characteristics of the firm.

2.3.1 Costs of Replacement

Researchers have long recognized features of CEOs that make them costly to replace. We consider four proxies for the costs of replacing the CEO following the revelation of financial misrepresentation. The first proxy is the CEO's track record. A CEO who delivers superior performance during his tenure is more costly for shareholders to replace (e.g., Parrino 1997; Kaplan and Minton 2011; Burks 2010). For example, when Hewlett Packard fired Mark Hurd (due to his "close relationship with a former contractor") in August 2010, the stock price tumbled 8% in the first trading day after the announcement. We create a dummy variable that indicates *under-performance* relative to industry peers (returns one standard deviation below the industry median) in the period before the restatement.

Similarly, with higher managerial talent and ability, a CEO is more costly to replace. We rely on the ability measure introduced by Demerjian, Lev, and McVay (2012) that provides a

means of assessing managerial ability independently of firm performance.¹¹ Using these authors' measure, we rank each firm within its two-digit SIC code in each year, and treat CEOs of firms in the top three deciles of their industry as having higher managerial ability.

A third measure, used in prior work, is an indicator of whether the CEO is also a *founder*. CEOs who are also founders are more entrenched and/or more valuable. This makes them more costly to replace and, as has been shown in prior work, they tend to be retained more often (e.g., Parrino 1997; Adams, Almeida, and Ferreira 2005; Leone and Liu 2010).¹² A CEO is also more costly to replace if there is no succession plan with readily available internal candidates. Research has long recognized that the availability of qualified internal candidates who are ready to run the business makes CEO replacement less costly (e.g., Hermalin and Weisbach 1988). More recent work by Mobbs (2010) shows that with the presence of executive directors who also hold outside board seats (*certified inside directors*), firms' forced CEO turnover decisions are more sensitive to accounting performance. Masulis and Mobbs (2011) show that firms with these CIDs make better investment, financing, and reporting decisions, and have better operating performance and market to book ratios, especially when board monitoring is difficult. The fourth measure is a dummy

¹¹ Demerjian, Lev, and McVay's measure is based on managers' efficiency in transforming corporate resources to revenues relative to their industry peers with adjustments made to isolate the effect of managerial ability. Demerjian, Lev, and McVay (2012) suggest that more able managers are those who — better understand technology and industry trends, reliably predict product demand, invest in higher valued projects, and manage their employees more efficiently — generate higher revenue for a given level of resources, or conversely, minimize the resources used for a given level of revenue. These authors assess managers based on the efficiency with which they generate revenue using Data Envelopment Analysis (DEA) — an optimization program that determines the most efficient use of inputs based on a portfolio of inputs — to create an initial measure of the relative efficiency of the firm within its industry. The authors then modify the DEA-generated firm efficiency measure by purging it of key firm-specific characteristics that are expected to aid or hinder management's efforts and attribute the unexplained portion of firm efficiency to managerial ability.

¹² However, if the founder CEO also serves as Chairman of the Board, he/she is perhaps more willing to resign from the CEO post if the founder is able to retain control of the firm as board chair. We thus consider the interaction of the founder and the dual variable (described later). We posit that in those cases, the founder is more willing to give up the CEO hat and thus more likely to resign.

variable that identifies firms where there is at least one certified inside director, which makes the CEO replacement less costly.

2.3.2 Costs of Retention

The existence of a shareholder lawsuit is our main proxy for the costs of CEO retention. When shareholders file lawsuits against the firm, it is likely too costly for the firm to retain the CEO. We predict that directors are more likely to lay blame on the CFO and CEO and seek to restore credibility by firing the CFO, and if necessary, the CEO. In measuring costly retention of the CEO, litigation proceedings are gathered from Stanford's Securities Class Action clearinghouse. We match lawsuits and accounting restatements by firm name and require class action periods to overlap with restatement periods. We also record the amount of the cash settlement, and although these data are available less frequently we consider the magnitude of settlement as an alternative proxy. In addition, we include an indicator for the SEC's enforcement actions (AAER).

2.3.3 Financial and Governance Characteristics

We control for a number of firm performance characteristics (prior return performance, cash flow to price, industry-adjusted ROA), risk (bankruptcy score, stock return volatility), and characteristics of restatement severity (announcement return). We also control for various corporate governance measures that have been shown to affect CEO turnover in firms with poor performance. Prior research suggests that the sensitivity of CEO replacement to poor performance is higher in firms with a higher proportion of outside directors (Weisbach 1988; Jenter and Lewellen 2010), outside blockholders (Denis, Denis and Sarin 1997), high institutional shareholdings (Huson, Malatesta, and Parrino 2004), lower ownership stakes by officers and directors (Denis, Denis, and Sarin 1997), and smaller boards (Jenter and Lewellen 2010); in more

homogeneous industries (Parrino 1997); and after the passage of SOX (Kaplan and Minton 2011). We control for a list of similar factors in our analysis of the CEO retention decision.

We also consider the extent to which CEOs and directors have tied social networks because such connectedness has been shown to result in less effective corporate governance. For example, directors who are socially connected to CEOs tend to grant higher CEO compensation with lower pay for performance sensitivity, and replace poor-performing CEOs less frequently (Barnea and Guedj 2007; Hwang and Kim 2009; Liu 2008; Larcker, Richardson, Seary, and Tuna 2010).¹³ We predict that directors who are socially connected to the CEO are more likely to retain the CEO.

Finally, recent research suggests the importance of information asymmetry between insiders and outsiders as a determinant of monitoring effectiveness (Duchin, Matsusaka, and Ozbas 2010). We consider several information asymmetry proxies from prior work, including stock return volatility and analyst following.

3. Sample and Descriptive Statistics

The primary sources for the accounting restatements consist of the combination of Accounting and Auditing Enforcement Releases (AAER), General Accounting Office (GAO), and Audit Analytics databases. Stock return and accounting data are from CRSP and COMPUSTAT, respectively, and traditional measures of corporate governance are from Compact Disclosure and SEC Filings.

3.1 Restatement Sample

We draw our sample from three sources of accounting restatements. The first source includes firms that are charged with GAAP violations by the Securities and Exchange Commission

¹³ Using a sample of firms under SEC enforcement actions for financial fraud, Chidambaran, Kedia, and Prabhala (2010) show that shared educational and non-business antecedents between CEOs and directors increase fraud probability, while shared business connections reduce fraud probability.

in Accounting and Auditing Enforcement Releases. The second source consists of the subset of restatements related to irregularities from the GAO database. We rely on Hennes, Leone, and Miller (2008) to identify restatements due to accounting irregularities from the GAO database. The third source consists of the subset of restatements related to irregularities from Audit Analytics where we again implement the technology from Hennes, Leone, and Miller (2008) to identify irregularities. As such, all restatements in our sample involve intentional misstatements.

Panel A of Table 1 reveals that we identify 739 misstatements from the AAER, GAO, and Audit Analytics databases. We drop 173 firms that are not in COMPUSTAT, 120 firms with missing announcement returns in CRSP, and 19 firms that are not in the Thomson Financial Insider Trading database. Our final sample consists of 427 restatements of intentional misreporting over the period 1993 to 2007.

In Panel B of Table 1, we report the frequency of restatements and the fraction of CEO, adjusted CEO, and CFO retention in each year of our sample period. The retention rates are 53.9%, 57.1% and 37.2% for CEOs, adjusted CEOs, and CFOs up to one year after the restatement announcement. These retention rates are in line with prior research as is the pattern of increasing CEO and CFO retention over time.¹⁴ For example, Burks (2010) notes that CEO turnover in firms with restatements decreases after 2002 and suggests this is the case because the more recent restatements are less severe.

¹⁴ A large number of studies have examined turnover in firms whose executives have engaged in questionable accounting. In studies involving firms charged with accounting fraud by the SEC, CEO turnover rates range from 36% in Beneish (1999, Table 6) to 88% in Karpoff, Lee, and Martin (2008a, Table 5). In studies involving restatements, CEO turnover rates range from 8% for innocuous restatements to 49% for accounting irregularities (Hennes, Leone, and Miller 2008). In studies that examine restatements, the rates of turnover vary depending on the type of executive, the period in which the sample restatements occur, and the window over which turnover is assessed. For example, the evidence in Hennes, Leone, and Miller (2008) is based on a sample of restatements from 2002–2005, and turnover is assessed over a 13-month period surrounding the restatement announcement. One year after the restatement, Land (2006) estimates that 45% of firms restating between 1996 and 1999 have CEO turnover; two years after the restatement, Desai, Hogan, and Wilkins (2006) find 51% of restating firms in 1997–1998 have turnover of their CEO, Chairman, or President, and Arthaud-Day, Certo, Dalton, and Dalton (2006) observe CEO turnover in 43% and CFO turnover in 55% of their 1998–1999 restatements.

In Panel C, we compare our sample firms to the universe of firms in COMPUSTAT in terms of accounting performance and firm characteristics. We assign each firm in our restatement sample a percentile rank by comparing them to all firms in COMPUSTAT in the same year. The comparison shows that restating firms appear to be slightly larger in size and have higher sales growth, but have significantly poorer accounting performance (measured by profit margin, earnings to price, and cash flow).

3.2 CEO Retention

We hand collect CEO retention data from proxy filings and annual reports with the SEC and from press releases found in Factiva. We consider CEO turnover from six months before to twelve months after the date of the restatement announcement. To determine who is accountable for the misreporting, we track all CEOs from one year prior to the period in which the questionable/fraudulent accounting begins to two years subsequent to the public discovery of the misreporting. Firms often initiate investigations into accounting irregularities months before the restatement announcement is made. As a result, the firm may make a turnover decision before the restatement is made public. Identifying the correct CEO is important, and prior work has shown that focusing on the officers in place at the time of the announcement can lead to the erroneous conclusion that the board failed to terminate the CEO when in fact the previous CEO had been replaced before the restatement was made public (Karpoff, Lee, and Martin 2008a).

In addition to CEO retention, we seek to identify leadership retention. We propose that a founder CEO who also serves as Chairman of the Board, may be more willing to “resign” from the CEO post if the founder remains on the board because in these cases the founder effectively remains at the helm of the firm. We view these founder-chairman-CEO “resignations” with the founder remaining on the board as window-dressing exercises. They provide the appearance of

effective monitoring to the extent that dismissing the CEO can restore financial reporting credibility, reestablish organizational legitimacy, and avoid costly audit and litigation outcomes, (e.g., Arthaud-Day, Certo, Dalton, and Dalton 2006; Leone and Liu 2010). However, the dismissal of the CEO leaves the leadership of the firm unchanged suggesting that CEO turnover as conventionally measured misclassifies these founder-chairman-CEO “resignations.”

Figure 1 shows the timeline for the typical accounting restatement and CEO retention decision. The average restatement period covers 2.5 years. If the board decides to fire the CEO, the average departure date is 2.5 months following the public announcement of the accounting restatement. We assess directors’ trading and ratification decisions over the testing period, which begins one year prior to the later of the start of the misreporting and the tenure of the CEO who is accountable for the misreporting, and ends at the earlier of the last misreporting date and the last date of the CEO’s tenure.

3.3 Descriptive Statistics

We compare characteristics of the firms that retain the CEO to those of the firms that fire the CEO in Table 2.¹⁵ Compared with boards that fire the CEO, boards retaining the CEO are more likely engage in selling their equity contingent wealth over the period in which earnings are subsequently restated: their selling (net of purchases) which amounts to 367.5 million shares with an aggregate value of \$16.8 billion is greater than the corresponding values for boards that fire the CEO (167.9 million shares with an aggregate value of \$6.3 billion). Consistent with these aggregate statistics, there are more net sellers in firms that retain the CEO: both inside and outside board members are more likely to be net sellers in firms that retain the CEO; in 63.9% of the firms outside directors are net sellers and in 58.9% of the firms inside directors are net sellers. By

¹⁵ Our restatement sample consists of 427 firm observations, but we are missing data in a subset of independent variables for five firms. As a result, we use 422 observations in our regression analyses.

comparison, the corresponding percentages (51.9% and 51.8%) are lower for firms that fire the CEO. Ten of the thirteen proxies we use to measure collusion require that outside and inside directors be net sellers or opportunistic net sellers simultaneously. As such, collusive selling identifies a smaller percentage of firms: 46.7% (45%) of the firms that retain the CEO have both outside and inside directors (CEO) involved in net selling compared to 35.5% (34.4%) of firms that fire the CEO. The next two proxies are based on opportunistic selling—either assessed relative to prior period benchmarks or using the Cohen, Malloy, and Pomorski (2012) classification—and systematically reveal more frequent collusive trading in firms where CEOs are retained. For example, firms that retain CEOs are more likely to have collusive abnormal selling by inside directors (including the accountable CEO) and outside directors (36.9% v. 26.8%); or between outside directors and the CEO (36.5% v. 25.7%). The remaining three proxies are based on the intensity of trading ratios first proposed by John and Lang (1991) and the calculation of the collusion variable equals the sum of the ratio for outside directors and the ratio for inside directors. These proxies also suggest that board members' selling is more intensive in firms that retain the CEO. In terms of ratification decisions, firms that retain CEOs are more likely to engage in value-destroying mergers (46.7% v. 33.3%).

In Panel B, we report control variables that are drawn from or inspired by prior work. In terms of costly replacement measures, 20.1% of firms that retain the CEO had poor relative performance prior to the restatement compared to 33.0% of firms that fire the CEO. Firms that retain the CEO are more likely to have managers with higher ability (28.3% v. 19.1%). Among CEOs who remain in office 42.6% are founders, compared to 24.6% of founders among CEOs who get fired. Furthermore, 29.2% of the CEOs who remain were founders and board chairs compared to 18.7% of those removed. Firms that retain the CEO are also less likely to have a

certified inside director (8.3% v. 21.3%) and more likely to have a CEO with longer tenure. Costly retention measures show that 44.7% of firms that keep the CEO are under litigation while 68.9% of firms that fire the CEO are under litigation. In addition, firms that retain the CEO are less likely to be the subject of SEC enforcement (19.3% v. 50.3%).

The remaining comparisons relate to various characteristics of firms and of restatements examined in prior work, which we use as controls in our multivariate analyses. The comparison reveals that firms that retain CEOs have better accounting and return performance (e.g., ROA is -5.2% v. -11.2%; 2-year prior stock performance is -18.2% v. -56.7%), less severe restatements (e.g., the three day announcement return is -7.2% v. -15.6%), less risk or information asymmetry as measured by monthly stock return volatility (0.040 v. 0.049), lower CFO turnover (0.471 v. 0.836), lower analyst coverage (0.434 v. 0.555); and have boards with more social ties (27.0% v. 15.3%) and boards with more outside directors (70.5% v. 64.0%).

Overall, these comparisons suggest effects that are consistent with the direction of our two hypotheses and with the economic relations documented in prior work. Firms that retain the CEO exhibit a higher level of trading collusion between outside and inside board members, and a greater incidence of value-destroying mergers. Their costs of replacement are greater (their CEOs have good track records and higher ability, are more likely to be the founder, and they have no internal CEO candidates). Their costs of retention are smaller (they are less likely to be involved in 10b-5 litigation proceedings, or to be the subject of regulatory action).

These results suggest that on one hand, the boards of restating firms potentially have misaligned incentives to remove CEOs due to a conflict of interest. On the other hand, boards seem to take into account the costs of replacing and retaining the CEO following the discovery of accounting irregularities, which may explain why some boards decide to retain the CEO even

though the latter may have facilitated the misreporting. Further analysis is necessary to consider all these possibilities jointly and to control for alternative explanations offered in prior research including firm performance, the severity of misreporting, and conventional corporate governance measures.

4. Empirical Tests

We model the probability that a CEO is retained by the board of directors by considering the hypothesized proxies for directors' collusive actions, the costs of replacement, and the costs of retention, while controlling for characteristics of the firm, corporate governance, and the nature of the questionable accounting:

$$P(\text{CEO Retained}=1) = 1/(1+e^{-Y}),$$

where $Y = a_1$

Directors' Collusive Actions

+ a_2 Collusive Abnormal Selling (or Net Selling) + a_3 Value-Destroying Merger

Costs of Replacement

+ a_4 Under-Performance + a_5 Managerial Ability + a_6 Founder + a_7 Founder/Chairman + a_8 Certified Inside Director

Costs of Retention

+ a_9 Litigation + a_{10} AAER

Firm Characteristics

+ a_{11} Restatement Anncmt. Return + a_{12} Prior Stock Performance + a_{13} Cash Flow to Price + a_{14} Industry Adjusted ROA + a_{15} Stock Return Volatility + a_{16} Bankruptcy Score

Corporate Governance Measures

+ a_{17} Analyst Coverage + a_{18} CEO/Director Social Ties + a_{19} CEO/Chairman Duality + a_{20} Big Board + a_{21} Board Independence + a_{22} Old Board + error,

where:

Collusive Abnormal Selling = Indicator that either the accountable CEO or the executive directors (including the accountable CEO) and non-executive directors are abnormal or opportunistic sellers in our testing period

Value-Destroying Merger = Indicator that there was at least one value-destroying merger ratified by the board during our testing period

Under-Performance	= Indicator that the firm's stock performance was one standard deviation below the industry median
Managerial Ability	= Indicator that the CEO is ranked in the top three deciles of the two-digit SIC code industry based on the Demerjian, Lev and McVay's managerial ability measure
Founder	= Indicator that the CEO is the founder (or co-founder) of the firm
Founder/Chairman	= Indicator that the CEO is the founder (or co-founder) and also serves as the Chairman of the board of directors
Certified Inside Director	= Indicator that at least one executive director serves on the board of directors of another public company at the time of the CEO turnover decision
Litigation	= Indicator that 10b-5 litigation (related to the corresponding accounting restatement) was filed
AAER	= Indicator that the firm is subject to an accounting and auditing enforcement action by the SEC
Restatement Annncmt. Return	= Market-adjusted three-day return from day -1 to +1 of the restatement announcement date
Prior Stock Performance	= Market-adjusted monthly return from month -24 to 0 of the restatement announcement date
Cash Flow to Price	= Cash flow from operations divided by market value of equity
Industry Adjusted ROA	= Firm's Return on Assets in excess of two-digit SIC code industry (measured over the fiscal year ending just prior to the restatement announcement)
Stock Return Volatility	= Volatility of monthly market-adjusted stock returns over a five-year period ending two years before the restatement announcement
Bankruptcy Score	= Zmijewski's score (See Appendix). A higher score implies a higher level of financial distress
Analyst Coverage	= Indicator that the firm is followed by at least one analyst
CEO/Director Social Ties	= Indicator that the percentage of social connections between the CEO and other current members of the board is greater than that of the median firm

CEO/Chairman Duality	= Indicator that the CEO is also the Chairman of the Board
Big Board	= Indicator that the number of directors is greater than that of the median firm
Board Independence	= Fraction of ‘conventionally’ independent directors
Old Board	= Fraction of directors known to be over 69 years old.

Correlations between all variables used in the subsequent regression analyses can be found in Table 3. Panel A shows correlation coefficients in the 8–14% range between adjusted CEO retention and the thirteen alternative proxies for collusive opportunistic selling, with the vast majority significant at the 5% or lower. Panel A also shows high correlations between alternative proxies, in particular between similar proxies where we vary how to measure collusive opportunistic selling (e.g., between outside directors and insiders or between outside directors and just the CEO).

In Panel B, we report the correlation between a larger set of variables. The correlation between the two alternative dependent variables is 93.6%, suggesting that studying Adjusted or Unadjusted CEO retention should yield similar results. Both of these variables are positively correlated with CFO retention (0.900 and 0.864). Generally speaking, the correlations between Adjusted or Unadjusted CEO retention and various independent variables confirm the comparisons discussed in Table 2. For example, correlations with the merger ratification variable (0.135 and 0.150) are positive, whereas the correlation with certified inside director (-0.188 and -0.174) and litigation (-0.241 and -0.232) are negative. There are also a number of correlations between independent variables that are large. Some are measures of the same underlying concept and are not used in the same regression — e.g., variables (4) and (5) on collusive selling or variables (13) and (14) on litigation. Founder and tenure of the CEO, (9) and (11), also appear to be substitutes

as they are highly correlated, and CEO tenure captures the quality of the manager as it is negatively correlated with our underperformance indicator (7), and positively correlated with accounting return (19) and stock returns (17). Some other independent variables measuring different attributes have significant correlations greater than 0.20 (in absolute value). As such, we examine variance inflation factors, and find no evidence that particular independent variables or groups of variables are inflating the variance of the parameter estimates.

4.1 CEO Retention

Table 4 presents the results of logistic regressions in which the dependent variable identifies CEOs that are retained for up to one year following the public discovery of the misreporting. The regressions contain 21 variables consisting of two variables testing the hypothesized effects of outside director's collusive action, and 19 control variables either drawn from or inspired by prior work. The table contains six columns that differ in the collusive selling measure.

In the first two specifications, the collusion variable is based on net selling. There is weak evidence that CEOs are more likely to be retained when collusion is based on net selling by both outside and inside directors [0.4613 (p-value=0.072)], and no evidence of an effect on CEO retention when collusion is assessed based on net selling by both outside directors and the accountable CEO [0.3271 (p-value=0.202)]. Columns (3) to (6) mirror the first two columns, except that the collusion is based on net selling in the testing period that exceeds any net selling in a prior period. The benchmark period is two years before the testing period in columns (3) and (4) and a period of equal length ending immediately prior to the testing period in columns (5) and (6). The findings are more pronounced when the trading of outside directors is compared to that of all board insiders: the coefficients—0.5248 and 0.5924—are significant at the 5.3% and 3.4% levels and the marginal effects suggest the effect of collusive trading to increase the probability of CEO

retention by 13.0% and 14.5%. By contrast, when the trading of outside directors is compared to that of the CEO, the coefficients are numerically smaller, and only marginally significant in one case.

The pattern that emerges with these abnormal selling measures is similar to what we observe for net selling. It is possible that the nature of our sample makes it more likely that the selling in the testing period is information-motivated, making the estimation of abnormal selling less critical. In sum, we find some evidence that collusive trading between outside and inside directors (rather than between outside directors and the CEO) increases the likelihood that the CEO is retained. In all six specifications, we find that boards who have ratified one or more value-destroying merger during our testing period are more likely to retain the CEO. The coefficient estimates ranging from 0.5604 to 0.5846 are statistically distinguishable from zero at the 5% level across specifications, and the marginal effects suggest that the effect of ratifying such mergers is to increase the probability of CEO retention by 13.8 to 14.3%. This is consistent with H_2 .

In terms of control variables, our findings include the following: (1) higher quality CEOs fare better: firms of which equity returns are lower than the industry median by one standard deviation are less likely to retain the CEO (-0.7253, p-value = 0.011) and CEOs in the top three deciles of managerial ability relative to industry peers are more likely to be retained (0.4752, p-value = 0.094); (2) consistent with Parrino (1997) and Leone and Liu (2010), we find that founder-CEOs are more likely to remain as CEO (0.9506, p-value = 0.036); (3) firms subject to 10b-5 litigation or subject to regulatory intervention by the SEC are less likely to keep the CEO; this is consistent with evidence in Hennes, Leone, and Miller (2008) and Karpoff, Lee, and Martin (2008a); and (4) firms with stronger accounting and stock performance are more likely to retain the CEO.

In Table 5, we present the results of the same specifications as in Table 4, except that the dependent variable is equal to 1 if the CEO is retained, or if a founder-chairman-CEO remains on the board for at least a year after giving up the CEO title. A founder CEO who also serves as Chairman of the Board may be more willing to “resign” from the CEO post if the founder fundamentally remains at the helm of the firm. We believe conventional measures of CEO turnover misclassify these founder-chairman-CEO “resignations” suggesting that leadership turnover is less frequent than previously measured.

Table 5 reveals the four noteworthy differences when we estimate the logistic regressions with our adjusted CEO retention measure. First, collusive selling is significantly positive at the 5% level across all measures. Economically, the CEO is 13.2–15.4% more likely to remain at the helm when there is collusive opportunistic selling. This is consistent with H_1 . Second, the coefficient on the restatement announcement return becomes statistically significant. Consistent with prior work, this result suggests that the costs of retaining the CEO increase with the severity of the misreporting (Hennes, Leone, and Miller 2008; Karpoff, Lee, and Martin 2008a). Third, we find that analyst coverage makes CEO retention after accounting restatements less likely. This is consistent with the notion advanced by Duchin, Matsusaka, and Ozbas (2010) that analyst coverage reduces the potential information asymmetry between insiders and outsiders, and thus increases monitoring effectiveness of outside directors. Fourth, the descriptive ability of the logistic regression increases to 25.6–25.9% from 22.8–23.3%, a percentage increase in the range of 10 to 15% which we view as consistent with our adjustment decreasing the measurement error in the dependent variable.

In Table 6, we estimate regressions using both adjusted and unadjusted CEO retention variables, and report the results of tests based on two alternative classifications of opportunistic

selling behavior. We rely on the opportunistic v. routine classification proposed by Cohen, Malloy and Pomorski (2012). Columns (1) and (3) treat as collusive trading those instances where both outside and inside directors are selling opportunistically in the testing period and corroborate the results for Tables 5 and 4 respectively. The results in column (2) and (4) show that collusion measures based on routine selling are not significant.¹⁶ This suggests that it is important to disentangle opportunistic from routine trading.

In Table 7, we report the results based on the insider trading intensity ratios proposed by John and Lang (1991)¹⁷. When the dependent variable is Adjusted CEO Retention, we find that more intensive trading by inside and outside directors increases the probability of retention whether we measure the collusive selling intensity based on number of trades, shares or dollar values. However, when the dependent variable is unadjusted CEO retention, our results become weaker when we measure collusion using ratios that take into account the magnitudes (rather than just the number of transactions).

Our findings suggest that the opportunistic/abnormal collusion indicator is positively related to the decision to keep the CEO. The measure indicates that both non-executive directors and executive directors (including the accountable CEO) were abnormally selling in advance of the discovery of the misreporting. Thus, boards with collusive insider selling behavior are more likely to retain the CEO after the revelation of the accounting irregularity. This raises the following question: is it collusion or simply opportunistic selling?

¹⁶ We classify individual trades as routine during the restatement period if the director traded during that same month consistently over the three year period prior to the restatement period. As shown in Table 2, each group of insiders engages in routine selling during our testing period. However, outside directors, the CEO, and other inside directors do not coordinate their routine selling during the testing period, in contrast to the observed collusive opportunistic selling. This evidence is consistent with the theory that only collusive opportunistic selling prior to restatement is information-motivated.

¹⁷ We multiply the sum of the intensity ratios for inside and outside directors by minus one, so as to expect a positive sign on the collusion variables in the regression analysis.

To answer the question, we present in Table 8 estimates of logistic regressions that replace the collusive selling indicators by indicators of trading by each group separately. In column (1) we report that opportunistic selling by outside directors alone does not affect the probability of retention. In column (2) and (3) we report that opportunistic selling by inside directors and that by the CEO increase the probability of retention respectively by 11–12%. This suggests that insiders who sell opportunistically have greater influence over board decisions. In column (4), we require collusive opportunistic selling by all three groups (outside directors, inside directors—excluding the CEO, and the CEO). The coefficient on this collusive selling indicator is 0.8421 (p-value=0.049), and its effect is to increase the probability of CEO retention by nearly 20%. Although, the probability of retention is affected by the trading of insiders and by the collusive trading of both inside and outside directors, the effect of the latter is significantly more pronounced.

Similar results are reported in columns (5) to (8) where we reproduce the tests using the unadjusted CEO retention variable, with one exception: opportunistic trading by the CEO alone does not significantly affect the probability of retention. This corroborates our conjecture that influential CEOs were more likely to trade opportunistically. In the reclassification of CEO retention, 14 founders who resigned from the CEO post but remained as board chairs are coded as fired, and this coding change renders the CEO abnormal selling variable insignificant.

4.2 Robustness tests

In Table 9, we reproduce the tests of Table 5 using (1) year fixed-effects to control for time-variant effects (such as the passage of SOX) and (2) industry fixed-effects to control for unobserved time-invariant industry-specific characteristics that might be correlated with CEO

retention. In the first three columns of Table 9, we show qualitatively similar results on the variables we use to test our hypotheses.

Further, we recognize that in our sample, we only observe firms that are caught manipulating earnings and have to restate their financial results. A potential selection bias exists if firms caught for intentionally misreporting are innately different from firms that do not. In the last three columns of Table 9, we show the corrected coefficients and p-values from a Heckman selection model where the restating firms are distinguished from the COMPUSTAT population using a model that captures risk, profitability, growth, and pricing characteristics. Specifically, the selection model is as follows:

$$P(\text{Firm has accounting restatement}=1) = 1/(1+e^{-Y}),$$

where $Y = a_0$
+ a_1 Cash Flow to Price + a_2 Bankruptcy Score + a_3 Book-to-Market + a_4 Log of Sales
+ a_5 Sales Growth + a_6 Leverage + a_7 Income Loss + a_8 Return + a_9 ROA + error.

The likelihood ratio test of independence suggests that the models are independent and our selection bias is not severe. The corrected coefficients and associated p-values show that we obtain similar results.

We also consider whether the dismissal of the CFO influences CEO retention. In firms involved in intentional misreporting, both the CEO and the CFO are likely to have played a role either directly or indirectly (lax oversight) in the misreporting. If the board diligently performs its monitoring role, it likely makes CEO and CFO retention decisions simultaneously when it evaluates the consequences of deliberate misreporting. The question is whether determinants of the CEO and the dual retention decisions at firms are the same whether collusion between the CEO and other directors inhibit the monitoring role of the board in making such decisions.

We rank the intensity of the dual firing decision on a scale of 1 to 4: ("1": CEO retained,

CFO retained), (“2”: CEO retained, CFO fired), (“3”: CEO fired, CFO retained), and (“4”: CEO fired, CFO fired). We find that 1 and 4 do represent the most severe and least severe cases in terms of announcement return, litigation, settlement amount, and past stock and accounting performance. That is, in untabulated analyses we find that the announcement return is most adverse when both the CEO and the CFO are fired (-17.2%), and so is the stock price deterioration over the prior two years (-60.3%), and cash flow performance (-4.7%). By comparison, at the other extreme when both the CEO and the CFO are retained, the effects are significantly less adverse (announcement return is -6.4%; return in prior two years is -8.2%; cash flow to price is 8.9%). Moreover, when both the CEO and the CFO are fired, the incidence of litigation is 71.2% the mean and median settlement equals \$35.1 and \$0.85 million, and the incidence of regulatory intervention is 53.6%. At the other extreme when both the CEO and the CFO are retained, the incidence of litigation is 38.8%, the mean settlement equals \$5.3 million with the median firm having no settlement cost, and the SEC investigates only 19.4% of the cases. Similarly, we find a notable increase in the degree of collusion when one compares Ranks 1 and 2 (where the CEO Stays) relative to Ranks 3 and 4 where the CEO is removed. However, there is no marked difference in the level of collusion when the only difference in the ranking comes from the status of the CFO.

5. Conclusion

Limited observability is a common hurdle faced by studies on the role of corporate boards. Without being able to observe the deliberations of boards, researchers have correlated observable outcomes of decisions where potential agency conflicts are more acute (e.g., CEO turnover, CEO compensation, and corporate restructuring) with measures of independence derived from studying observable characteristics of outside directors’ professional and social lives.

In this paper, we provide evidence that an observable action (non-executive directors’ insider trading) and an observable outcome (the market assessment of a board-ratified merger) are

useful in inferring that a firm's executive and non-executive directors are aligned. We study firms that are revealed to have intentionally misreported earnings because "Crises test the independence and the action orientation of board members both individually and collectively." (Colley, Doyle, Logan, and Stettinius 2003, p. 140). We show that CEOs are more likely to be retained when both outside and inside directors opportunistically sell their firm's equity before the delinquent accounting is revealed, and when outside directors ratify one or more value-destroying mergers during the restatement period. These findings are incremental to traditional measures of corporate governance, and robust to controlling for several determinants of CEO turnover documented in prior research. Our evidence suggests that financial economists should consider collusive opportunistic trading and certain merger ratifications as additional and observable means of assessing the independence and monitoring effectiveness of outside directors.

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Figure 1: Timeline of Irregularities

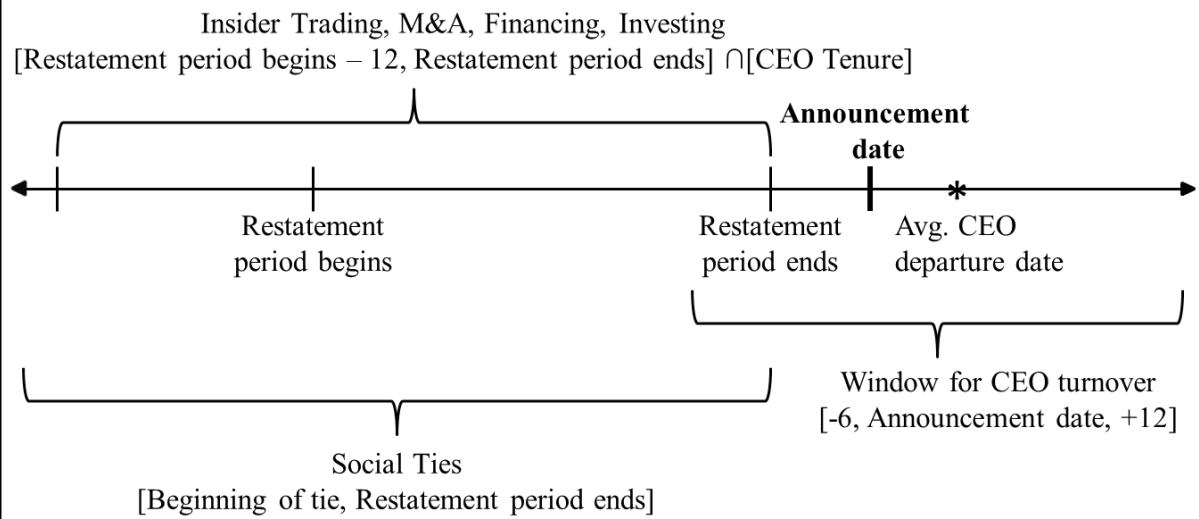


Table 1
Restatement Sample

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. Panel A shows how the final sample was determined from the original sample of restatements gathered from AAER, GAO, and Audit Analytics. Panel B displays the number of accounting restatements per year as well as the CEO, adjusted CEO, and CFO retention for each year at the restating firms. Adjusted CEO retention is defined as being equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/founder and remains on the Board following the accounting restatement, and is equal to 0 otherwise. Panel C compares our sample of restatements to firms in COMPUSTAT from 1993 through 2007. All firm characteristics are measured as of the fiscal year end $t-1$, where year t is the year of the announcement of the accounting restatement. The percentile rank is the rank of the sample firm in all firms in COMPUSTAT in that year. Subsequent tests will consider the possibility of a selection bias in our sample and COMPUSTAT data will be used in the first stage of the Heckman selection model. T-tests and Median tests both test the null hypothesis that the percentile rank is equal to 50. P-Values are reported. See the Appendix for descriptions of all variables.

Panel A: Sample Determination

Intersection of AAER, GAO, Audit Analytics	739
- Firms with missing COMPUSTAT data	173
- Firms with missing CRSP data	120
- Firms with missing Insider Trading data	19
Resulting Sample of Restatements	427

Panel B: Restatements, CEO Retention, Leadership Retention, and CFO Retention by Year

Announcement Year	Restatements		CEO	Adjusted	CFO
	Frequency	Percentage	Retention	CEO	Retention
			Percentage	Retention	Percentage
1993	1	0.23	0.00	0.00	0.00
1994	8	1.87	25.00	25.00	12.50
1995	5	1.17	40.00	40.00	40.00
1996	6	1.41	50.00	66.67	33.33
1997	18	4.22	44.44	50.00	27.78
1998	30	7.03	40.00	46.67	30.00
1999	24	5.62	33.33	37.50	20.83
2000	36	8.43	25.00	25.00	25.00
2001	32	7.49	56.25	59.38	37.50
2002	52	12.18	48.08	48.08	44.23
2003	47	11.01	55.32	61.70	36.17
2004	51	11.94	66.67	66.67	39.22
2005	70	16.39	68.57	72.86	45.71
2006	35	8.20	74.29	77.14	42.86
2007	12	2.81	75.00	83.33	58.33
Total	427	100.00	53.86	57.14	37.24

Panel C: Percentile Rank of Our Restatement Firms Compared to COMPUSTAT

					H0: Mean/Median = 50	
	Sample	Mean	Sample	Median	Mean Diff.	Median Diff.
(N = 427/114,642)	Mean Value	Percentile Rank	Median Value	Percentile Rank	P-Value	P-Value
Sales (Millions of \$)	2,243.3	57.11	310.7	59.00	0.000	0.000
Total Assets (Millions of \$)	2,324.3	54.29	350.3	57.00	0.001	0.001
Market Value of Equity (Millions of \$)	3,058.3	56.95	298.2	57.00	0.000	0.000
Profit Margin	-0.151	43.86	0.010	41.00	0.000	0.000
Return on Assets	-0.078	46.00	0.013	45.00	0.002	0.003
Leverage	0.473	50.24	0.459	52.50	0.856	0.881
Book-to-Market	0.551	46.85	0.418	45.00	0.018	0.017
Earnings to Price	-0.101	44.24	0.013	41.00	0.000	0.000
Sales to Price	2.143	50.55	0.961	52.00	0.688	0.699
Cash Flow to Price	0.023	43.20	0.032	37.00	0.000	0.000
Income Loss (0,1)	0.429	52.07	0.000	34.00	0.084	0.000
Bankruptcy Score	-2.196	51.03	-2.351	54.00	0.436	0.447
Sales Growth	0.238	53.37	0.115	55.00	0.016	0.015
Cash Flow	167.838	45.31	6.855	45.00	0.002	0.001

Table 2
Univariate Statistics for the Restatement Sample

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. Retained is measured as adjusted CEO retention. All firm characteristics are measured as of the fiscal year end t-1, where year t is the year of the announcement of the accounting restatement. P-Values are reported. See the Appendix for descriptions of all variables.

Panel A: Directors' Collusive Actions

	Retained (N = 244)		Fired (N = 183)		Mean Diff.	Median Diff.
	Mean	Median	Mean	Median	P-Value	P-Value
Collusive Actions						
Collusive Selling [outside:inside]	0.467	0.000	0.355	0.000	0.021	0.021
Collusive Selling [outside:CEO]	0.450	0.000	0.344	0.000	0.027	0.028
Collusive Abnormal Selling [outside:inside] (2 year prior period)	0.369	0.000	0.268	0.000	0.027	0.028
Collusive Abnormal Selling [outside:CEO] (2 year prior period)	0.365	0.000	0.257	0.000	0.018	0.018
Collusive Abnormal Selling [outside:inside] (matched prior period)	0.340	0.000	0.251	0.000	0.048	0.048
Collusive Abnormal Selling [outside:CEO] (matched prior period)	0.336	0.000	0.246	0.000	0.044	0.044
Collusive Abnormal Selling [outside:CEO:others inside] (2 year prior period)	0.156	0.000	0.087	0.000	0.030	0.036
Collusive Abnormal Selling [outside:CEO:others inside] (matched prior period)	0.139	0.000	0.087	0.000	0.090	0.099
Collusive Opportunistic Selling [outside:inside] (CMP)	0.463	0.000	0.355	0.000	0.026	0.026
Collusive Opportunistic Selling [outside:CEO] (CMP)	0.446	0.000	0.344	0.000	0.034	0.034
Collusive Selling Intensity [outside:inside] (JL:Trades)	-0.453	-0.680	-0.071	-0.053	0.002	0.003
Collusive Selling Intensity [outside:inside] (JL:Shares)	-0.567	-0.888	-0.192	-0.146	0.003	0.005
Collusive Selling Intensity [outside:inside] (JL:Dollars)	-0.627	-0.999	-0.246	-0.260	0.003	0.003
Ratification						
Value Destroying Merger (0,1)	0.467	0.000	0.333	0.000	0.005	0.005

Panel B: Firm Characteristics, Restatement Characteristics, & Corporate Governance Measures

	Retained (N = 244)		Fired (N = 183)		Mean Diff.	Median Diff.
	Mean	Median	Mean	Median	P-Value	P-Value
Costs of Replacement						
Under-Performance (0,1)	0.201	0.000	0.330	0.000	0.003	0.003
Managerial Ability (0,1)	0.283	0.000	0.191	0.000	0.026	0.029
Founder (0,1)	0.426	0.000	0.246	0.000	0.000	0.000
Founder/Chairman (0,1)	0.292	0.000	0.187	0.000	0.011	0.013
Certified Inside Director (0,1)	0.082	0.000	0.213	0.000	0.000	0.000
CEO Tenure (days)	4138.0	3455.5	2411.3	1689.0	0.000	0.000
Costs of Retention						
Litigation (0,1)	0.447	0.000	0.689	1.000	0.000	0.000
Litigation Settlement (Millions of \$)	11.892	0.000	34.204	0.595	0.137	0.000
AAER (0,1)	0.193	0.000	0.503	1.000	0.000	0.000
Size						
Sales (Millions of \$)	2148.7	388.4	2369.4	198.0	0.689	0.005
Total Assets (Millions of \$)	2204.9	391.5	2483.6	254.1	0.639	0.302
Profitability						
Return on Assets	-0.052	0.021	-0.112	0.002	0.035	0.045
Profit Margin	-0.107	0.014	-0.210	0.002	0.052	0.009
Income Loss (0,1)	0.377	0.000	0.497	0.000	0.013	0.013
Market Performance Effects						
Restatement Anncmt. Return [-1,+1]	-0.072	-0.036	-0.156	-0.107	0.000	0.000
Restatement Anncmt. Return [-2,+2]	-0.074	-0.039	-0.168	-0.113	0.000	0.000
Prior Stock Performance [-24,0]	-0.182	-0.429	-0.567	-0.691	0.000	0.001
Prior Stock Performance [-12,0]	-0.064	-0.171	-0.273	-0.404	0.001	0.002
Growth & Risk						
Sales Growth	0.212	0.115	0.274	0.113	0.221	0.956
Bankruptcy Score	-2.316	-2.568	-2.035	-2.167	0.128	0.019
Leverage	0.467	0.452	0.480	0.475	0.587	0.328
Stock Return Volatility	0.040	0.025	0.049	0.034	0.069	0.001
Fundamentals						
Book-to-Market	0.503	0.399	0.616	0.455	0.047	0.190
Earnings to Price	-0.077	0.018	-0.133	0.000	0.109	0.045
Sales to Price	2.142	0.858	2.145	1.007	0.993	0.468
Cash Flow to Price	0.064	0.057	-0.033	0.005	0.000	0.000
Restatement Characteristics						
Restatement Period (days)	932.3	800.0	814.0	690.0	0.059	0.016
CFO Turnover (0,1)	0.471	0.000	0.836	1.000	0.000	0.000
Corporate Governance Measures						
Analyst (0,1)	0.434	0.000	0.555	1.000	0.014	0.014
CEO/Director Social Ties (0,1)	0.270	0.000	0.153	0.000	0.003	0.004
CEO/Director Social Ties (%)	0.122	0.000	0.135	0.000	0.645	0.601
CEO/Director Social Ties (#)	1.289	0.000	1.425	0.000	0.667	0.601
CEO/Chairman Duality (0,1)	0.626	1.000	0.544	1.000	0.091	0.091
Board Size	7.884	8.000	8.188	8.000	0.482	0.248
Board Independence (%)	0.705	0.750	0.640	0.667	0.003	0.002
Old Board (%)	0.072	0.000	0.054	0.000	0.081	0.016

Table 3
Spearman Correlation Coefficients
Prob > |r| under H0: Rho=0

Panel A: Alternative Collusive Selling Proxies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Adjusted CEO Retention	1													
(2) Collusive Selling [outside:inside]	0.112 0.021	1												
(3) Collusive Selling [outside:CEO]	0.107 0.027	0.952 0.001	1											
(4) Collusive Abnormal Selling [outside:inside] (2 year prior period)	0.107 0.027	0.812 0.001	0.775 0.001	1										
(5) Collusive Abnormal Selling [outside:CEO] (2 year prior period)	0.115 0.018	0.779 0.001	0.823 0.001	0.930 0.001	1									
(6) Collusive Abnormal Selling [outside:CEO:others inside] (2 year prior period)	0.102 0.036	0.440 0.001	0.453 0.001	0.548 0.001	0.557 0.001	1								
(7) Collusive Abnormal Selling [outside:inside] (matched prior period)	0.096 0.048	0.769 0.001	0.739 0.001	0.925 0.001	0.864 0.001	0.532 0.001	1							
(8) Collusive Abnormal Selling [outside:CEO] (matched prior period)	0.098 0.044	0.739 0.001	0.783 0.001	0.871 0.001	0.930 0.001	0.554 0.001	0.933 0.001	1						
(9) Collusive Abnormal Selling [outside:CEO:others inside] (matched prior period)	0.080 0.099	0.420 0.001	0.433 0.001	0.524 0.001	0.533 0.001	0.957 0.001	0.554 0.001	0.560 0.001	1					
(10) Collusive Opportunistic Selling [outside:inside] (CMP)	0.108 0.026	0.995 0.001	0.947 0.001	0.816 0.001	0.783 0.001	0.773 0.001	0.743 0.001	0.442 0.001	0.422 0.001	1				
(11) Collusive Opportunistic Selling [outside:CEO] (CMP)	0.103 0.034	0.947 0.001	0.995 0.001	0.779 0.001	0.827 0.001	0.743 0.001	0.787 0.001	0.455 0.001	0.435 0.001	0.952 0.001	1			
(12) Collusive Selling Intensity [outside:inside] (JL:Trades)	0.146 0.003	0.724 0.001	0.693 0.001	0.585 0.001	0.555 0.001	0.554 0.001	0.529 0.001	0.370 0.001	0.352 0.001	0.727 0.001	0.696 0.001	1		
(13) Collusive Selling Intensity [outside:inside] (JL:Shares)	0.130 0.007	0.833 0.001	0.811 0.001	0.684 0.001	0.662 0.001	0.658 0.001	0.640 0.001	0.388 0.001	0.376 0.001	0.831 0.001	0.808 0.001	0.907 0.001	1	
(14) Collusive Selling Intensity [outside:inside] (JL:Dollars)	0.127 0.009	0.826 0.001	0.805 0.001	0.673 0.001	0.655 0.001	0.648 0.001	0.633 0.001	0.378 0.001	0.367 0.001	0.823 0.001	0.802 0.001	0.900 0.001	0.983 0.001	1

Panel B: Variables of Interest

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)		
(1) Adjusted CEO Retention	1																												
(2) CEO Retention	0.936 0.001	1																											
(3) CFO Retention	0.900 0.001	0.864 0.001	1																										
(4) Collusive Selling [outside:inside]	0.112 0.021	0.081 0.094	0.111 0.022	1																									
(5) Collusive Abnormal Selling [outside:inside] (2 year prior period)	0.107 0.027	0.082 0.093	0.089 0.066	0.812 0.001	1																								
(6) Value Destroying Merger (0,1)	0.135 0.005	0.150 0.002	0.145 0.003	0.162 0.001	0.132 0.006	1																							
(7) Under-Performance (0,1)	-0.146 0.003	-0.171 0.001	-0.192 0.001	0.043 0.377	0.088 0.068	-0.085 0.080	1																						
(8) Managerial Ability (0,1)	0.106 0.029	0.098 0.042	0.098 0.044	0.171 0.001	0.141 0.003	0.126 0.009	0.080 0.099	1																					
(9) Founder (0,1)	0.187 0.001	0.096 0.047	0.123 0.011	0.100 0.039	0.110 0.023	-0.041 0.403	0.001 0.976	0.031 0.523	1																				
(10) Founder/Chairman (0,1)	0.121 0.013	0.037 0.441	0.084 0.084	0.091 0.063	0.083 0.086	-0.091 0.060	0.044 0.365	-0.006 0.907	0.780 0.001	1																			
(11) Log of CEO Tenure	0.378 0.001	0.335 0.001	0.369 0.001	0.144 0.003	0.062 0.204	0.086 0.077	-0.209 0.001	0.069 0.155	0.448 0.001	0.355 0.001	1																		
(12) Certified Inside Director (0,1)	-0.188 0.001	-0.174 0.001	-0.149 0.002	0.018 0.715	-0.003 0.951	-0.058 0.234	-0.048 0.321	-0.101 0.038	-0.108 0.026	-0.120 0.014	-0.180 0.001	1																	
(13) Litigation (0,1)	-0.241 0.001	-0.232 0.001	-0.267 0.001	0.125 0.010	0.126 0.009	0.121 0.012	0.055 0.254	-0.003 0.957	0.010 0.839	0.005 0.922	-0.093 0.055	0.062 0.203	1																
(14) Log of Cash Settlement	-0.226 0.001	-0.226 0.001	-0.226 0.001	0.082 0.093	0.061 0.211	0.084 0.082	0.040 0.410	-0.043 0.376	0.045 0.359	0.055 0.259	-0.083 0.088	0.102 0.035	0.668 0.001	1															
(15) AAER	-0.328 0.001	-0.330 0.001	-0.314 0.001	0.049 0.317	0.040 0.406	0.000 0.427	0.097 0.060	-0.022 0.041	-0.005 0.747	0.011 0.981	-0.124 0.692	0.185 0.003	0.196 0.061	0.183 0.001	1														
(16) Restatement Annmt. Return [-1,+1]	0.235 0.001	0.198 0.001	0.252 0.001	0.040 0.406	0.039 0.427	0.091 0.060	-0.099 0.041	0.016 0.747	-0.001 0.981	-0.019 0.692	0.144 0.003	-0.091 0.061	-0.317 0.001	-0.271 0.001	-0.194 0.001	1													
(17) Prior Stock Performance [-24,0]	0.207 0.001	0.191 0.001	0.250 0.001	0.091 0.060	0.143 0.003	0.062 0.205	-0.119 0.014	0.141 0.003	0.014 0.772	-0.038 0.431	0.211 0.001	-0.081 0.095	-0.179 0.001	-0.134 0.006	-0.064 0.189	0.124 0.010	1												
(18) Cash Flow to Price	0.224 0.001	0.253 0.001	0.273 0.001	0.035 0.469	-0.040 0.408	0.119 0.014	-0.110 0.023	0.054 0.267	-0.135 0.005	-0.122 0.012	0.161 0.001	-0.096 0.047	-0.135 0.005	-0.085 0.081	-0.245 0.001	0.138 0.004	0.171 0.001	1											
(19) Industry Adjusted ROA	0.143 0.003	0.118 0.015	0.151 0.002	0.208 0.001	0.121 0.012	0.182 0.001	-0.159 0.001	0.150 0.002	0.064 0.189	0.048 0.328	0.160 0.001	-0.165 0.001	0.062 0.204	0.032 0.512	-0.115 0.017	0.105 0.030	0.152 0.002	0.112 0.020	1										
(20) Stock Return Volatility	-0.172 0.001	-0.176 0.001	-0.224 0.001	-0.053 0.280	-0.028 0.564	-0.244 0.001	0.072 0.136	-0.080 0.101	0.097 0.045	0.060 0.215	-0.149 0.002	0.066 0.172	0.123 0.011	0.140 0.004	0.079 0.104	-0.165 0.001	-0.167 0.001	-0.425 0.086	-0.083 0.001	1									
(21) Bankruptcy Score	-0.091 0.059	-0.097 0.045	-0.081 0.095	-0.172 0.001	-0.121 0.012	-0.166 0.001	0.153 0.002	-0.051 0.291	-0.015 0.755	0.025 0.615	-0.146 0.003	0.163 0.001	-0.077 0.111	-0.109 0.024	-0.025 0.613	-0.062 0.203	-0.137 0.005	-0.100 0.039	-0.433 0.001	0.129 0.001	1								
(22) Analyst Coverage	-0.119 0.014	-0.111 0.022	-0.149 0.002	-0.124 0.010	-0.071 0.145	-0.134 0.006	0.108 0.026	-0.050 0.307	0.060 0.216	0.024 0.616	-0.049 0.315	0.032 0.514	-0.082 0.090	-0.043 0.381	-0.015 0.751	-0.050 0.299	-0.090 0.064	-0.223 0.001	-0.188 0.001	0.253 0.001	0.241 0.001	1							
(23) CEO/Director Social Ties (0,1)	0.140 0.004	0.152 0.002	0.173 0.000	0.053 0.274	0.077 0.111	0.109 0.024	-0.064 0.800	0.085 0.078	0.050 0.307	0.122 0.502	-0.033 0.179	-0.065 0.111	-0.011 0.024	-0.176 0.000	0.115 0.018	0.079 0.104	0.156 0.104	0.096 0.001	-0.146 0.049	-0.068 0.003	0.009 0.163	-0.146 0.163	-0.068 0.533						
(24) CEO/Chairman Duality (0,1)	0.082 0.091	0.055 0.256	0.092 0.059	0.012 0.808	0.001 0.985	0.045 0.353	0.070 0.153	-0.043 0.379	0.171 0.001	0.477 0.001	0.203 0.001	-0.178 0.001	0.042 0.385	0.020 0.688	0.026 0.600	0.063 0.195	-0.034 0.481	0.091 0.061	0.138 0.005	-0.100 0.039	-0.057 0.238	-0.039 0.425	0.052 0.288						
(25) Big Board (0,1)	-0.027 0.577	-0.038 0.434	-0.075 0.122	-0.007 0.891	0.013 0.790	-0.126 0.009	-0.053 0.271	-0.007 0.882	0.132 0.006	0.039 0.418	0.015 0.761	0.004 0.942	-0.033 0.500	-0.017 0.726	0.163 0.001	-0.120 0.013	-0.057 0.239	-0.240 0.001	-0.088 0.069	0.268 0.001	-0.025 0.611	0.070 0.151	-0.122 0.012	-0.075 0.122					
(26) Board Independence (%)	0.167 0.001	0.136 0.005	0.154 0.001	0.038 0.438	0.029 0.553	0.051 0.290	0.040 0.409	-0.064 0.722	-0.017 0.280	0.053 0.210	0.061 0.210	-0.123 0.011	-0.053 0.271	-0.012 0.802	-0.052 0.003	0.144 0.079	0.109 0.118	0.118 0.107	0.107 0.107	-0.194 -0.041	-0.041 -0.093	0.016 0.001	0.204 0.748	-0.149 0.001					
(27) Old Board (%)	0.106 0.028	0.126 0.009	0.134 0.006	-0.046 0.344	-0.045 0.354	0.072 0.136	-0.083 0.088	0.022 0.655	-0.017 0.725	-0.008 0.875	0.139 0.004	-0.109 0.024	-0.069 0.157	-0.073 0.132	-0.118 0.015	0.103 0.034	0.013 0.787	0.117 0.016	0.027 0.572	-0.166 0.001	0.044 0.362	-0.001 0.978	0.045 0.357	0.043 0.375	-0.210 0.001	0.077 0.111			

Table 4
CEO Retention

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is equal to 1 if the CEO keeps his job as CEO following the accounting restatement and 0 if the CEO was fired due to the accounting restatement. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable $D(Stay) = 1$ (P-Value in parenthesis, Marginal Effect in brackets)

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Directors' Collusive Actions</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>
Collusive Selling [outside:inside]	0.4613* (0.072) [0.1145*]					
Collusive Selling [outside:CEO]		0.3271 (0.202) [0.0815]				
Collusive Abnormal Selling [outside:inside] (2 year prior period)			0.5248* (0.053) [0.1295***]			
Collusive Abnormal Selling [outside:CEO] (2 year prior period)				0.4475* (0.098) [0.1107*]		
Collusive Abnormal Selling [outside:inside] (matched prior period)					0.5924** (0.034) [0.1454**]	
Collusive Abnormal Selling [outside:CEO] (matched prior period)						0.4163 (0.132) [0.1031]
Value Destroying Merger (0,1)	0.5604** (0.028) [0.1383***]	0.5765** (0.023) [0.1417***]	0.5622** (0.027) [0.1384***]	0.5694** (0.025) [0.1398***]	0.5745** (0.024) [0.1412***]	0.5846** (0.022) [0.1431***]
Costs of Replacement						
Under-Performance (0,1)	-0.7253** (0.011)	-0.7133** (0.012)	-0.7390*** (0.010)	-0.7289** (0.011)	-0.7536*** (0.008)	-0.7235** (0.011)
Managerial Ability (0,1)	0.4752* (0.094)	0.4859* (0.087)	0.4944* (0.081)	0.4906* (0.083)	0.5065* (0.074)	0.5040* (0.074)
Founder (0,1)	0.9506** (0.036)	0.9553** (0.036)	1.0002** (0.027)	0.9991** (0.027)	0.9838** (0.030)	0.9813** (0.030)
Founder/Chairman (0,1)	-0.6921 (0.210)	-0.6728 (0.223)	-0.7453 (0.175)	-0.7290 (0.184)	-0.7370 (0.180)	-0.7042 (0.198)
Certified Inside Director (0,1)	-0.5465 (0.141)	-0.5366 (0.148)	-0.5421 (0.142)	-0.5402 (0.144)	-0.5548 (0.135)	-0.5392 (0.146)
Costs of Retention						
Litigation (0,1)	-0.8258*** (0.001)	-0.8068*** (0.002)	-0.8499*** (0.001)	-0.8335*** (0.001)	-0.8491*** (0.001)	-0.8240*** (0.001)
AAER (0,1)	-1.2289*** (0.000)	-1.2064*** (0.000)	-1.2321*** (0.000)	-1.2136*** (0.000)	-1.2473*** (0.000)	-1.2226*** (0.000)

<i>Firm Characteristics</i>						
Restatement Annmt. Return [-1,+1]	0.8883 (0.210)	0.9023 (0.202)	0.8496 (0.230)	0.8659 (0.221)	0.8597 (0.225)	0.8842 (0.211)
Prior Stock Performance [-24,0]	0.3092** (0.031)	0.3139** (0.029)	0.2893** (0.045)	0.3002** (0.038)	0.2897** (0.044)	0.3037** (0.035)
Cash Flow to Price	2.5014*** (0.002)	2.5072*** (0.002)	2.5502*** (0.002)	2.5261*** (0.002)	2.5736*** (0.002)	2.5318*** (0.002)
Industry Adjusted ROA	-0.5721 (0.104)	-0.5324 (0.126)	-0.5529 (0.115)	-0.5235 (0.131)	-0.5757 (0.104)	-0.5317 (0.127)
Stock Return Volatility	1.2101 (0.607)	1.2053 (0.610)	1.1403 (0.628)	1.0700 (0.649)	1.2216 (0.603)	1.1942 (0.612)
Bankruptcy Score	-0.0197 (0.793)	-0.0191 (0.799)	-0.0179 (0.810)	-0.0142 (0.849)	-0.0135 (0.856)	-0.0134 (0.857)
<i>Corporate Governance Measures</i>						
Analyst Coverage (0,1)	-0.3016 (0.228)	-0.3106 (0.214)	-0.3171 (0.204)	-0.3220 (0.197)	-0.3344 (0.181)	-0.3379 (0.175)
CEO/Director Social Ties (0,1)	0.4302 (0.145)	0.4235 (0.151)	0.4083 (0.168)	0.4088 (0.167)	0.4079 (0.168)	0.4111 (0.164)
CEO/Chairman Duality (0,1)	0.4628 (0.119)	0.4421 (0.135)	0.4606 (0.121)	0.4501 (0.129)	0.4461 (0.132)	0.4313 (0.143)
Big Board (0,1)	0.2269 (0.373)	0.2259 (0.375)	0.2287 (0.369)	0.2208 (0.386)	0.2244 (0.379)	0.2227 (0.382)
Board Independence (%)	0.6068 (0.284)	0.6066 (0.285)	0.6549 (0.247)	0.6410 (0.259)	0.6653 (0.242)	0.6571 (0.246)
Old Board (%)	1.0342 (0.361)	0.9971 (0.379)	0.9131 (0.422)	0.8898 (0.435)	0.8955 (0.431)	0.8921 (0.432)
Constant	-0.0436 (0.940)	-0.0061 (0.992)	-0.0257 (0.965)	0.0103 (0.986)	-0.0024 (0.997)	0.0231 (0.968)
Observations	422	422	422	422	422	422
Pseudo R-Square	0.231	0.228	0.232	0.230	0.233	0.229

Table 5
Adjusted CEO Retention

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/Founder and remains on the Board following the accounting restatement, and is equal to 0 otherwise. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable $D(\text{Stay_Real}) = 1$ (P-Value in parenthesis, Marginal Effect in brackets)						
	(1)	(2)	(3)	(4)	(5)	(6)
Directors' Collusive Actions	$D(\text{Stay_Real})$	$D(\text{Stay_Real})$	$D(\text{Stay_Real})$	$D(\text{Stay_Real})$	$D(\text{Stay_Real})$	$D(\text{Stay_Real})$
Collusive Selling [outside:inside]	0.5962** (0.025) [.1465**]					
Collusive Selling [outside:CEO]		0.5373** (0.045) [.1323**]				
Collusive Abnormal Selling [outside:inside] (2 year prior period)			0.6193** (0.029) [.1510**]			
Collusive Abnormal Selling [outside:CEO] (2 year prior period)				0.6322** (0.026) [.1538**]		
Collusive Abnormal Selling [outside:inside] (matched prior period)					0.6341** (0.029) [.1542**]	
Collusive Abnormal Selling [outside:CEO] (matched prior period)						0.6261** (0.031) [.1521**]
Value Destroying Merger (0,1)	0.5342** (0.043) [.1318**]	0.5474** (0.037) [.1347**]	0.5418** (0.039) [.1330**]	0.5409** (0.040) [.1326**]	0.5576** (0.034) [.1365**]	0.5616** (0.033) [.1372**]
Costs of Replacement						
Under-Performance (0,1)	-0.5932** (0.041)	-0.5986** (0.040)	-0.6075** (0.037)	-0.6180** (0.035)	-0.6108** (0.036)	-0.6174** (0.035)
Managerial Ability (0,1)	0.4790 (0.105)	0.4784 (0.105)	0.5132* (0.081)	0.5019* (0.088)	0.5281* (0.072)	0.5184* (0.077)
Founder (0,1)	1.4953*** (0.002)	1.5082*** (0.002)	1.5309*** (0.002)	1.5302*** (0.002)	1.5141*** (0.002)	1.5066*** (0.002)
Founder/Chairman (0,1)	-0.6810 (0.244)	-0.6866 (0.242)	-0.7039 (0.229)	-0.6997 (0.231)	-0.6813 (0.244)	-0.6663 (0.254)
Certified Inside Director (0,1)	-0.5604 (0.131)	-0.5659 (0.128)	-0.5416 (0.143)	-0.5519 (0.136)	-0.5426 (0.143)	-0.5493 (0.139)
Costs of Retention						
Litigation (0,1)	-0.8770*** (0.001)	-0.8674*** (0.001)	-0.8993*** (0.001)	-0.8932*** (0.001)	-0.8877*** (0.001)	-0.8831*** (0.001)
AAER (0,1)	-1.2413*** (0.000)	-1.2192*** (0.000)	-1.2356*** (0.000)	-1.2168*** (0.000)	-1.2469*** (0.000)	-1.2315*** (0.000)

<i>Firm Characteristics</i>						
Restatement Annmt. Return [-1,+1]	1.4596** (0.047)	1.4660** (0.045)	1.4194* (0.053)	1.4257* (0.052)	1.4380* (0.050)	1.4512** (0.048)
Prior Stock Performance [-24,0]	0.3885** (0.012)	0.3916** (0.011)	0.3613** (0.019)	0.3690** (0.017)	0.3660** (0.017)	0.3728** (0.016)
Cash Flow to Price	1.7572** (0.017)	1.7657** (0.016)	1.8306** (0.013)	1.8119** (0.014)	1.8476** (0.012)	1.8276** (0.014)
Industry Adjusted ROA	-0.3805 (0.258)	-0.3614 (0.277)	-0.3359 (0.323)	-0.3210 (0.341)	-0.3537 (0.304)	-0.3413 (0.316)
Stock Return Volatility	0.3484 (0.885)	0.2890 (0.904)	0.2916 (0.903)	0.1649 (0.945)	0.4142 (0.863)	0.3480 (0.885)
Bankruptcy Score	0.0324 (0.672)	0.0348 (0.649)	0.0307 (0.687)	0.0359 (0.638)	0.0348 (0.649)	0.0380 (0.619)
<i>Corporate Governance Measures</i>						
Analyst Coverage (0,1)	-0.4336* (0.092)	-0.4360* (0.090)	-0.4572* (0.075)	-0.4596* (0.074)	-0.4792* (0.062)	-0.4840* (0.060)
CEO/Director Social Ties (0,1)	0.3591 (0.241)	0.3493 (0.254)	0.3374 (0.274)	0.3397 (0.271)	0.3383 (0.271)	0.3408 (0.269)
CEO/Chairman Duality (0,1)	0.4588 (0.127)	0.4445 (0.138)	0.4488 (0.135)	0.4460 (0.137)	0.4293 (0.150)	0.4228 (0.156)
Big Board (0,1)	0.2504 (0.341)	0.2431 (0.355)	0.2502 (0.340)	0.2327 (0.376)	0.2492 (0.342)	0.2354 (0.371)
Board Independence (%)	1.0267* (0.077)	1.0296* (0.077)	1.0546* (0.070)	1.0409* (0.075)	1.0692* (0.067)	1.0682* (0.068)
Old Board (%)	0.8959 (0.447)	0.8432 (0.475)	0.7772 (0.510)	0.7321 (0.537)	0.7764 (0.509)	0.7332 (0.535)
Constant	-0.0546 (0.926)	-0.0222 (0.970)	-0.0186 (0.975)	0.0171 (0.977)	0.0030 (0.996)	0.0293 (0.961)
Observations	422	422	422	422	422	422
Pseudo R-Square	0.258	0.256	0.258	0.259	0.258	0.258

Table 6
Opportunistic Selling v. Routine Selling

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is either equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/Founder and remains on the Board following the accounting restatement and equal to 0 otherwise [D(Stay_Real)], or equal to 1 if the CEO keeps his job as CEO following the accounting restatement and 0 if the CEO was fired due to the accounting restatement [D(Stay)]. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. Results are shown for opportunistic or routine measures of insider trading based on the paper by Cohen, Malloy, and Pomorski (2012). See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable D(Stay_Real) = 1 or D(Stay) = 1 (P-Value in parenthesis, Marginal Effect in brackets)

	(1)	(2)	(3)	(4)
<i>Directors' Collusive Actions</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>
Collusive Opportunistic Selling [outside:inside] (CMP)	0.5731** (0.031) [.1411**]		0.4458* (0.082) [.1107*]	
Collusive Routine Selling [outside:inside] (CMP)		1.9825 (0.126) [.3778]		1.8402 (0.146) [.3683]
Value Destroying Merger (0,1)	0.5420** (0.039) [.1337**]	0.5586** (0.033) [.1360**]	0.5653** (0.027) [.1395**]	0.5821** (0.022) [.1423**]
<i>Costs of Replacement</i>				
Under-Performance (0,1)	-0.5921** (0.041)	-0.4968* (0.081)	-0.7244** (0.011)	-0.6478** (0.020)
Managerial Ability (0,1)	0.4902* (0.096)	0.5910** (0.043)	0.4817* (0.089)	0.5586** (0.048)
Founder (0,1)	1.4877*** (0.002)	1.5361*** (0.002)	0.9467** (0.037)	0.9903** (0.030)
Founder/Chairman (0,1)	-0.6678 (0.253)	-0.5935 (0.308)	-0.6844 (0.215)	-0.6304 (0.252)
Certified Inside Director (0,1)	-0.5459 (0.140)	-0.5450 (0.143)	-0.5373 (0.147)	-0.5495 (0.142)
<i>Costs of Retention</i>				
Litigation (0,1)	-0.8800*** (0.001)	-0.8409*** (0.001)	-0.8275*** (0.001)	-0.8016*** (0.002)
AAER (0,1)	-1.2420*** (0.000)	-1.2261*** (0.000)	-1.2296*** (0.000)	-1.2202*** (0.000)

<i>Firm Characteristics</i>				
Restatement Annmt. Return [-1,+1]	1.4386** (0.050)	1.4862** (0.044)	0.8765 (0.216)	0.8980 (0.206)
Prior Stock Performance [-24,0]	0.3875** (0.012)	0.4110*** (0.008)	0.3088** (0.031)	0.3295** (0.022)
Cash Flow to Price	1.7657** (0.016)	1.7945** (0.015)	2.5069*** (0.002)	2.5018*** (0.002)
Industry Adjusted ROA	-0.3748 (0.264)	-0.2608 (0.421)	-0.5680 (0.106)	-0.4732 (0.171)
Stock Return Volatility	0.3463 (0.885)	0.6629 (0.782)	1.2098 (0.607)	1.4647 (0.541)
Bankruptcy Score	0.0329 (0.667)	0.0253 (0.738)	-0.0193 (0.797)	-0.0243 (0.745)
<i>Corporate Governance Measures</i>				
Analyst Coverage (0,1)	-0.4393* (0.088)	-0.4763* (0.063)	-0.3052 (0.222)	-0.3357 (0.178)
CEO/Director Social Ties (0,1)	0.3691 (0.228)	0.3763 (0.220)	0.4359 (0.139)	0.4392 (0.137)
CEO/Chairman Duality (0,1)	0.4537 (0.131)	0.4104 (0.168)	0.4595 (0.122)	0.4239 (0.151)
Big Board (0,1)	0.2555 (0.331)	0.2854 (0.275)	0.2302 (0.366)	0.2508 (0.324)
Board Independence (%)	1.0044* (0.083)	1.0290* (0.076)	0.5934 (0.294)	0.6225 (0.272)
Old Board (%)	0.8947 (0.447)	0.8086 (0.489)	1.0332 (0.362)	0.9664 (0.393)
Constant	-0.0367 (0.950)	0.0288 (0.961)	-0.0320 (0.956)	0.0170 (0.977)
Observations	422	422	422	422
Pseudo R-Square	0.257	0.254	0.231	0.230

Table 7
Selling Intensity

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is either equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/Founder and remains on the Board following the accounting restatement and equal to 0 otherwise [D(Stay_Real)], or equal to 1 if the CEO keeps his job as CEO following the accounting restatement and 0 if the CEO was fired due to the accounting restatement [D(Stay)]. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. Results are shown for measures of the intensity of insider trading based on the paper by John and Lang (1991). See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable D(Stay_Real) = 1 or D(Stay) = 1 (P-Value in parenthesis, Marginal Effect in brackets)

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Directors' Collusive Actions</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>
Collusive Intensity Selling [outside:inside] (Trades)	0.2738*** (0.009) [.0684***]			0.2106** (0.039) [.0527**]		
Collusive Intensity Selling [outside:inside] (Shares)		0.2246** (0.024) [.0559**]			0.1617* (0.095) [.0404*]	
Collusive Intensity Selling [outside:inside] (Dollars)			0.2204** (0.027) [.0549**]			0.1579 (0.104) [.0394]
Value Destroying Merger (0,1)	0.5534** (0.035) [.1334**]	0.5411** (0.040) [.1296**]	0.5479** (0.037) [.1309**]	0.5750** (0.024) [.1397**]	0.5672** (0.026) [.1372**]	0.5733** (0.024) [.1385**]
<i>Costs of Replacement</i>						
Under-Performance (0,1)	-0.5575* (0.055)	-0.5662* (0.051)	-0.5569* (0.054)	-0.7033** (0.013)	-0.7036** (0.013)	-0.6962** (0.014)
Managerial Ability (0,1)	0.5010* (0.090)	0.5183* (0.078)	0.5113* (0.082)	0.4896* (0.085)	0.5029* (0.076)	0.4984* (0.078)
Founder (0,1)	1.4513*** (0.003)	1.4444*** (0.003)	1.4362*** (0.003)	0.9195** (0.043)	0.9145** (0.044)	0.9099** (0.045)
Founder/Chairman (0,1)	-0.6237 (0.285)	-0.5925 (0.310)	-0.5884 (0.312)	-0.6645 (0.228)	-0.6314 (0.251)	-0.6284 (0.253)
Certified Inside Director (0,1)	-0.4817 (0.191)	-0.5115 (0.166)	-0.5118 (0.166)	-0.4782 (0.194)	-0.5012 (0.174)	-0.5016 (0.174)
<i>Costs of Retention</i>						
Litigation (0,1)	-0.8775*** (0.001)	-0.8551*** (0.001)	-0.8647*** (0.001)	-0.8227*** (0.001)	-0.8036*** (0.002)	-0.8102*** (0.001)
AAER (0,1)	-1.2445*** (0.000)	-1.2342*** (0.000)	-1.2239*** (0.000)	-1.2253*** (0.000)	-1.2172*** (0.000)	-1.2097*** (0.000)

<i>Firm Characteristics</i>						
Restatement Annmt. Return [1.4445*	1.4449**	1.4839**	0.8650	0.8745	0.9042
	(0.050)	(0.049)	(0.044)	(0.226)	(0.219)	(0.204)
Prior Stock Performance [-24,0	0.3805**	0.3823**	0.3773**	0.3018**	0.3048**	0.3015**
	(0.014)	(0.014)	(0.015)	(0.036)	(0.034)	(0.037)
Cash Flow to Price	1.8262**	1.7589**	1.7639**	2.5468***	2.4933***	2.5020***
	(0.013)	(0.016)	(0.017)	(0.002)	(0.002)	(0.002)
Industry Adjusted ROA	-0.2975	-0.2988	-0.3027	-0.5086	-0.5031	-0.5060
	(0.353)	(0.351)	(0.347)	(0.142)	(0.145)	(0.143)
Stock Return Volatility	0.3105	0.3744	0.2097	1.2119	1.2525	1.1372
	(0.898)	(0.876)	(0.930)	(0.609)	(0.596)	(0.630)
Bankruptcy Score	0.0515	0.0500	0.0498	-0.0062	-0.0078	-0.0080
	(0.503)	(0.516)	(0.518)	(0.935)	(0.918)	(0.916)
<i>Corporate Governance Measures</i>						
Analyst Coverage (0,1)	-0.4064	-0.4237	-0.4251*	-0.2796	-0.2959	-0.2974
	(0.116)	(0.101)	(0.100)	(0.266)	(0.238)	(0.235)
CEO/Director Social Ties (0,1)	0.3682	0.3750	0.3830	0.4376	0.4414	0.4466
	(0.232)	(0.222)	(0.212)	(0.139)	(0.135)	(0.130)
CEO/Chairman Duality (0,1)	0.4066	0.3981	0.3869	0.4236	0.4153	0.4075
	(0.174)	(0.182)	(0.194)	(0.152)	(0.159)	(0.167)
Big Board (0,1)	0.2802	0.2637	0.2651	0.2432	0.2360	0.2376
	(0.288)	(0.316)	(0.313)	(0.341)	(0.354)	(0.351)
Board Independence (%)	0.9457	0.9811*	0.9612*	0.5543	0.5830	0.5684
	(0.101)	(0.090)	(0.098)	(0.327)	(0.303)	(0.316)
Old Board (%)	0.9038	0.9023	0.8650	1.0323	1.0366	1.0139
	(0.449)	(0.447)	(0.464)	(0.366)	(0.362)	(0.372)
Constant	0.1602	0.1233	0.1427	0.1083	0.0803	0.0936
	(0.788)	(0.836)	(0.810)	(0.852)	(0.890)	(0.872)
Observations	422	422	422	422	422	422
Pseudo R-Square	0.261	0.258	0.258	0.233	0.230	0.230

Table 8

Individual Groups v. Collusion of Groups

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is either equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/Founder and remains on the Board following the accounting restatement and equal to 0 otherwise [D(Stay_Real)], or equal to 1 if the CEO keeps his job as CEO following the accounting restatement and 0 if the CEO was fired due to the accounting restatement [D(Stay)]. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. Results are shown for the individual groups of outside directors, inside directors, and the CEO as well as for the collusion of outside and inside directors. See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable D(Stay_Real) = 1 or D(Stay) = 1 (P-Value in parenthesis, Marginal Effect in brackets)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Directors' Collusive Actions</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>	<i>D(Stay)</i>
Abnormal Selling [outside] (2 year prior period)	0.2905 (0.237) [.0724]				0.1164 (0.625) [.0291]			
Abnormal Selling [inside] (2 year prior period)		0.4890* (0.053) [.1215**]				0.4640* (0.060) [.1155*]		
Abnormal Selling [CEO] (2 year prior period)			0.4666* (0.063) [.1160*]				0.3394 (0.164) [.0846]	
Collusive Abnormal Selling [outside:CEO:others inside] (2 year prior period)				0.8421** (0.049) [.1996**]				0.8819** (0.028) [.2101**]
Value Destroying Merger (0,1)	0.5727** (0.029) [.1407**]	0.5378** (0.041) [.1230**]	0.5426** (0.039) [.1344**]	0.5568** (0.034) [.1360**]	0.5933** (0.020) [.1452**]	0.5563** (0.029) [.1290**]	0.5722** (0.025) [.1415**]	0.5765** (0.024) [.1415**]
<i>Costs of Replacement</i>								
Under-Performance (0,1)	-0.5441* (0.058)	-0.5736** (0.047)	-0.5889** (0.043)	-0.5431* (0.058)	-0.6619** (0.018)	-0.7177** (0.011)	-0.7095** (0.012)	-0.6991** (0.013)
Managerial Ability (0,1)	0.5446* (0.062)	0.5338* (0.069)	0.5404* (0.065)	0.5393* (0.065)	0.5184* (0.065)	0.5068* (0.074)	0.5143* (0.068)	0.5235* (0.065)
Founder (0,1)	1.5380*** (0.001)	1.4365*** (0.003)	1.4757*** (0.002)	1.4829*** (0.002)	1.0133** (0.024)	0.9347** (0.038)	0.9787** (0.030)	0.9499** (0.037)
Founder/Chairman (0,1)	-0.6240 (0.281)	-0.5645 (0.328)	-0.5850 (0.310)	-0.6092 (0.295)	-0.6787 (0.212)	-0.6481 (0.235)	-0.6646 (0.222)	-0.6674 (0.225)
Certified Inside Director (0,1)	-0.4971 (0.177)	-0.5027 (0.169)	-0.5300 (0.148)	-0.5683 (0.128)	-0.4971 (0.177)	-0.5028 (0.169)	-0.5178 (0.158)	-0.5865 (0.117)
<i>Costs of Retention</i>								
Litigation (0,1)	-0.8411*** (0.001)	-0.8660*** (0.001)	-0.8688*** (0.001)	-0.8444*** (0.001)	-0.7870*** (0.002)	-0.8285*** (0.001)	-0.8186*** (0.001)	-0.8168*** (0.001)
AAER (0,1)	-1.2059*** (0.000)	-1.2488*** (0.000)	-1.2218*** (0.000)	-1.2271*** (0.000)	-1.2045*** (0.000)	-1.2480*** (0.000)	-1.2162*** (0.000)	-1.2402*** (0.000)

<i>Firm Characteristics</i>								
Restatement Anncmt. Return [-1,+1]	1.5354** (0.036)	1.3885* (0.059)	1.4053* (0.056)	1.4143* (0.055)	0.9370 (0.185)	0.8191 (0.250)	0.8574 (0.227)	0.8113 (0.256)
Prior Stock Performance [-24,0]	0.3926** (0.011)	0.3679** (0.018)	0.3768** (0.015)	0.3782** (0.015)	0.3238** (0.025)	0.2900** (0.045)	0.3039** (0.036)	0.2947** (0.043)
Cash Flow to Price	1.7648** (0.017)	1.8337** (0.013)	1.8511** (0.012)	1.8671** (0.012)	2.4725*** (0.002)	2.5388*** (0.002)	2.5377*** (0.002)	2.6187*** (0.001)
Industry Adjusted ROA	-0.2823 (0.390)	-0.2942 (0.360)	-0.2851 (0.372)	-0.3193 (0.345)	-0.4834 (0.161)	-0.5083 (0.139)	-0.4853 (0.155)	-0.5574 (0.117)
Stock Return Volatility	0.3129 (0.896)	0.5566 (0.817)	0.3916 (0.871)	0.5773 (0.809)	1.1957 (0.615)	1.3905 (0.556)	1.2328 (0.601)	1.4302 (0.548)
Bankruptcy Score	0.0307 (0.684)	0.0352 (0.642)	0.0383 (0.614)	0.0237 (0.755)	-0.0199 (0.789)	-0.0121 (0.871)	-0.0113 (0.879)	-0.0264 (0.725)
<i>Corporate Governance Measures</i>								
Analyst Coverage (0,1)	-0.4614* (0.072)	-0.4828* (0.060)	-0.4645* (0.070)	-0.4472* (0.082)	-0.3298 (0.186)	-0.3411 (0.172)	-0.3255 (0.192)	-0.2967 (0.236)
CEO/Director Social Ties (0,1)	0.3660 (0.231)	0.3603 (0.240)	0.3602 (0.241)	0.3583 (0.245)	0.4286 (0.145)	0.4246 (0.151)	0.4225 (0.152)	0.4160 (0.161)
CEO/Chairman Duality (0,1)	0.4075 (0.171)	0.3888 (0.193)	0.3847 (0.198)	0.4031 (0.177)	0.4182 (0.156)	0.4095 (0.167)	0.4059 (0.169)	0.4238 (0.153)
Big Board (0,1)	0.2524 (0.335)	0.3058 (0.245)	0.2818 (0.283)	0.3106 (0.237)	0.2402 (0.345)	0.2704 (0.289)	0.2503 (0.325)	0.2802 (0.274)
Board Independence (%)	1.0357* (0.074)	1.0553* (0.068)	1.0621* (0.067)	1.0448* (0.071)	0.6484 (0.250)	0.6657 (0.237)	0.6632 (0.240)	0.6605 (0.244)
Old Board (%)	0.8217 (0.484)	1.0073 (0.397)	0.9104 (0.444)	0.6523 (0.580)	0.9780 (0.386)	1.1230 (0.326)	1.0192 (0.371)	0.7420 (0.516)
Constant	-0.0361 (0.952)	-0.1212 (0.840)	-0.0886 (0.883)	-0.0122 (0.984)	-0.0056 (0.992)	-0.1298 (0.825)	-0.0692 (0.906)	-0.0415 (0.943)
Observations	422	422	422	422	422	422	422	422
Pseudo R-Square	0.252	0.256	0.256	0.257	0.226	0.232	0.229	0.234

Table 9
Alternative Estimation Methods

The sample consists of 427 firms which restated intentional accounting misreporting during the period 1993 to 2007. A logistic specification is used in these regressions where the dependent variable is equal to 1 if the CEO keeps his job as CEO following the accounting restatement or if the CEO was a Chairman/Founder and remains on the Board following the accounting restatement, and is equal to 0 otherwise. For binary variables the marginal effect is due to a change from 0 to 1 of the independent variable and for continuous variables the marginal effect is due to a change from .5 standard deviations below the median to .5 standard deviations above the median of the independent variable, while holding all other independent variables at their median values. Columns 1, 2, and 3 report the results for the full model with year and industry fixed effects. Columns 4, 5, and 6 report the corrected coefficients and p-values from the Heckman Selection Model where restating firms are distinguished from the Compustat population using a model that captures risk, profitability, growth, and pricing characteristics. See the Appendix for descriptions of all variables.

Logistic Regression: Dependent Variable $D(Stay_Real) = 1$ (P-Value in parenthesis, Marginal Effect in brackets)

<i>Directors' Collusive Actions</i>	Fixed Effects			Heckman Selection Model		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>	<i>D(Stay_Real)</i>
Collusive Selling [outside:inside]	0.6618** (0.023) [.1446*]			0.3993** (0.013)		
Collusive Abnormal Selling [outside:inside] (2 year prior period)		0.6303** (0.038) [.1418*]			0.4103** (0.015)	
Collusive Abnormal Selling [outside:inside] (matched prior period)			0.6539** (0.036) [.1441*]			0.4079** (0.018)
Value Destroying Merger (0,1)	0.6934** (0.017) [.1523**]	0.6973** (0.016) [.1581**]	0.7164** (0.013) [.1593**]	0.3190** (0.041)	0.3262** (0.036)	0.3379** (0.030)
Costs of Replacement						
Under-Performance (0,1)	-0.7022** (0.027)	-0.6990** (0.028)	-0.6992** (0.028)	-0.4134** (0.025)	-0.4147** (0.024)	-0.4190** (0.023)
Managerial Ability (0,1)	0.5149 (0.118)	0.5438* (0.098)	0.5639* (0.087)	0.2789 (0.120)	0.3044* (0.089)	0.3148* (0.079)
Founder (0,1)	1.8327*** (0.001)	1.8557*** (0.001)	1.8440*** (0.001)	0.8631*** (0.002)	0.8762*** (0.002)	0.8641*** (0.002)
Founder/Chairman (0,1)	-0.7165 (0.264)	-0.7437 (0.246)	-0.7254 (0.258)	-0.4508 (0.188)	-0.4453 (0.191)	-0.4384 (0.197)
Certified Inside Director (0,1)	-0.4305 (0.278)	-0.3982 (0.313)	-0.3939 (0.318)	-0.2583 (0.264)	-0.2367 (0.302)	-0.2487 (0.279)
Costs of Retention						
Litigation (0,1)	-1.1020*** (0.000)	-1.1108*** (0.000)	-1.1096*** (0.000)	-0.5135*** (0.001)	-0.5241*** (0.001)	-0.5229*** (0.001)
AAER (0,1)	-1.0863*** (0.002)	-1.0779*** (0.002)	-1.0829*** (0.002)	-0.6830*** (0.000)	-0.6813*** (0.000)	-0.6879*** (0.000)
Observations	422	422	422	78,315	78,316	78,316
Pseudo R-Square	0.313	0.313	0.313			
Controls	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	NO	NO	NO
Industry Fixed Effects	YES	YES	YES	NO	NO	NO
LR Test of Indep rho=0				-0.0431	-0.0298	-0.0518
chi2(1)				0.010	0.001	0.010
prob>chi2				(0.924)	(0.948)	(0.909)

Appendix	
Variable Name	Variable Definition
Collusive Actions	
Collusive Selling [outside:inside]	Indicator equal to 1 if both outside directors and insiders (CEO and executive directors) have net shares sold during the restatement period
Collusive Selling [outside:CEO]	Indicator equal to 1 if both outside directors and the CEO have net shares sold during the restatement period
Collusive Abnormal Selling [outside:inside] (2 year prior period)	Indicator equal to 1 if both outside directors and insiders (CEO and executive directors) have net shares sold during the restatement period and sold more equity over the restatement period than over the prior two year period
Collusive Abnormal Selling [outside:CEO] (2 year prior period)	Indicator equal to 1 if both outside directors and the CEO have net shares sold during the restatement period and sold more equity over the restatement period than over the prior two year period
Collusive Abnormal Selling [outside:inside] (matched prior period)	Indicator equal to 1 if both outside directors and insiders (CEO and executive directors) have net shares sold during the restatement period and sold more equity over the restatement period than over the matched prior period
Collusive Abnormal Selling [outside:CEO] (matched prior period)	Indicator equal to 1 if both outside directors and the CEO have net shares sold during the restatement period and sold more equity over the restatement period than over the matched prior period
Collusive Abnormal Selling [outside:CEO:others inside] (2 year prior period)	Indicator equal to 1 if outside directors, the CEO, and all other insiders (executive directors) have net shares sold during the restatement period and sold more equity over the restatement period than over the matched prior period
Collusive Abnormal Selling [outside:CEO:others inside] (matched prior period)	Indicator equal to 1 if outside directors, the CEO, and all other insiders (executive directors) have net shares sold during the restatement period and sold more equity over the restatement period than over the matched prior period
Collusive Opportunistic Selling [outside:inside] (CMP)	Indicator equal to 1 if both outside directors and insiders (CEO and executive directors) have opportunistically sold net shares during the restatement period [opportunistic selling based on the paper by Cohen, Malloy, and Pomorski (2012)]
Collusive Opportunistic Selling [outside:CEO] (CMP)	Indicator equal to 1 if both outside directors and the CEO have opportunistically sold net shares during the restatement period [opportunistic selling based on the paper by Cohen, Malloy, and Pomorski (2012)]
Collusive Selling Intensity [outside:inside] (JL:Trades)	Sum of the trading intensity of trades by both outside directors and insiders (CEO and executive directors) during the restatement period [trading intensity based on the paper by John and Lang (1991), -1 is intense selling and +1 is intense buying]
Collusive Selling Intensity [outside:inside] (JL:Shares)	Sum of the trading intensity of shares by both outside directors and insiders (CEO and executive directors) during the restatement period [trading intensity based on the paper by John and Lang (1991), -1 is intense selling and +1 is intense buying]
Collusive Selling Intensity [outside:inside] (JL:Dollars)	Sum of the trading intensity of dollars by both outside directors and insiders (CEO and executive directors) during the restatement period [trading intensity based on the paper by John and Lang (1991), -1 is intense selling and +1 is intense buying]
Ratification	
Value Destroying Merger (0,1)	Indicator equal to 1 if there is at least one value destroying merger ratified by the CEO during the CEO's tenure
Costs of Replacement	
Under-Performance (0,1)	Indicator equal to 1 if firm's stock performance was one standard deviation below the industry median
Managerial Ability	The log of the average managerial ability rank for each firm over the CEO's tenure and restatement period (low rank relates to high managerial ability within the same 2-digit industry and year)
Founder (0,1)	Indicator equal to 1 if the CEO is the founder (or cofounder) of the firm
Founder/Chairman (0,1)	Indicator equal to 1 if the CEO is the founder (or cofounder) and serves as the chairman of the board of directors
Certified Inside Director (0,1)	Indicator equal to 1 if at least one executive director is serving on the board of another public firm at the time of the CEO turnover decision
CEO Tenure (days)	CEO's tenure at the firm with the accounting restatement in days
Costs of Retention	
Litigation (0,1)	Indicator equal to 1 if 10b-5 litigation (related to the accounting restatement) was filed
Litigation Settlement	Amount of cash settlement (in dollars) for the 10b-5 litigation filed against the firm that is related to the accounting restatement
AAER (0,1)	Indicator equal to 1 if the firm is subject to an accounting and auditing enforcement action by the SEC

Variable Name	Variable Definition
Size	
Sales	Sales (#12)
Total Assets	Total Assets (#6)
Profitability	
Return on Assets	Income before Extraordinary Items (#18) divided by total assets (#6)
Profit Margin	Income before Extraordinary Items (#18) divided by sales (#12)
Loss (0,1)	Indicator equal to 1 when Income before Extraordinary Items (#18) is negative
Market Performance Effects	
Restatement Annncnt. Return [-1,+1]	Market-adjusted three day return from day -1 to day +1 of the restatement announcement date
Prior Stock Performance [-24,-1]	Market-adjusted monthly return from month -24 to -1 of the restatement announcement date
Growth & Risk	
Sales Growth	Ratio of sales in two consecutive years minus 1
Bankruptcy Score	"-4.803-(3.599*Return on Assets)+(5.406*Leverage)-(0.100*Current Ratio);" see Zmijewski (1984) (Higher scores indicate higher levels of financial distress)
Leverage	Total debt to total assets [(#5+#9)/#6]
Stock Return Volatility	Volatility of monthly market adjusted stock returns for a five year period ending 2 years before the restatement announcement
Fundamentals	
Book-to-Market	Book value of common equity (#60) divided by market value of equity (#24*#25)
Earnings to Price	Income before Extraordinary Items (#18) divided by market value of equity (#24*#25)
Sales to Price	Sales (#12) divided by market value of equity (#24*#25)
Cash Flow to Price	Cash Flow from Operations (#308) divided by market value of equity (#24*#25)
Restatement Characteristics	
Restatement Period (days)	The number of days over which the financial statements are restated
CFO Turnover (0,1)	Indicator equal to 1 when the CFO is fired
Social Connections During Fraud Period	
CEO/Director Social Ties (0,1)	Indicator equal to 1 if the fraction of the board with at least one social connection during or prior to the restatement period is greater than that of the median firm.
CEO/Director Social Ties (%)	Fraction of the board that has had at least one social connection to the CEO during or prior to the restatement period
CEO/Director Social Ties (#)	Number of social connections between the CEO and other current members of the board during or prior to the restatement period
Traditional Corporate Governance Measures	
Analyst (0,1)	Indicator that the firm is followed by at least one analyst
Board Size	The number of directors on the board in the year prior to the restatement announcement
Big Board (0,1)	Indicator equal to 1 if the number of directors is greater than that of the median firm
Board Dependence (%)	Fraction of the board who are considered to be executives
Old Board (%)	Fraction of directors known to be over 69 years old
Insider Concentrated Board (0,1)	Indicator equal to 1 if the fraction of executives is greater than that of the median firm
Prompter (0,1)	Indicator equal to 1 if the board, Auditor, or the SEC were involved in prompting the investigation into the accounting restatement
CEO/Chairman Duality (0,1)	Indicator equal to 1 if the CEO is also the Chairman of the Board