

Executives' "Off-The-Job" Behavior, Corporate Culture, and Financial Reporting Risk

Robert Davidson
McDonough School of Business, Georgetown University
rhd22@georgetown.edu

Aiyesha Dey
Carlson School of Management, University of Minnesota
deya@umn.edu

Abbie Smith
The University of Chicago Booth School of Business
abbie.smith@chicagobooth.edu

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Abstract

We examine how and why two aspects of CEO behavior outside the workplace, as measured by prior legal infractions and the ownership of luxury goods, are related to the likelihood of misstated financial statements, including fraud and material reporting errors. We interpret an executive's prior record of legal infractions, including charges of driving under the influence, other drug related charges, domestic violence, reckless behavior, disturbing the peace, and speeding tickets, as a symptom of a relatively low regard for laws and a lack of self-control. Hence we predict and find that record holders have a relatively high propensity to perpetrate fraud. We interpret an executive's prior ownership of luxury goods as a symptom of low frugality. We predict and find that the risk of fraudulent corporate reporting, the risk that other insiders are named in perpetrating fraud, and the risk of unintentional reporting errors increase over the tenure of "unfrugal CEOs", consistent with a deterioration in the culture/control environment. Also consistent with a loosening of the culture, we find a decline in measures of board monitoring intensity and an increase in the equity-based incentives of top executives during the tenure of unfrugal CEOs, and some evidence that these changes distinguish fraud from nonfraud years of the fraud sample. Further, unfrugal CFOs are more likely to be appointed by unfrugal CEOs than by frugal CEOs, and the relation between CFO type and fraud risk is more pronounced in firms run by unfrugal CEOs, consistent with a relatively weak control environment. Finally, we find a positive relation between less egregious earning management and CEOs' prior records and asset ownership, providing additional assurance that our results are not driven by a potential relation between executive type and SEC detection or enforcement.

Keywords: frugality, fraud, corporate culture, corporate governance.

JEL Classification Codes: G30; G34; G38

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1. Introduction

Decades of research has explored economy, industry, and firm-level determinants of corporate behavior and performance. In a seminal paper, Bertrand and Schoar (2003) drill down to the executive level, tracking top executives from firm to firm to investigate how corporate behavior and performance vary with who is at the helm. They document that top executives vary significantly in managerial “style”, with manager fixed effects especially pronounced for corporate acquisition and diversification decisions, dividend policies, interest coverage and cost cutting policies. Subsequent research in economics, finance, and accounting investigates the effects of individual executives in a variety of additional settings (e.g. Malmendier and Tate (2005; 2008), Cain and McKeon (2010), Aktas et al. (2010), Bamber et al. (2010), Dyreng et al. (2010), Schrand and Zechman (2011)). This emerging literature indicates a non-trivial, and possibly first-order, manager-specific relation to corporate behavior and performance. However, how managerial style and corporate culture vary with observable characteristics of executives is not well understood.

We examine how and why two aspects CEO behavior outside the workplace, as measured by prior legal infractions and ownership of luxury goods, are related to the likelihood of misstated financial statements. We consider both reporting fraud and unintentional material reporting errors. We investigate two potential channels through which prior CEO behavior is linked to the probability of material misstatements: 1) the executive’s propensity to misreport (hereafter “propensity channel”); and 2) changes in corporate culture (hereafter “culture channel”).

Our first measure of CEO behavior is whether or not the CEO has prior legal infractions, including driving under the influence, other drug related charges, domestic violence, reckless behavior, disturbing the peace, and speeding tickets. We interpret a CEO’s prior legal infractions as a symptom of a relatively high disregard for laws and lack of self-control, and predict a direct, positive relation with his propensity to perpetrate fraud. And if CEOs with records (hereafter “record holders”) are associated with an erosion of the corporate culture (e.g. weaken internal control systems, appointment of unreliable CFO, reduce board monitoring) a positive relation between record holders and reporting errors also is expected,

with an increase in the risk of both fraud and material reporting errors over the CEO's tenure as the culture deteriorates.

Our second measure of prior CEO behavior is ownership of expensive cars, boats, and/or planes. We interpret ownership of such luxury goods as a symptom of relatively low "frugality". Prior consumer psychology research (DeYoung (1996); Lastovicka et al. (1999)) defines frugality as a distinct psychological trait characterized by the degree to which a consumer is restrained in acquiring and resourceful in using goods and services to achieve long-term goals. Managerial accounting research (Anderson and Lillis (2010)) characterizes *corporate* frugality in an analogous fashion, highlighting the relatively heavy focus on control systems in frugal firms and the potential influence of top management on corporate frugality. Hence, we posit that CEOs who own luxury goods (hereafter "unfrugal CEOs") are less likely to "run a tight ship" than frugal CEOs, increasing the risk of fraudulent and erroneous reporting. Further, we expect this reporting risk to increase over the tenure of unfrugal CEOs as the culture deteriorates. However, in contrast to record holders, we have no clear prediction regarding unfrugal CEOs' propensity to personally perpetrate fraud, given no obvious connection between frugality and the ability to rationalize illegal behavior.

Based on a sample of 110 fraud firms identified in SEC Accounting and Auditing Enforcement Releases (AAERs) and a matched sample of 110 nonfraud firms, we find that 20 percent of CEOs of fraud firms had a record at the time of the initiation of the fraud vs. 5 percent of CEOs nonfraud firms. This positive "record effect" on fraudulent corporate reporting is highly significant and robust to controls for the CEO's equity-based incentives to misreport and to controls for the likelihood of fraud *detection* (conditional on fraud), including measures of firm visibility, auditor changes, board monitoring intensity, and likelihood of a material internal control weakness.

Results of two additional analyses indicate that record holders are significantly more likely to be named in an AAER for perpetrating fraud than executives with a clean record. The first analysis employs the total sample of fraud and nonfraud firm-years. The second analysis is based on the CEOs and CFOs of a subsample of 75 fraud firms only, and examines whether the record of the CEO or CFO is related to

the likelihood that he is named for perpetrating the fraud. An appealing feature of this analysis is that for each CEO/CFO pair, the corporate culture and other firm-level factors related to fraudulent reporting or the detection/enforcement of fraud are held constant, reducing concerns about omitted correlated variables. Together these results support the “propensity” channel for executives with a prior record.

In contrast, we find little evidence that the corporate culture becomes more conducive to misreporting during the tenure of record holders (“culture” channel). To explore this channel, we test whether the probability of fraudulent corporate reporting and restatements due to unintentional reporting errors increase over the tenure of record holders as the culture deteriorates, and find no support for these effects. We also test whether the probability of fraud perpetrated by *other* insiders increases over the tenure of CEOs with a prior record, and find weak/mixed results. Further, we fail to find any direct evidence of changes in culture during the tenure of record holders; i.e. the appointment of a CFO with a record or an unfrugal CFO, an increase in the probability of a material internal control weakness through changes to the business, a reduction in the intensity of board monitoring, or an increase in executives’ equity-based incentives to misreport. And finally, we find no evidence that fraud risk varies with CFO type (as measured by the CFO’s prior record and asset ownership) to a greater extent in firms run by CEOs with a record.

Our results for unfrugal CEOs tell a different story. First, we find no evidence from our analysis of who is named in fraud that unfrugal executives have a high propensity to perpetrate fraud (“propensity” channel). This is not surprising given no obvious link between frugality and regard for laws. And second, we do find support for the culture channel for unfrugal CEOs. Over the tenure of unfrugal CEOs, there is a significant increase in the probability of fraudulent corporate reporting, of other insiders being named in fraud, and of restatements caused by material reporting errors. In addition, measures of board monitoring intensity decline and executives’ equity-based incentives to misreport increase during the tenure of unfrugal CEOs, and these changes help to distinguish fraud from nonfraud years in the sample of fraud firms run by unfrugal CEOs. Further, unfrugal CFOs are more likely to be appointed by unfrugal CEOs than by frugal CEOs, and fraud risk varies significantly more with CFO type (as measured by both the

CFO's prior record and asset ownership) in firms run by unfrugal CEOs, consistent with a relatively weak control environment.

Our final analysis examines whether less egregious earnings management is more pervasive in firms run by record holders and unfrugal CEOs. We find that firms run by record holders and by unfrugal CEOs are significantly more likely to meet or barely beat analysts' forecasts. These results provide further evidence that the link between prior executive behavior and financial reporting is not driven entirely by a potential relation between these behaviors and SEC detection or enforcement procedures.

The evidence presented here provides new insights into the risk of materially misstated financial statements. The factors associated with misreporting are relevant for auditors, directors, investors, competitors and potential entrants, suppliers, customers, and other users of financial statement information. And given the important informational and contracting role of financial statement information in facilitating economic growth and efficiency, the factors associated with misreporting have been the focus of much prior research (e.g. DeFond and Jiambalvo (1991), Beasley (1996), Dechow, Sloan and Sweeney (1996), Abbot, Parker and Peters (2004), Agrawal and Chadha (2005), Hennes, Leone, and Miller (2008), Dechow, Ge, Larson and Sloan (2011), Schrand and Zechman (2011)). The majority of this research focuses on the relation between misreporting and hypothesized motives and opportunities to misreport. We add to this literature by providing evidence on the relation between misreporting and executives' prior behavior outside the work environment. We also add to this literature by providing evidence of how prior executive behavior is associated with 1) his propensity to misreport, and 2) changes in the corporate culture during the CEO's tenure.

Our study also contributes to the literature examining the relation between manager characteristics (e.g. education level, birth cohort, narcissism, overconfidence) and managerial style. We introduce to this literature measures of the propensity to break the law and frugality based on legal infractions outside the workplace and ownership of luxury goods. Our results provide preliminary evidence that these measures capture meaningful variation in managerial "style" related to the risk of

misstatements, raising the possibility that these measure are useful in exploring other aspects of corporate behavior and performance.

Our results also have potential implications for the large literature on the determinants and effects of corporate governance. Although our results do not demonstrate causality, they do provide evidence of an association between CEO type and changes in governance structures (e.g. board monitoring, equity-based incentives) during the tenure of the CEO. Second, our results suggest that the effects of governance structures may vary in an intuitive way with CEO type. For example, the probability of fraud is more strongly associated with the equity-based incentives of unfrugal CEOs (vs. frugal CEOs), raising the question of whether other behaviors of unfrugal executives vary more with incentive packages. And does the policing role of the board matter more for unfrugal executives and/or executives with records?

Finally, our results contribute to the criminology literature, providing evidence that executives with prior legal infractions outside the workplace are more likely to be named for perpetrating fraud within the corporate environment.

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature and develops our hypotheses. Section 3 describes the sample and provides some descriptive statistics. Section 4 presents the research design and the results of our main fraud analyses and sensitivity tests. Section 5 discusses our analyses of reporting errors and changes in corporate culture. Section 6 provides concluding remarks and future research opportunities.

2. Hypotheses Development

Our research builds on several literatures. Hambrick and Mason's (1984) "Upper Echelons Theory" argues that managerial experiences, values and cognitive styles, such as honesty, affect their choices and consequent corporate decisions. Motivated by this theory, prior studies examine the effect of managerial characteristics on corporate decisions. Bertrand and Schoar (2003) introduce manager fixed effects in their examination of corporate investment behavior, financing policy, organizational strategy

and performance. They conclude that top executives vary in management “styles”, explaining differences in corporate strategies and outcomes. Similarly, Bamber et al. (2010) document that top executives influence their firms’ voluntary accounting disclosures, and Dyreng et al. (2010) find that individual executives influence the level of corporate tax avoidance.

Other studies focus on identifying specific managerial characteristics associated with corporate decisions and/or performance. For example, Kaplan et al. (2011) find that subsequent corporate performance is positively associated with CEOs’ general abilities and execution skills, and Malmendier and Tate (2009) document that award-winning “superstar” CEOs subsequently underperform, manage earnings more and extract more compensation.

Personal characteristics that have received considerable attention are over-confidence and narcissism. Roll (1986) argues that management over-confidence is associated with unsuccessful corporate takeovers. Malmendier and Tate (2008; 2005) find that over-confident CEOs are more likely to engage in value-destroying mergers and acquisitions (M&A) and link overconfidence to corporate investment decisions. Cain and McKeon (2010) argue that over-confidence leads to increased over-all risk taking and more frequent M&A activity, while Schrand and Zechman (2011) find that overconfident CEOs are more likely to initially overstate earnings by small, within GAAP amounts, which can then put them on a slippery slope to accounting fraud. Aktas et al. (2010) find that CEO narcissism in both the acquirer and target companies has a negative effect on the takeover process. Based on psychometric tests administered to CEOs, Graham et al. (2010) find evidence consistent with a matching between behavioral traits of executives and the kinds of companies they join. Further, they find these behavioral traits, such as optimism and risk-aversion, help explain compensation structure.

Our study also relates to the auditing literature which has long acknowledged the potential importance of ethics and tone at the top. The concept of a “Fraud Triangle” was formally incorporated in SAS 99 (*Consideration of Fraud on a Financial Statement Audit*, October 2002). The standard describes the fraud triangle and states that three conditions are present when fraud occurs: 1) there is an *incentive* or pressure that provides a reason to commit fraud, 2) there is an *opportunity* to perpetrate fraud (e.g.

absence of controls, ineffective controls, or the ability of management to override controls), and 3) the individuals committing the fraud possess an *attitude* that enables them to rationalize the fraud (hereafter a “propensity” to perpetrate fraud). Prior research focuses primarily on the first two factors (i.e. incentives and opportunities), with the notable exception of Schrand and Zechman (2011).

We build on these literatures by examining how and why executives’ prior behavior outside the workplace is associated with the risk that financial statements are materially misstated.¹ We consider two types of material misstatements, fraud and material reporting errors. While both types of misreporting misinform capital markets, analysts, competitors, suppliers, directors and others users of financial statements, they are distinguished by intent; fraud is intentionally perpetrated by insiders, while errors are unintentional, and generally viewed as a manifestation of a weakness in a firm’s internal control systems.

Our first measure of an executive’s behavior is whether he has prior legal infractions, interpreted as a manifestation of a disregard for laws and lack of self-control. The criminology literature defines crime as an act of force or fraud undertaken in the pursuit of self interest, and argues that individuals with greater propensities to commit crimes are likely to have low self-control and are less likely to conform to social norms and laws (Gottfredson and Hirschi (1990)). Jones and Kavanagh (1996) show that individuals lacking conventional morality exhibit significantly more unethical behavioral tendencies than others. Blickle et al. (2006) argue that low self-control and high hedonism are positively related to the likelihood of committing white-collar crime. Further, individuals displaying unethical tendencies, such as past criminal behavior, tend to persist in this type of behavior by justifying it through moral disengagement and by exhibiting motivated forgetting of information that might otherwise limit their dishonesty (Gendreau et al. (1996); Shu et al. (2009)). Finally, Fisman and Miguel (2007) find that UN diplomats’ unpaid parking tickets in NYC are significantly related to the corruption and legal enforcement

¹ While CEO legal infractions and low frugality may be related to other attributes such as overconfidence and risk-seeking, we argue that these capture distinct character traits of individuals. In sensitivity analyses we find that measures of CEO overconfidence and risk-seeking are not significantly correlated with our measures of CEOs’ records and frugality, and our results are robust to controlling for measures of CEO overconfidence and risk-seeking tendencies in our regressions.

in their home country, suggesting that even apparently minor legal violations can capture differential behavioral norms.

If the presence/absence of a record captures meaningful variation in regard for laws and self-control, we expect record holders to have a relatively strong propensity to intentionally mislead investors (propensity channel).² Hence, we predict that firm runs by record holders are more likely to issue fraudulent financial statements, and that record holders are more likely to be named for perpetrating fraud. In contrast, we do not expect a CEO's propensity to misreport to have a direct effect on the probability of reporting *errors*, since errors are deemed unintentional. However, a corporate culture conducive to misstatements may be established during the reign of record holders, increasing the risk of errors and fraud (culture channel).³

Our second measure of prior CEO behavior is the ownership of luxury goods (including aircrafts, boats, and cars costing more than \$75,000), interpreted as a manifestation of relatively low personal frugality.⁴ Frugality is identified in the consumer psychology literature as a distinct psychological trait characterized by the degree to which a consumer is both restrained in acquiring and resourceful in using goods and services to achieve long term goals (DeYoung (1996); Lastovicka et al. (1999)). This research suggests that frugality is not synonymous with pure deprivation or cheapness, but rather reflects short-term sacrifices in buying and using consumer goods and services to achieve longer-term goals. Further, frugality is likely to be indistinct from non-materialism (Lastovicka et al. (1996)). The question naturally arises as to how frugality affects an executive's stewardship of corporate resources.

² The link between records and disregard for laws & lack of self-control may arguably vary with the severity of the infraction (e.g. speeding tickets vs. more severe violations) and/or the number of infractions. Our results are robust to using two alternatives to the presence/absence of a record; 1) presence/absence of speeding tickets; 2) # prior infractions.

³ Sorting of CEOs with records to firms with a weak control environment also could lead to more misreporting in firms run by such CEOs. However, we find no evidence of sorting of record holders to such firms in our matched sample, suggesting that sorting is not driving our results. An interesting question for future research is whether record holders and unfrugal CEOs sort to firms with distinct cultures, growth opportunities, managerial discretion, regulatory environments, risk, etc. in *unmatched* samples.

⁴Liu and Yermack (2007) interpret the purchase of large homes as signals of CEO entrenchment, and find the such purchases are associated with a deterioration in future corporate performance.

Anderson and Lillis (2010) examine the notion of *corporate* frugality and suggest that it indicates an enduring corporate trait of consistent disciplined management of spending to achieve long term strategic objectives. Using a mix of field research and survey methods, they document that frugal companies have a relatively strong focus on controls and efficiency enhancing investments. Anderson and Lillis conjecture that the antecedent of such a frugal corporate culture includes frugal executives. Other researchers also stress the importance of key individuals, such as the CEO or the CFO, in overlaying an individual culture of frugality on an organization (Mazzini (1989)).⁵

If our measure of the ownership of luxury goods captures meaningful variation in executives' frugality, and if frugal CEOs oversee a culture of corporate frugality characterized by strong discipline and rigorous controls, we expect CEOs who own luxury goods (i.e. "unfrugal CEOs") to be more likely to oversee a "loose" culture conducive to misstatements, increasing the probability of reporting errors and fraud (culture channel). It is not clear that unfrugal CEOs will have a high probability of being named in fraud since there is no obvious connection between one's frugality and regard for laws (propensity channel). While unfrugal (i.e. materialistic) CEOs presumably have a relatively strong desire to maintain a luxurious lifestyle with high compensation (e.g. bonuses, option gains etc.), it seems unlikely that this temptation will induce unfrugal CEOs to commit fraud unless they have an attitude that enables them to rationalize the crime. This is ultimately an empirical question.

To summarize, we predict that firms run by record holders and by unfrugal CEOs have a relatively a high probability of material misstatements. However, our priors regarding how and why record holders vs. unfrugal CEOs are related to reporting risk differ somewhat. We expect record holders to be more likely to be directly involved in perpetrating fraud (propensity channel). In contrast, we do not have strong priors regarding unfrugal CEOs' propensity to commit fraud. However, we expect that a corporate culture conducive to misstatements (fraud and/or errors) is more likely to be established during the tenure of unfrugal CEOs and record holders than during the tenure of other CEOs (culture channel).

⁵ Some examples include Sam Walton's tightfisted management of Wal-Mart and Ingvar Kamprad's policy of continuous cost reduction at IKEA.

To examine the culture channel, we test whether the probability of misstatements (i.e. fraud and errors), and the probability that other insiders are named in fraud, increase over the tenure unfrugal CEOs and record holders. And we test whether the sensitivity of fraud to the presence of a *CFO* with a record or an unfrugal *CFO* is higher in firms run by record holders and unfrugal CEOs, consistent with a weak control environment.

To further examine the culture channel, we investigate whether CEO type is associated with changes in four aspects of the culture that we expect to increase the risk of material misstatements: (1) the appointment of a *CFO* with a record or an unfrugal *CFO*; (2) an increase in executives' equity-based incentives; 3) an increase in the probability of a material control weakness due to a change in business strategy (e.g. acquisitions, rapid growth, foreign operations, etc.); 4) a reduction in the intensity of board monitoring.

We include the appointment of a *CFO* with a record or an unfrugal *CFO* as a measure of a weakening culture due to the hypothesized disregard for rules and lack of focus on controls by record holders and unfrugal executives, respectively. We consider executives' equity-based incentives because prior researchers posit an associated motivation to mislead the capital markets by inflating reported performance (e.g. Erickson, Hanlon, and Maydew (2006), Davidson (2011), Armstrong, Jagolinzer, and Larcker (2010), Johnson, Ryan and Tian (2009)) and find mixed support for this hypothesis.

We consider an increase in the probability of a material control weakness as a deterioration in the culture because ineffective internal control systems increase opportunities to perpetrate fraud and the likelihood of unintentional reporting errors. We estimate the probability of a material weakness in internal controls for each year in the tenure of sample CEOs using a simplified version of Doyle, Ge and McVay (2007).⁶ This is intended to capture a change in the probability of a material control weakness due to a change in business strategy during a CEO's tenure. If the effectiveness of internal controls is reduced by

⁶ We exclude two explanatory variables, SPEs and number of segments, from the Doyle et al. (2007) model due to the lack of data.

the corporate growth and investment strategies of unfrugal CEOs or record holders, more misstatements are likely to result.⁷

We use three measures of a reduction in the intensity of board monitoring: a reduction in the stock-based compensation of independent directors (as a percentage of shares outstanding), a reduction in the structural independence of the board, and an increase in the number of structurally independent directors who have social ties to the CEO. The latter measure is motivated by recent papers which argue and document that structural independence may not ensure that directors objectively monitor the CEO because of social and professional ties that may exist between a structurally independent director and the CEO (Hwang and Kim (2009); Dey and Liu (2011)). Each of these proxies for board monitoring has been shown to be associated with financial reporting quality, and, hence, have the potential to adversely affect reporting outcomes (Bhagat and Bolton (2008); Bhagat et al. (1999); Klein (2002); Farber (2005); Larcker et al. (2007); Dey and Liu (2011)).

Finally, in an attempt to “close the loop” between changes in culture and misreporting, we explore whether the probability of fraud increases as expected with significant changes in corporate culture during the tenure of unfrugal CEOs.⁸

3. Sample, Data, and Descriptive Statistics

3.1 Sample

We derive our sample of fraud firms from AAERs between 1980 and 2010. These releases summarize investigations the SEC brings against the agents of firms for violations of SEC and Federal rules, and provides detailed information regarding the nature and timing of the violation (including the start and end dates), the accounts that were manipulated, and the direction of manipulation. Over the

⁷ In a related pilot study focused on the relation between CEO frugality and corporate investment behavior, we find preliminary evidence that unfrugal CEOs engage in more acquisitions, invest less in organic growth (R&D, capital expenditures), and generate lower future accounting and stock returns per dollar invested than frugal CEOs. Such changes in business strategy may reduce the effectiveness of internal control systems.

⁸ Since none of our measures of corporate culture change significantly during the tenure of criminal CEOs, our “close the loop” analysis is limited to unfrugal CEOs.

violation period 1980 through 2005, we have a total of 3,148 AAERs. We only consider firms for which it can be determined that their financial statements were materially misstated. After eliminating AAERs not involving accounting fraud and redundant cases we are left with 852 firms.⁹

From this sample of 852 firms, we remove 28 AAERs due to option backdating and asset or revenue understatements.¹⁰ After merging the remaining sample with CRSP and Compustat, we are left with 271 firms. The two primary reasons for the decline in sample size are the lack of any identifying code for the firm (363 firms) and the absence of CRSP and Compustat data before and during the period wherein the fraud began (190 firms). We eliminate an additional 161 firms for which executive compensation data are not available on ExecuComp, leaving our final sample of 110 firms whose fraud was initiated between 1992 and 2004.¹¹ Table 1, Panel A summarizes the sample selection process.

Table 1, Panel B presents the industry membership of the fraud sample. The majority of these firms are concentrated in two Fama-French industry groupings, “Consumer Durables, Non-durables, Wholesale, Retail and Some Services (Laundries and Repair Shops)” and “Business Equipment, Telephone and Television Transmission”. The error firms are evenly distributed across these industry groupings.

For each fraud firm we select a control firm from the same Fama-French industry group (five-industry classification) whose estimated probability of fraud in the fraud initiation year is closest to the that of the fraud firm. We generate estimates of fraud probabilities from a logit model (fraud vs. no fraud) estimated for all firms with available data for seven model variables: CEO age, average total assets, debt to equity ratio, excess stock returns, standard deviation of excess stock returns, and market to book

⁹ AAERs only document cases of fraud that are *detected* and *enforced*. It is possible that the SEC’s detection methods or litigation decisions are related to CEOs’ prior behavior outside the workplace. However, as Dechow et al. (2011) point out, the SEC identifies firms for review through anonymous tips, news reports, voluntary firm restatements, and their own review practices. Several independent sources provide information regarding potential malfeasance, which should reduce the possibility of bias in the SEC’s detection methods. Nevertheless, our interpretation of results is subject to the caveat that fraud detection and/or enforcement may be related to CEO behavior. This concern is mitigated to some extent by finding a similar relation between CEO behavior and proxies for less egregious earnings management which do not rely on SEC detection. See section 4.3.

¹⁰ In most of these cases, the fraudulent act is related to forging documents or failing to disclose the backdating to shareholders, not to overstating net earnings or assets. Nevertheless, we verify that our results are robust to including these cases (for the firms where other required data are available).

¹¹ About 70 percent of our sample firms initiated fraud between 1997 and 2001.

value of equity, all measured in the year prior to the fraud initiation of a given fraud firm, and the equity beta estimated over the prior 3 years. By considering industry, year, firm size, growth opportunities, leverage, and volatility we are attempting to match on important aspects of the business and contracting environment. We incorporate abnormal stock returns in the year prior to the fraud initiation year to mitigate recent performance differences between the two samples. Finally, we consider CEO age due to the potential influence of age on an executive's record, asset ownership, and financial reporting behavior.

We depict our fraud firm-years with an indicator variable, *FRAUD*, that equals 1 in fraud firm-years, and 0 for all other firm-years.¹² For all fraud firms, we examine whether any executives were named by the SEC as being directly involved in the perpetration of the fraud. *NAMED_EXEC* is an indicator variable equal to 1 in firm-years for which a given executive is named by the SEC as perpetrating the fraud, and 0 otherwise.

We obtain our sample of material reporting errors by combining the sample of restatements due to errors from the Audit Analytics database with the error sample in Hennes, Leone and Miller (2008).¹³ Our error sample includes 94 firms over the sample period 1995 – 2005. Our corresponding control sample comprises the 110 control non-fraud firms as well as 70 firms that do not have reporting errors randomly selected from each major industry over the sample period. We depict error firm-years with an indicator variable, *ERROR*, that equals 1 for the year when the firm had an error in its financial statements (subsequently restated), and equals 0 in all other sample firm-years.

¹² We include in our analyses all years since the CEO of each fraud firm was appointed for which we have data, up to and including the year of the initiation of the fraud. We use the same years for each fraud firm's matched nonfraud firm.

¹³ Hennes et al. (2008) begin with the GAO database of restatements, and identify the subset resulting from clerical errors. The GAO database excludes restatements that are not due to errors or manipulation. Specifically, the GAO claims to exclude restatements related to “mergers and acquisitions, discontinued operations, stock splits, issuance of stock dividends, currency-related issues (for example, converting from Canadian dollars to U.S. dollars), changes in business segment definitions, changes due to transfers of management, changes made for presentation purposes, general accounting changes under generally accepted accounting principles (GAAP), litigation settlements, and arithmetic and general bookkeeping errors. As a general rule we also excluded restatements resulting from accounting policy changes because they did not necessarily reveal previously undisclosed, economically meaningful data to market participants.”

Our data on executives' legal infractions and ownership of planes, boats, and luxury vehicles are obtained from numerous federal, state and county databases accessed by licensed private investigators.¹⁴ These data include information on criminal and civil convictions, specifically, traffic violations, driving under influence and other drug and alcohol related charges, reckless endangerment and domestic violence charges. We set an indicator variable, *RECORD*, equal to 1 if the executive has any such convictions in his personal record as of the year prior to the year of the initiation of the fraud (or the corresponding year for the matched control (nonfraud) firm), and 0 otherwise.¹⁵ We define *#RECORD* as the total number of criminal and civil convictions against an executive as of the year prior to the year of fraud initiation (or the corresponding year for the matched control firm) and verify the robustness of all our results with respect to this variable. *OWN* is an indicator variable equal to 1 if the executive owns luxury assets, including aircraft, boats, and cars with a purchase price greater than \$75,000, prior to the fraud initiation year (or the corresponding year for the matched control firm), and 0 otherwise. *#OWN* is defined as the total number of luxury assets owned by an executive prior to the fraud initiation year (or the corresponding year for the matched control firm).

Figures 1 and 2 graphically portray the frequency of legal infractions and ownership of assets by type for the fraud and non-fraud samples. A majority of the legal infractions comprise traffic violations. As is clear from figure 1, executives in the fraud firms have more traffic violations and other infractions than those in the control firms. Also, cars with purchase prices greater than \$75,000 and boats form the main components of luxury assets, with only one executive in both the fraud and non-fraud matched samples owning aircrafts. Figure 2 indicates more luxury assets among fraud firm executives as compared to control firm executives, although the differences are not as striking as the legal infractions. Figures 3 and 4 depict the analogous data for the sample of errors and control firms. We find that error firms have fewer CEOs with records. However, CEOs in error firms appear to be less frugal.

¹⁴ Our acquisition and use of asset data conforms to all provisions of the Driver's Privacy Protection Act (DPPA).

¹⁵ As a sensitivity check, we employ an alternative measure of *RECORD* that is set to nonzero if the executive has any convictions in his record, regardless of when they occurred. Our results are robust to this alternative.

For each of the sample firms we obtain data on the firm and governance characteristics from several sources. Firm characteristics and stock return data are obtained from Compustat and CRSP, respectively. We use governance data from the RiskMetrics database (previously called Investor Responsibility Research Center (IRRC) database), and executive compensation data from ExecuComp.

We obtain social connections between the CEO and directors from BoardEx of Management Diagnostics Limited, a private research company specialized in social network data on company officials of US and European public and private companies. The data contain relational links between directors and other officials for active companies. Links in the dataset are constructed by cross-referencing employment history, educational background and professional qualifications.¹⁶ To examine the social connections of directors with their CEOs, we consider whether an independent director overlapped with the CEO in the past for two or more years in at least one of the following: university, military service, employer. We also consider the director to be socially connected to the CEO if he or she is a member of one or more clubs, serves in one or more charities, or is a member of any other similar types of organizations with the CEO.¹⁷

3.2 Descriptive Statistics for Fraud Sample

Table 2, Panel A presents descriptive statistics for various, board, firm and CEO characteristics for our matched fraud and nonfraud samples. The variables are measured as of the year before the fraud was initiated (except for firm age, estimated in the fraud initiation year, and beta estimated using the three years prior to the fraud initiation year). Differences in the mean and median values for the fraud vs. nonfraud samples are reported as well as their significance levels.

Fraud firms have an average (median) of 69% (71%) independent directors, while the control sample has on average (median) of 65% (69%) independent directors. On average, the CEO has social ties

¹⁶ One example of a typical entry would be as follows: in the year 2005, Mr. Greene, CEO of Unicorn Inc., was “connected” to Mr. White, President of ABC Inc. since between 1992 and 1997 they both were employed by and served on the board of directors of XYZ Inc, respectively as CFO and COO. BoardEx does not depend on business professionals to volunteer their own data on the above aspects. Instead more than 500 trained analysts gather data on business professionals around the globe.

¹⁷ The Appendix presents definitions and data sources for all variables.

with his/her outside directors in 0.8% of fraud firms and 1% of control firms, while, while the median firm in both samples has no social ties between the CEO and outside directors. These differences in structural or social independence are not significant. Independent directors in the fraud sample receive a significantly (.05 level) smaller percentage of outstanding shares of stock as compensation, with a mean (median) number of shares received being 0.07% (0.02%) of the total shares outstanding. In comparison, the mean (median) independent director stock compensation is 0.12% (0.03%) of total shares outstanding in the control sample.

As expected, firm size, market-to-book, abnormal returns, leverage and CEO age are not significantly different across the two samples, indicating that the two samples are matched well in these dimensions. The other two performance measures (Tobin's Q and return on assets), equity risk (beta), auditor changes, percentage of fraud firms in the industry (2-digit SIC code) and internal control weaknesses also are not significantly different across two samples. Considering the two measures representing the firm visibility, analyst following is not significantly different across the two samples. However, the CEOs in the fraud firms get significantly higher media coverage than their counterparts in the control sample. The F-Score (the output of Model 1 of Dechow, Ge, Larson, and Sloan (2011)) is significantly higher in the fraud sample (mean (median) F-Score of 2.06 (1.64) for the fraud sample and 1.48 (1.30) for the control sample), indicating, not surprisingly, the higher likelihood of fraud among these firms. None of the other CEO characteristics are significantly different across the fraud and control samples.

As evident from figures 1 and 2, the measures of CEO type are significantly different across the two samples. More CEOs in the fraud sample have records: specifically, 20% of the fraud firm CEOs have a record, as compared to 5% of CEOs of non-fraud firms (T test of the difference is significant at .01 level). The total number of legal infractions in the fraud sample is 37 vs. 8 in the control sample (difference significant at .01 level). CEOs in the fraud sample also appear modestly less frugal (differences for *OWN* and *#OWN* are significant at .10 level); 37% of fraud firms' CEOs possess luxury

goods, as compared to 30% of non-fraud firm CEOs. The number of luxury goods for the fraud firm CEOs totals 80 vs. 70 for the control sample.

Table 2, Panel B presents Pearson (above diagonal) and Spearman (below diagonal) correlations between our main variables. Briefly, the main observations are as follows. Legal infractions, as measured by both *RECORD* and *#RECORD*, are significantly positively correlated with *FRAUD* (.01 level). *FRAUD* is marginally positively correlated with *OWN* and *#OWN* (only the Spearman correlation is significant for the latter). As expected, the F-Score also is significantly positively correlated with fraud and with the record variables. These correlations support the hypothesized relation between fraud and CEOs' records and, to a less extent, CEOs' asset ownership.

3.3 Descriptive Statistics for Error Sample

Table 2, Panel C presents the summary statistics for our error and control samples. All variables are measured as of the year before the errors occurred. As expected, *IC_WEAKNESS*, the estimated risk of an internal control weaknesses associated with a firm's business, is significantly higher in the error sample. We estimate *IC_WEAKNESS* as the fitted value from a modified version of the model in Doyle, Ge and McVay (2007) including firm size, firm age, foreign transactions, acquisitions and restructurings.¹⁸ Error firms have a significantly higher average Tobin's Q and lower median CEO tenure. None of the other variables are significantly different across the error and control samples.

Considering CEO type, the percentages of CEOs with records are generally similar across the error (4.25%) and control (5.8%) samples. However, ownership of luxury goods is significantly more prevalent among CEOs in the error sample; specifically, 51% of the error firm CEOs own luxury goods vs. 33% of non-error firm CEOs, consistent with the hypothesized "loose" control environment in firms run by unfrugal CEOs. The significant positive correlation (.01 level) between *ERROR* and *OWN* reported in Table 2, Panel D conveys a similar impression. In the next section we examine these relations in more depth in a multiple regression setting.

¹⁸ Due to lack of data, we exclude two variables of the Doyle et al. model, namely, SPEs and number of segments.

4. CEO Record, Asset Ownership, and Fraud

4.1 Empirical Specification

We begin by testing whether the likelihood of fraud varies with CEO type (measured by *RECORD* and *OWN*) using the following multi-period logit model, setting *FRAUD* equal to 1 for fraud firm-years, and 0 otherwise (including non-fraud years of the fraud sample firms and all years of the nonfraud sample firms).¹⁹

Our main “fraud” model appears below:

$$\begin{aligned} FRAUD = & \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times TENURE + \alpha_3 \times RECORD \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (1a)$$

$$\begin{aligned} FRAUD = & \alpha_0 + \alpha_1 \times OWN + \alpha_2 \times TENURE + \alpha_3 \times OWN \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (1b)$$

Model 1 allows the relation between *FRAUD* and CEO type to vary with CEO tenure. Hence model 1 enables us to test the prediction that fraud risk increases more over the tenure of record holders and unfrugal CEOs (vs. over the tenure of other CEOs), as well as testing whether fraud risk increases over the tenure of these executives in an *absolute* sense, providing our first tests of the “culture channel”.²⁰ The variable *%IND_FRAUD* (the percentage of firms in the same 2-digit industry that are fraud firms) is included to control for the industry related incidence of fraud using a narrower definition of industry than used to identify the matched control firms. The lagged values of Tobin’s Q and return on assets in the equation are included to control for past firm performance.

¹⁹ Our rationale for choosing a multi-period logit model over a traditional single-period logit analysis is based on Shumway (2001), which indicates two shortcomings in single-period models: (1) a sample selection bias that may arise from using only one, non-randomly selected observation per firm, and (2) a failure to model time-varying changes in the underlying or baseline risk of an event (such as bankruptcy or fraud). We verify that our results on main effects (*RECORD* and *OWN*) are robust to using Cox proportional hazards models (for all of our regressions).

²⁰ We repeat the above analysis (and all subsequent analyses) by replacing the indicator variables, *RECORD* and *OWN* with the number of legal infractions and number of luxury assets, *#RECORD* and *#OWN*, respectively. Our results for *#RECORD* and *#OWN* are similar to those for *RECORD* and *OWN* respectively for all regressions. We do not report these regressions in most tables for the sake of brevity.

To test whether the likelihood of being named in fraud (propensity channel) varies by CEO type (*RECORD* and *OWN*), we estimate the following multiperiod logit model (“CEO named model”):

$$\begin{aligned} NAMED_CEO = & \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times TENURE + \alpha_3 \times RECORD \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (2a)$$

$$\begin{aligned} NAMED_CEO = & \alpha_0 + \alpha_1 \times OWN + \alpha_2 \times TENURE + \alpha_3 \times OWN \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (2b)$$

The dependent variable, *NAMED_CEO*, is equal to 1 in fraud-years for which the CEO is named in the AAER as being a perpetrator of fraud, and 0 in all other firm-years for the total sample of fraud and nonfraud firms. We expect record holders to have a relatively high propensity to perpetrate fraud; however, however, given no obvious connection between a CEO’s frugality and ability to rationalize crime, we do not have strong priors about the relation between *OWN* and *NAMED_CEO*. We include tenure and its interaction with CEO type in the above models to allow the likelihood of being named in fraud to vary with the length of time the CEO has been at the helm.

Finally, to test whether the likelihood that other insiders are named in fraud varies with CEO type, we estimate the following multiperiod logit model (“Others named model”):

$$\begin{aligned} OTHERS_NAMED = & \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times TENURE + \alpha_3 \times RECORD \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (3a)$$

$$\begin{aligned} OTHERS_NAMED = & \alpha_0 + \alpha_1 \times OWN + \alpha_2 \times TENURE + \alpha_3 \times OWN \times TENURE + \alpha_4 \times TOBIN'S_Q \\ & + \alpha_5 \times ROA + \alpha_6 \times \%IND_FRAUD + \varepsilon \end{aligned} \quad (3b)$$

The dependent variable, *OTHERS_NAMED*, equals 1 if individuals other than the CEO were named by the SEC as the perpetrators of fraudulent reporting in a given year, and 0 for all other firm-years in the total sample. Model 3 enables us to test the prediction that the risk that other insiders are named in fraud increases more over the tenure of record holders and unfrugal CEOs (vs. over the tenure of other CEOs), as well as testing whether this risk increases over the tenure of these executives in an absolute sense, interpreted as a symptom of a deteriorating culture.

We check the robustness of results from the main models to the inclusion of a variety of additional control variables. One set of variables attempts to control for the visibility of the firm and the

CEO. A potential concern regarding the interpretation of results is that our fraud sample is limited to firms for which the violation of GAAP is *detected* and *enforced*. To the extent fraud detection and/or enforcement procedures (against the firm and/or specific individual) vary with CEO type (directly, or through correlated omitted variables), our interpretation of results as evidence of fraudulent reporting, per se, is problematic. In light of prior research suggesting that the visibility of the firm increases the likelihood of detection (Miller (2006)), we add several controls for visibility, including analyst following, press coverage of the firm, press coverage of the CEO, and auditor changes.²¹

We also control for the wealth of the CEO because wealthier CEOs are likely to own more luxury goods. We include perquisites the CEO receives from the firm in a given year to control for such lifestyle benefits & luxury goods. We also include the F-Score, the predicted probability of misstatements using the primary model developed by Dechow et al. (2011), to control for additional firm characteristics associated with misstatements.^{22, 23}

Because the inclusion of the additional control variable results in a loss of observations, we report results for models with and without these additional controls.

4.2 Results and Discussion

Table 3, Panels A and B present the results of models (1a) and (1b). Table 3, Panel A reports significant, positive coefficients on *RECORD* (at .01 and .05 levels) and insignificant interactions

²¹ In addition, as described below we separately analyse a sample which includes the CEOs and CFOs of 75 fraud firms only, examining whether the the likelihood that a given executive is named in fraud is related to that executive's type. Since fraud was detected and enforced for all firms in this sample, (and all firm level factors for a given CEO-CFO pair are held constant), the test provides additional assurance that omitted correlated variables are not driving the observed relation between fraud and executive character. As a final sensitivity check, we examine the relation between CEO character less and egregious earnings management not subject to detection or enforcement concerns. See section 4.3.

²² Model 1 from Dechow et al. (2011) includes accruals based on the accruals model developed by Richardson et al. (2005), the change in receivables, the change in inventory, %soft assets, the change in cash sales, the change in ROA, and an indicator variable measuring the issuance of stock and/or debt. To the extent that the F-Score is based on *symptoms* of fraudulent reporting (accruals etc.), inclusion of the F-Score may “throw the baby out with the bath water”. However, a comparison of the results both with and without the F-Score reveals that this is not the case.

²³ In untabulated results, we also include control variables for executives' equity-based incentives to misreport (*DELTA*), and opportunities to misreport (board monitoring (*%INDEP*, *SOCIAL*, and *DIR_SHARES*) and probability of an internal control weakness due to business strategy (*IC_WEAKNESS*)). Our results are robust to these controls.

between *RECORD* and tenure in all models. These results support the conjecture that firms run by executives with prior legal infractions have a significantly higher likelihood of fraud than firms run by others.²⁴ Although the coefficient on tenure is negative and significant in four models (consistent with a decline in fraud risk over the tenure of non-record holders), the chi-square statistics reported at the bottom of the table suggest the probability of fraud does not vary significantly over the tenure of record holders. These results provide no evidence to support a deterioration in the culture of firms run by record holders.

The results in Table 3, Panel B tell a different story for unfrugal CEOs. The coefficients on *OWN* are not significant at conventional levels in any of the models. However, the interactions between *OWN* and *TENURE* are positive and significant in five of the six models (at the .05 and .10 levels), indicating that the likelihood of fraudulent corporate reporting increases more with the tenure of unfrugal CEOs than with the tenure of frugal CEOs, consistent with the hypothesized erosion of corporate culture over the tenure of unfrugal CEOs. The chi-square statistics reported at the bottom of Panel B are significant at the .10 level in three of the six models, providing some (albeit weak) evidence that fraud risk increases in an absolute sense over the tenure of unfrugal CEOs.

Table 4, Panels A and B presents the results of the CEO named models (2a) and (2b) representing our investigation of the direct involvement of the CEO in fraudulent reporting (propensity channel). The results in Table 4, Panel A provide strong support for the prediction that record holders are more likely to be named for perpetrating fraud (the coefficients on *RECORD* are significant at the .01 level in five of six models, and at the .05 level in the 6th model). And while the probability of being named in fraud does not vary significantly over the tenure of non-record holders, the probability of being named in fraud *declines* significantly over the tenure of record holders in an absolute sense (chi-square statistics significant at .05 level or better in all six models), and relative to non-record holders (significant negative interaction between *RECORD* and tenure in all six models). These results suggest that record holders are more likely

²⁴ The inclusion of an interaction between *RECORD* and tenure makes it difficult to infer the magnitude of the main effect of legal infractions on accounting fraud from these tables. Instead, the marginal effect of such infractions for a given level of tenure can be estimated by multiplying the coefficient on the interaction by a chosen level of tenure and adding this to the coefficient on *RECORD*. For brevity, these marginal effects are not reported, but are available upon request.

to perpetrate fraud (propensity channel), but do not suggest a gradual deterioration in the culture of firms run by record holders (culture channel). In contrast, the results for unfrugal CEOs in Table 4, Panel B, do not support a relation between unfrugal CEOs and direct involvement in corporate fraud.

The results in Table 5, Panels A and B, present results for the Others named models (3a) and (3b), providing further insight into the culture channel. In Table 5, Panel A the coefficient for *RECORD* is significant in three out of six models (at the .05 and .10 levels), providing mixed evidence of an elevated risk of other insiders perpetrating fraud in firms run by CEOs with prior legal infractions. The results do not support the prediction that the risk of other insiders perpetrating fraud increases over the tenure of record holders.

In contrast, the results in Table 5, Panel B indicate that while the coefficient on *OWN* is not significant in any of the models, the interactions between *OWN* and *TENURE* are positive and significant in all models (at the .05 and .10 levels), suggesting that the probability that other insiders perpetrate fraud increase over the tenure of unfrugal CEOs more than over the tenure of frugal CEOs. The chi-square statistics for the sum of the coefficients on tenure and the interaction of *OWN* and tenure is positive and significant in 5 out of 6 models, implying that the positive relation between the tenure of an unfrugal CEO and the involvement of others in fraud is also significantly different from zero in an absolute sense (the chi-square statistics are significant at the .10 levels).

Collectively the results in Tables 3-5 suggest that fraud risk is elevated in firms run by CEOs with prior legal infractions and such record holders are significantly more likely than non-record holders to be directly involved in fraud (propensity channel). However, the results do not suggest that the culture gradually deteriorates over the tenure of record holders. In contrast the risk of fraud and other insiders being named in fraud increase over the tenure of unfrugal CEOs, providing preliminary evidence consistent with a loosening of the corporate culture during the reign of unfrugal CEOs. The results do not suggest a relation between a CEO's frugality and his propensity to commit fraud.

4.3 Sensitivity Analyses

CEO-CFO Fraud Firm Analysis

We conduct additional analyses to check the robustness of our results. One important concern is the potential for omitted correlated variables. If executives sort to firms in a nonrandom fashion, then the variables measuring CEO type may be proxying for such omitted firm characteristics. The nonrandom matching of executives with firms generally makes the identification of “executive effects” difficult. However, the AAERs identify the executives named as the perpetrator of the fraud, usually either the CEO, the CFO, or both. The identity of the executives responsible for perpetrating the fraud provides us with a unique setting to test the relation between executives’ personal and financial reporting behavior while holding constant firm-level factors for each CEO-CFO pair.

Table 6, Panel A reports that out of a subsample of 75 fraud firms²⁵, the CEO was named in 48 cases, and the CFO was named in 37 cases (both executives were named in 30 cases and neither were named in 14 cases). In the total sample of fraud firms, 24% of the CEOs and 17% of the CFOs had legal infractions prior to the year of fraud initiation. In comparison, 31% and 22% of the named CEOs and CFOs had legal infractions. Also, 32% of all CEOs and 25% of CFOs were considered unfrugal prior to the year of fraud initiation, as compared to 33% of named CEOs and 32% of named CFOs.

Using data on the legal infractions and luxury asset ownership for 75 CEOs and 75 CFOs of the subsample of 75 fraud firms (and excluding all nonfraud firms), we test whether the likelihood that a given executive is named in perpetrating the fraud is positively related to his legal infractions or low frugality. The results of the estimated logit regression are reported in Table 6, Panel B. The significant positive coefficient on *RECORD* (.01 level) of 1.17 suggests that the odds of a given CEO or CFO at a fraud firm being named (vs. not named) for perpetrating the fraud is 3.2 times (222%) higher if that executive has previously broken the law. And the significant positive coefficient on *#RECORDS* (.10 level) of 0.596 suggests that the odds of a CEO or CFO being named in the fraud increases by 81% for

²⁵ Given the high cost of data on legal infractions and asset ownership, we selected a subsample of the 110 fraud firms for this intra-firm analysis.

each additional legal infraction. In contrast, the coefficients on *OWN* and *#OWN* are insignificant. The results are robust to the exclusion of the 14 fraud firms for which neither the CEO nor CFO is named, providing additional assurance that the prior results are not driven by omitted correlated variables such as firm-level factors affecting SEC detection or enforcement procedures.²⁶

Comparison to Overconfidence

Another concern is that our measures of CEO type may be capturing other personal attributes that have been discussed in the literature, such as, overconfidence and risk-seeking (e.g., Malmendier and Tate (2005; 2008)).²⁷ We next examine whether our behavior measures are related to these attributes. Data availability limits us to one measure of overconfidence from Malmendier and Tate (2005), where we classify CEOs who are habitual net acquirers of their firm's stock as overconfident.²⁸ We measure risk-seeking nature of CEOs by examining whether they own motorcycles. We are able to compute the overconfidence measure for 76 firms and risk-seeking measure for our full sample of 220 fraud and non-fraud firms.

We find that these measures of CEO overconfidence and risk-seeking are not significantly correlated with our CEO type variables. Next, we rerun our full regression model (4) by including the

²⁶ We are collecting data on the press coverage of all 150 executives in this analysis to incorporate executive visibility in the press as a control variable in the next draft.

²⁷ Malmendier and Tate (2005) consider three measures of overconfidence. First, they measure CEO overconfidence based on the optimal timing of option exercises for underdiversified, risk-averse CEOs. Briefly, unlike outside investors, CEOs cannot trade their options and hedge their risks by short selling company stock. Further, their human capital and reputation are intimately linked to their company's performance, making them overexposed to their firm's idiosyncratic risk. Therefore, in most cases, a risk-averse CEO should exercise his/her options given a sufficiently high stock price. They consider a benchmark for the minimum percentage in the money at which a CEO should exercise his/her options for a given year after the vesting period. The measure of overconfidence compares the benchmark prediction to the actual exercise behavior of a CEO. The idea is that a CEO who persistently exercises options later than suggested by the benchmark is overconfident about his/her ability to keep the company's stock price rising. Second, they look at the end of the option's duration – if a CEO is optimistic enough about his/her firm's future performance that he/ she holds options all the way to expiration (typically 10 years), then they classify the CEO as overconfident. Finally, since underdiversified CEOs should avoid acquiring additional equity, they classify CEOs who habitually increase their holdings of company stock as overconfident.

²⁸ We slightly modify their approach to increase the size of our sample. Whereas Malmendier and Tate (2005) exclude the first five years of a CEO's tenure and look at whether he is a net acquirer over the next five years, we exclude the first four years of a CEO's tenure and look at whether he is a net acquirer over the next four years. This modification increases the number of CEOs for which we can calculate the measure from 40 to 76.

measure of CEO overconfidence and risk-seeking as a control variables (not reported for brevity). The main effect of *RECORD* continues to be significantly associated with corporate fraud, while CEO overconfidence and risk-seeking are not statistically significant. These results increase our confidence in the conjecture that our measure of *RECORD* captures a different attribute.²⁹

CEO Type and Earnings Management

In our final sensitivity analysis, we attempt to provide further insight as to whether the observed relation between fraud and CEO type is driven by SEC detection and enforcement processes, rather than the occurrence of misreporting. We investigate the relation between CEO type and proxies for less egregious forms of earnings management that are not subject to this concern. We conduct this analysis on our combined sample of fraud and non-fraud firms. We only consider quarters after the CEO in question assumes his position up until the year that the fraud is initiated (the corresponding year for the matched non-fraud firm). We also separately analyze the fraud and non-fraud subsamples to check the generalizability of our results.³⁰

Our primary measure of earnings management is the percentage of the previous 8 quarters that a firm exactly meets or beats the most recent consensus analysts' forecast by one cent (*MEET_BEAT*). Our results are robust to using other proxies for earnings management from prior research, including measures of accruals quality and discretionary accruals (calculated using the modified Jones model).³¹ These tests are necessarily joint tests of whether manipulation of reported earnings is associated with CEO type and the validity of the earnings management proxies.

²⁹ We are collecting data on the size of CEOs' signatures as a potential measure of narcissism as used by Zweigenhaft and Marlowe (1973) and Jorgenson (1977).

³⁰ We note that we have a limited number of CEOs with a record in our non-fraud subsample, and so these results should be interpreted with caution.

³¹ These measures of earnings management are controversial, including concerns with the potential for correlated omitted variables and measurement error (see Dechow et al. (2010) for a discussion of the pros and cons for using these measures). Therefore, our results should be interpreted keeping these drawbacks in mind. Mindful of the limitation of empirical proxies, we rely heavily on the established research in our choice of these proxies.

We test the association between *MEET_BEAT* and CEO type using OLS regression.³² Consistent with our fraud analysis, we find a significant and positive coefficient for the *RECORD* (.05 level). In particular, a company run by a CEO with a record is associated with an increase of 11.34 in the percentage of quarters when it meets or beats the consensus analysts' forecast. These results provide additional assurance of a connection between executives' prior legal infractions and earnings manipulation. We also find a significant and positive coefficient on the *OWN* variable (.05 level). An unfrugal CEO is associated with an increase by 4.18 in the percentage of quarters when the firm meets or beats the consensus analysts' forecast. Hence, although our fraud analyses find no evidence that unfrugal CEOs have a high propensity to perpetrate fraud, our results suggest that their firms are more likely to engage in "legal" forms of earnings management.

5. CEO Type and Corporate Culture

5.1 Errors in Financial Statements

As further evidence of the relation between CEO type and erosion of corporate culture, we test whether the probability of reporting errors varies by CEO type, allowing the relation to increase with the tenure of record holders and unfrugal CEOs. We estimate by the following multiperiod logit model based on all sample firm-years:

$$\begin{aligned} \text{ERRORS} = & \alpha_0 + \alpha_1 \times \text{RECORD} + \alpha_2 \times \text{TENURE} + \alpha_3 \times \text{RECORD} \times \text{TENURE} \\ & + \alpha_4 \times \text{IC_WEAKNESS} + \varepsilon \end{aligned} \tag{4a}$$

$$\begin{aligned} \text{ERRORS} = & \alpha_0 + \alpha_1 \times \text{OWN} + \alpha_2 \times \text{TENURE} + \alpha_3 \times \text{OWN} \times \text{TENURE} \\ & + \alpha_4 \times \text{IC_WEAKNESS} + \varepsilon \end{aligned} \tag{4b}$$

ERRORS is an indicator variable equity to 1 in firm-years containing a material reporting error (identified by a subsequent restatement), and zero otherwise. *IC_WEAKNESS* (the estimated probability

³² The results of these earnings management analyses are consistent across the full sample, and the fraud and non-fraud subsamples. We do not report the subsample results for the sake of brevity, but the results are available upon request.

of an internal control weakness from a simplified version of the Doyle et al (2007) model), is included to control for the inherent challenges to firms' internal control systems resulting from their business strategy. We estimate two versions of model 4, one using *IC_WEAKNESS* estimated during the first year for which we have data on a given CEO (as a proxy for the control system upon appointment as CEO), and the other using *IC_WEAKNESS* estimated during the current year.

Table 7 presents the results of models (4a) and (4b). These results in the first two columns provide no evidence that the probability of reporting errors is related to CEOs' prior legal infractions (*RECORD*). In contrast, the results in the last two columns indicate a significant positive coefficient on *OWN* (.05 level), and a significant positive interaction between *OWN* and *TENURE* (at the .10 level). The results indicate an elevated risk of reporting errors in firms run by unfrugal CEOs which increases over the tenure of such CEOs in an absolute sense (chi-square statistics significant at .05 level) and relative to frugal CEOs (interaction of *OWN* and *TENURE* significant at .05 and .10 levels in the two models). Hence, collectively our results suggest that over the tenure of unfrugal CEOs, firms have an increasing risk of fraud (Table 3, Panel B), of other insiders being named in fraud (Table 5, Panel B), and unintentional reporting errors (Table 7), consistent with a "loosening" of the culture during the reign of unfrugal CEOs.

5.2. Further Analysis of Culture Channel

To further probe the culture channel, we investigate how the likelihood of fraudulent reporting is related to specific aspects of the corporate culture (section 5.2.1), how changes in the corporate culture are related to CEO type (section 5.2.2), and the extent to which fraud- vs. nonfraud years of the fraud sample can be differentiated by these changes in culture (section 5.2.3).

5.2.1 The Relation Between Fraud and Corporate Culture

We examine the relation between fraud and four aspects of the corporate culture: (1) the equity-based incentives of top executives as measured by *DELTA*; (2) the prior records and frugality of the CFOs (*CFO_RECORD* and *CFO_OWN*); (3) the probability of internal control weaknesses as measured by the

IC_WEAKNESS; and (4) measures of weak board monitoring, including a low percentage of the directors who are structurally independent, a high percentage of independent directors with social ties to the CEO, and low stock based compensation of the independent directors (*%INDEP*; *SOCIAL*, *DIR_SHARES*).³³ These aspects are intended to capture variation in the financial incentives of executives to misreport, CFO type, and opportunities to misreport (i.e. relative strength of internal control systems and board monitoring).

We estimate the following multiperiod logit model, where the variable *CORP_ENVIRON* represents either *DELTA*, *CFO_RECORD*, *CFO_OWN*, *IC_WEAKNESS*, *%INDEP*, *SOCIAL* or *DIR_SHARES* :

$$FRAUD = \alpha_0 + \alpha_1 \times CORP_ENVIRON + \alpha_2 \times TOBIN'S_Q + \alpha_3 \times ROA + \alpha_4 \times \%IND_FRAUD + \varepsilon \quad (5)$$

Table 8, Panel A presents results of model 5 based on the total sample of all fraud and nonfraud firm-years. To allow the relation between fraud and *CORP_ENVIRON* to vary by CEO type, we also estimate model 5 separately for subsamples of CEOs with and without records (Panel B), and unfrugal and frugal CEOs (Panel C).

Several interesting insights emerge from Table 8. In the total sample (i.e. Panel A based on all CEOs), none of the *CORP_ENVIRON* variables is significantly related to fraud except *CFO_OWN*, which is significantly positively related to fraud (.05 level). Although we cannot infer a causal relation between *CFO_OWN* and fraud, the positive association is highly intuitive given the natural influence of a CFO on a firm's internal controls. Similar results are reported in Panel B for the subsample of CEOs without records, and in Panel C for the subsample of frugal CEOs. And none of the *CORP_ENVIRON* variables are significant for the subsample of record holders (Panel B).

³³Several prior studies document evidence suggesting that monitoring by outside directors increases with their stock-based compensation (Bhagat and Bolton (2008); Bhagat et al. (1999)). Prior studies examining the association between structural independence of the board and various aspects of financial reporting quality include Klein (2002), Farber (2005) and Larcker et al. (2007), among others. However, a few recent papers argue and document that structural independence may not ensure that directors objectively monitor the CEOs due to social and professional ties that may exist between a structurally independent director and the CEO (Hwang and Kim (2009); Dey and Liu (2011)). See Bhagat and Black (1999), Hermalin and Weisbach (2003) and Adams et al. (2010) for surveys on corporate boards.

In contrast, the results in Panel C indicate that for the subsample of unfrugal CEOs, there is a significant positive relation between fraud and *DELTA*, CFO type as measured by both *CFO_RECORD* and *CFO_OWN*, and *SOCIAL*, and a significant negative relation between fraud and *DIR_SHARES*. And although we cannot infer causality, these results do suggest that in firms run by unfrugal CEOs, there is an elevated fraud risk in firm-years with relatively high equity-based incentives, a CFO with a record or an unfrugal CFO, and weak board monitoring (high *SOCIAL* and low *DIR_SHARES*). Further, Chi-square statistics reported in the bottom of Panel C indicate that these relations are significantly stronger in firms run by unfrugal (vs. frugal) CEOs. Results in Panel C do not indicate a significant relation between fraud and either *IC_WEAKNESS* or *%INDEP* for unfrugal CEOs, however.

5.2.2 Changes in Corporate Culture and CEO Type

In this section we examine whether changes in corporate culture are related to CEO type. We first estimate logit model (6a) to test whether the probability of appointing a CFO with a record or an unfrugal CFO varies by CEO type:

$$\begin{aligned}
 CFO_RECORD \text{ or } CFO_OWN = & \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times OWN + \alpha_3 \times SIZE \\
 & + \alpha_4 \times MTB + \alpha_5 \times ACQUISITION + \alpha_6 \times STD_RET + \alpha_7 \times ROA + \alpha_8 \times IND_COMP_CFO + \varepsilon \quad (6a)
 \end{aligned}$$

The control variables in model (6a) attempt to capture firm characteristics that might attract unfrugal CFOs or those with prior records, including firm size, growth, volatility, performance, and past acquisition intensity. We also include the median industry CFO compensation to control for the potential tendency for these CFOs to be attracted to higher paying industries.

Table 9, Panel A reports the results for model (6a). The probability of appointing a CFO with a record is not significantly related to CEO type, or to any of the control variables. However, the probability of appointing an *unfrugal* CFO is significantly higher if the CEO is also unfrugal (.05 level). Given the significant positive association between fraud and *CFO_OWN* reported in Table 8, the appointment of an unfrugal CFO is consistent with a loosening control environment.

We next examine whether changes in our other measures of the corporate culture over the tenure of CEOs are associated with CEO type. We estimate the following model for each aspect of the corporate culture, including *DELTA*, *IC_WEAKNESS*, *%INDEP*, *SOCIAL*, and *DIR_SHARES*:

$$\begin{aligned} CORP_ENVIRON = & \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times OWN + \alpha_3 \times TENURE \\ & + \alpha_4 \times RECORD \times TENURE + \alpha_4 \times OWN \times TENURE + Controls + \varepsilon \end{aligned} \quad (6b)$$

The control variables for each dependent variable are motivated by prior research (Bryan et al. (2000); Coles, Daniel and Naveen (2006); Linck, Netter and Yang (2008); Dey and Liu (2011)).

Table 9, Panel B reports the results for model (6b). The results provide no evidence of a relation between changes in the corporate culture over the tenure of CEOs and *RECORD*. In contrast, over the tenure of unfrugal CEOs, *DELTA* and *SOCIAL* increase significantly and *DIR_SHARES* decrease significantly, both in absolute terms and relative to changes in the corresponding variables during the tenure of frugal CEOs. These results are consistent with an increase in executives' equity-based incentives (as measured by high *DELTA*) and a decline in board monitoring intensity (as measured by high *SOCIAL* and low *DIR_SHARES*) under the reign of unfrugal CEOs. Interestingly, these are the three culture variables (in addition to CFO type) that are significantly related to fraud in firms run by unfrugal CEOs in the analysis reported in Table 8, Panel C. Our other two measures of the culture, *IC_WEAKNESS* and *%INDEP*, do not vary significantly over the tenure of unfrugal CEOs.

The key results of Tables 8 and 9 can be summarized as follows. In firms run by unfrugal CEOs, fraud is significantly positively related to executives' equity-based incentives (*DELTA*), the presence of a CFO with a record, the presence of an unfrugal CFO, and weak board monitoring (as measured by high *SOCIAL* and low *DIR_SHARES*). All of these relations are significantly stronger in firms run by unfrugal CEOs than in other firms. Further, with the exception of *CFO_RECORD*, all of these "fraud risk factors" increase significantly over tenure of unfrugal CFOs in absolute terms and relative to corresponding changes over the tenure of frugal CEOs. Collectively these results are consistent with the significant increase in reporting risk over the tenure of unfrugal CEOs as measured by increasing risk of fraud (Table

3, Panel B), increasing risk of other insiders being named in fraud (Table 5, Panel B), and increasing of reporting errors (Table 7) over the tenure of unfrugal CEOs, and provide support for the hypothesized loosened culture under the reign of unfrugal CEOs. In contrast, we find little evidence of the culture channel for CEOs with records.³⁴

5.2.3 Closing the Loop

In our final “close the loop” analysis, we attempt to provide further insight into the culture channel by examining the extent to which the fraud vs. nonfraud years of the fraud sample (including only the first nonfraud year with available data) can be explained by changes in *DELTA*, *SOCIAL*, and *DIR_SHARES*. We focus on these three measures of the corporate culture because of their significant changes over the tenure of unfrugal CEOs. We estimate the following model separately for fraud firms run by unfrugal vs. frugal CEOs, where *FRAUD* =1 in fraud years, and 0 in nonfraud years, and *CORP_ENVIRON* is *DELTA*, *SOCIAL*, or *DIR_SHARES*:

$$FRAUD = \alpha_0 + \alpha_1 \times CORP_ENVIRON + \alpha_2 \times TOBIN'S_Q + \alpha_3 \times ROA + \alpha_4 \times \%IND_FRAUD + \varepsilon \quad (6c)$$

The results reported in Table 10 indicate that in firms run by unfrugal CEOs, equity-based incentives of the top executives (*DELTA*) and social ties between independent directors and the CEO (*SOCIAL*) are significantly higher in fraud years than in nonfraud years. However, *DIR_SHARES* is not significantly different in the fraud vs. nonfraud years. In contrast, in firms run by frugal CEOs, none of the three culture variables are significantly different in fraud vs. nonfraud years.

³⁴ In further analyses, we examine whether record holders and unfrugal CEOs sort into industries and/or firms with higher equity-based incentives, weaker controls, or weaker board monitoring. Specifically, we estimate logit models where our CEO type variables (*RECORD* and *OWN*) are the dependent variables and include our measures of the corporate culture as of the year the CEO is appointed (namely, *DELTA*, *IC_WEAKNESS*, *%INDEP*, *SOCIAL* and *DIR_SHARES*). We also include firm size, growth, past acquisition intensity, past performance, volatility and median industry compensation to control for firm characteristics that are likely to be associated with CEO type. However, with the exception of a significant negative relation between nonfrugal CEOs and *%INDEP*, none of our measures of corporate culture are significantly related to CEO type.

6. Summary and Conclusion

We examine how and why two aspects CEO behavior outside the workplace, as measured by prior legal infractions and ownership of luxury goods, are related to the likelihood of misstated financial statements. Based on a sample of fraud and matched non-fraud firms, we document that CEOs (and CFOs) with prior legal infractions have a relatively high propensity to perpetrate fraud (i.e. named in the fraud), but no evidence that such CEOs are associated with changes in the corporate culture. In contrast, while unfrugal CEOs, as measured by the ownership of luxury goods, are not more likely than frugal CEOs to be named in fraud, the risk of fraudulent corporate reporting, the risk that other insiders are named in fraud, and the risk of restatements caused by reporting errors all increase significantly over the tenure of unfrugal CEOs, consistent with the hypothesized loosening of the corporate culture during the reign of unfrugal CEOs (culture channel). Further, cultural factors associated with relatively high fraud risk in the firms run by unfrugal CEOs increase significantly during the tenure of unfrugal CEOs. Specifically, over the tenure of unfrugal CEOs, we detect a significant increase in executives' equity-based incentives, a significant decrease in board monitoring (as measured by stock compensation of outside directors and social connections between outside directors and the CEO), and a tendency to appoint an unfrugal CFO, consistent with the "loosening" of the culture. Further, we find the positive relation between fraud and the presence of a CFO with a record is significantly higher in firms run by unfrugal CEOs than in other firms.

Our paper is subject to a variety of limitations. First, our sample size is necessarily small due to the high cost of data on executives' ownership of luxury goods and prior legal infractions. Second, our fraud and error samples include only cases of fraudulent and erroneous reporting that are detected and enforced. Hence, our interpretation of results as evidence of misreporting per se, is subject to this important caveat. And third, although our analysis based on CEO-CFO pairs of fraud firms reduces concerns about omitted correlated variables, we cannot completely eliminate these concerns or infer a causal relation between our measures of CEO type, corporate governance, and misreporting.

Subject to these caveats, our research provides preliminary evidence that financial reporting risk varies in an intriguing and intuitive way with the behavior of top executives outside the office, as evidenced by prior legal infractions and ownership of luxury goods. And further, several dimensions of the corporate culture vary over the tenure of unfrugal CEOs consistent with a loosening of the control environment and the documented increase in reporting risk. These preliminary findings suggest that our measures of executive behavior outside the work environment capture meaningful variation in managerial “style”.

Preliminary results of related pilot studies provide further encouragement that *RECORD* and *OWN* capture meaningful differences in executives’ regard for laws and frugality, respectively, as posited here. While these pilot studies are too preliminary to be conclusive, they do suggest that the inside trades of executives with prior legal infractions have a larger positive relation to future earnings surprises, consistent with trading on inside information. And companies run by CEOs who own luxury goods are significantly more likely to engage in large acquisitions, to invest less in long-term organic growth, to operate assets in place less efficiently, to generate inferior subsequent accounting and stock return per dollar of corporate investment, and to go bankrupt, suggesting a pattern of low frugality with regard to the management of corporate resources.

Beyond exploring the relation between personal and corporate spending, our measures suggest a variety of avenues for future research. For example, how do corporate governance mechanisms and the effects of corporate governance mechanisms vary with executive and director type? Do executive and director types sort to firms (e.g. did deregulation of banking, and the associated personal wealth accumulation opportunities, attract to banking a higher proportion of executives and/or directors with low frugality and/or values, and what are the implications for systemic risk?). Are the prior legal infractions and ownership of luxury goods by politicians related to their stewardship of taxpayers’ money?

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Appendix

Definition of Variables and Data Sources

| Category | Definition of Variable (Name) | Measurement | Data Source |
|---|---|--|--|
| Board Monitoring Variables | Board independence. (%INDEP) | The proportion of the board that is independent. An independent director is defined as a director who is not an employee of the firm, does not have any business transactions with the firm, has no family ties with the employees of the firm and has no other interlocking relationships with the firm. | IRRC plus hand collection from SEC DEF 14A filings |
| | Social connections between CEO and director. (SOCIAL) | The number of independent directors who are socially connected to the CEO because they have mutual alma maters, worked in the same company/ companies in the past, served in the military together, are currently members of the same clubs as the CEO, serve in the same charitable or belong to other non-professional organizations as the CEO. | BoardEx |
| | The stock-based compensation of a director. (DIR_SHARES) | The median number of shares of stock for independent directors as a proportion of total outstanding shares of the firm. | IRRC plus hand collection from SEC DEF 14A filings |
| Firm Variables | Firm size. (SIZE) | The market capitalization of the firm as of the year prior to the initiation of fraud (or the corresponding year for the control firm). | Compustat |
| | Growth opportunities. (MTB) | The market value of equity divided by the book value of equity measured at the end of the year prior to the initiation of fraud (or the corresponding year for the control firm). | Compustat |
| | Stock returns. (RETURN) | The abnormal stock return measured in the year prior to the initiation of fraud (or the corresponding year for the control firm). | CRSP |
| | Firm risk. (BETA) | The systematic risk measured using a one-factor market model and using a minimum of 36 monthly returns ending at fiscal year-end. | CRSP |
| | Leverage. (LEVERAGE) | The total debt divided by the book value of the equity measured in the year prior to the initiation of fraud (or the corresponding year for the control firm). | Compustat |
| | Standard deviation of returns. (STD_RET) | The standard deviation of monthly stock returns calculated over the year prior to the initiation of fraud (or the corresponding year for the control firm). | CRSP |
| | Research and development. (R&D) | The total research and development expenses scaled by sales for the year. | Compustat |

Appendix (Cont.) Definition of Variables

| Category | Definition of Variable (Name) | Measurement | Data Source |
|---|--|--|--------------------|
| Firm Variables | Firm value. (<i>TOBIN'S_Q</i>) | The prior year's market value of assets divided by the book value of assets . | Compustat |
| | Operating performance. (<i>ROA</i>) | The prior year's operating income before depreciation divided by the firm's average total assets, less the industry median return on assets using the Fama-French 5 industry definition. | Compustat |
| | Prevalence of fraud by industry. (<i>%IND_FRAUD</i>) | The number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year. | SEC AAERs |
| | The F-Score for a firm. (<i>FSCORE</i>) | The output from the predictive model (Model 1) for accounting manipulations reported in Dechow, Ge, Larson, and Sloan (2011). The main variables in this model include change in accounts receivables, change in inventory, the percentage of non-tangible assets, change in cash sales, change in return on assets, whether the firm issued any capital and accruals. | Compustat |
| | Internal control weakness. (<i>IC_WEAKNESS</i>) | The fitted score using a modified version of the model in Doyle, Ge and McVay (2007). We exclude SPEs and segments due to data limitations. | Compustat and CRSP |
| | Foreign currency transactions. (<i>FOREIGN</i>) | A dummy variable that equals 1 if the firm has foreign currency transactions. | Compustat |
| | Age of the firm. (<i>FIRM_AGE</i>) | The natural logarithm of the age of the firm, measured as the number of years the firm is on CRSP. | CRSP |
| | Restructuring charges. (<i>RESTRUCTURE</i>) | The sum of restructuring charges over the past two years scaled by the market capitalization of the prior year. | Compustat |
| | Acquisition intensity. (<i>ACQUISITION</i>) | The sum of acquisitions over the past two years scaled by the market capitalization of the prior year. | Compustat |
| | Analyst following of the firm. (<i>ANALYST_FOLL</i>) | The number of analysts issuing forecasts for the firm. | IBES |
| | Auditor changes. (<i>AUDITOR_CHANGES</i>) | A dummy variable that equals 1 if the firm changed auditors in the current year. | Compustat |
| | Accounting fraud. (<i>FRAUD</i>) | A dummy variable that equals 1 in the years a firm committed accounting fraud and had an AAER issued against it by the SEC. | SEC AAERs |
| | Accounting errors. (<i>ERRORS</i>) | A dummy variable that equals 1 for the years a firm had a material clerical error in reported numbers and had to issue a restatement due to this error. | Audit Analytics |
| Meeting or beating analysts' forecasts. (<i>MEET_BEAT</i>) | The percentage of last 8 quarters that a firm meets or beats (by one cent) the most recent median consensus analysts forecast. | IBES and Compustat | |

Appendix (Cont.)

Definition of Variables

| Category | Definition of Variable (Name) | Measurement | Data Source |
|---|---|---|-------------|
| <i>CEO</i> <i>/CFO</i> <i>Variables</i> | Legal infractions in the past of an executive (<i>RECORD</i>) | A dummy variable that equals 1 if a CEO had any legal infraction prior to the fraud initiation year (or the corresponding year for the control firm). | eFOTT |
| | Spending habits of an executive. (<i>OWN</i>) | A dummy variable that equals 1 if an executive owns an aircraft, boat, or a car that costs more than \$75,000 prior to the fraud initiation year (or the corresponding year for the matched control firm). | eFOTT |
| | Number of legal infractions in the past of an executive (<i>#RECORD</i>) | The number of legal infractions committed by a CEO or CFO prior to the fraud initiation year (or the corresponding year for the control firm). | eFOTT |
| | Spending habits of an executive. (<i>#OWN</i>) | The number of aircrafts, boats, or cars that costs more than \$75,000 owned by the executive prior to the fraud initiation year (or the corresponding year for the matched control firm). | eFOTT |
| | Executive named in a fraud case. (<i>NAMED_EXEC;NAMED_CEO ; OTHERS_NAMED</i>) | A dummy variable that equals 1 if the CFO, the COO or any firm employee other than the CEO is named by the SEC as being responsible in perpetrating the fraud. | SEC AAERs |
| | The age of the CEO in the firm (<i>CEO_AGE</i>) | The age of the CEO measured in the year of the initiation of fraud (or the corresponding year for the matched control firm). | ExecuComp |
| | The delta of the CEO's wealth. (<i>CEO_DELTA</i>) | The dollar change in the value of a CEO's stock and option portfolio for a 1% change in stock price. | ExecuComp |
| | Tenure of the CEO. (<i>TENURE</i>) | The number of years the CEO has worked in his/her current position. | ExecuComp |
| | Perquisites received by the executive. (<i>PERKS</i>) | The average value of all perquisites received by the executive over the 3 years leading up to the event year. | |
| | Overconfidence. (<i>OVERCONFIDENCE</i>) | A dummy variable that equals 1 if the CEO is considered overconfident, based on whether the executive is a net acquirer of shares (Malmendier and Tate (2005)). We modify the measure as net purchases after the 4th year of tenure over the next 4 years in order to obtain sufficient observations. | ExecuComp |
| | Media coverage of the CEO. (<i>MEDIA</i>) | The number of media documents with the CEO's name in them over the fraud period divided by the number of quarters of the fraud period. This is measured similarly over an equivalent period of time for the control firms. | |
| | Wealth of the CEO. (<i>WEALTH</i>) | The fair value of the CEO's wealth derived from stock and options from the firm plus other compensation received over the previous 3 years, using the option valuation model in Core and Guay (2002). | ExecuComp |
| | Industry CFO compensation. (<i>IND_COMP_CFO</i>) | The median 2-digit industry total compensation received by CFOs. | ExecuComp |

Table 1, Panel A
Fraud Sample Selection

| | |
|---|------------|
| Total AAERs | 3148 |
| AAERs not involving accounting fraud and redundant AAERs | 2298 |
| Total accounting fraud AAERs | 852 |
| Cases of options backdating | 24 |
| Cases of asset/revenue understatement | 4 |
| Number of fraud cases | 824 |
| Firms without CRSP identifiers | 329 |
| Firms with CRSP identifiers but no data to calculate lagged returns | 190 |
| Firms without Compustat identifiers/data | 34 |
| Number of fraud cases with CRSP & Compustat data | 271 |
| Firms without required compensation data on ExecuComp | 161 |
| Final Sample | 110 |
| Average Duration of Fraud | 2.50 years |
| Median Duration of Fraud | 2 years |
| Shortest Case | 1 quarter |
| Longest Case | 13 years |

This table describes the selection of the fraud sample, including the number of fraud firms and years.

Table 1, Panel B
Industry Distribution of Fraud Sample

| | SAMPLE FRAUD FIRMS NUMBER OBS. (%) | SAMPLE ERROR FIRMS NUMBER OBS. (%) |
|---|---------------------------------------|---------------------------------------|
| Consumer Durables, Nondurables, Wholesale, Retail and Some Services (Laundries and Repair Shops) | 30 (27%) | 19 (20%) |
| Manufacturing, Energy and Utilities | 14 (13%) | 12 (13%) |
| Business Equipment, Telephone and Television Transmission | 29 (26%) | 20 (21%) |
| Healthcare, Medical Equipment and Drugs | 8 (7%) | 16 (17%) |
| Other – Mines, Construction, Building Management, Transportation, Hotels, Bus Services, Entertainment and Finance | 29 (27%) | 27 (29%) |
| TOTAL | 110 (100%) | 94 (100%) |

This table reports the Fama-French industry distribution for our sample fraud and error firms and for all firm-years on Compustat over the sample period, 1992-2004 for fraud firms and 1996-2005 for error firms. The fraud firm control sample was matched by industry. The industry distribution for the error firm control sample is similar to that for the error sample.

Figure 1: Legal Infractions by Firm Type



Figure 2: Asset Ownership by Firm Type

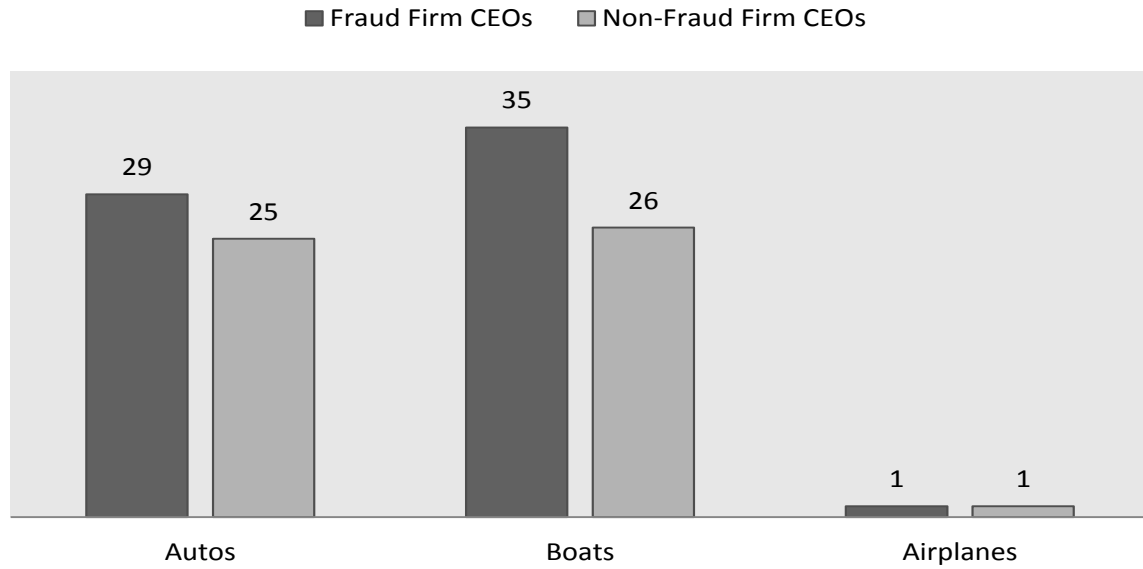


Figure 3: Legal Infractions by Firm Type



Figure 4: Asset Ownership (Percentage) by Firm Type

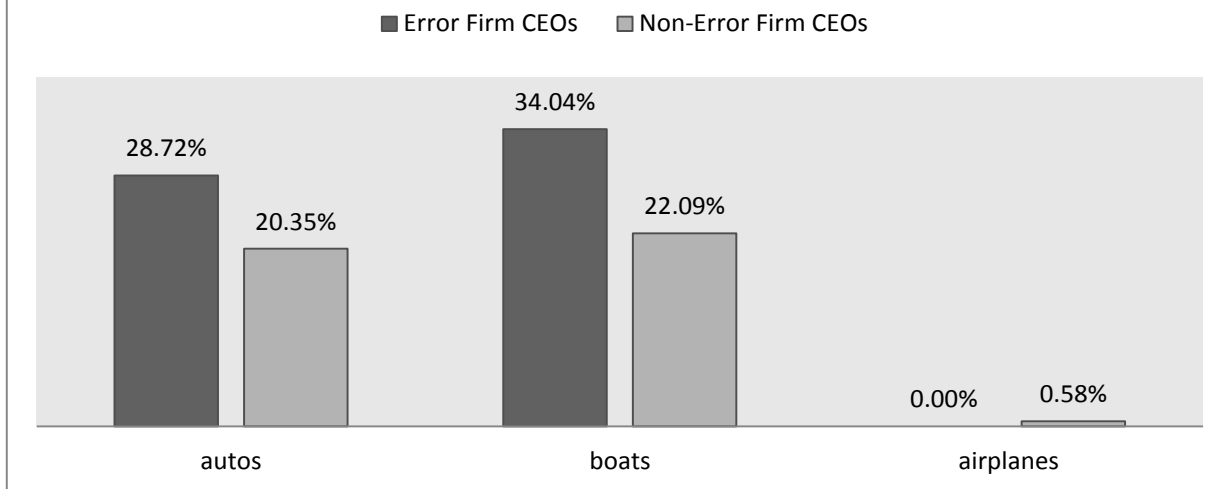


Table 2, Panel A
Descriptive Statistics for Fraud Sample vs. Matched Control Sample

| | FRAUD SAMPLE | | | MATCHED SAMPLE | | | DIFFERENCE | |
|-----------------------------|--------------|--------|-----------|----------------|--------|-----------|------------|----------|
| | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN |
| <i>Board Monitoring</i> | | | | | | | | |
| <i>% INDEP</i> | 69.000 | 71.000 | 17.000 | 65.000 | 69.000 | 19.000 | 4.000 | 2.000 |
| <i>SOCIAL</i> | 0.8000 | 0.000 | 1.420 | 1.0600 | 0.000 | 1.980 | -0.260 | 0.000 |
| <i>DIR_SHARES</i> | 0.071 | 0.017 | 0.1261 | 0.121 | 0.031 | 0.282 | -0.050** | -0.014** |
| <i>Firm Characteristics</i> | | | | | | | | |
| <i>SIZE (\$ billions)</i> | 7.462 | 7.684 | 1.561 | 7.233 | 7.218 | 1.587 | 0.229 | 0.466 |
| <i>MTB</i> | 3.257 | 2.628 | 2.574 | 10.446 | 2.186 | 79.055 | -7.189 | 0.442 |
| <i>RETURN</i> | 0.160 | 0.040 | 0.660 | 0.150 | 0.010 | 0.620 | 0.010 | 0.030 |
| <i>TOBINS_Q</i> | 3.147 | 2.021 | 2.561 | 2.747 | 2.018 | 2.415 | 0.400 | 0.003 |
| <i>ROA</i> | 0.066 | 0.039 | 0.102 | 0.072 | 0.041 | 0.104 | -0.006 | -0.002 |
| <i>LEVERAGE</i> | 0.766 | 0.680 | 1.299 | 1.540 | 0.520 | 8.652 | -0.774 | 0.160 |
| <i>BETA</i> | 1.280 | 1.200 | 0.820 | 1.250 | 1.240 | 0.740 | 0.030 | -0.040 |
| <i>ANALYST_FOLL</i> | 14.710 | 12.000 | 10.050 | 13.300 | 11.000 | 9.380 | 1.410 | 1.000 |
| <i>MEDIA</i> | 18.870 | 8.000 | 34.430 | 10.470 | 4.000 | 24.220 | 8.400* | 4.000* |
| <i>AUDITOR_CHANGES</i> | 0.060 | 0.000 | 0.240 | 0.060 | 0.000 | 0.240 | 0.000 | 0.000 |
| <i>%IND_FRAUD</i> | 0.550 | 0.310 | 0.750 | 0.620 | 0.270 | 0.950 | -0.070 | 0.040 |
| <i>FSCORE</i> | 2.059 | 1.637 | 1.772 | 1.482 | 1.299 | 0.940 | 0.577*** | 0.338*** |
| <i>IC_WEAKNESS</i> | -0.74 | -0.76 | 0.360 | -0.78 | -0.81 | 0.36 | -0.040 | -0.050 |

***Significant at the 1% level; **5% level; *10% level. T tests (Wilcoxon tests) are conducted for differences in means (medians).

Table 2, Panel A (Cont.)

| | FRAUD SAMPLE | | | MATCHED SAMPLE | | | DIFFERENCE | |
|--|------------------|---------|-----------|------------------|---------|-----------|-------------------|--------|
| | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN |
| <i>CEO Characteristics</i> | | | | | | | | |
| <i>CEO_AGE</i> | 63.000 | 65.000 | 8.800 | 65.000 | 67.000 | 9.000 | -2.000 | -2.000 |
| <i>CEO_DELTA</i> | 2,391,681 | 209,600 | 8,648,717 | 1,351,525 | 146,328 | 7,933,319 | 1,040,156 | 63,272 |
| <i>WEALTH (\$ millions)</i> | 4.540 | 0.570 | 12.820 | 4.230 | 0.580 | 21.80 | 0.310 | -0.010 |
| <i>TENURE</i> | 7.680 | 6.000 | 7.200 | 10.220 | 8.000 | 7.670 | -2.540 | -2.000 |
| <i>PERKS</i> | 9,970 | 0 | 34,257 | 4,384 | 0 | 14,404 | 5,586 | 0 |
| <i>OVERCONFIDENCE</i> | 0.730 | 1.000 | 0.450 | 0.600 | 1.000 | 0.450 | 0.130 | 0 |
| | TOTAL (%) | | | TOTAL (%) | | | DIFFERENCE | |
| <i>RECORD</i> | 22 (20%) | | | 5 (5%) | | | 17*** | |
| <i>#RECORD</i> | 37 | | | 8 | | | 29*** | |
| <i>OWN</i> | 40 (37%) | | | 32 (30%) | | | 8* | |
| <i>#OWN</i> | 80 | | | 70 | | | 10* | |
| ***Significant at the 1% level; **5% level; *10% level. T tests (Wilcoxon tests) are conducted for differences in means (medians). T-tests are used to test the differences in the CEO record and own variables. | | | | | | | | |

Table 2, Panel B
Pearson and Spearman Correlations for Fraud Sample

| | <i>FRAUD</i> | <i>RECORD</i> | <i>OWN</i> | <i>WEALTH</i> | <i>PERKS</i> | <i>ANALYST_FOLL</i> | <i>MEDIA</i> | <i>AUDITOR_CHANGE</i> | <i>ROA</i> | <i>%IND_FRAUD</i> | <i>FSCORE</i> |
|-----------------------|-----------------|-----------------|----------------|---------------|--------------|---------------------|----------------|-----------------------|---------------|-------------------|----------------|
| <i>FRAUD</i> | | 0.297*** | 0.068* | 0.168* | 0.006 | 0.088* | 0.056 | 0.066 | -0.071 | 0.028 | 0.173* |
| <i>RECORD</i> | 0.249*** | | 0.187* | -0.045 | 0.046 | -0.021 | -0.017 | 0.005 | 0.010 | 0.149 | 0.321** |
| <i>OWN</i> | 0.081* | 0.039 | | -0.025 | 0.145 | -0.083 | 0.165 | 0.187* | 0.157 | -0.045 | -0.090 |
| <i>WEALTH</i> | 0.038 | -0.060 | 0.0723 | | -0.061 | 0.125 | 0.095 | 0.011 | 0.087 | -0.068 | |
| <i>PERKS</i> | 0.064 | -0.018 | 0.165* | 0.022 | | -0.021 | 0.341** | -0.064 | -0.090 | -0.026 | -0.097 |
| <i>ANALYST_FOLL</i> | 0.067* | -0.052 | -0.105* | 0.161 | -0.014 | | 0.0836 | -0.0655 | 0.085* | 0.106 | -0.091 |
| <i>MEDIA</i> | 0.140** | -0.032 | 0.067 | 0.119* | 0.176 | 0.127 | | -0.023 | 0.016 | -0.058 | 0.064 |
| <i>AUDITOR_CHANGE</i> | 0.033 | 0.056 | 0.110 | -0.024 | -0.074 | -0.021 | -0.085 | | 0.047 | 0.023 | 0.024 |
| <i>ROA</i> | 0.002 | -0.006 | 0.122* | -0.109 | -0.061 | 0.048 | 0.011 | 0.084 | | 0.022 | 0.087 |
| <i>%IND_FRAUD</i> | -0.059 | 0.217 | -0.060* | -0.041 | -0.035 | 0.130 | -0.026 | 0.027 | 0.037 | | -0.023 |
| <i>FSCORE</i> | 0.208 | 0.262* | -0.115 | 0.014 | -0.090 | -0.110 | 0.157 | 0.024 | 0.036 | -0.047 | |

***Significant at the 1% level; **5% level; *10% level

Table 2, Panel C
Descriptive Statistics for Error Sample vs. Matched Control Sample

| | ERROR SAMPLE | | | CONTROL SAMPLE | | | DIFFERENCE | |
|---------------------------|------------------|--------|-----------|------------------|--------|-----------|-------------------|----------|
| | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN | STD. DEV. | MEAN | MEDIAN |
| <i>SIZE (\$ billions)</i> | 6.660 | 6.590 | 1.400 | 7.500 | 7.380 | 1.880 | -0.840 | -0.790 |
| <i>IC_WEAKNESS</i> | -0.700 | -0.720 | 0.320 | -0.810 | -0.860 | 0.370 | 0.110** | 0.140** |
| <i>FIRM_AGE</i> | 2.140 | 2.080 | 1.140 | 2.870 | 3.000 | 0.830 | -0.730** | -0.920** |
| <i>FOREIGN</i> | 0.170 | 0 | 0.380 | 0.220 | 0 | 0.410 | -0.050 | 0 |
| <i>R&D</i> | 0.100 | 0 | 0.340 | 0.280 | 0 | 0.700 | -0.180* | 0 |
| <i>ACQUISITIONS</i> | 0.050 | 0 | 0.130 | 0.060 | 0 | 0.210 | -0.010 | 0 |
| <i>RESTRUCTURE</i> | -0.010 | 0 | 0.030 | -0.010 | 0 | 0.030 | 0 | 0 |
| <i>TOBIN'S_Q</i> | 3.240 | 2.110 | 3.800 | 2.570 | 2.050 | 1.720 | 0.670** | 0.060 |
| <i>ROA</i> | 0.490 | 0.480 | 0.290 | 0.510 | 0.510 | 0.280 | -0.020 | -0.030 |
| <i>TENURE</i> | 8.070 | 6.000 | 7.090 | 9.580 | 7.500 | 9.030 | -1.510 | -1.500* |
| | TOTAL (%) | | | TOTAL (%) | | | DIFFERENCE | |
| <i>RECORD</i> | 4 (4.25%) | | | 10 (5.81%) | | | -1.56% | |
| <i>OWN</i> | 48 (51.06%) | | | 57 (33.14%) | | | 17.92%** | |

***Significant at the 1% level; **5% level; *10% level. T tests (Wilcoxon tests) are conducted for differences in means (medians). T-tests are used to test the differences in the CEO record and own variables.

Table 2, Panel D
Pearson and Spearman Correlations for Error Sample

| | <i>ERROR</i> | <i>RECORD</i> | <i>OWN</i> | <i>SIZE</i> | <i>FIRM_AGE</i> | <i>FOREIGN</i> | <i>R&D</i> | <i>ACQUISITION</i> | <i>RESTRUCTURE</i> | <i>IC_WEAKNESS</i> |
|--------------------|------------------|----------------|-----------------|------------------|------------------|-----------------|----------------|--------------------|--------------------|--------------------|
| <i>ERROR</i> | | -0.158* | 0.100*** | -0.197*** | -0.320*** | -0.047* | -0.117* | -0.058* | 0.063* | 0.143*** |
| <i>RECORD</i> | -0.151* | | -0.031 | 0.022 | -0.002 | -0.097** | -0.009 | 0.016 | -0.012 | -0.017 |
| <i>OWN</i> | 0.096*** | -0.047* | | 0.008 | 0.004 | -0.054* | -0.017 | -0.013 | 0.030 | -0.018 |
| <i>SIZE</i> | -0.201** | 0.018 | -0.001 | | 0.460*** | 0.120*** | -0.062* | -0.033 | -0.015 | -0.627*** |
| <i>FIRM_AGE</i> | -0.324*** | 0.000 | 0.008 | 0.446*** | | 0.142*** | -0.011 | 0.045* | -0.104* | -0.535*** |
| <i>FOREIGN</i> | -0.050* | -0.086* | -0.060* | 0.132*** | 0.150*** | | -0.012 | -0.036 | -0.041* | 0.222*** |
| <i>R&D</i> | -0.116* | -0.009 | -0.018 | -0.060* | -0.010 | -0.011 | | -0.008 | 0.004 | 0.054** |
| <i>ACQUISITION</i> | -0.037* | 0.010 | -0.007 | -0.042* | 0.039* | -0.033 | -0.008 | | -0.064** | 0.449*** |
| <i>RESTRUCTURE</i> | 0.012 | -0.036 | 0.047* | 0.012 | -0.078* | -0.059* | 0.004 | -0.096** | | -0.172** |
| <i>IC_WEAKNESS</i> | 0.140*** | -0.019 | -0.013 | -0.630*** | -0.529*** | 0.220*** | 0.054** | 0.450*** | -0.170** | |

***Significant at the 1% level; **5% level; *10% level

Table 2 (Cont.) Description

Panel A and Panel C of Table 2 presents the mean, median and standard deviations of the board, firm, and CEO characteristics over all sample years for the fraud / non-fraud samples and the error / non-errors samples respectively. The differences in the variables between the two samples and the significances of t-tests of differences in means and Wilcoxon tests of differences in medians are also presented. T-tests are used to test the differences in the CEO character variables. Panel B and Panel D of Table 2 presents the Pearson (above the diagonal) and Spearman (below the diagonal) correlations of some of the main dependent and independent variables for the fraud and error analyses respectively.

The variables are defined as follows: *%INDEP* is the proportion of the board that is independent directors; *SOCIAL* is the number of board members that are socially connected to the CEO through mutual alma maters, military, social organizations and prior employment; *DIR_SHARES* is the median stock-based compensation of the independent directors measured as the total number of shares owned by independent directors as a percentage of total shares outstanding of the firm; *SIZE* is the market capitalization of the firm; *MTB* is the market value of equity divided by the book value of equity; *RETURN* is the abnormal stock return for the prior year; *TOBIN'S Q* is the market value of assets divided by the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *LEVERAGE* is the total debt divided by the book value of equity; *BETA* is the systematic risk measured using a one-factor market model and using a minimum of 36 monthly returns ending at fiscal year-end; *ANALYST_FOLL* is the number of analysts issuing forecasts for a firm in the year; *MEDIA* is the number of articles on the CEO over the fraud period divided by the number of months in the fraud period; *AUDITOR_CHANGES* is a dummy variable that equals 1 if the firm changed auditors in the current year; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year; *FSCORE* is the output from the predictive model for accounting manipulations reported in Dechow et al. (2010); *IC_WEAKNESS* is the fitted score using a modified version of the model in Doyle et al (2007); *CEO_AGE* is the age of the CEO; *CEO_DELTA* is the dollar change in the value of a CEO's stock and option portfolio for a 1% change in stock price; *WEALTH* is the fair value of the CEO's wealth derived from stock and options from the firm plus other compensation received over the previous 3 years; *TENURE* is the number of years the individual has been the CEO of the firm; *PERKS* is the average value of all perquisites received by the CEO in the past 3 years; *OVERCONFIDENCE* is a dummy variable that equals 1 if the CEO is a net acquirer of the firm's stock (Malmendier and Tate (2005)); *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the year of fraud initiation, 0 otherwise; *#RECORD* is the number of civil or criminal convictions received by a CEO prior to the year of fraud initiation; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat or a car worth more than \$75,000 prior to the year of fraud initiation, 0 otherwise; *#OWN* is the number of aircrafts, boats, and expensive cars (more than \$75,000) owned by a CEO prior to the year of fraud initiation; *FRAUD* is a dummy variable that equals 1 in the years a firm committed accounting fraud, and 0 otherwise; *FIRM_AGE* is the logarithm of the number of years the firm has been on CRSP; *FOREIGN* is a dummy variable that equals 1 if the firm has foreign currency transactions; *R&D* is the total research and development expenses scaled by sales for the year; *ACQUISITION* is the sum of acquisitions over the past two years scaled by the market capitalization of prior year; *RESTRUCTURE* is the sum of restructuring charges over the past two years scaled by the market capitalization of the prior year; *ERROR* is a dummy variable that equals 1 for the years a firm had a material clerical error in reported numbers.

Table 3, Panel A: CEO Record and Corporate Fraud

| | DEPENDENT VARIABLE = FRAUD | | | | | |
|---|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>INTERCEPT</i> | -2.663*** (-10.77) | -2.533*** (-6.42) | -2.304*** (-8.45) | -2.363*** (-8.93) | -2.583*** (-8.73) | -2.540*** (-3.87) |
| <i>RECORD</i> | 0.749** (2.19) | 1.076** (3.21) | 1.223** (3.31) | 0.812** (2.39) | 0.754* (1.97) | 0.940** (2.18) |
| <i>TENURE</i> | -0.033* (-1.69) | -0.075** (-2.56) | -0.033* (-1.88) | 0.006 (0.41) | -0.047* (-1.84) | -0.024 (-0.68) |
| <i>RECORD x TENURE</i> | 0.014 (0.47) | 0.050 (1.38) | -0.009 (-0.03) | -0.006 (-0.28) | 0.031 (0.90) | 0.005 (0.13) |
| <i>TOBIN'S_Q</i> | 0.074** (2.46) | 0.113** (2.10) | 0.044 (1.27) | 0.040 (1.29) | 0.060* (1.85) | 0.155* (1.73) |
| <i>ROA</i> | -0.056 (-0.07) | -1.889 (-1.52) | -0.209 (-0.26) | -0.452 (-0.55) | 0.289 (0.32) | -0.634** (-2.13) |
| <i>%IND_FRAUD</i> | 0.020 (0.19) | 0.226 (1.32) | -0.088 (-0.77) | 0.143 (1.13) | 0.004 (0.03) | 0.521 (1.42) |
| <i>ANALYST_FOLL</i> | | 0.013 (0.94) | | | | -0.001 (-0.08) |
| <i>WEALTH</i> | | | 0.004 (0.71) | | | -0.133 (-1.42) |
| <i>PERKS</i> | | | | 0.007* (1.75) | | 0.002 (0.55) |
| <i>FSCORE</i> | | | | | 0.021 (1.15) | 0.399 (1.59) |
| CHI SQUARE: <i>TENURE + RECORD x TENURE ≠ 0</i> | 0.79 | 1.15 | 2.46 | 0.04 | 0.48 | 0.78 |
| PSUEDO R2 | 0.02 | 0.07 | 0.03 | 0.02 | 0.04 | 0.08 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 3, Panel B: CEO Frugality and Corporate Fraud

| | DEPENDENT VARIABLE = FRAUD | | | | | |
|--|----------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| <i>INTERCEPT</i> | -2.655*** (-10.14) | -2.678*** (-6.39) | -2.244*** (-7.57) | -2.266*** (-8.29) | -2.631*** (-8.24) | -2.597** (-3.59) |
| <i>OWN</i> | 0.068 (0.18) | 0.594 (1.23) | -0.105 (-0.26) | -0.056 (-0.15) | 0.007 (0.02) | 0.170 (0.33) |
| <i>TENURE</i> | -0.030* (-1.70) | -0.049** (-2.00) | -0.020* (-1.68) | -0.047 (-1.20) | -0.038** (-2.33) | -0.028 (-1.22) |
| <i>OWN x TENURE</i> | 0.090** (2.13) | 0.094 (1.58) | 0.070* (1.89) | 0.094** (2.03) | 0.102** (2.26) | 0.088** (2.01) |
| <i>TOBIN'S_Q</i> | 0.078** (2.58) | 0.110* (1.99) | 0.057 (1.60) | 0.042 (1.35) | 0.059* (1.84) | 0.130 (1.38) |
| <i>ROA</i> | -0.102 (-0.13) | -1.700 (-1.40) | -0.222 (-0.27) | -0.414 (-0.49) | 0.309 (0.34) | -1.545** (-2.11) |
| <i>%IND_FRAUD</i> | 0.117 (1.16) | 0.253 (1.30) | 0.049 (0.42) | 0.207 (1.58) | 0.156 (1.34) | 0.596* (1.64) |
| <i>ANALYST_FOLL</i> | | 0.011 (0.85) | | | | -0.009 (-0.04) |
| <i>WEALTH</i> | | | 0.001 (0.27) | | | -0.106 (-1.25) |
| <i>PERKS</i> | | | | 0.006* (1.66) | | 0.001 (0.36) |
| <i>FSCORE</i> | | | | | 0.032* (1.72) | 0.446* (1.74) |
| CHI SQUARE: <i>TENURE + OWN x TENURE ≠ 0</i> | 3.00* | 1.26 | 2.22 | 2.45 | 3.05* | 3.18* |
| PSUEDO R2 | 0.02 | 0.04 | 0.01 | 0.01 | 0.02 | 0.07 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 3 (Cont.) Description

*****Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm. Interactions are calculated using the Norton, Wang, and Ai (2004) adjustment.**

Table 3, Panel A presents the results for logit models examining the relation between CEO record and fraudulent corporate reporting. Table 3, Panel B presents the results for logit models examining the relation between CEO frugality and fraudulent corporate reporting. Both panels use up to 110 fraud and 110 non fraud matched control firms and all years with available data up to the year the fraud began (corresponding year for the matched firm).

The variables are defined as follows: *FRAUD* is a dummy variable that equals 1 in the year a firm commits accounting fraud, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *TENURE* is the number of years the individual has been the CEO of the firm; *TOBIN'S_Q* is the market value of assets to the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year; *ANALYST_FOLL* is the number of analysts issuing forecasts for a firm in the year; *WEALTH* is the fair value of the CEO's wealth derived from stock and options from the firm plus other compensation received over the previous 3 years; *PERKS* is the average value of all perquisites received by the CEO in the past 3 years; *FSCORE* is the output from the predictive model for accounting manipulations reported in Dechow et al. (2011).

Table 4, Panel A: CEO Record and Named by the SEC for Fraud

| | DEPENDENT VARIABLE = CEO_NAMED | | | | | |
|---|--------------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| <i>INTERCEPT</i> | -2.357*** (-5.50) | -1.637** (-3.09) | -2.811*** (-4.97) | -2.554*** (-4.76) | -2.152*** (-4.20) | -1.704 (-1.48) |
| <i>RECORD</i> | 4.926*** (5.21) | 6.944** (3.95) | 6.178*** (6.05) | 4.520*** (4.57) | 4.386*** (4.19) | 7.562*** (9.09) |
| <i>TENURE</i> | 0.003 (0.11) | -0.125** (-2.43) | 0.021 (0.50) | 0.044 (1.17) | -0.024 (-0.69) | -0.078 (-1.03) |
| <i>RECORD x TENURE</i> | -0.182** (-2.22) | -0.464** (-2.09) | -0.236** (-2.91) | -0.187** (-2.58) | -0.131* (-1.69) | -0.517*** (-4.56) |
| <i>TOBIN'S_Q</i> | 0.062 (1.09) | 0.111 (1.05) | 0.043 (0.72) | 0.063 (1.15) | 0.054 (0.98) | -0.010 (-0.05) |
| <i>ROA</i> | 0.882 (0.68) | -1.612* (-1.69) | 0.720 (0.49) | 1.212 (0.95) | 0.633 (0.56) | -1.214** (-2.28) |
| <i>%IND_FRAUD</i> | -0.708** (-2.72) | -0.448 (-1.46) | -0.763** (-2.53) | -0.644** (-2.19) | -0.473* (-1.89) | -0.403 (-0.64) |
| <i>ANALYST_FOLL</i> | | -0.001 (-0.05) | | | | -0.002 (-0.06) |
| <i>WEALTH</i> | | | 0.002 (0.37) | | | -0.022 (-0.17) |
| <i>PERKS</i> | | | | 0.015 (1.43) | | 0.010 (0.97) |
| <i>FSCORE</i> | | | | | 0.024 (0.90) | 0.612** (2.76) |
| CHI SQUARE: <i>TENURE + RECORD x TENURE ≠ 0</i> | 5.91** | 7.54*** | 7.87*** | 5.28** | 5.10** | 6.52*** |
| PSUEDO R2 | 0.22 | 0.34 | 0.28 | 0.22 | 0.23 | 0.42 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 4, Panel B: CEO Frugality and Named by the SEC for Fraud

| | DEPENDENT VARIABLE = CEO_NAMED | | | | | |
|--|--------------------------------|---------------------|----------------------|----------------------|----------------------|---------------------|
| <i>INTERCEPT</i> | -1.961*** (-5.31) | -1.362** (-2.47) | -2.222*** (-4.67) | -1.962*** (-4.61) | -1.779*** (-4.17) | -1.674* (-1.66) |
| <i>OWN</i> | 0.376 (0.67) | 0.730 (1.13) | 0.040 (0.06) | 0.451 (0.73) | 0.183 (0.30) | 0.750 (0.69) |
| <i>TENURE</i> | -0.060 (-1.39) | -0.169** (-3.16) | -0.101 (-1.59) | -0.021 (-0.52) | -0.061 (-1.40) | -0.217** (-2.06) |
| <i>OWN x TENURE</i> | 0.077 (1.26) | 0.013 (0.14) | 0.150* (1.87) | 0.054 (0.92) | 0.058 (0.87) | 0.038 (0.24) |
| <i>TOBIN'S_Q</i> | 0.081 (1.28) | 0.130 (1.40) | 0.103* (1.71) | 0.072 (1.34) | 0.052 (0.87) | 0.061 (0.39) |
| <i>ROA</i> | 0.659 (0.54) | -1.982 (-1.46) | 0.336 (0.25) | 0.719 (0.58) | 0.460 (0.39) | -1.675** (-2.39) |
| <i>%IND_FRAUD</i> | -0.110 (-0.35) | -0.113 (-0.23) | 0.103 (0.36) | -0.129 (-0.42) | 0.083 (0.29) | 0.705 (1.12) |
| <i>ANALYST_FOLL</i> | | -0.002 (-0.10) | | | | 0.021 (0.72) |
| <i>WEALTH</i> | | | -0.007 (-1.09) | | | -0.032 (-0.31) |
| <i>PERKS</i> | | | | 0.008 (1.13) | | 0.007 (0.73) |
| <i>FSCORE</i> | | | | | 0.054 (1.12) | 0.566** (2.44) |
| CHI-SQUARE: <i>TENURE + OWN x TENURE ≠ 0</i> | 0.16 | 4.03** | 1.05 | 0.61 | 0.01 | 2.09 |
| PSUEDO R2 | 0.06 | 0.12 | 0.09 | 0.06 | 0.04 | 0.18 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 4 (Cont.) Description

*****Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm. Interactions are calculated using the Norton, Wang, and Ai (2004) adjustment.**

Table 4, Panel A presents the results for logit models examining the relation between CEO record and the CEO being named by the SEC as perpetrating the fraud. Table 4, Panel B presents the results for logit models examining the relation between CEO frugality and the CEO being named by the SEC as perpetrating the fraud. Both panels use up to 110 fraud and 110 non fraud matched control firms and all years with available data up to the year the fraud began (corresponding year for the matched firm).

The variables are defined as follows: *NAMED_CEO* is a dummy variable that equals 1 if the CEO is named in the AAER as being a perpetrator of the accounting fraud, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *TENURE* is the number of years the individual has been the CEO of the firm; *TOBIN'S_Q* is the market value of assets to the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year; *ANALYST_FOLL* is the number of analysts issuing forecasts for a firm in the year; *WEALTH* is the fair value of the CEO's wealth derived from stock and options from the firm plus other compensation received over the previous 3 years; *PERKS* is the average value of all perquisites received by the CEO in the past 3 years; *FSCORE* is the output from the predictive model for accounting manipulations reported in Dechow et al. (2011).

Table 5, Panel A: CEO Record and Others Named in Fraud

| | DEPENDENT VARIABLE = OTHERS_NAMED | | | | | |
|---|-----------------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| <i>INTERCEPT</i> | -3.410*** (-8.89) | -3.075*** (-5.08) | -3.054*** (-7.17) | -3.146*** (-7.21) | -3.090*** (-7.59) | -2.717** (-3.14) |
| <i>RECORD</i> | 0.895* (1.68) | 1.132** (2.11) | 1.035 (1.54) | 0.964* (1.76) | 0.577 (0.90) | 0.448 (0.54) |
| <i>TENURE</i> | -0.059* (-1.66) | -0.131** (-2.14) | -0.064 (-1.61) | -0.030 (-0.87) | -0.065* (-1.74) | -0.099 (-1.35) |
| <i>RECORD x TENURE</i> | 0.035 (0.73) | 0.121* (1.87) | 0.027 (0.48) | 0.013 (0.28) | 0.053 (1.04) | 0.119 (1.48) |
| <i>TOBIN'S_Q</i> | 0.093** (2.42) | 0.159** (2.57) | 0.089* (1.82) | 0.075* (1.91) | 0.075* (1.77) | 0.270** (2.06) |
| <i>ROA</i> | -0.345 (-0.38) | -1.894** (-2.32) | -0.556 (-0.59) | -0.496 (-0.56) | -0.353 (-0.37) | -0.691** (-2.22) |
| <i>%IND_FRAUD</i> | -0.140 (-0.68) | 0.268 (1.49) | -0.232 (-0.85) | -0.110 (-0.40) | -0.327 (-1.12) | 0.483 (0.86) |
| <i>ANALYST_FOLL</i> | | 0.022 (1.22) | | | | 0.014 (0.53) |
| <i>WEALTH</i> | | | -0.007 (-0.64) | | | -0.206 (-1.46) |
| <i>PERKS</i> | | | | 0.006 (1.36) | | 0.002 (0.57) |
| <i>FSCORE</i> | | | | | 0.009 (0.68) | 0.158 (0.76) |
| CHI SQUARE: <i>TENURE + RECORD x TENURE ≠ 0</i> | 0.57 | 0.23 | 0.82 | 0.28 | 0.09 | 0.30 |
| PSUEDO R2 | 0.04 | 0.12 | 0.04 | 0.04 | 0.04 | 0.12 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 5, Panel B: CEO Frugality and Others Named in Fraud

| | DEPENDENT VARIABLE = OTHERS_NAMED | | | | | |
|--|-----------------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| <i>INTERCEPT</i> | -3.467*** (-9.47) | -3.243*** (-5.32) | -3.189*** (-7.25) | -3.066*** (-7.07) | -3.035*** (-6.77) | -2.912** (-3.06) |
| <i>OWN</i> | 0.210 (0.36) | 0.149 (0.21) | 0.235 (0.37) | 0.055 (0.09) | -0.369 (-0.59) | -0.325 (-0.38) |
| <i>TENURE</i> | -0.032* (-1.64) | -0.049* (-1.90) | -0.037* (-1.68) | 0.062 (0.39) | -0.047* (-1.86) | -0.020 (-0.60) |
| <i>OWN x TENURE</i> | 0.106** (2.31) | 0.070* (1.93) | 0.093** (2.27) | 0.031** (2.01) | 0.109* (1.99) | 0.093** (2.33) |
| <i>TOBIN'S_Q</i> | 0.098** (2.61) | 0.141** (2.35) | 0.112** (2.26) | 0.083** (2.12) | 0.068 (1.53) | 0.198 (1.41) |
| <i>ROA</i> | -0.366 (-0.41) | -1.360 (-1.59) | -0.595 (-0.63) | -0.482 (-0.54) | -0.123 (-0.13) | -1.356* (-1.76) |
| <i>%IND_FRAUD</i> | 0.016 (0.08) | 0.294 (1.26) | -0.048 (-0.18) | 0.027 (0.10) | -0.142 (-0.51) | 0.518 (1.01) |
| <i>ANALYST_FOLL</i> | | 0.017 (0.95) | | | | 0.009 (0.35) |
| <i>WEALTH</i> | | | -0.015 (-0.95) | | | -0.135 (-0.96) |
| <i>PERKS</i> | | | | 0.004 (1.03) | | 0.002 (0.52) |
| <i>FSCORE</i> | | | | | 0.021 (1.30) | 0.255 (1.22) |
| CHI-SQUARE: <i>TENURE + OWN x TENURE ≠ 0</i> | 3.11* | 2.15 | 3.26* | 3.47* | 2.84* | 3.42* |
| PSUEDO R2 | 0.02 | 0.06 | 0.04 | 0.02 | 0.03 | 0.08 |
| N | 1651 | 946 | 1158 | 702 | 1074 | 364 |

Table 5 (Cont.) Description

*****Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm. Interactions are calculated using the Norton, Wang, and Ai (2004) adjustment.**

Table 5, Panel A presents the results for logit models examining the relation between CEO record and individuals other than the CEO being named by the SEC as perpetrating the fraud. Table 5, Panel B presents the results for logit models examining the relation between CEO frugality and individuals other than the CEO being named by the SEC as perpetrating the fraud. Both panels use up to 110 fraud and 110 non fraud matched control firms and all years with available data up to the year the fraud began (corresponding year for the matched firm).

The variables are defined as follows: *OTHERS_NAMED* is a dummy variable that equals 1 if at least one individual other than the CEO is named in the AAER as being a perpetrator of the accounting fraud, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *TENURE* is the number of years the individual has been the CEO of the firm; *TOBIN'S_Q* is the market value of assets to the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year; *ANALYST_FOLL* is the number of analysts issuing forecasts for a firm in the year; *WEALTH* is the fair value of the CEO's wealth derived from stock and options from the firm plus other compensation received over the previous 3 years; *PERKS* is the average value of all perquisites received by the CEO in the past 3 years; *FSCORE* is the output from the predictive model for accounting manipulations reported in Dechow et al. (2011).

Table 6, Panel A
Executives In Fraud Firms

| | ALL CEOS | ALL CFOS | EXECUTIVES NAMED IN FRAUD | |
|--------------------------|-----------|-----------|---------------------------|-----------|
| | | | CEO | CFO |
| | TOTAL (%) | TOTAL (%) | TOTAL (%) | TOTAL (%) |
| <i>RECORD</i> | 18 (24%) | 13 (17%) | 15 (31%) | 8 (22%) |
| <i>#RECORD</i> | 22 (29%) | 14 (19%) | 20 (42%) | 8 (22%) |
| <i>OWN</i> | 24 (32%) | 19 (25%) | 16 (33%) | 12 (32%) |
| <i>#OWN</i> | 39 (52%) | 31 (41%) | 23 (48%) | 19 (51%) |
| NO. OF EXECUTIVES | 75 | 75 | 48 | 37 |

Table 6, Panel A presents the summary of executive record and frugality for a subsample of CEOs and CFOs of 75 fraud firms, including those for the CEOs and CFOs named by the SEC as perpetrators of the fraud. The variables are defined as follows: *RECORD* is a dummy variable that equals 1 if a CEO/CFO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *#RECORD* is the number of civil or criminal convictions a CEO/CFO has prior to the fraud initiation year; *OWN* is a dummy variable that equals 1 if a CEO/CFO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *#OWN* is the number of aircrafts, boats, and expensive cars (more than \$75,000) owned by a CEO/CFO prior to the fraud initiation year.

Table 6, Panel B
Analysis of CEO-CFO Pairs of Fraud Firms:
CEO/CFO Record, Frugality, and Being Named in Fraud

| | DEPENDENT VARIABLE = NAMED_EXEC | |
|--|---------------------------------|---------------------|
| | COEF. (Z) | COEF. (Z) |
| <i>INTERCEPT</i> | -0.648** (-2.92) | -0.456** (-2.27) |
| <i>RECORD</i> | 1.170** (2.77) | |
| <i>OWN</i> | 0.268 (0.72) | |
| <i>#RECORD</i> | | 0.596* (1.85) |
| <i>#OWN</i> | | 0.044 (0.22) |
| CHI SQUARE: <i>RECORD</i>><i>OWN</i> | 4.28** | 2.87* |
| PSUEDO R2 | 0.04 | 0.03 |
| NO. OF EXECUTIVES | 150 | 150 |
| NO. OF FIRMS | 75 | 75 |

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by firm.

Table 6 Panel B presents the results of logit models examining the relation between the record and frugality variables for the CEOs and CFOs in the fraud sample and whether or not the executive is named as a perpetrator of the fraud. The variables are defined as follows: *NAMED_EXEC* is a dummy variable that equals 1 if the executive is named by the SEC as perpetrating the fraud, 0 otherwise; *RECORD* is a dummy variable that equals 1 if the executive was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *#RECORD* is the number of civil or criminal convictions received by the executive prior to the fraud initiation year; *OWN* is a dummy variable that equals 1 if the executive owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *#OWN* is the number of aircrafts, boats, and cars (more than \$75,000) owned by the executive prior to the fraud initiation year.

Table 7
CEO Record, Frugality, and Restatements due to Errors

| | DEPENDENT VARIABLE = ERRORS | | | |
|---|-----------------------------|----------------------|-----------------------|----------------------|
| | RECORD | | FRUGAL | |
| <i>INTERCEPT</i> | -3.073*** (-12.17) | -2.436*** (-9.83) | -3.280*** (-10.90) | -2.652*** (-9.56) |
| <i>RECORD</i> | -0.784 (-0.84) | -1.264 (-1.12) | | |
| <i>OWN</i> | | | 0.494** (2.48) | 0.583** (2.72) |
| <i>TENURE</i> | 0.001 (0.13) | 0.002 (0.21) | 0.003 (0.41) | 0.006 (0.46) |
| <i>RECORD x TENURE</i> | -0.014 (-0.12) | 0.003 (0.24) | | |
| <i>OWN x TENURE</i> | | | 0.013** (2.02) | 0.009* (1.73) |
| <i>IC_WEAKNESS_START</i> | 0.213 (1.31) | | 0.2288 (1.42) | |
| <i>IC_WEAKNESS</i> | | 0.754** (2.98) | | 0.795** (3.18) |
| CHI SQUARE: <i>TENURE + INTERACTION ≠ 0</i> | 0.02* | 0.07 | 3.78** | 3.24** |
| PSUEDO R2 | 0.01 | 0.06 | 0.01 | 0.02 |
| N | 1929 | 1986 | 1929 | 1929 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm. Interactions are calculated using the Norton, Wang, and Ai (2004) adjustment.

Table 7 presents the results for logit models examining the relation between CEO record and frugality and restatements resulting from unintentional errors in financial statements. The models include 94 restatement firms and 172 control firms. All years with available data up to the restatement year are included for the restatement firms. All years with available data up to 2005 (our last year with a restatement) are included for the control firms.

The variables are defined as follows: *ERROR* is a dummy variable that equals 1 in the years a firm had a material clerical or unintentional error in its reported numbers, and 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the restatement year, 0 otherwise (prior to the first year of inclusion for control firms); *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the restatement year, 0 otherwise (prior to the first year of inclusion for the control firms); *TENURE* is the number of years the individual has been the CEO of the firm; *IC_WEAKNESS* is the fitted score using a modified version of the model in Doyle et al (2007), either at the first year of data for a CEO in the firm (*IC_WEAKNESS_START*) or in the year of the error (*IC_WEAKNESS*).

Table 8, Panel A
Corporate Culture and Fraud: All CEOs

| | DEPENDENT VARIABLE = FRAUD | | | | | |
|--------------------|----------------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|
| <i>INTERCEPT</i> | -2.605*** (-13.84) | -3.037*** (-13.74) | -3.268*** (-9.90) | -2.482*** (-4.32) | -2.199*** (-8.75) | -2.388*** (-11.20) |
| <i>DELTA</i> | 0.035 (1.24) | | | | | |
| <i>CFO_RECORD</i> | | 0.437 (1.29) | | | | |
| <i>CFO_OWN</i> | | 0.422** (2.07) | | | | |
| <i>IC_WEAKNESS</i> | | | -0.450 (-1.09) | | | |
| <i>%INDEP</i> | | | | 0.000 (0.02) | | |
| <i>SOCIAL</i> | | | | | 0.012 (0.25) | |
| <i>DIR_SHARES</i> | | | | | | -0.243 (-0.72) |
| <i>TOBIN'S_Q</i> | 0.051 (1.57) | 0.076* (1.93) | 0.089** (2.82) | 0.051 (1.43) | 0.072 (1.46) | 0.050 (1.40) |
| <i>ROA</i> | -0.329 (-0.43) | -0.228 (-0.24) | -0.391 (-0.47) | -0.532 (-0.65) | -0.857 (-0.94) | -0.632 (-0.76) |
| <i>%IND_FRAUD</i> | 0.063 (0.56) | 0.148 (1.14) | -0.008 (-0.08) | 0.206 (1.36) | 0.250 (1.48) | 0.181 (1.18) |
| PSUEDO R2 | 0.01 | 0.03 | 0.01 | 0.01 | 0.01 | 0.01 |
| N | 1,168 | 1,111 | 1,527 | 973 | 629 | 909 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm.

Table 8, Panel B
Corporate Culture and Fraud: Record holders vs. Non-Record holders

| | DEPENDENT VARIABLE = FRAUD | | | | | | | | | | | |
|--------------------|----------------------------|-------------|-------------|-------------|-------------|-------------|----------------------|-------------|-------------|-------------|-------------|-------------|
| | CEOS WITH RECORDS | | | | | | CEOS WITHOUT RECORDS | | | | | |
| <i>INTERCEPT</i> | -1.512** | -1.766** | -2.062** | -1.252 | -1.904** | -1.776** | -2.666*** | -3.243*** | -3.479*** | -2.846*** | -2.151*** | -2.379*** |
| | (-2.51) | (-2.27) | (-2.09) | (-1.02) | (-2.34) | (-3.50) | (-12.48) | (-13.25) | (-9.74) | (-4.18) | (-8.06) | (-10.05) |
| <i>DELTA</i> | 0.049 | | | | | | 0.038 | | | | | |
| | (1.60) | | | | | | (0.62) | | | | | |
| <i>CFO_RECORD</i> | | 0.242 | | | | | | 0.255 | | | | |
| | | (0.65) | | | | | | (0.57) | | | | |
| <i>CFO_OWN</i> | | -0.103 | | | | | | 0.559* | | | | |
| | | (-0.16) | | | | | | (1.96) | | | | |
| <i>IC_WEAKNESS</i> | | | -0.430 | | | | | | -0.529 | | | |
| | | | (-0.35) | | | | | | (-1.20) | | | |
| <i>%INDEP</i> | | | | -0.007 | | | | | | 0.004 | | |
| | | | | (-0.51) | | | | | | (0.52) | | |
| <i>SOCIAL</i> | | | | | 0.126 | | | | | | -0.028 | |
| | | | | | (0.42) | | | | | | (-0.46) | |
| <i>DIR_SHARES</i> | | | | | | -0.289 | | | | | | -0.665 |
| | | | | | | (-1.46) | | | | | | (-1.34) |
| <i>TOBIN'S_Q</i> | 0.109 | 0.278** | 0.143* | 0.114 | 0.252 | 0.091 | 0.028 | 0.073* | 0.089** | 0.034 | 0.048 | 0.035 |
| | (1.09) | (2.13) | (1.94) | (1.43) | (1.56) | (1.20) | (0.72) | (1.81) | (2.46) | (0.84) | (0.94) | (0.87) |
| <i>ROA</i> | -1.296 | -1.477 | -1.908 | -0.812 | -1.403 | -0.193 | -0.321 | -0.183 | -0.463 | -0.449 | -0.791 | -0.656 |
| | (-0.37) | (-1.10) | (-0.92) | (-0.30) | (-1.39) | (-0.08) | (-0.40) | (-0.19) | (-0.53) | (-0.51) | (-0.85) | (-0.72) |
| <i>%IND_FRAUD</i> | -0.099 | -0.120 | -0.375* | 0.114 | 0.630*** | 0.170 | -0.018 | 0.278 | 0.041 | 0.062 | 0.053 | 0.015 |
| | (-0.48) | (-0.53) | (-1.67) | (0.49) | (4.05) | (0.81) | (-0.11) | (1.43) | (0.23) | (0.31) | (0.26) | (0.08) |
| PSUEDO R2 | 0.02 | 0.03 | 0.03 | 0.02 | 0.10 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| N | 132 | 126 | 167 | 122 | 94 | 110 | 1036 | 985 | 1361 | 851 | 535 | 799 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm.

Table 8, Panel C
Corporate Culture and Fraud: Frugal vs. Unfrugal CEOs

| | DEPENDENT VARIABLE = FRAUD | | | | | | | | | | | |
|--------------------|----------------------------|----------------------|----------------------|---------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|---------------------|----------------------|----------------------|
| | UNFRUGAL CEOS | | | | | | FRUGAL CEOS | | | | | |
| <i>INTERCEPT</i> | -2.719*** (-6.67) | -4.331*** (-8.10) | -4.122*** (-7.23) | -3.917** (-3.74) | -2.207*** (-4.21) | -2.344*** (-5.37) | -2.575*** (-11.36) | -2.829*** (-11.99) | -2.992*** (-8.19) | -1.688** (-2.54) | -2.365*** (-8.02) | -2.472*** (-9.77) |
| <i>DELTA</i> | 0.074** (2.04) | | | | | | -0.013 (-0.25) | | | | | |
| <i>CFO_RECORD</i> | | 1.189** (2.05) | | | | | | 0.226 (0.56) | | | | |
| <i>CFO_OWN</i> | | 0.604** (2.53) | | | | | | 0.285* (1.82) | | | | |
| <i>IC_WEAKNESS</i> | | | -0.944 (-1.51) | | | | | | -0.212 (-0.43) | | | |
| <i>%INDEP</i> | | | | 0.019 (1.50) | | | | | | -0.012 (-1.36) | | |
| <i>SOCIAL</i> | | | | | 0.092** (2.02) | | | | | | -0.032 (-0.39) | |
| <i>DIR_SHARES</i> | | | | | | -0.400** (-2.08) | | | | | | -0.104 (-0.67) |
| <i>TOBIN'S_Q</i> | 0.103 (1.13) | 0.276** (2.14) | 0.115 (1.11) | 0.052 (0.61) | 0.137 (1.37) | 0.044 (0.51) | 0.021 (0.52) | 0.055 (1.29) | 0.074** (2.18) | 0.048 (1.21) | 0.067 (1.27) | 0.050 (1.29) |
| <i>ROA</i> | 0.894 (1.05) | 0.700* (1.94) | 1.558 (1.22) | 0.851 (1.06) | 0.865 (0.42) | 0.624 (0.92) | -0.828 (-0.96) | -1.07 (-1.12) | -1.161 (-1.26) | -0.657* (-1.71) | -0.526 (-1.44) | -0.623* (-1.66) |
| <i>%IND_FRAUD</i> | -0.550 (-1.55) | 0.219 (0.82) | -0.210 (-0.65) | -0.235 (-0.74) | -0.320 (-0.89) | -0.328 (-1.01) | 0.156 (1.26) | 0.163 (1.10) | 0.040 (0.34) | 0.389** (2.08) | 0.461** (2.33) | 0.382** (2.08) |
| PSUEDO R2 | 0.02 | 0.09 | 0.04 | 0.02 | 0.04 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 |
| N | 444 | 408 | 505 | 354 | 235 | 346 | 724 | 703 | 1022 | 619 | 394 | 563 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm.

Table 8 (Cont.) Description

Table 8, Panel A presents the results for logit models estimated on the fraud and non-fraud matched sample examining the relation between various aspects of the corporate culture and fraud. Table 8 Panels B and C present the results of the same analyses but estimated on subsamples of CEOs with and without records (Panel B) and frugal and non-frugal CEOs (Panel C).

Chi-square statistics comparing the differences in the coefficients across models are as follows:

| | |
|----------------------|---|
| <i>DELTA</i> : | Record \neq No Record = 0.04 Non-frugal \neq Frugal = 3.92** |
| <i>CFO_RECORD</i> : | Record \neq No Record = 0.02 Non-frugal \neq Frugal = 3.14* |
| <i>CFO_OWN</i> : | Record \neq No Record = 4.04** Non-frugal \neq Frugal = 2.64 |
| <i>IC_WEAKNESS</i> : | Record \neq No Record = 0.26 Non-frugal \neq Frugal = 1.04 |
| <i>%INDEP</i> : | Record \neq No Record = 0.63 Non-frugal \neq Frugal = 2.56 |
| <i>SOCIAL</i> : | Record \neq No Record = 1.31 Non-frugal \neq Frugal = 3.35* |
| <i>DIR_SHARES</i> : | Record \neq No Record = 0.59 Non-frugal \neq Frugal = 3.09* |

The variables are defined as follows: *DELTA* is the dollar change in the value of the CEO's stock and option portfolio for a 1% change in stock price; *CFO_RECORD* is a dummy variable that equals 1 if a CFO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *CFO_OWN* is a dummy variable that equals 1 if a CFO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *IC_WEAKNESS* is the fitted score using a modified version of the model in Doyle et al (2007); *%INDEP* is the proportion of the board that is independent directors; *SOCIAL* is the number of board members who are socially connected to the CEO through mutual alma maters, military, social organizations and prior employment; *DIR_SHARES* is the median stock-based compensation of the independent directors measured as the total number of shares owned by independent directors as a percentage of total shares outstanding of the firm;); *TOBIN'S_Q* is the market value of assets to the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year.

Table 9, Panel A
Corporate Culture vs. CEO Type:
Appointment of the CFO

| | DEPENDENT VARIABLE = CFO_RECORD | DEPENDENT VARIABLE = CFO_OWN |
|-----------------------------|------------------------------------|---------------------------------|
| | COEF. (Z) | COEF. (Z) |
| <i>INTERCEPT</i> | -2.812** (-2.73) | -1.711** (-3.19) |
| <i>RECORD</i> | 0.490 (0.53) | -0.331 (-0.39) |
| <i>OWN</i> | 0.644 (1.03) | 1.132** (2.40) |
| <i>SIZE</i> | -0.008 (-0.52) | -0.008 (-0.83) |
| <i>MTB</i> | -0.122 (-0.50) | -0.145 (-0.65) |
| <i>ACQUISITION</i> | -3.881 (-0.52) | 0.913 (0.53) |
| <i>STD_RET</i> | 0.215 (0.98) | 0.321* (1.66) |
| <i>ROA</i> | 5.840 (1.52) | 1.268 (0.48) |
| <i>IND_COMP_CFO</i> | -0.064 (-0.05) | -0.415 (-0.09) |
| PSEUDO R² | 0.04 | 0.10 |
| N | 104 | 104 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm.

Table 9, Panel A presents the results of logit models that examine the likelihood of hiring a CFO with a record or a non-frugal CFO as a function of CEO record and own. This model includes the 104 fraud and non-fraud matched firms that we have CFO data for wherein the CFO was hired by the CEO in question.

The variables are defined as follows: *CFO_RECORD* is a dummy variable that equals 1 if a CFO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *CFO_OWN* is a dummy variable that equals 1 if a CFO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the fraud initiation year, 0 otherwise; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the fraud initiation year, 0 otherwise; *SIZE* is the market capitalization of the firm; *MTB* is the market value of equity divided by the book value of equity; *ACQUISITION* is the sum of acquisitions over the past two years scaled by the market capitalization of prior year; *STD_RET* is the standard deviation of monthly stock returns calculated over the year prior to the hiring of the CFO; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *IND_COMP_CFO* is the median 2-digit SIC code industry total compensation received by CFOs.

Table 9, Panel B
Changes in Corporate Culture and CEO Type

| | DELTA | IC_WEAKNESS | %INDEP | SOCIAL | DIR_SHARES |
|------------------------|-------------------|--------------------|-------------------|-------------------|--------------------|
| | COEF. | COEF. | COEF. | COEF. | COEF. |
| | (T) | (Z) | (T) | (Z) | (T) |
| <i>INTERCEPT</i> | -0.104 (-0.50) | 2.680 (0.96) | 0.954** (3.00) | 0.095 (0.36) | 0.005 (0.99) |
| <i>RECORD</i> | -0.169 (-0.68) | -1.967 (-0.83) | -0.506 (-0.50) | -0.139 (-0.24) | 0.040 (0.90) |
| <i>OWN</i> | 0.136* (1.77) | -2.451 (-0.88) | 0.401 (0.88) | -0.101 (-0.19) | -0.009* (-1.84) |
| <i>TENURE</i> | -0.015 (-0.68) | 1.025 (0.86) | 0.017 (0.82) | -0.008 (-0.42) | -0.0004 (-1.22) |
| <i>RECORD × TENURE</i> | 0.015 (0.66) | -0.607 (-0.75) | 0.032 (0.62) | 0.022 (1.37) | -0.001 (-0.80) |
| <i>OWN × TENURE</i> | 0.027** (2.35) | -0.928 (-0.80) | -0.010 (-0.28) | 0.038** (2.04) | -0.004* (-1.95) |
| <i>SIZE</i> | 0.118 (0.70) | | -0.005 (-0.15) | 0.013** (2.30) | -0.003 (-0.90) |
| <i>MTB</i> | -0.209 (-0.09) | | -0.013 (-0.11) | -0.005 (-0.44) | -0.001* (-1.93) |
| <i>LEVERAGE</i> | 0.284 (0.28) | | | | 0.003 (0.17) |

Table 9, Panel B (Cont.)

| | DELTA | IC_WEAKNESS | %INDEP | %SOCIAL | DIR_SHARES |
|---|--------------|--------------------|---------------|----------------|-------------------|
| | COEF. | COEF. | COEF. | COEF. | COEF. |
| | (T) | (Z) | (T) | (T) | (T) |
| <i>STD_RET</i> | 0.284 | | 0.553 | -0.054 | |
| | (0.28) | | (0.15) | (-0.08) | |
| <i>R&D</i> | | | 0.006 | | |
| | | | (1.57) | | |
| F-STATISTIC / CHI-SQUARE: <i>TENURE + RECORD x TENURE ≠ 0</i> | 0.41 | 1.53 | 0.42 | 1.40 | 0.85 |
| F-STATISTIC / CHI-SQUARE: <i>TENURE + OWN x TENURE ≠ 0</i> | 3.29* | 1.55 | 1.05 | 3.12* | 3.68** |
| ADJUSTED R2 / PSUEDO R2 | 0.10 | 0.01 | 0.01 | 0.08 | 0.02 |
| N | 2,971 | 3,678 | 2,025 | 629 | 1,871 |

***Significant at the 1% level; **5% level; *10% level. Coefficient estimates are presented. Standard errors are clustered by firm. Interactions are calculated using the Norton, Wang, and Ai (2004) adjustment.

Table 9, Panel B presents the results of logit models that examine changes in corporate culture as a function of CEO record and frugality. The models include all firms – fraud, restatement, control – with available data up to year the fraud began (fraud firms), the restatement year (restatement firms) and 2005 (our last year with restatements) for control firms.

The variables are defined as follows: *FRAUD* is a dummy variable that equals 1 in the year a firm commits accounting fraud, and 0 otherwise; *DELTA* is the dollar change in the value of the CEO's stock and option portfolio for a 1% change in stock price; *IC_WEAKNESS* is the fitted score using a modified version of the model in Doyle et al (2007); *%INDEP* is the proportion of the board that is independent directors; *SOCIAL* is the number of board members who are socially connected to the CEO through mutual alma maters, military, social organizations and prior employment; *DIR_SHARES* is the median stock-based compensation of the independent directors measured as the total number of shares owned by independent directors as a percentage of total shares outstanding of the firm;); *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any civil or criminal offenses prior to the stated measurement year by firm type, 0 otherwise; *OWN* is a dummy variable that equals 1 if a CEO owns an aircraft, boat, or a car worth more than \$75,000 prior to the stated measurement year by firm type, 0 otherwise; *TENURE* is the number of years the individual has been the CEO of the firm; *SIZE* is the market capitalization of the firm; *MTB* is the market value of equity divided by the book value of equity; *LEVERAGE* is the total debt divided by the book value of equity; *STD_RET* is the standard deviation of monthly stock returns calculated over the prior year; *R&D* is the total research and development expenses scaled by sales for the year.

Table 10
Closing the Loop: Changes in Corporate Culture and Fraud vs. Non-Fraud Years

| | DEPENDENT VARIABLE = FRAUD | | | | | |
|-------------------|----------------------------|---------------------|---------------------|----------------------|---------------------|----------------------|
| | UNFRUGAL CEOS | | | FRUGAL CEOS | | |
| <i>INTERCEPT</i> | -1.803** (-3.71) | -1.602** (-2.11) | -1.589** (-2.94) | -1.045*** (-4.13) | -1.524** (-3.87) | -1.276*** (-4.47) |
| <i>DELTA</i> | 0.107** (2.23) | | | 0.001 (0.04) | | |
| <i>SOCIAL</i> | | 0.168* (1.97) | | | -0.078 (-1.29) | |
| <i>DIR_SHARES</i> | | | -0.721 (-0.91) | | | 0.233 (1.47) |
| <i>TOBIN'S_Q</i> | 0.283* (1.96) | 0.110 (0.71) | 0.172 (1.10) | 0.016 (0.43) | 0.173** (2.32) | 0.038 (0.90) |
| <i>ROA</i> | -0.632 (-0.47) | 0.343 (0.33) | -0.533 (-0.16) | -0.079 (-0.06) | -0.708 (-0.28) | 0.456 (0.27) |
| <i>%IND_FRAUD</i> | 0.904* (1.85) | 0.701 (1.29) | 1.195 (1.60) | 0.093 (0.61) | 0.451** (2.46) | 0.242** (2.15) |
| PSUEDO R2 | 0.05 | 0.05 | 0.04 | 0.01 | 0.02 | 0.01 |
| N | 148 | 107 | 133 | 214 | 143 | 182 |

***Significant at the 1% level; **5% level; *10% level. Log odds ratios are presented. Standard errors are clustered by firm.

Table 10 (Cont.) Description

Table 10 presents the results of the logit models examining the relation between fraud and aspects of the corporate culture that change during the tenure of unfrugal CEOs. The results are presented separately for frugal and non-frugal CEOs. These models use all fraud firms with available data and examine the first year with available data and the fraud initiation year.

The variables are defined as follows: *FRAUD* is a dummy variable that equals 1 in the year a firm commits accounting fraud, and 0 otherwise; *DELTA* is the dollar change in the value of the CEO's stock and option portfolio for a 1% change in stock price; *SOCIAL* is the number of board members who are socially connected to the CEO through mutual alma maters, military, social organizations and prior employment; *DIR_SHARES* is the median stock-based compensation of the independent directors measured as the total number of shares owned by independent directors as a percentage of total shares outstanding of the firm; *TOBIN'S_Q* is the market value of assets to the book value of assets; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *%IND_FRAUD* is the number of fraud firms in the firm's 2 digit SIC code divided by the total number of firms in that 2 digit SIC code that year.
