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ABSTRACT

We examine how executives' behavior outside the workplace, as measured by their ownership of luxury goods (low "frugality") and prior legal infractions, is related to financial reporting risk. We predict and find that CEOs and CFOs with a legal record are more likely to perpetrate fraud. In contrast, we do not find a relation between executives' frugality and the propensity to perpetrate fraud. However, as predicted, we find that unfrugal CEOs oversee a relatively loose control environment characterized by relatively high probabilities of other insiders perpetrating fraud and unintentional material reporting errors. Further, cultural changes associated with an increase in fraud risk are more likely during unfrugal (vs. frugal) CEOs' reign, including the appointment of an unfrugal CFO, an increase in executives' equity-based incentives to misreport, and a decline in measures of board monitoring intensity.

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

1. Introduction

We examine how and why two aspects of top executives' behavior outside the workplace, as measured by their legal infractions and ownership of luxury goods, are related to the likelihood of future misstated financial statements, including fraud and unintentional material reporting errors.[1] We investigate two potential channels through which executives' off-the-job behavior is linked to the probability of future misstatements: 1) the executive's propensity to misreport (hereafter "propensity channel"); and 2) changes in corporate culture (hereafter "culture channel").[2]

Our first measure of executive behavior, prior legal infractions, includes driving under the influence, other drug related charges, domestic violence, reckless behavior, disturbing the peace, and speeding tickets. Motivated by the criminology literature, we interpret these legal infractions as a symptom of a relatively high disregard for laws and lack of self-control. We predict and find a direct, positive relation between CEOs' and CFOs' prior records and their propensity to perpetrate fraud (propensity channel), as reflected in the executive being named for fraudulent corporate reporting in an SEC Accounting and Auditing Enforcement Release (AAER). We find no relation between CEOs' prior legal infractions and *other* insiders being named in fraud, unintentional reporting errors, or other symptoms of a relatively weak control environment (culture channel).

Our second measure of executive behavior is the ownership of luxury goods, including expensive cars, boats, and houses. We interpret the ownership of luxury goods as a symptom of relatively low "frugality". Motivated by psychology and managerial accounting literatures, we predict that CEOs who refrain from acquiring luxury goods (hereafter "frugal CEOs") are likely to run a "tight ship" relative to

[1] We measure an executive's legal infractions and luxury asset ownership over the period up to and including the year before the reporting error or initiation of fraud. We refer to these as "prior" legal infractions and luxury asset ownership.

[2] We use "culture" to refer to a firm's multifaceted control environment with likely effects on the risk of misreporting (e.g. internal control systems, director monitoring, equity-based incentive plans, reliability of CFO, etc.). Hereafter we use "culture" and "control environment" interchangeably.

unfrugal CEOs (culture channel). Consistent with the culture channel, we find that the probabilities of both fraudulent reporting by other insiders and erroneous reporting are higher in firms run by an unfrugal (vs. frugal) CEO, and these differences become more pronounced over the CEO's tenure. Further, we find some evidence that the increasing probability of fraud over the tenure of unfrugal CEOs is associated with the appointment of an unfrugal CFO, as well as an increase in more "traditional" fraud risk factors; i.e. an increase in executives' equity-based incentives and weakened board monitoring. In contrast to executives with records, we find no evidence that unfrugal executives have a higher propensity to perpetrate fraud. This is not surprising given no obvious connection between frugality and the ability to rationalize illegal behavior.

In summary, we find that both executives' prior legal records and ownership of luxury goods are related to financial reporting risk. However, our hypotheses and results differ with respect to how and why legal records and asset ownership are related to misreporting. Executives with a record have a relatively high probability of being named in fraud, interpreted as evidence of a high propensity to perpetrate fraud (propensity channel). In contrast, firms run by unfrugal executives have relatively high probabilities of fraud perpetrated by *other* insiders and unintential reporting errors, and these corporate reporting risks become more pronounced over the course of the tenure of unfrugal CEOs (culture channel).

The interpretation of our results is subject to several key caveats. First, our sample size is constrained by the high cost of the background checks we use to obtain data on legal records and asset ownership.[3] Our fraud and error samples are small and have a high proportion of fraud and error firms relative to the underlying population of firms. These sample limitations reduce the power of our tests and limit inferences about the magnitude of the effects of executive type on the probability of fraud and errors in the general population of public U.S. companies.

[3] The sample for our main analysis of fraudulent reporting includes 109 fraud firms and 109 matched nonfraud firms. The sample for our analysis of reporting errors includes 94 error firms and 179 control firms. Section 3 describes our sample selection procedures.

Second, our fraud and error samples include only firms whose misreporting is *detected* and *enforced,* raising the possibility that our results are confounded by factors associated with the SEC's detection and enforcement procedures. We address this concern in several ways. In our fraud analyses, we use a matched sample of fraud and control firms, and test the robustness of results to the inclusion of a variety of control variables for firm and executive visibility and other attributes that may affect detection and enforcement. Second, as our most compelling identification strategy for isolating the propensity channel, we analyze the relation between executive type and the likelihood that the executive is named in fraud using CEO and CFO pairs from 75 fraud firms (holding constant all nonexecutive-level factors for each CEO-CFO pair). We find results consistent with those based on the matched sample of 109 fraud and 109 nonfraud firms. Third, as an additional identification strategy for the propensity channel, we examine the relation between CEO type and both *intentional* (fraud and CEO being named in fraud) and *unintentional* misreporting (errors). As expected, the probability of fraud and the CEO being named in fraud is elevated in firms run by CEOs with a record and the probability of errors is not. Fourth, as our most compelling identification strategy for isolating the culture channel, we examine *changes* in the prevalence of misreporting over the tenure of the CEO by CEO type, and link these to *changes* in specific aspects of the control environment. Finally, we examine the relation between CEO type and a measure of less egregious earnings management unaffected by SEC detection and enforcement procedures. Nevertheless, our interpretation of results as evidence of misreporting, per se, remains subject to this important caveat.

Third, endogenous sorting of executives to firms may bias our results. Our identification strategies above, as well the robustness of results to our instrument for executive frugality mitigate, but do not eliminate, this concern.

Subject to these caveats, our paper makes three main contributions. First, our evidence provides new insights into the risk of materially misstated financial statements. Second, we introduce novel measures of executive "type" based on prior legal infractions and luxury asset ownership. We document evidence suggesting that these measures of executives' "off-the-job" behavior capture meaningful

differences in managerial style in a financial reporting context, raising the possibility that these measures are useful in exploring other aspects of corporate behavior and performance. And third, we provide the first evidence of which we are aware of how changes in corporate culture over the tenure of CEOs differ in an intuitive and intriguing way by CEO type.

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 data and provides some descriptive statistics. Section 4 presents our analysis of the relation beween fraud and executive type, and our analysis of the propensity channel. Section 5 presents our analysis of the culture channel. Section 6 presents sensitivity analyses and Section 7 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. Consistent with this theory, Bertrand and Schoar (2003) document significant manager fixed effects on corporate investment behavior, financing policy, organizational strategy and performance. Similarly, Bamber, Jiang and Wang (2010) and Dyreng, Hanlon and Maydew (2010) document significant management fixed effects on firms' voluntary accounting disclosures and corporate tax avoidance, respectively.

Other studies focus on identifying specific managerial characteristics associated with corporate decisions and/or performance. For example, Kaplan, Klebanov and Sorensen (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 overconfidence and narcissism. Roll (1986) argues that management overconfidence is associated with unsuccessful corporate takeovers. Malmendier and Tate (2008; 2005) find that overconfident 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 overconfidence leads to increased overall 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, Bodt, Bollaert and Roll (2011) find that CEO narcissism in both the acquirer and target companies has a negative effect on the takeover process. Finally, based on psychometric tests administered to CEOs, Graham, Harvey and Puri (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 builds on the auditing and earnings management literatures. The auditing literature 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), specifying three prerequisites for fraud: 1) an *incentive* or pressure to commit fraud, 2) an *opportunity* to perpetrate fraud (e.g. absence of controls, ineffective controls, or the ability of management to override controls), and 3) an *attitude* that enables the rationalization of fraud (hereafter a "propensity" to perpetrate fraud). Prior earnings management research focuses primarily on the first two factors (i.e. incentives and opportunities), with the notable exception of Schrand and Zechman (2011)[4].

We build on these literatures by examining how and why executives' prior behavior outside the workplace, as measured by legal records and ownership of luxury goods, is associated with the risk that financial statements are materially misstated,[5] including fraud and material reporting errors. While both

[4] A large literature focuses on the motives and opportunities to misreport. See, for example, DeFond and Jiambalvo (1991),Dechow, Sloan, and Sweeney (1995), Beasley (1996), Klein (2002), Abbot, Parker, and Peters (2004), Agrawal and Chadha (2005), Farber (2005), Erickson, Hanlon, and Maydew (2006), Larcker, Richardson, and Tuna (2007), Davidson (2011), Dechow, Ge, Larson, and Sloan (2011), Dey and Liu (2011), and Schrand and Zechman (2011).

[5] 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 (see Section 6.1) we find that measures of CEO overconfidence, narcissism, 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, narcissism, and risk-seeking tendencies.

types of misreporting misinform capital markets, analysts, competitors, suppliers, directors and other 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 focus on executives' prior legal records as a financial reporting risk factor is motivated by the criminology and psychology literatures. 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 actually 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, Schlegel, Fassbender and Klein (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, Little and Goggin, 1996; Shu, Francesca and Bazerman, 2009). Finally, Fisman and Miguel (2007) find that UN diplomats' unpaid parking tickets in NYC are significantly related to the corruption and legal enforcement in their home country, suggesting that even 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 executives with a record to have a relatively strong propensity to intentionally mislead investors (propensity channel).[6] Hence, we predict that firms run by record holders are more likely to issue fraudulent financial statements, and that record holders are more likely to be named by the SEC for perpetrating fraud. In contrast, we do not expect an executive's propensity to misreport to have a direct

[6] The link between records and disregard for laws & a 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.

effect on the probability of reporting *errors*, since errors are deemed unintentional. However, a corporate culture that is more conducive to misstatements may be established during the reign of record holder CEOs, elevating the risk of errors and fraud (culture channel).[7]

Our focus on executives' ownership of luxury goods as a financial reporting risk factor is motivated by considering insights from both psychology and managerial accounting literatures. We interpret executives' ownership of luxury goods as a manifestation of relatively low frugality.[8] 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, Bettencourt, Hughner and Kuntze, 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, Bettencourt, Hughner and Kuntze, 1999). The question naturally arises as to how frugality affects an executive's stewardship of corporate resources.

Anderson and Lillis (2011) 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

[7] 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 holder CEOs sort to firms with distinct cultures, growth opportunities, managerial discretion, regulatory environments, risk, etc. in *unmatched* samples.

[8] Liu 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.

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).[9]

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 relatively strong discipline and rigorous controls (culture channel), we expect firms run by *unfrugal* CEOs to have higher financial reporting risk than firms run by frugal CEOs, as evidenced by a relatively high probability of fraudulent corporate reporting, of other insiders being named in fraud, and of unintentional reporting errors. We expect these three differences to become more pronounced over the tenure of unfrugal CEOs as the control environment deteriorates (relative to firms run by frugal CEOs). Finally, we expect the increase in fraud risk over the tenure of unfrugal (vs. frugal) CEOs to be associated with changes in measured aspects of the control environment, including an increase in executives' equity-based incentives to misreport, the appointment of an unfrugal or record holding CFO, a decline in board monitoring intensity, and an increase in the estimated probability of a material internal control weakness due to changes in the firm's business model.

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 the probability of a material control weakness as a symptom of deterioration in culture because ineffective internal control systems increase opportunities to perpetrate fraud and the likelihood of unintentional reporting errors. Our estimates of the probability of a material weakness in internal controls for each year in the tenure of sample CEOs, based on a simplified version of Doyle, Ge

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

and McVay (2007),[10] are intended to capture a change in the risk of a material control weakness due to a change in business strategy. If the effectiveness of internal controls is reduced, for example, by corporate growth and investment strategies of unfrugal CEOs or record holders, more misstatements are likely to result.[11]

Finally, we consider three measures of the intensity of board monitoring as a symptom of the culture/control environment: the stock-based compensation of independent directors as a percentage of shares outstanding (increases board monitoring), the structural independence of the board (increases board monitoring), and whether the CEO is socially connected to any of the independent directors (decreases board monitoring). The latter measure is motivated by recent papers documenting that social ties with the CEO can compromise the monitoring activities of otherwise independent directors (Hwang and Kim, 2009; Dey and Liu, 2011). There is at least some evidence (albeit mixed) that board monitoring as measured by each of these proxies is associated with financial reporting quality (Bhagat and Bolton, 2008; Bhagat, Carey and Elson, 1999; Klein, 2002; Farber, 2005; Larcker, Richardson and Tuna, 2007; Dey and Liu, 2011).

Although, as described above, we predict that unfrugal (vs. frugal) CEOs are associated with relatively high financial reporting risk through the culture channel, we have no clear prediction about whether unfrugal executives have a higher probability of being named in fraud than frugal executives, 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.

[10] We exclude two explanatory variables, SPEs and number of segments, from the Doyle, Ge and McVay (2007) model due to the lack of data.

[11] In a related 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), 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.

To summarize, we predict that firms run by CEOs who have a legal record or own luxury goods have a higher probability of future material misstatements. However, our priors differ with regard to how and why legal records and asset ownership are related to reporting risk. We expect record holders are more likely to be directly involved in perpetrating fraud (propensity channel). In contrast, we do not have strong priors regarding CEO frugality and the propensity to commit fraud. However, we expect that a corporate culture conducive to misstatements (fraud and/or errors) is more likely in firms run by unfrugal CEOs (vs. frugal CEOs), and possibly record holders (culture channel), with such cultural differences becoming more pronounced over the course of the CEO's tenure.

3. Sample, Data, and Descriptive Statistics

3.1 Sample and Data

We derive our sample of fraud firms from all SEC AAERs. 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 violation period 1980 through 2004, 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.[12]

From this sample of 852 firms, we remove 28 AAERs due to option backdating and asset or revenue understatements. 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

[12] AAERs only document cases of fraud that are *detected* and *enforced.* As discussed above, we attempt to address this concern in several ways. Further, as Dechow, Ge, Larson and Sloan (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 influence of the SEC's detection methods on our results. Nevertheless, our interpretation of results is subject to the caveat that fraud detection and/or enforcement may be related to CEO behavior.

wherein the fraud began (190 firms). We eliminate an additional 161 firms for which executive compensation data are not available on ExecuComp (which begins in 1992), and one firm for which we could not obtain accurate asset ownership information. Our final sample includes 109 firms whose fraud was initiated between 1992 and 2004.[13] Table 1, Panel A summarizes the sample selection process.

Table 1, Panel B presents the industry membership of the fraud sample. Over half of the sample 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".

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 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.[14] For all fraud firms, we examine whether any executives were named by the SEC as being directly involved in the perpetration of the fraud. *EXEC_NAMED*

[13] About 70 percent of our sample firms initiated fraud between 1997 and 2001.
[14] 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.

(*CEO_NAMED*) is an indicator variable equal to 1 in firm-years for which a given executive (CEO) is named by the SEC for 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).[15] Our error sample includes 94 firms over the sample period 1995 – 2005. Our corresponding control sample comprises the 109 non-fraud firms in the control group for our fraud analyses 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.

Our data on executives' legal infractions and ownership of real estate, boats, and luxury vehicles are obtained from numerous federal, state and county databases accessed by licensed private investigators. We augment our real estate data by hand collection from public real estate information on the internet.[16] The legal infractions include criminal 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.[17] *FRUGAL* is an indicator variable equal to 1 if the executive does not own any luxury assets, including a primary residence worth more than twice the average of the median home prices in the zip codes within ten miles of the corporate headquarters, any additional residences or vacation homes worth more than twice the average home prices in that

[15] Hennes, Leone and Miller (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."

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

[17] As a sensitivity check, we employ an alternative measure of *RECORD* that is set to 1 if the executive has any convictions in his record, regardless of when they occurred. Our results are robust to this alternative.

metropolitan area (as defined by the Core Based Statistical Area (CBSA)), boats greater than 25 feet in length, and cars with a purchase price greater than $75,000, at any time prior to the fraud initiation year (or the corresponding year for the matched control firm), and 0 otherwise.

Table 2 presents the sample distribution of CEO legal records and luxury asset ownership. (Figures 1 and 2 (3 and 4) graphically portray the frequencies of legal infractions and ownership of assets by type for the fraud and non-fraud samples (error and nonerror samples)). The measures of CEO type are significantly different across the fraud and control samples. More CEOs in the fraud sample have records: specifically, 20% of the fraud firm CEOs have a record, as compared to 4.5% 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 38 vs. 9 in the control sample (difference significant at .01 level). These include 12 CEOs with serious crimes (such as reckless behavior and domestic violence, driving under influence, and felony drug charges), comprising 11% of CEOs in the fraud sample versus no CEOs with serious crimes in the control sample.

CEOs in the fraud sample appear modestly less frugal (67 unfrugal CEOs in the fraud sample vs. 53 in the control sample, difference significant at .01 level). Specifically, 56% of cars worth at least $75,000 and 58% of boats are owned by CEOs in the fraud sample (both significant at .10 level). Fifty four percent of expensive homes, (as valued by more than two times the average of median prices within ten miles of the corporate headquarters), are owned by fraud firm CEOs (not significant).

The percentages of CEOs with records are generally similar across the error (8%) and control (7%) samples. However, ownership of luxury goods is significantly (.05 level) more prevalent among CEOs in the error sample; specifically, 65% of the error firm CEOs own luxury goods vs. 47% of non-error firm CEOs. As compared to control firm CEOs, a significantly higher percentage of error firm CEOs possess cars above $75,000 (29% vs. 20%), boats (34% vs. 22%) and houses worth more than twice the

average prices in neighboring zip codes (37% vs. 26%).[18] These results are in line with the conjecture of a relatively "loose" control environment in firms run by unfrugal CEOs.

We obtain data on firm and governance characteristics of sample firms 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), executive compensation data from ExecuComp, and analyst information from I/B/E/S.

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.[19] To examine the social connections of independent 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 (e.g. golf clubs), serves in one or more charities, or is a member of other similar organizations with the CEO. Appendix Table I presents definitions and data sources for all dependent and independent variables.

3.2 Descriptive Statistics for Fraud Sample

Table 3, Panel A presents descriptive statistics for various, board, firm and CEO characteristics for our matched sample of fraud and nonfraud firms. The variables are measured as of the year before the

[18] Given that the error and control sample have different sizes, we express the descriptives and corresponding figures for this sample in percentages.

[19] 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.

fraud was initiated (or the corresponding year for the matched control firm). Differences in the mean and median values for the fraud vs. nonfraud samples are reported as well as their significance levels.

The CEO has social ties with his outside directors in 61% of fraud firms vs. 39% of control firms (difference significant at .01 level). The other board characteristics (the proportion of the board that is independent (*%INDEP*) and the percentage of outstanding shares of stock held by independent directors (*DIR_SHARES*)) do not differ significantly across the fraud and nonfraud samples.

Turning to firm characteristics, fraud firms are more visible, with significantly higher analyst following and more press coverage. The F-Score (the output of Model 1 of Dechow, Ge, Larson, and Sloan (2011)) is significantly higher in the fraud sample, indicating a higher estimated risk of fraud among these firms. Fraud firms also have higher estimated risk of a material internal control weakness. Surprisingly, the percentage of fraud firms in the industry (2-digit SIC code) is significantly lower for fraud firms. And as expected, firm size, market-to-book, Tobin's Q, and ROA are fairly similar across the two samples, indicating that the two samples are matched reasonably well on these dimensions.

Finally, turning to CEO characteristics, CEOs in the fraud sample have more wealth, shorter tenure, more overconfidence, and more press coverage than the CEOs in the control sample. None of the other CEO characteristics (age, delta of his stock and option portfolio, perks, and narcissism) are significantly different across the two sets of firms.

Table 3, Panel B presents Pearson correlations between our main variables. Briefly, *FRAUD* is significantly positively correlated with legal infractions, as measured by *RECORD* (Pearson correlation (r) = .09, .01 level), while *FRAUD* is not significantly correlated with *FRUGAL*. *FRUGAL* and *RECORD* are negatively correlated (r = -.04, .05 level). As expected, the F-Score is significantly positively correlated with *FRAUD* (r = .07, .01 level) and with *RECORD* (r = .13, .01 level). These correlations support the hypothesized relation between fraud and CEOs' records. While *FRAUD* is significantly positively correlated with media coverage of the firm (r = .15, .01 level), the latter is not significantly correlated with *RECORD* or *FRUGAL*. Media coverage of the CEO is marginally positively correlated with *FRAUD* (r = .05, .10 level), and highly negatively correlated with *FRUGAL* (r = -.08, .01 level).

3.3 Descriptive Statistics for Error Sample

Table 3, Panel C presents summary statistics for our error and control samples. All variables in the error sample are measured as of the year before the error occurred. We match the control firms to error firms on the basis of the start year of CEO, and measure all variables in each control firm using the same year used in the matched error firm.[20] As expected, *IC_WEAKNESS* (including that in the first year of the CEO's tenure as well as the year before the error occurred), the estimated risk of an internal control weaknesses associated with a firm's business model, 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, loss, foreign transactions, acquisitions and restructurings. Each of these individual components are significantly different across the error and control firms (except for restructurings). Specifically, error firms are smaller, younger, have lesser foreign transactions, lesser acquisitions, and higher losses. Error firms also have higher average CEO tenure. However, CEO age is not significantly different across the error and control samples.

The correlation table (Table 3, Panel D) reveals that *ERROR* is not significantly correlated with *RECORD*, but is significantly negatively correlated with *FRUGAL* (r = -.034, 0.05 level), consistent with the hypothesized tighter control environment in firms run by frugal CEOs.[21] We examine these relations below in more depth in a multivariate setting.

4. Executive Type vs. Fraud and the Propensity Channel

4.1 Empirical Analyses of Matched Sample of Fraud and Nonfraud Firms

[20] Our results are robust to the following alternative approaches for measuring all variables for the control sample: 1) variables are measured as of 2000 which is the median year for the occurrence of errors; 2) variables are measured as of 2003 which is the 75th percentile year for the occurrence of errors; and 3) variables are measured as of the latest year for the firm in the sample.

[21] *ERROR* is negatively correlated with firm size and age and positively correlated with sales growth and restructuring.

We test whether the likelihood of fraud varies with CEO type (measured by *RECORD* and *FRUGAL*) using a dynamic hazard 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). Our rationale for choosing the hazard model over a single-period logit model is based on Shumway (2001), which indicates two shortcomings in multinomial choice 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). A hazard model overcomes these methodological concerns by including every available firm-year observation. Our main "fraud" model appears below:

$$FRAUD = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times FRUGAL + \alpha_3 \times TOBIN'S\_Q + \alpha_4 \times ROA + \alpha_5 \times \%IND\_FRAUD + \varepsilon \quad (1)$$

The variable *%IND_FRAUD* (the percentage of firms in the same 2-digit industry that are fraud firms in the current year) 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. Lagged values of Tobin's Q and return on assets are included to control for past firm performance.[22]

To test whether the likelihood of being *named* in fraud (propensity channel) varies by CEO type (*RECORD* and *FRUGAL*), we estimate the following hazard model ("CEO named" model):

$$CEO\_NAMED = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times FRUGAL + \alpha_3 \times TOBIN'S\_Q + \alpha_4 \times ROA + \alpha_5 \times \%IND\_FRAUD + \varepsilon \quad (2)$$

The dependent variable, *CEO_NAMED* , 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 all fraud and nonfraud firms. We expect record holders to have a relatively high propensity to perpetrate fraud ($\alpha_1 > 0$); however, we do not have strong priors about the relation between *FRUGAL* and *CEO_NAMED* (α_2).

[22] We repeat the above analysis (and all subsequent analyses) by replacing the indicator variables, *RECORD* and *FRUGAL* with the number of legal infractions and number of luxury assets (houses, cars and boats). Our (untabulated) results are generally similar to those reported.

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 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, 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 press coverage of the firm, press coverage of the CEO, analyst following, and auditor changes (we only report the results for press coverage, but the results for *RECORD* and *FRUGAL* are similar for the other two visibility measures).

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 their potential substitution for a CEO's ownership of luxury goods. We also include the F-Score, the predicted probability of misstatements using the primary model developed by Dechow, Ge, Larson and Sloan (2011), to control for additional firm characteristics associated with misstatements. [23, 24] Because the inclusion of each of the additional control variables results in a loss of observations, we report results for models with and without each of these additional controls.

Table 4 presents the results of model (1).[25] As predicted, we find a significant positive relation between *FRAUD* and *RECORD* (significant at the .01 level in all models). The hazard ratio for *RECORD* in the base model (column 1) indicates that the probability of fraud in the next year is higher (in the

[23] Model 1 from Dechow, Ge, Larson and Sloan (2011) includes accruals based on the accruals model developed by Richardson, Sloan, Soliman and Tuna (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 with vs. without the F-Score reveals that this is not the case.

[24] 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.

[25] Standard errors are clustered by firm in all analyses. As a robustness check, we cluster standard errors in fraud models by matched pair and find consistent results.

matched sample) by approximately 120% in firms run by CEOs with a legal record relative to firms run by CEOs with a clean record. In contrast, we do not find a significant relation between *FRAUD* and *FRUGAL* in any of the models in Table 4.

Table 5, Panel A presents the results of the CEO named model (2), representing our investigation of the direct involvement of the CEO in fraudulent reporting (propensity channel). The results provide strong support for our prediction that record holders are more likely to be named for perpetrating fraud (*RECORD* is significant at the .01 level in all models). The hazard ratio for *RECORD* indicates that the probability that a firm's CEO is named for perpetrating fraud is higher (in the matched sample) by 647% in firms run by CEOs with a legal record relative to firms run by CEOs with a clean record. In contrast, we do not find a significant relation between *CEO_NAMED* and *FRUGAL* in any of the models in Table 5. This is not surprising given there is no obvious reason to expect a relation between an executive's frugality and his ability to rationalize illegal behavior. Overall the results in Table 5, Panel A support a link between CEO type and fraudulent reporting through the propensity channel for CEOs with a record, but not for unfrugal CEOs.

4.2 Additional Analysis of the Propensity Channel: CEO-CFO Pairs of the Fraud Sample

An important concern in the above models is the potential for omitted correlated variables. For example, 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 executive(s) named as the perpetrator of the fraud, providing a unique setting to identify the relation between executives' personal vs. financial reporting behavior while holding constant firm-level factors (and all other non-executive level factors) for each CEO-CFO pair.

We consider a subsample of 75 fraud firms where 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).[26] In this subsample 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 the CEOs and 25% of CFOs in the subsample of fraud firms were classified as 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 CEO or CFO is named in perpetrating the fraud is positively related to his legal infractions or low frugality, controlling for the press coverage of the given executive during the fraud period.

The results of the estimated logit regression are reported in Table 5, Panel B. The coefficient on *RECORD* is statistically significant at the .05 level. The marginal effect of this coefficient (significant at .01 level) suggests that the likelihood of a given CEO or CFO at a fraud firm being named (vs. not named) for perpetrating the fraud is 42% higher if that executive has previously broken the law. We repeat this analysis by excluding the 14 fraud firms for which neither the CEO nor CFO is named to assure that results are not driven by omitted correlated variables associated with whether or not any executives are named. We also find a positive and significant (.05 level) coefficient on *RECORD* in this reduced sample, indicating that the likelihood of a given CEO or CFO at a fraud firm being named for perpetrating the fraud is 25% higher if that executive has a prior record. In contrast, the coefficients on *FRUGAL* are insignificant in both models.

Collectively the results in Tables 4 and 5 are consistent with the propensity channel for record holder CEOs: we document that fraud risk is elevated in firms run by CEOs with a prior record and such record holders are significantly more likely than non-record holders to be directly involved in fraud. In

[26] Given the high cost of data on legal infractions and asset ownership, we selected a random subsample of the 109 fraud firms for this analysis of CEO-CFO pairs.

contrast, we find no evidence that the level of an executive's frugality is associated with his propensity to commit fraud.

5. CEO Type and the Culture Channel

Section 5 presents our analysis of the hypothesized "culture channel" through which executive type (*RECORD* and *FRUGAL*) is linked to the probability of material misstatements. We define corporate culture as the governance and control environment of the company deemed likely to affect financial reporting risk, and conduct the following series of analyses. In section 5.1 we examine by CEO type how the likelihood of fraud and of the CEO being named in fraud vary over the tenure of the CEO (Table 6). In section 5.2, we examine the relation between other insiders being named in fraud and CEO type (Table 7, Panel A), and examine by CEO type how the likelihood of others being named varies over the tenure of the CEO (Table 7, Panel B). In section 5.3 we examine the relation between reporting errors and CEO type (Table 8, Panel A), and examine by CEO type how the likelihood of reporting errors varies over the tenure of the CEO (Table 8, Panel B). And in section 5.4, we examine by CEO type changes in specific aspects of firms' control environment over the tenure of the CEO, including the type of CFO appointed (Table 9, Panel A), and various corporate governance characteristics expected to affect financial reporting risk (Table 9, Panels B and C). We also examine by CEO type how these changes in corporate culture are related to changes in the probability of fraud (Table 10).

5.1 Fraud and CEO Named vs. CEO Tenure

We first examine by CEO type how the probabilities of fraud and of the CEO being named in fraud vary over the tenure of the CEO. We estimate the following fraud and CEO named models for four subsamples, namely subsamples of CEOs with records, CEOs without records, frugal CEOs and unfrugal CEOs:

$$FRAUD \text{ or } CEO\_NAMED = \alpha_0 + \alpha_1 \times TENURE + \alpha_2 \times TOBIN'S\_Q + \alpha_3 \times ROA + \alpha_4 \times \%IND\_FRAUD + \varepsilon \quad (3)$$

Table 6 presents these results, along with Z statistics for differences in α_1 (coefficient on *TENURE*) for the subsamples of CEOs with vs. without a record, and for subsamples of CEOs with high vs. low frugality. The relation between *FRAUD* and *TENURE* is insignificant for both record holder and non-record holder subsamples, and the difference in α_1 between these two subsamples is insignificant. Similar "nonresults" are reported for the *CEO_NAMED* model except for a marginally *negative* relation between *CEO_NAMED* and *TENURE* in the subsample of record holders. The results in Table 6 do not provide evidence in support of a deterioration in the culture of firms run by record holders (culture channel).

In contrast, the results in Table 6 indicate that the relation between *FRAUD* and *TENURE* is negative and significant (at .05 level) for frugal CEOs and positive and significant (at .05 level) for unfrugal CEOs. The reported hazard ratios imply that the likelihood of fraudulent corporate reporting declines by 6% per year over the tenure of frugal CEOs and increases by 6% over the tenure of unfrugal CEOs. The Z statistic of -3.89 suggests that the difference between the two subsamples is significant at the .01 level. This is consistent with the hypothesized erosion of corporate culture over the tenure of unfrugal CEOs, both in an absolute sense and relative to frugal CEOs. The probability that the CEO is named in fraud does not vary significantly over the tenure of frugal or non-frugal CEOs, consistent with our prior conclusions on the lack of an association between an executive's frugality and his propensity to commit fraud.

5.2 Other Insiders Named in Fraud

We test whether the likelihood that other insiders are named in fraud varies with CEO type by estimating the following hazard model ("Others named model"):

$$OTHERS\_NAMED = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times FRUGAL + \alpha_3 \times TOBIN'S\_Q + \alpha_4 \times ROA + \alpha_5 \times \%IND\_FRAUD + \varepsilon \quad (4a)$$

The dependent variable, *OTHERS_NAMED*, equals 1 if insiders other than the CEO were named by the SEC for perpetrating fraud in a given year, and 0 for all other firm-years in the total sample. We repeat the above models by including controls for the media coverage and the F-score.

A potential concern with this model is omitted correlated variables because we are not comparing executives *within* a firm (like our analysis of CEO-CFO pairs of fraud firms in Section 4). To identify the effect of CEO type on the probability that other insiders are named, we reestimate model (4a) using a seemingly unrelated bivariate probit model (biprobit). This model addresses the concern that the two outcomes (sorting of CEOs into firms and the occurrence of fraud) have correlated, unobservable determinants. The biprobit model produces a rho statistic that tests whether the sorting of CEOs by type into firms biases our misreporting model of interest. We use this model because both our dependent variable and our endogenous regressor are binary, meaning that IV OLS and IV binary models should not be used. Nevertheless, we verify the robustness of our results across IV models.[27] We use cash as a proportion of total assets as our instrument for CEO frugality, based on the intuition that cash-rich firms would prefer to hire CEOs who are more restrained in their spending and place a greater emphasis on long-term strategic goals when making investment decisions. However, there is likely to be no direct association between cash assets and other insiders perpetrating fraud, except through the CEO type. The F-statistic (see Appendix Table II Panel A) indicates that a weak instrument is not a concern in this analysis.[28] Further, the rho statistic from the biprobit model suggests that is is unlikely that correlated omitted variables are driving our results. Our results are robust across the biprobit and hazard models.[29]

[27] We present the first stage regression of both the IV and the biprobit models and the supporting statistics in Appendix Table II, Panel A. The F-statistics corresponding to the IV models further indicate that the instrument used is appropriate. We were unable to obtain a good instrument for *RECORD*, and could not conduct a biprobit analysis for this variable.

[28] Our results are robust to using research and development expense as a proportion of total assets as an instrument (we us this in subsequent models); however, in this model cash as a proportion of total assets proves to be a stronger instrument.

[29] We perform analogous robustness checks for the fraud and CEO named analyses above and find similar results. However, we believe that the CEO-CFO matched pairs analysis reported in Section 4 is our most compelling identification strategy for the propensity channel.

We also examine by CEO type how the probability that other insiders are named in fraud varies over the tenure of the CEO by estimating the following model for four subsamples, namely subsamples of CEOs with records, CEOs without records, frugal CEOs and unfrugal CEOs:

$$OTHERS\_NAMED = \alpha_0 + \alpha_1 \times TENURE + \alpha_2 \times TOBIN'S\_Q + \alpha_3 \times ROA + \alpha_4 \times \%IND\_FRAUD + \varepsilon \quad (4b)$$

The results in Table 7, Panels A and B, present results for the Others named models (4a) and (4b). We report results corresponding to both the hazard and biprobit models in Panel A, but due to the similarity of the results we discuss only those related to the hazard models.

The relation between *OTHERS_NAMED* and *RECORD* is insignificant in all models in Panel A, providing no evidence that the risk of other insiders perpetrating fraud increases with *RECORD* as would have been expected if CEOs with a record tend to oversee a relatively loose control environment. Further the results in Panel B indicate that the probability that others are named *declines* marginally more over the tenure of CEOs with (vs. without) a record (Z = 1.76, significant at .10 level), opposite to the direction implied by a relative deterioration in the culture of firms run by record holders.

In contrast, Table 7, Panel A documents a negative and statistically significant relation between *OTHERS_NAMED* and *FRUGAL* in all models. The hazard ratio for *FRUGAL* in the base model (.064 reported in column 1) implies that the probability that others are named for perpetrating fraud during the next year is 94% lower in firms run by frugal (vs. unfrugal) CEOs. This is consistent with the prediction that frugal CEOs run a relatively "tight ship". Further, Panel B documents that the probability that others are named in fraud decreases significantly over the tenure of frugal CEOs (.05 level) and increases significantly over the tenure of unfrugal CEOs (.10 level). The hazard ratio for *TENURE* of the frugal CEOs (.389) implies that the probability that other insiders perpetrate fraud during the next year declines by about 61% a year over the tenure of frugal CEOs, while the corresponding hazard ratio for unfrugal CEOs (1.057) implies that the probability that other insiders perpetrate fraud during the next year increases by about 6% a year over the tenure of unfrugal CEOs. The Z statistic for the difference in tenure effect for frugal versus unfrugal CEOs (Z = -3.42) is significant (.01 level), consistent with a relative

weakening of the control environment during the reign of unfrugal (vs. frugal) CEOs. Collectively the others named analyses reported in Table 7, Panels A and B, are consistent with the prediction that frugality is related to financial reporting risk through the culture channel.

5.3 Reporting Errors

As further evidence of the relation between CEO type and corporate culture, we test whether the probability of reporting errors varies by CEO type (model 5a), and how the relation between the probability of reporting errors and CEO tenure varies by CEO type (model 5b estimated separately by CEO type):

$$ERROR = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times FRUGAL + \alpha_3 \times IC\_WEAKNESS + \varepsilon \quad (5a)$$

$$ERROR = \alpha_0 + \alpha_1 \times TENURE + \alpha_2 \times IC\_WEAKNESS + \varepsilon \quad (5b)$$

The dependent variable, *ERROR*, is an indicator variable that equals 1 in firm-years containing a material reporting error (identified by a subsequent restatement), and zero otherwise. *IC_WEAKNESS* (the estimated probability of an internal control weakness from a simplified version of the Doyle, Ge and McVay (2007) model), is included to control for the inherent challenges to firms' internal control systems resulting from their business strategy. We estimate two additional versions of the above models, one using *IC_WEAKNESS_START* which is the internal control weakness estimated during the first year of the tenure of the CEO (as a proxy for the strength of the internal control system upon his appointment as CEO), and the other using the individual components used to estimate the probability of internal control weakness, namely, firm size, firm age, loss, foreign transactions, acquisitions, sales growth and restructurings. We re-estimate model (5a) using a biprobit model in which we use R&D expense as a proportion of total assets as an instrument to control for potential selection of frugal executives into firms (See Appendix Table II, Panel B, for the first stage results and supporting statistics suggesting the strength of the instrument used). Our instrument is based on the intuition that firms that have a longer

term focus, such as on growth through innovation, are more likely to hire frugal CEOs. However, there is likely to be no direct association between R&D expense and errors (except through the executive effect).

Table 8, Panels A and B present the results of models (5a) and (5b), respectively. In Panel A we present all three specifications of the hazard and biprobit models. Panel A documents an insignificant relation between *ERROR* and *RECORD* in all models. Further, Panel B documents an insignificant relation between *ERROR* and *TENURE* for subsamples of CEOs with and without records. And the difference in the relation between *ERROR* and *TENURE* across these two subsamples is insignificant.

In contrast, as predicted Panel A documents a significant negative relation between *ERROR* and *FRUGAL* in all models. The hazard ratio for *FRUGAL* in the base model (column 1) (0.59) implies that the probability of a material reporting error during the next year is approximately 41% lower in sample firms run by frugal (vs. unfrugal) CEOs, consistent with a relatively strong control environment in firms run by frugal CEOs. Moreover, Panel B documents that the probability of reporting errors decreases significantly (.10 level) over the tenure of frugal CEOs by 4% per year, while it increases significantly (.10 level) over the tenure of unfrugal CEOs by 4% a year. The Z statistic (Z = -3.31) is significant at the .01 level, consistent with the predicted relative increase in reporting risk over the tenure of unfrugal CEOs.

Collectively the error analyses reported in Table 8, Panels A and B, are consistent with the prediction that frugal CEOs run a relatively tight ship, and that there is a significant deterioration in the control environment over the tenure of unfrugal CEOs relative to frugal CEOs. Consistent with all other tests above of the culture channel pertaining to *FRUGAL*, these results support the hypothesis that CEO frugality is linked to financial reporting risk through the culture channel. And consistent with all other tests above of the culture channel pertaining to *RECORD*, the error analyses provide no evidence that CEOs' records are related to financial reporting risk through the culture channel.

5.4. Governance and Control Environment

In our final analyses of the culture channel, we examine whether and how CEO type is associated with changes in the governance and control environment of their firms.

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:

$$CFO\_RECORD \text{ or } CFO\_FRUGAL = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times FRUGAL + \alpha_3 \times SIZE + \alpha_4 \times ROA + \alpha_5 \times MTB + \alpha_6 \times ACQUISITION + \alpha_7 \times STD\_RET + \alpha_8 \times IND\_COMP\_CFO + \varepsilon \quad (6a)$$

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 or a frugal CFO is not significantly related to whether or not the CEO has a record (*RECORD)*. However, the probability of appointing a CFO with a record is significantly lower if the CEO is frugal (.05 level), and the probability of appointing a frugal CFO is significantly higher if the CEO is also frugal (.05 level). Given the key role that CFOs play in financial reporting, the appointment of CFOs with a clean record and high frugality is consistent with the management of a tight control environment. Hence the documented relations between the CFO appointments and *FRUGAL* support the prediction that frugal CEOs oversee a tight control environment relative to unfrugal CEOs, consistent with the culture channel.

We next examine whether CEO type is associated with changes in our other measures of corporate culture over the CEO's tenure. We estimate the following models for each of the corporate culture variables, including *DELTA*, *IC_WEAKNESS*, *%INDEP*, *SOCIAL*, and *DIR_SHARES:*

$$CORP\ CULTURE\ VARIABLE = \alpha_0 + \alpha_1 \times RECORD + \alpha_2 \times TENURE + \alpha_3 \times RECORD \times TENURE + Controls + \varepsilon \quad (6b)$$

$$CORP\ CULTURE\ VARIABLE = \alpha_0 + \alpha_1 \times FRUGAL + \alpha_2 \times TENURE + \alpha_3 \times FRUGAL \times TENURE + Controls + \varepsilon \quad (6c)$$

The control variables for each dependent variable are motivated by prior research (Bryan, Hwang, Klien and Lilien, 2010; Coles, Daniel and Naveen, 2005; Linck, Netter and Yang, 2008; Dey and Liu, 2011).

Table 9, Panels B and C report the results for models (6b) and (6c), respectively. The results in Panel B provide no evidence that changes in the corporate culture over the tenure of CEOs is different for CEOs with vs. without records. In contrast, the results in Panel C indicate that *DELTA* and *SOCIAL* increase significantly (.05 level) and *DIR_SHARES* decrease significantly (at .10 level) over the tenure of unfrugal CEOs (captured by the coefficient on *TENURE* in each model). Further, these changes are significantly less pronounced over the tenure of *frugal* CEOs (difference between the two groups captured by the coefficient on *FRUGAL* x *TENURE* in each model). These results are consistent with an increase in executives' equity-based incentives to misreport (as measured by high *DELTA*) and a decrease in board monitoring intensity (as evidenced by an increase in *SOCIAL* and a reduction in *DIR_SHARES*) under the reign of unfrugal CEOs in both absolute terms, and relative to frugal CEOs. While we cannot infer whether such changes are "suboptimal", they are likely to be associated with an increase in financial reporting risk over the tenure of unfrugal CEOs (in absolute terms and relative to frugal CEOs). (See discussion of Table 10 below). Our other two measures of the culture, *IC_WEAKNESS* and *%INDEP*, do not vary significantly over the tenure of frugal or unfrugal CEOs.

Given our evidence of an association between CEO frugality and the control environment, 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 can be explained by changes in *DELTA*, *SOCIAL*, and *DIR_SHARES* for the unfrugal and frugal CEOs. We also examine the extent to which fraud vs. nonfraud firm-years for the matched sample of fraud and nonfraud firms can be explained by *DELTA*, *SOCIAL*, *DIR_SHARES,* and CFO type (i.e. *CFO_RECORD* or *CFO_FRUGAL*). We focus on these measures of the corporate culture because of their significant changes over the tenure of unfrugal CEOs. We estimate the following model for corporate culture variables:

$$FRAUD = \alpha_0 + \alpha_1 \times FRUGAL + \alpha_2 \times CORP\ CULTURE\ VARIABLE + \alpha_3 \times FRUGAL \times CORP\ CULTURE\ VARIABLE + \alpha_4 \times TOBIN'S\_Q + \alpha_5 \times ROA + \alpha_6 \times \%IND\_FRAUD + \varepsilon \quad (6d)$$

The results reported in the left half of Table 10 indicate that in fraud 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 that in nonfraud years (α_2 significantly > 0 at .05 and .01 levels, respectively). These effects are significantly less pronounced in fraud firms run by frugal CEOs (α_3 significantly < 0 at .10 and .05 levels, respectively). However, *DIR_SHARES* is not significantly different in the fraud vs. nonfraud years of fraud firms run by frugal or unfrugal CEOs.

The right half of Table 10 reports results based on the matched sample of fraud and nonfraud firms. In contrast to the results above, *DELTA* is no longer significantly related to *FRAUD* in firms run by unfrugal CEOs (and the interaction between *FRUGAL* and *DELTA* is no longer significant). However, in firms run by unfrugal CEOs, *CFO_FRUGAL* and *DIR_SHARES* are significantly negatively related to *FRAUD* (.05 level) and (as before) *SOCIAL* is significantly positively related to *FRAUD* (.01 level). And the latter two results are significantly less pronounced in firms run by frugal CEOs. 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 an unfrugal CFO and weak board monitoring (as measured by high *SOCIAL* and low *DIR_SHARES*).

The key results presented in this section can be summarized as follows. In firms run by unfrugal CEOs, fraud is significantly positively related to executives' equity-based incentives (*DELTA*) (for analysis based on fraud firms), the presence of an unfrugal CFO (for analysis on pooled sample), and weak board monitoring (as measured by high *SOCIAL* (for both analyses) and low *DIR_SHARES* (for analysis based on pooled sample)). Further, all of these "fraud risk factors" increase significantly over tenure of unfrugal CEOs relative to corresponding changes over the tenure of frugal CEOs. Collectively these results are consistent with the observed increase in the probabilities of fraud, other insiders being named in fraud, and reporting errors over the tenure of unfrugal CEOs, and provide support for the

hypothesis that a culture characterized by a relatively loose control environment develops during the tenure of unfrugal CEOs. In contrast, we find little evidence of the culture channel for CEOs with records.

6. Sensitivity Analyses

We conduct additional analyses to enhance the interpretation of results. First, we examine whether our measures of CEO type are capturing characteristics that are distinct from those discussed in the literature. Second, we examine how CEO type is related to less egregious forms of misreporting to provide additional assurance that our results on the relation between the risk of material misstatements and CEO type are not due to SEC detection or enforcement procedures.

6.1 Comparison to Overconfidence, Narcissism and Risk-Seeking

Our measures of CEO type may be capturing personal attributes that have been discussed in the literature, including overconfidence, narcissism and risk-seeking (e.g., Malmendier and Tate, 2005; 2008; Zweigenhaft and Marlowe, 1973; Jorgenson, 1977).[30] We examine whether our measures of executive type are related to these attributes. Data availability limits us to one measure of overconfidence from Malmendier and Tate (2005), whereby we classify CEOs as overconfident if they are habitual net acquirers of their firm's stock.[31] We measure narcissism by the area covered by an executive's signature

[30] 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 firm's future performance that he holds options all the way to expiration (typically 10 years), then the CEO is classified as overconfident. Finally, since underdiversified CEOs should avoid acquiring additional equity, they classify as overconfident CEOs who habitually increase their holdings of company stock.

[31] We slightly modify their approach to increase the size of our sample. Whereas Melmendier 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.

scaled by the number of letters in the name (hand collected from SEC DEF 14A filings and 10-K reports) (Zweigenhaft and Marlowe, 1973; Jorgenson, 1977). We measure the risk-seeking nature of CEOs by examining whether they own motorcycles, and also by the risk-taking activities in their firms as measured by the research and development, capital expenditures and acquisitions undertaken by these CEOs (Kothari, Laguerre and Leone, 2002; Coles, Daniel and Naveen,2005; Biddle, Hillary and Verdi, 2009). We are able to compute the overconfidence measure for 76 firms, the narcissism measure for 70 firms and risk-seeking measures for our full sample of 218 fraud and nonfraud firms.[32]

We find that these measures of CEO overconfidence, narcissism and risk-seeking are not significantly correlated with our measures of CEO type. Next, we reestimate our main fraud and CEO named models, including measures of CEO overconfidence, narcissism and risk-seeking as control variables (not reported for brevity). The main effect of *RECORD* continues to be positive and significant and *FRUGAL* continues to be insignificant. The proxies for CEO narcissism and risk-seeking are not statistically significant, while CEO overconfidence is significant (at .10 level) in the fraud model.

6.2 CEO Type and Earnings Management

In our final 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 procedures, 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).

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

[32] We note that a caveat in these analyses is the limited data we have on CEO overconfidence and narcissism.

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 (Jones, 1991).[33]

We test the association between *MEET_BEAT* and CEO type using OLS regression and verify that the results are robust to using an IV model with research and development as a proportion of assets as our instrument for CEO frugality.[34] However, as before we fail to find a good instrument for CEO record. Table 10 reports the results of this analysis. Consistent with our fraud analysis, we find a significant and positive coefficient for the *RECORD* (.05 level or better). In particular, a company run by a CEO with a record is associated with an increase of 5.56 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 negative coefficient on the *FRUGAL* variable (.10 level), but only for the IV model. An unfrugal CEO is associated with a decrease by 10.96 in the percentage of quarters when the firm meets or beats the consensus analysts' forecast.

7. Summary and Conclusions

We examine how and why two aspects of top executives' behavior outside the workplace, legal infractions and ownership of luxury goods, are related to the likelihood of materially 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 a corporate culture characterized by a relatively weak control environment.

[33] These measures of earnings management are controversial, including concerns with the potential for correlated omitted variables and measurement error (see Dechow, Ge and Schrand (2010) for a discussion of the pros and cons for using these measures). Therefore, our results should be interpreted with 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 note that 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.

[34] The results (untabulated) of these earnings management analyses are consistent across the full sample, and the fraud and non-fraud subsamples.

In contrast, we find no relation between the frugality of executives (as measured by their ownership of luxury goods) and their propensity to perpetrate fraud. However, consistent with a weakening of the control environment, we find a relative increase in financial reporting risk over the tenure of unfrugal CEOs as reflected by the probabilities of fraud, others being named in fraud, and material reporting errors. Further, the increase in fraud risk over the tenure of unfrugal CEOs is related to changes in several aspects of the corporate culture, including an increase in executives' equity-based incentives, a decrease in measures of board monitoring, and the appointment of an unfrugal CFO.

Our paper is subject to several limitations. First, our sample size is necessarily small and nonrepresentative of the underlying population with respect to the proportion of firms with fraud and material reporting errors. Second, our fraud and error samples include only cases of fraudulent and erroneous reporting that are detected and enforced. While we attempt to address this concern, we cannot eliminate it. Hence, our interpretation of results as evidence of misreporting per se, is subject to this important caveat. And third, although our analysis of CEO-CFO pairs of fraud firms and our biprobit model, in particular, reduce 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 evidence that the probability of materially misstated financial statements varies in an intuitive and intriguing way with executives' off-the-job behavior, contributing new insights into financial reporting risk. We also provide new evidence of how changes in several dimensions of the corporate culture over the tenure of the CEO differ by CEO type. Our results suggest that our novel measures of executive type (*RECORD* and *FRUGAL*) capture meaningful variation in managerial "style" in a financial reporting context, suggesting that these measures may be useful in exploring other aspects of corporate behavior and performance.

In our related research, preliminary results provide further encouragement that *RECORD* and *FRUGAL* capture meaningful differences in executives' regard for laws and frugality, respectively, as posited here. These results suggest that the inside trades of executives with (vs. without) prior legal

infractions have a stronger positive relation to future earnings surprises and are more profitable, consistent with a higher propensity of record holders to trade on inside information. And companies run by unfrugal CEOs 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 stewardship of corporate resources.

Our study lays the groundwork for additional future research. For example, is the behavior of unfrugal (i.e. materialistic) executives more responsive to financial incentive packages? Do the effects of board monitoring depend on the type of executives being monitored? Does director type "matter"? Are the prior legal infractions and ownership of luxury goods by politicians related to their stewardship of taxpayers' money?

R**eferences**

Abbot, L., Parker, S., Peters, G., 2004. Audit committee characteristics and restatements. Auditing: A Journal of Practice and Theory 23, 69-87.

Adams R., Hermalin, B., Weisbach, M., 2010. The role of boards of directors in corporate governance: A conceptual framework and survey. Journal of Economic Literature 48, 58-107.

Agrawal, A., Chadha, S., 2005. Corporate governance and accounting scandals. The Journal of Law and Economics 48, 371-406

Aktas, N., Bodt, E., Bollaert, H., Roll, R., 2011. CEO narcissism and the takeover process: From private initiation to deal completion. Unpublished working paper.

Anderson, C., Anthony, R., 1986. The New Corporate Directors: Insights for Board Members and Executives. Wiley, New York, NY.

Anderson, S., Lillis, A., 2011. Corporate frugality: Theory, measurement and practice. Forthcoming, Contemporary Accounting Research.

Armstrong, C., Jagolinzer, A., Larcker, D., 2010. Chief executive officer equity incentives and accounting irregularities. Journal of Accounting Research 48, 225-271.

Bamber, L., Jiang, J., Wang, I., 2010. What's my style: The influence of top managers on voluntary corporate financial disclosure. The Accounting Review 85, 1131- 1162.

Beasley, M., 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. The Accounting Review 71, 443-465.

Bertrand, M., Schoar, A., 2003. Managing with style: The effect of managers on firm policies. The Quarterly Journal of Economics 118, 1169-1198

Bhagat, S., Black, B., 1999. The uncertain relation between board composition and firm performance. The Business Lawyer 54, 921-963.

Bhagat, S., Bolton, P., 2008. Corporate governance and firm performance. Journal of Corporate Finance 14, 257-273.

Bhagat, S., Carey, D., Elson, C., 1999. Director ownership, corporate performance and management turnover. The Business Lawyer 54, 921-963.

Biddle, G., Hillary, G., Verdi, R., 2009. How does financial reporting quality relate to investment efficiency? Journal of Accounting and Economics 48, 112 131.

Blickle, G., Schlegel, A., Fassbender, P., Klein, U., 2006. Some personality correlates of business white collar crime. Applied Psychology: An International Review 55, 220-233.

Bryan, S., Hwang, L., Klein, A., Lilien, S., 2010. Outside director compensation: An empirical analysis of economic determinants. Unpublished working paper.

Cain, M., McKeon, S., 2010. Sensation seeking and firm risk: Evidence from CEO pilots. Unpublished working paper.

Coles, J., Daniel, N., Naveen, L., 2005. Managerial incentives and risk-taking. Journal of Financial Economics 79, 431-468.

Core, J., Guay, W., 2002. Estimating the value of employee stock option portfolios and their sensitivites to price and volatility. Journal of Accounting Research 40, 613-630.

Davidson, R., 2011. Accounting fraud: Booms, busts and incentives to perform. Unpublished working paper.

Dechow, P., Ge, W., Larson, C., Sloan, R., 2011. Predicting material accounting manipulations. Contemporary Accounting Research 28, 17-82.

Dechow, P., Ge, W., Schrand, K., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting and Economics 50, 344-401.

Dechow, P., Sloan, R., Sweeney, A., 1995. Detecting earnings management. The Accounting Review 70, 193-225.

DeFond, M., Jiambalvo, J., 1991. Incidence and circumstances of accounting rrrors. The Accounting Review 66, 643-655.

Dey, A., Liu, X., 2011. Audit committee independence and corporate financial reporting: The role of social networks. Unpublished working paper.

DeYong, R., 1996. Some psychological aspects of reduced consumer behavior. Environment and Behavior 28, 358-409.

Doyle, J., Ge, W., McVay, S., 2007. Determinants of weaknesses in internal control over financial reporting. Journal of Accounting and Economics 44, 193-223.

Dyreng, S., Hanlon, M., Maydew, E., 2010. The effects of executives on corporate tax avoidance. The Accounting Review 85, 1163-1189.

Erickson, M., Hanlon, M., Maydew, E., 2006. Is there a link between executive equity incentives and accounting fraud? Journal of Accounting Research 44, 113-143.

Fama, E., Jensen, M., 1983. Separation of ownership and control. Journal of Law and Economics 26, 301-325.

Farber, D., 2005. Restoring trust after fraud: Does corporate governance matter? The Accounting Review 80, 539-561.

Fisman, R., Miguel, E., 2007. Corruption, norms, and legal enforcement: Evidence from UN diplomatic parking tickets. Journal of Political Economy 115, 1020-1048.

Gendreau, P., Little, T., Goggin, C., 1996. A meta-analysis of the determinants of adult offender recidivism. Criminology 34, 575-607.

Gottfredson, M., Hirschi, T., 1990. A General Theory of Crime. Stanford C: Stanford University Press.

Graham, J., Harvey, C., Puri, M., 2010. Managerial attitudes and corporate actions. Unpublished working paper.

Hambrick, D., Mason, P., 1984. Upper echelons: The organization as a reflection of its top managers. Academy of Management Review 9, 193-206.

Hennes, K., Leone, A., and Miller, B., 2008. The importance of distinguishing erros from irregularities in restatement research: The case of restatements and CEO/CFO turnover. The Accounting Review 83, 1487-1519.

Hermalin, B., Weisbach, M., 2003. Boards of directors as an endogenously determined institution: A survey of the economic literature. Federal Bank of New York Economic Policy Review 9, 7-26.

Hwang, B., Kim, S., 2009. It pays to have friends. Journal of Financial Economics 93, 138-158.

Johnson, S., Ryan, H., Tian, Y., 2009. Managerial incentives and corporate fraud: The sources of incentives matter. Review of Finance 13, 115-145.

Jones, J., 1991. Earnings management during import relief investigations. Journal of Accounting Research 29, 193-228.

Jones, G., Kavanagh, M., 1996. An experimental examination of the effects of individual and situational factors on unethical behavior interntions in the workplace. Journal of Business Ethics 15, 511-523.

Jorgenson, D., 1977. Signature size and dominance: A brief note. The Journal of Psychology 97, 269-270.

Kaplan, S., Klebanov, M., Sorensen, M., 2011. Which CEO characteristics and abilities matter? Forthcoming, Journal of Finance.

Klein, A., 2002. Audit committee, board of director characteristics and earnings management. Journal of Accounting and Economics 33, 375-400.

Kothari, S. P., Laguerre, T., Leone, A., 2002. Capitalization versus expensing: Evidence on the uncertainty of future earnings from capital expenditures versus R&D outlays. Review of Accounting Studies 7, 355-382.

Larcker, D., Richardson, S., Tuna, I., 2007. Corporate governance, accounting outcomes and organizational performance. The Accounting Review 82, 963-108.

Lastovicka, J., Bettencourt, L., Hughner, R., Kuntze, R., 1999. Lifestyle of the tight and frugal: Theory and evidence. Journal of Consumer Research 26, 85-98.

Linck, J., Netter, J., Yang, T., 2008. The determinants of board structure. Journal of Financial Economics 87, 308-328.

Liu,C., Yermack, D., 2007. Where are the shareholders' mansions? CEOs' home purhcases, stock sales, and subsequent company performance. Unpublished working paper.

Malmendier, U., Tate, G., 2005. CEO overconfidence and corporate investment. Journal of Finance 60, 2661-2700.

Malmendier, U., Tate, G., 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. Journal of Financial Economics 89, 20-43.

Malmendier, U., Tate, G., 2009. Superstar CEOs. Quarterly Journal of Economics 124, 1593-1638.

Mazzini, R., 1989. Cost effectiveness via modifications of organizational culture. AACE International – Transactions of the Annual Meeting, J.4.1-J.4.7.

Miller, G., 2006. The press as a watchdog for accounting fraud. Journal of Accounting Research 44, 1001-1033.

Norton, E., Wang, H., Chunrong, Ai., 2004. Computing interaction effects and standard errors in logit and probit models. Stata Journal 4, 154-167.

Richardson, S., Sloan, R., Solimon, M., Tuna, I., 2005. Accrual reliability, earnings persistence, and stock prices. Journal of Accounting and Economics 39, 437-485.

Roll, R., 1986. The hubris hypothesis of corporate takeovers. The Journal of Business 59, 197-216.

Schrand, C., Zechman, S., 2011. Executive overconfidence and the slippery slope to financial misreporting. Forthcoming, Journal of Accounting and Economics.

Shu, L., Francesca, G., Bazerman, M., 2009. Dishonest deed, clear conscience: Self preservation through moral disengagement and motivated forgetting. Harvard Business School NOM Unit Working Paper.

Shumway, T., 2001. Forecasting bankruptcy more accurately: A simple hazard model. The Journal of Business 74, 101-124.

Zweigenhaft, R., Marlowe, D., 1973. Signature size: Studies in expressive movement. Journal of Consulting and Clinical Psychology 40, 469-473.

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 or executive data from eFOTT	162
Final Sample	**109**
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 final fraud sample, including the number of fraud firms.

Table 1, Panel B
Industry Composition of Fraud and Error Samples

	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	28 (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	**109 (100%)**	**94 (100%)**

This table reports the Fama-French industry distribution for our sample fraud and error firms, 1992-2004 for fraud firms and 1993-2005 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

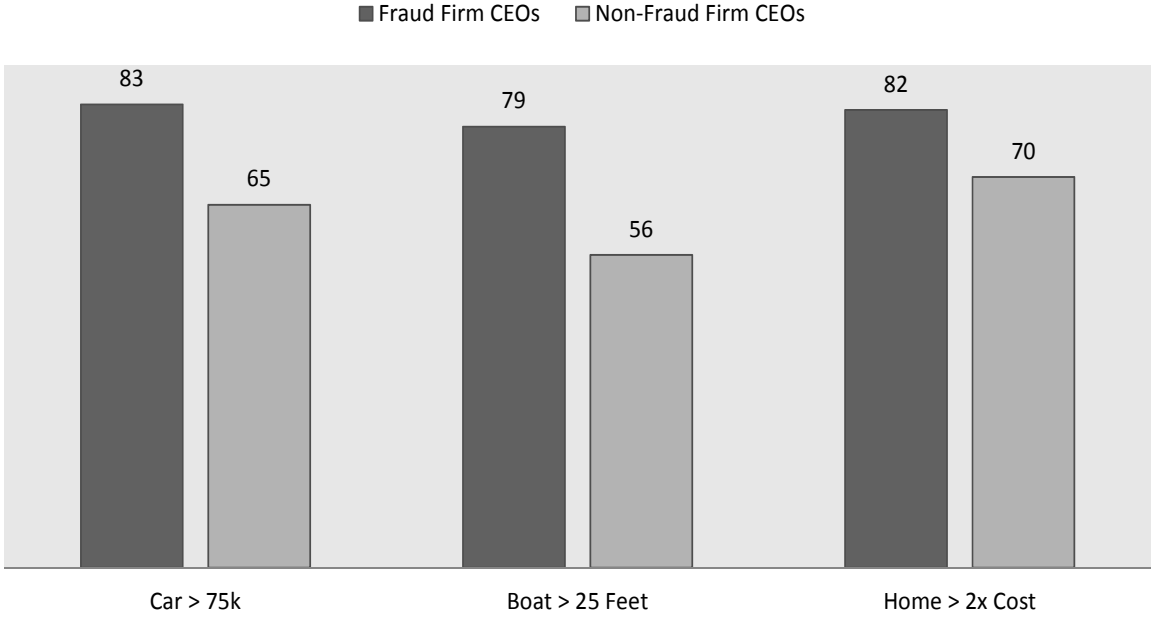

Figure 3: Legal Infractions (Percentage) by Firm Type

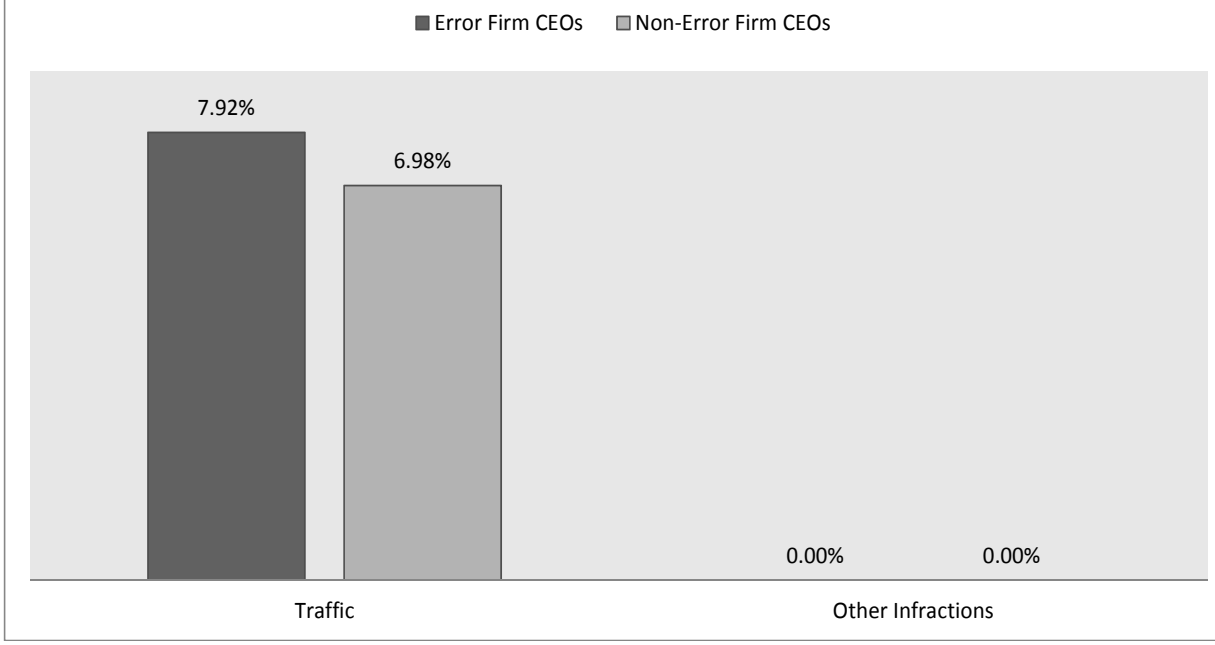

Figure 4: Asset Ownership (Percentage) by Firm Type

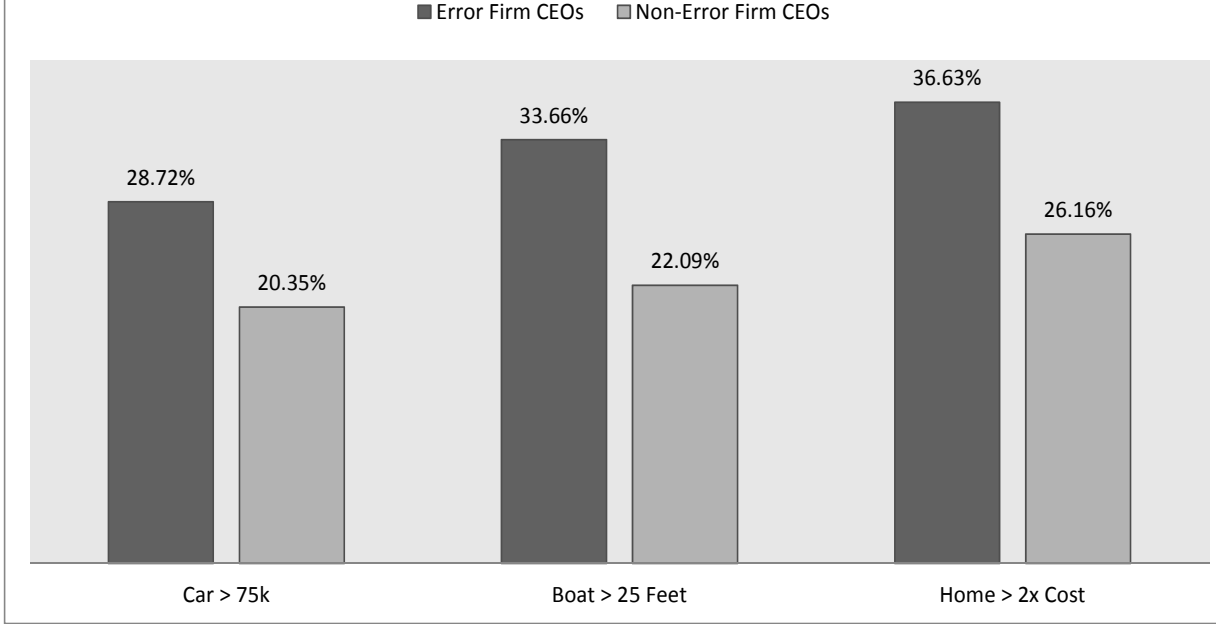

Table 2
Summary of CEO Prior Legal Records and Luxury Asset Ownership Data

	FRAUD FIRMS (N = 109)	CONTROL NON-FRAUD FIRMS (N = 109)	ERROR FIRMS (N = 94)	CONTROL NON-ERROR FIRMS (N = 180)
	Number	*Number*	*%*	*%*
Prior Legal Infractions of CEOs				
CEOs with Prior Legal Infractions	22***	5	8%	7%
All Legal Infractions	38***	9	13%	8%
CEOs with Serious Legal Infractions (Domestic violance, reckless behaviors, DUI, drug related charges)	12***	0	0%	0%
Serious Legal Infractions	16***	0	0%	0%
Luxury Asset Ownership of CEOs				
Frugal CEOs	42*	56	35%**	53%
Unfrugal CEOs	67*	53	65%**	47%
Cars worth more than $75,000	83*	65	29%*	20%
Boats longer than 25 feet	79*	56	34%**	22%
Homes worth more than twice the average of median home prices of neighbouring zip codes	82	70	37%**	26%

*****Significant at the 1% level; **5% level; *10% level. T tests are conducted for differences in means between the fraud/non-fraud firms and error/non-error firms.**

This table presents the composition of the data on CEOs' legal infractions and asset ownership for the fraud, non-fraud, error and non-error samples. We note that while we present the raw numbers of legal infractions and assets for the fraud and non-fraud samples, we percentages (of total firms in sample) for the error and non-error samples due to different sample sizes.

Table 3, Panel A
Descriptive Statistics for Fraud Firms vs. Matched Control Firms

	FRAUD SAMPLE			MATCHED SAMPLE			DIFFERENCE	
	MEAN	**MEDIAN**	**STD. DEV.**	**MEAN**	**MEDIAN**	**STD. DEV.**	**MEAN**	**MEDIAN**
Board Characteristics								
% INDEP	76.68	78.17	11.77	75.10	77.78	13.20	1.58	0.39
SOCIAL	0.61	1.00	0.49	0.39	0.00	0.49	0.22***	1.00***
DIR_SHARES	0.17	0.02	0.79	0.14	0.03	0.59	0.03	-0.01
Firm Characteristics								
SIZE	7.05	6.90	2.10	7.09	6.98	1.84	-0.04	-0.08
MTB	1.70	0.95	2.45	1.47	1.03	1.61	0.23*	-0.08
TOBINS_Q	2.62	1.89	2.41	2.49	2.04	1.65	0.13	-0.15*
ROA	0.05	0.04	0.11	0.06	0.04	0.12	-0.01	0.00
ANALYST_FOLL	15.01	12.00	10.49	12.75	11.00	8.97	2.26***	1.00**
MEDIA_FIRM	355	85	693	184	80	395	171***	5***
%IND_FRAUD	0.38	0.19	0.61	0.53	0.25	0.94	-0.15***	-0.06***
FSCORE	1.88	1.39	2.57	1.44	1.23	1.02	0.44***	0.16***
IC_WEAKNESS	-0.65	-0.69	0.41	-0.71	-0.74	0.39	0.06**	0.05**
CEO Characteristics								
CEO_AGE	66.35	67.00	7.99	66.92	68.000	8.490	-0.57	-1.00
CEO_DELTA	2,391,681	209,600	8,648,717	1,351,525	146,328	7,933,319	1,040,156	63,272
WEALTH	17.00	16.71	1.90	16.58	16.52	1.74	0.42***	0.19***
TENURE	8.17	7.00	6.14	10.68	9.00	8.02	-2.51***	-2.00**
PERKS	9675	0.00	3438	9231	0.00	45311	444	0.00
OVERCONFIDENCE	0.76	1.00	0.43	0.64	1.00	0.48	0.12**	0.00
NARCISSISM	58.63	52.50	31.96	63.75	48.29	44.53	-5.12	4.21
MEDIA_CEO	13.70	5.00	36.06	9.84	4.00	34.08	3.86**	1.00**

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

Table 3, Panel B
Pearson Correlations for Fraud Sample

	FRAUD	*RECORD*	*FRUGAL*	*TOBIN'S_Q*	*ROA*	*%IND_FRAUD*	*MEDIA_FIRM*	*MEDIA_CEO*	*WEALTH*	*PERKS*	*FSCORE*
FRAUD											
RECORD	0.09***										
FRUGAL	-0.01	-0.04**									
TOBIN'S_Q	0.08*	0.06**	0.06***								
ROA	0.05**	0.00	-0.04	0.36***							
%IND_FRAUD	0.03	0.08***	0.06***	0.01	-0.05**						
MEDIA_FIRM	0.15***	0.00	0.03	0.17***	0.05*	0.13***					
MEDIA_CEO	0.05*	-0.04	-0.08***	0.00	0.04	0.14***	0.36***				
WEALTH	0.06	0.07**	0.04	0.28***	0.08***	0.01	0.26***	0.07**			
PERKS	0.05	-0.03	-0.05	-0.08**	-0.06*	0.01	0.20***	0.13***	0.09**		
FSCORE	0.07***	0.13***	0.05	0.09***	-0.03	-0.03	0.03	-0.01	-0.04	-0.04	

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

Table 3, Panel C
Descriptive Statistics for Error Firms vs. Control Firms

	ERROR SAMPLE			CONTROL SAMPLE			DIFFERENCE	
	MEAN	**MEDIAN**	**STD. DEV.**	**MEAN**	**MEDIAN**	**STD. DEV.**	**MEAN**	**MEDIAN**
IC_WEAKNESS	-0.61	-0.64	0.36	-0.76	-0.80	0.39	0.15***	0.16***
IC_WEAKNESS_START	-0.41	-0.39	0.44	-0.64	-0.68	0.42	0.23***	0.29***
SIZE	6.59	6.55	1.43	7.50	7.38	1.87	-0.91***	-0.83***
FIRM_AGE	2.18	2.08	1.22	2.96	3.09	0.88	-0.78***	-1.01***
LOSS	0.21	0.00	0.41	0.13	0.00	0.34	0.08***	0.00***
FOREIGN	0.13	0.00	0.11	0.23	0.00	0.42	-0.10***	0.00***
ACQUISITIONS	0.05	0.00	0.14	0.07	0.00	0.21	-0.02**	0.00
SALES_GROWTH	0.33	0.00	0.47	0.24	0.00	0.42	0.09***	0.00
RESTRUCTURE	0.01	0.00	0.03	0.01	0.00	0.03	0.00	0.00
CEO_AGE	65	65	9.90	65	63	8.43	0.17	2.00
TENURE	9.35	7	8.62	8.78	7	7.44	0.57*	0.00

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

Table 3, Panel D
Pearson Correlations for Error Sample

	ERROR	*RECORD*	*FRUGAL*	*IC_WEAKNESS*	*IC_WEAKNESS_START*	*SIZE*	*FIRM_AGE*	*LOSS*	*FOREIGN*	*ACQUISITION*	*SALES_GROWTH*	*RESTRUCTURE*
ERROR												
RECORD	0.01											
FRUGAL	-0.03**	0.00										
IC_WEAKNESS	0.07***	-0.09***	0.01									
IC_WEAKNESS_START	0.08***	-0.11***	-0.01	0.62***								
SIZE	-0.04*	0.07***	0.06***	-0.60***	-0.57***							
FIRM_AGE	-0.12***	0.08***	-0.02	-0.2***	-0.62***	0.47***						
LOSS	0.02	-0.01	-0.06***	0.55***	0.29**	-0.17**	-0.07***					
FOREIGN	-0.02	-0.04**	0.08***	0.21***	0.05**	0.17***	0.18***	-0.00				
ACQUISITION	0.03	-0.02	0.04*	0.47***	0.08***	-0.05**	0.06***	0.12**	-0.01			
SALES_GROWTH	0.04**	-0.01	0.04*	0.39***	0.13***	-0.07**	-0.15***	-0.01	0.02	0.11***		
RESTRUCTURE	0.07***	0.05**	0.05**	0.19***	-0.02	-0.01	0.12***	0.23**	0.08**	0.16***	-0.02	

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

Table 3 (Cont.)
Description

Panel A and Panel C of Table 3 present 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-error samples, respectively. The differences in the variables between the two samples and the significance of t-tests of differences in means and Wilcoxon/Chi-square tests of differences in medians also are presented. Panel B and Panel D of Table 3 present the Pearson correlations of some of the main dependent and independent variables for the fraud and error samples respectively (Spearman correlations (unreported) are similar to those reported).

The variables are defined as follows: *%INDEP* is the proportion of the board that is independent directors; *SOCIAL* is a dummy variable that equals 1 if the CEO is socially connected with any of his independent board members via mutual alma maters, military, clubs and 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 log of market capitalization of the firm; *MTB* is the market value of equity divided by the book value of equity; *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; *ANALYST_FOLL* is the number of analysts issuing forecasts for a firm in the year; *MEDIA_FIRM* is the number of articles on the firm in the 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. (2011); *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 log of 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; *NARCISSISM* is the area covered by a CEO's signature scaled by the number of letters in his name; *MEDIA_CEO* is the number of articles on the CEO in the year; *FRAUD* is a dummy variable that equals 1 in the years a firm committed accounting fraud, and 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *IC_WEAKNESS_START* is the fitted score in the first year of a CEO's tenure using a modified version of the model in Doyle et al. (2007); *FIRM_AGE* is the logarithm of the number of years the firm has been on CRSP; *LOSS* is a dummy variable that equals 1 if net income is negative in the current quarter; *FOREIGN* is a dummy variable that equals 1 if the firm has foreign currency transactions; *ACQUISITION* is the sum of acquisitions over the past two years scaled by the market capitalization of prior year; *SALES_GROWTH* is a dummy variable that equals 1 if the industry-adjusted growth in sales over the last year is in the top quintile; *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 4
FRAUD vs. CEO Type

	DEPENDENT VARIABLE = FRAUD				
	HAZARD RATIO (Z)	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**
RECORD	2.214***	1.985***	2.59***	1.98***	2.351***
	(4.25)	(3.61)	(4.34)	(3.33)	(3.91)
FRUGAL	0.913	0.924	0.892	1.059	0.816
	(-0.49)	(-0.46)	(-0.57)	(0.28)	(-0.92)
TOBIN'S_Q	1.044*	0.986	1.015	1.005	1.03
	(1.73)	(-0.46)	(0.56)	(0.17)	(1.11)
ROA	1.014	1.014	1.01	1.018*	1.011
	(1.54)	(1.64)	(1.16)	(1.74)	(1.22)
%IND_FRAUD	1.064	0.981	0.958	1.066	1.058
	(0.73)	(-0.17)	(-0.41)	(0.59)	(0.60)
MEDIA_FIRM		1.038***			
		(4.33)			
WEALTH			1.001		
			(1.10)		
PERKS				1.056***	
				(4.41)	
FSCORE					1.064**
					(2.24)
PSEUDO R2	**0.09**	**0.10**	**0.10**	**0.12**	**0.08**
NO. OF OBSERVATIONS	**1,703**	**1,062**	**1,141**	**679**	**1,095**

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

Table 4 (Cont.)
Description

Table 4 presents the results of the hazard models examining the relation between fraud and CEO type (record and frugality).

The variables are defined as follows: *FRAUD* is a dummy variable that equals1 in the years a firm committed accounting fraud, and 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *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; *%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; *MEDIA_FIRM* is the number of articles on the firm in the year; *WEALTH* is the log of 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: Analysis of Propensity Channel with Matched Sample of Fraud & Nonfraud Firms
CEO_NAMED vs. CEO Type

	DEPENDENT VARIABLE = CEO_NAMED				
	HAZARD RATIO (Z)	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**
RECORD	7.471***	8.140***	8.831***	7.131***	6.245***
	(6.81)	(7.04)	(6.49)	(5.91)	(5.31)
FRUGAL	1.394	1.608	1.327	1.389	1.157
	(1.10)	(1.51)	(0.87)	(0.94)	(0.42)
TOBIN'S_Q	1.068**	1.035	1.054	1.032	1.045
	(2.32)	(1.28)	(1.60)	(1.08)	(1.36)
ROA	1.011	1.016	1.007	1.024*	1.011
	(0.93)	(1.31)	(0.58)	(1.93)	(0.87)
%IND_FRAUD	0.920	0.787*	0.737	0.868	0.849
	(-0.55)	(-1.66)	(-1.21)	(-0.59)	(-1.01)
MEDIA_CEO		2.148***			
		(4.78)			
WEALTH			1.001		
			(0.64)		
PERKS				1.088***	
				(6.62)	
FSCORE					1.045
					(1.42)
PSEUDO R2	**0.46**	**0.47**	**0.47**	**0.42**	**0.48**
NO. OF OBSERVATIONS	**1,703**	**1,062**	**1,141**	**679**	**1,095**

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

Table 5, Panel B:
Analysis of Propensity Channel with CEO-CFO Pairs of Fraud Firms:
NAMED_EXEC vs. CEO Type

	DEPENDENT VARIABLE = NAMED_EXEC			
	75 FRAUD FIRMS		FIRMS WITH AT LEAST ONE NAMED EXECUTIVE	
	COEF. (Z)	MARGINAL EFFECTS	COEF. (Z)	MARGINAL EFFECTS
INTERCEPT	-0.446*		0.375	
	(-1.71)		(1.03)	
RECORD	1.314**	0.423***	1.346**	0.25**
	(2.43)	(6.05)	(2.31)	(2.56)
FRUGAL	0.226	0.082	0.605	0.112
	(0.66)	(1.08)	(0.87)	(0.93)
MEDIA_EXEC	-0.002	-0.001	-0.001	-0.001
	(-0.83)	(-0.79)	(-0.12)	(-0.12)
PSEUDO R2	**0.04**		**0.06**	
NO. OF EXECUTIVES	**150**		**122**	
NO. OF FIRMS	**75**		**61**	

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

Table 5 Panel A presents the results of the hazard models examining the relation between CEO type (*RECORD* and *FRUGAL*) and his being named by the SEC for perpetrating fraud. Table 5 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 first two columns present the log odds ratios and marginal effects for all fraud firms, and the next two columns present the log odds ratios and marginal effects for only those fraud firms where at least one executive was named.

The variables are defined as follows: *CEO_NAMED*/*EXEC_NAMED* is a dummy variable that equals 1 if the CEO / executive is named by the SEC for perpetrating the fraud, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *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; *%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; *MEDIA_CEO/ MEDIA_EXEC* is the number of articles on the CEO/CFO for the year; *WEALTH* is the log of 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: Analysis of Culture Channel
FRAUD and CEO_NAMED vs. CEO Tenure by CEO Type

	DEPENDENT VARIABLE = FRAUD				DEPENDENT VARIABLE = CEO_NAMED			
	RECORD	**NO RECORD**	**FRUGAL**	**UNFRUGAL**	**RECORD**	**NO RECORD**	**FRUGAL**	**UNFRUGAL**
	HAZARD RATIO (Z)	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**
TENURE	0.910	0.987	0.941**	1.06**	0.87*	0.998	0.963	1.051
	(-1.59)	(-0.61)	(-2.17)	(1.96)	(-1.81)	(-0.04)	(-1.00)	(0.80)
TOBIN'S_Q	0.984	1.057	1.034	1.256**	1.048	1.069*	1.061*	1.295**
	(-0.22)	(1.81)	(1.24)	(2.74)	(0.59)	(1.84)	(1.86)	(2.14)
ROA	1.007	1.015	1.106	0.996	1.011	1.012	1.007	0.995
	(0.21)	(1.52)	(1.30)	(-0.27)	(0.34)	(0.93)	(0.48)	(-0.33)
%IND_FRAUD	1.095	1.028	1.099	1.188	0.99	0.63	1.124	0.919
	(0.41)	(0.26)	(0.99)	(0.97)	(-0.04)	(-1.00)	(0.86)	(-0.20)
Z-STATISTICS:								
RECORD ≠ NO RECORD		**1.08**				**-0.06**		
FRUGAL ≠ UNFRUGAL				**-3.89*** **				**-2.10** **
PSEUDO R2	**0.02**	**0.07**	**0.07**	**0.25**	**0.48**	**0.11**	**0.10**	**0.25**
NO. OF OBSERVATIONS	**206**	**1,497**	**906**	**797**	**206**	**1,497**	**906**	**797**

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

Table 6 presents the results for hazard models examining the relation between CEO tenure and fraud for the four CEO type subsamples. The variables are defined as follows: *FRAUD* is a dummy variable that equals 1 in the years a firm committed accounting fraud, and 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 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.

Table 7, Panel A: Analysis of Culture Channel
OTHERS_NAMED vs. CEO Type

	DEPENDENT VARIABLE = OTHERS_NAMED					
	HAZARD	**BIPROB**	**HAZARD**	**BIPROB**	**HAZARD**	**BIPROB**
	HAZARD RATIO (Z)	**COEF. (Z)**	**HAZARD RATIO (Z)**	**COEF. (Z)**	**HAZARD RATIO (Z)**	**COEF. (Z)**
RECORD	0.564	-3.809	0.451	-0.317	0.878	-0.074
	(-0.94)	(0.01)	(-1.38)	(-1.00)	(-0.23)	(-0.23)
FRUGAL	0.064***	-2.054**	0.073***	-1.174**	0.099**	-1.021*
	(-3.27)	(-2.04)	(-3.26)	(-2.26)	(-2.73)	(-1.90)
TOBIN'S_Q	1.120*	0.048	1.094*	0.042	1.076	0.037
	(1.97)	(0.56)	(1.68)	(1.07)	(1.19)	(0.97)
ROA	1.001	-0.007	0.996	-0.003	1.002	-0.001
	(0.03)	(-0.79)	(-0.28)	(-0.31)	(0.18)	(-0.09)
%IND_FRAUD	1.252	0.087	1.364	0.141	1.193	0.090
	(1.36)	(0.78)	(1.44)	(1.00)	(0.86)	(0.68)
MEDIA_FIRM			0.958	-0.014		
			(-0.86)	(-0.67)		
FSCORE					1.128	0.033
					(0.69)	(0.70)
RHO STATISTIC		**0.80**		**0.076**		**0.061**
CHI SQUARE		**0.70**		**0.03**		**0.02**
P-VALUE		**0.40**		**0.86**		**0.88**
PSEUDO R2	**0.55**		**0.52**		**0.47**	
NO. OF OBSERVATIONS	**1,703**	**1,661**	**1,062**	**1,062**	**1,095**	**1,060**

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

Table 7, Panel A presents the results of the hazard and bivariate probit models examining the relation between CEO type and insiders other than the CEO being named by the SEC for perpetrating the fraud.

Table 7, Panel B: Analysis of Culture Channel
OTHERS_NAMED vs. CEO Tenure by CEO Type

	DEPENDENT VARIABLE = OTHERS_NAMED			
	RECORD	**NO RECORD**	**FRUGAL**	**UNFRUGAL**
	HAZARD RATIO (Z)	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**
TENURE	0.908	0.976	0.389**	1.057*
	(-1.54)	(-0.48)	(-2.33)	(1.84)
TOBIN'S_Q	0.257	1.051	0.812	1.202
	(-1.51)	(1.00)	(-0.73)	(1.54)
ROA	1.062	1.009	0.974	1.001
	(0.57)	(0.73)	(-1.14)	(0.03)
%IND_FRAUD	0.742	1.178	2.396	1.288
	(-0.90)	(0.80)	(1.43)	(1.11)
Z-STATISTICS:				
RECORD ≠ NO RECORD		**1.76***		
FRUGAL ≠ UNFRUGAL				**-3.42*****
PSEUDO R2	**0.23**	**0.24**	**0.59**	**0.40**
NO. OF OBSERVATIONS	**206**	**1,497**	**906**	**797**

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

Table 7, Panel B presents the results for hazard models examining the relation between CEO tenure and insiders other than the CEO being named by the SEC for perpetrating the fraud for the four CEO type subsamples. 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 legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *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; *%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; *MEDIA_FIRM* is the number of articles on the firm in the year; *FSCORE* is the output from the predictive model for accounting manipulations reported in Dechow et al. (2011); *TENURE* is the number of years the individual has been the CEO of the firm.

Table 8, Panel A: Analysis of Culture Channel
ERROR vs. CEO Type

	DEPENDENT VARIABLE = ERROR					
	HAZARD	**BIPROB**	**HAZARD**	**BIPROB**	**HAZARD**	**BIPROB**
	HAZARD RATIO (Z)	**COEF. (Z)**	**HAZARD RATIO (Z)**	**COEF. (Z)**	**HAZARD RATIO (Z)**	**COEF. (Z)**
RECORD	1.791	0.294	1.237	0.164	1.219	0.163
	(1.55)	(1.54)	(0.58)	(0.91)	(0.49)	(0.81)
FRUGAL	0.590**	-1.825**	0.617**	-1.624*	0.618**	-0.678**
	(-2.22)	(-2.11)	(-2.23)	(-1.85)	(-2.15)	(-2.04)
IC_WEAKNESS_START	2.519***	0.396***				
	(3.75)	(3.09)				
IC_WEAKNESS			1.947***	0.255*		
			(3.54)	(1.74)		
SIZE					1.102	0.007
					(1.37)	(0.15)
FIRM_AGE					0.485***	-0.246***
					(-5.58)	(-2.96)
LOSS					1.216	-0.216
					(0.65)	(-1.00)
FOREIGN					0.708*	-0.054
					(-1.82)	(-0.33)
ACQUISITION					1.170	0.246
					(0.28)	(1.04)
SALES_GROWTH					1.085	0.245*
					(0.33)	(1.72)
RESTRUCTURE					28.975	1.671
					(0.91)	(0.71)
RHO STATISTIC		**0.87**		**0.831**		**0.362**
CHI SQUARE		**2.16**		**2.2**		**0.49**
P-VALUE		**0.14**		**0.14**		**0.49**
PSEUDO R2	**0.05**		**0.15**		**0.22**	
NO. OF OBSERVATIONS	**2,082**	**2,038**	**2,176**	**2,038**	**2,176**	**2,038**

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

Table 8, Panel B: Analysis of Culture Channel
ERROR vs. CEO Tenure by CEO Type

	DEPENDENT VARIABLE = ERROR			
	RECORD	**NO RECORD**	**FRUGAL**	**UNFRUGAL**
	HAZARD RATIO (Z)	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**	**HAZARD RATIO (Z)**
TENURE	0.892	1.029	0.962*	1.041*
	(-1.33)	(1.48)	(-1.74)	(1.77)
IC_WEAKNESS	0.837	1.908***	1.806**	2.122*
	(-0.12)	(3.43)	(2.71)	(1.87)
Z-STATISTICS:				
RECORD ≠ NO RECORD		**0.02**		
FRUGAL ≠ UNFRUGAL			**-3.31*** **	
PSEUDO R2	**0.05**	**0.08**	**0.05**	**0.18**
NO. OF OBSERVATIONS	**167**	**2,009**	**1,285**	**891**

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

Table 8, Panel A presents the results for hazard and bivariate probit models examining the relation between CEO type and errors. Table 8, Panel B presents the results for hazard models examining the relation between reporting errors and CEO tenure for the four CEO type subsamples.

The variables are defined as follows: *ERROR* is a dummy variable that equals 1 for the years a firm had a material error in reported numbers, 0 otherwise; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *IC_WEAKNESS*/ *IC_WEAKNESS_START* is the fitted score using a modified version of the model in Doyle et al. (2007) for the current period or in the first year of tenure of the CEO; *SIZE* is the log of the market capitalization of the firm; *FIRM_AGE* is the logarithm of the number of years the firm has been on CRSP; *LOSS* is a dummy variable that equals 1 if net income is negative in the current quarter; *FOREIGN* is a dummy variable that equals 1 if the firm has foreign currency transactions; *ACQUISITION* is the sum of acquisitions over the past two years scaled by the market capitalization of prior year; *SALES_GROWTH* is a dummy variable that euals 1 if the industry-adjusted growth in sales over the last year is in the top quintile; *RESTRUCTURE* is the sum of restructuring charges over the past two years scaled by the market capitalization of the prior year.

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

	DEPENDENT VARIABLE = CFO_RECORD		DEPENDENT VARIABLE = CFO_FRUGAL	
	COEF. (Z)	**MARGINAL EFFECTS**	**COEF. (Z)**	**MARGINAL EFFECTS**
INTERCEPT	-4.405**		2.102*	
	(-2.51)		(1.80)	
RECORD	1.065	0.096	0.173	0.028
	(1.34)	(1.39)	(0.27)	(0.27)
FRUGAL	-0.797**	-0.061**	1.011**	0.165**
	(-2.24)	(-2.25)	(2.31)	(2.47)
SIZE	0.142	0.011	-0.278**	-0.045**
	(0.78)	(0.78)	(-2.07)	(-2.18)
ROA	0.052*	0.004*	0.005	0.001
	(1.98)	(1.99)	(0.24)	(0.24)
MTB	0.014	0.001	0.298	0.049
	(0.13)	(0.13)	(1.53)	(1.56)
ACQUISITION	3.230	0.245	-4.202**	-0.686**
	(1.56)	(1.58)	(-2.02)	(-2.14)
STD_RET	1.565	0.119	-6.182*	-1.009*
	(0.31)	(0.31)	(-1.70)	(-1.77)
IND_COMP_CFO	0.002	0.001	0.001	0.002
	(0.18)	(0.18)	(0.99)	(1.00)
PSEUDO R2	**0.20**		**0.15**	
NO. OF OBSERVATIONS	**137**		**137**	

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

Table 9, Panel A presents the results of logit models that examine the likelihood of hiring a CFO with a record or an unfrugal CFO as a function of CEO type. The first two columns present the log odds ratios and marginal effects for CFO record, and the next two columns present the log odds ratios and marginal effects for CFO frugality.

Table 9, Panel B: Analysis of Culture Channel
Corporate Culture vs. Tenure by CEO Type (RECORD)

	DELTA	IC_WEAKNESS	%INDEP	SOCIAL	DIR_SHARES
	COEF. (T)	COEF. (Z)	COEF. (T)	COEF. (Z)	COEF. (T)
INTERCEPT	-3.607***	-0.685***	71.672***	0.116	0.618***
	(-3.81)	(-20.39)	(14.41)	(0.85)	(4.54)
RECORD	0.721	-0.010	-4.369	0.412	0.056
	(0.99)	(-0.13)	(-0.99)	(1.50)	(0.62)
TENURE	0.075*	0.000	-0.404***	0.005	-0.001
	(1.78)	(0.01)	(-3.43)	(0.95)	(-0.43)
RECORD × TENURE	-0.054	-0.002	0.005	-0.008	-0.006
	(-1.20)	(-0.38)	(0.01)	(-0.51)	(-1.22)
SIZE	0.400***		0.307	0.041**	-0.068***
	(4.02)		(0.58)	(2.17)	(-4.55)
MTB	0.127**		0.099	-0.010	0.022***
	(2.40)		(0.33)	(-0.60)	(3.09)
LEVERAGE	-0.005				-0.001**
	(-0.89)				(-2.21)
STD_RET	3.342*		-24.735**	-0.246	
	(1.86)		(-2.55)	(-0.62)	
R&D			0.001*		
			(1.85)		
CHI-SQUARE: *TENURE + RECORD x TENURE ≠ 0*	**0.35**	**0.19**	**0.66**	**0.03**	**1.87**
ADJUSTED R2 / PSEUDO R2	**0.19**	**0.01**	**0.07**	**0.08**	**0.05**
NO. OF OBSERVATIONS	**1,828**	**2,893**	**1,508**	**1,586**	**1,466**

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

Table 9, Panel C: Analysis of Culture Channel
Corporate Culture vs. Tenure by CEO Type (FRUGAL)

	DELTA	IC_WEAKNESS	%INDEP	SOCIAL	DIR_SHARES
	COEF. (T)	COEF. (Z)	COEF. (T)	COEF. (Z)	COEF. (T)
INTERCEPT	-3.254***	-0.664***	69.024***	-1.403**	0.584***
	(-3.69)	(-12.16)	(13.55)	(-2.18)	(5.01)
FRUGAL	-0.462	-0.041	2.937	-0.158	0.071
	(-1.35)	(-0.65)	(1.14)	(-0.34)	(1.61)
TENURE	0.042**	-0.001	-0.234	0.051**	-0.020*
	(2.02)	(-0.20)	(-1.29)	(2.11)	(-1.82)
FRUGAL × TENURE	-0.027*	0.001	-0.284	-0.036**	0.011*
	(-1.74)	(0.27)	(-1.19)	(-2.01)	(1.70)
SIZE	0.396***		0.342	0.174**	-0.069***
	(4.09)		(0.66)	(2.06)	(-4.60)
MTB	0.128**		0.053	-0.008	0.022***
	(2.41)		(0.18)	(-0.12)	(3.15)
LEVERAGE	-0.004				-0.001
	(-0.56)				(-1.47)
STD_RET	3.374*		-23.71**	-1.564	
	(1.83)		(-2.45)	(-0.84)	
R&D			0.002*		
			(1.83)		
F-STAT / CHI-SQ: *TENURE + FRUGAL x TENURE ≠ 0*	**2.60***	**0.03**	**1.95**	**0.68**	**0.04**
ADJUSTED R2 / PSEUDO R2	**0.19**	**0.02**	**0.06**	**0.09**	**0.05**
NO. OF OBSERVATIONS	**1,828**	**2,893**	**1,508**	**1,586**	**1,466**

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

Table 9 (Cont.)
Description

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

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 legal infractions prior to the fraud initiation year, 0 otherwise; *CFO_FRUGAL* is a dummy variable that equals 1 if a CFO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 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 a dummy variable that equals 1 if the CEO is socially connected with any of his independent board members via mutual alma maters, military, clubs and 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; *SIZE* is the log of 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 initiation of fraud (or the corresponding year for the control firm); *IND_COMP_CFO* is the median 2-digit SIC code industry total compensation received by CFOs; *LEVERAGE* is the total debt divided by the book value of equity; *R&D* is the total research and development expense scaled by total assets.

Table 10: Analysis of Culture Channel
FRAUD vs. Corporate Culture by CEO Type

	DEPENDENT VARIABLE = FRAUD						
	FRAUD FIRMS ONLY			FRAUD AND NON-FRAUD FIRMS			
	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)
FRUGAL	1.130	1.291	0.954	0.829	0.738	1.544	0.839
	(0.67)	(0.84)	(-0.27)	(-0.85)	(-0.79)	(1.23)	(-0.80)
DELTA	1.039**			1.084			
	(2.31)			(1.47)			
DELTA x FRUGAL	0.981*			0.980			
	(-1.72)			(-0.92)			
CFO_RECORD					1.373		
					(1.02)		
CFO_RECORD x FRUGAL					1.074		
					(0.11)		
CFO_FRUGAL					0.578**		
					(-2.08)		
CFO_FRUGAL x FRUGAL					1.526		
					(0.88)		
SOCIAL		1.474***				2.638***	
		(2.73)				(3.16)	
SOCIAL x FRUGAL		0.729**				0.325**	
		(-2.22)				(-2.49)	
DIR_SHARES			1.118				0.923**
			(0.54)				(-2.05)
DIR_SHARES x FRUGAL			0.982				1.044*
			(-0.34)				(1.81)

Table 10 (Cont.)

	DEPENDENT VARIABLE = FRAUD						
	FRAUD FIRMS ONLY			FRAUD AND NON-FRAUD FIRMS			
	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)	HAZARD RATIO (Z)
TOBIN'S_Q	0.982	0.975	0.975	1.031	1.058*	1.068*	1.034
	(-0.69)	(-0.64)	(-1.03)	(1.19)	(1.77)	(1.91)	(1.20)
ROA	1.014*	1.027**	1.016**	1.007	1.010	1.012	1.004
	(1.66)	(2.61)	(2.01)	(0.84)	(1.15)	(1.31)	(0.50)
%IND_FRAUD	1.126	1.324**	1.189**	1.029	1.177	1.252*	1.112
	(1.41)	(2.76)	(2.85)	(0.27)	(1.43)	(1.94)	(0.78)
PSEUDO R2	**0.03**	**0.09**	**0.05**	**0.04**	**0.08**	**0.13**	**0.03**
NO. OF OBSERVATIONS	**357**	**526**	**303**	**1,139**	**1,152**	**931**	**1,378**

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

Table 10 presents the results of the hazard models examining the relation between fraud and aspects of the corporate culture that change during the tenure of unfrugal CEOs. The first three columns present results using the fraud versus non-fraud years of the fraud firms only, while the next three columns present results using all firms, i.e., the fraud and the non-fraud firms.

The variables are defined as follows: *FRAUD* is a dummy variable that equals 1 in the years a firm committed accounting fraud, and 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 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; *CFO_RECORD* is a dummy variable that equals 1 if a CFO was convicted of any legal infractions prior to the fraud initiation year, 0 otherwise; *CFO_FRUGAL* is a dummy variable that equals 1 if a CFO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *SOCIAL* is a dummy variable that equals 1 if the CEO is socially connected with any of his independent board members mutual alma maters, military, clubs and 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 11
Earnings Management vs. CEO Type

	DEPENDENT VARIABLE = MEET_BEAT		
	OLS	**IV First Stage**	**IV Second Stage**
	COEF. (T)	**COEF. (T)**	**COEF. (T)**
INTERCEPT	28.738***	0.251***	30.59***
	(4.87)	(6.93)	(4.66)
RECORD	5.567**	0.020	5.752***
	(1.99)	(0.94)	(6.03)
FRUGAL	-2.338		-10.964*
	(-1.14)		(-1.74)
ROA	-0.066	0.003*	-0.023
	(-0.28)	(1.77)	(-0.25)
SIZE	-1.437**	0.023***	-1.213***
	(-2.10)	(5.99)	(-5.11)
MTB	-0.004**	-0.001	-0.005**
	(-8.56)	(-1.19)	(-2.47)
CURRENT_ASSET	18.483***	0.177***	20.512***
	(3.96)	(6.03)	(10.58)
NET_INCOME	0.001	0.001	0.001
	(1.62)	(0.12)	(1.15)
LOSS (t-1)	-4.732***	0.025	-4.409***
	(-5.06)	(1.30)	(-5.05)
LOSS (t-2)	-4.459***	0.004	-4.347***
	(-7.22)	(0.22)	(-5.18)
LOSS (t-3)	-4.793***	-0.006	-4.749***
	(-7.76)	(-0.29)	(-5.67)
LOSS (t-4)	-5.275***	-0.014	-5.311***
	(-6.78)	(-0.77)	(-6.44)
R&D		2.228***	
		(7.03)	
F-STATISTIC		**49.35**	
ADJUSTED R^2	**0.10**	**0.02**	**0.06**
NO. OF OBSERVATIONS	**7,462**	**7,462**	**7,462**

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

Table 11 (Cont.)
Description

Table 11 presents the OLS and IV regression results examining the relation between CEO type and earnings management. The instrument for frugality used in the IV model is research and development expense as a proportion of total assets.

The variables are defined as follows: *MEET_BEAT* is the percentage of the prior 8 quarters when the firm met or beat the most recent consensus analysts' forecast by a small amount; *RECORD* is a dummy variable that equals 1 if a CEO was convicted of any legal infractions prior to the year of fraud initiation, 0 otherwise; *FRUGAL* is a dummy variable that equals 1 if a CEO does not own a boat, a car worth more than $75,000, a primary residence worth more than twice the average of median home prices in the zip codes within ten miles of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area prior to the year of fraud initiation, 0 otherwise; *ROA* is the prior year's operating income before depreciation divided by the firm's average total assets, adjusted for the industry median; *SIZE* is the log of market capitalization of the firm; *MTB* is the market value of equity divided by the book value of equity; *CURRENT_ASSET* is the current assets as a proportion of total assets; *NET_INCOME* is the seasonally adjusted income before extraordinary items; *LOSS* (*t-q*) is a dummy variable that equals 1 if net income is negative in the previous *q* quarter; R&D is research and development expenses as a proportion of total assets.

Appendix Table I
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*)	A dummy variable that equals 1 if the CEO is socially connected to any of the independent directors on the board. Social connections between CEOs and directors include 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	Accounting fraud. (*FRAUD*)	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. (*ERRORS*)	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
	Firm size. (*SIZE)*	The logarithm of 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
	Firm value. (*TOBIN'S_Q*)	The prior year's market value of assets divided by the book value of assets .	Compustat
	Operating performance. (*ROA*)	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
	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
	Analyst following of the firm. (*ANALYST_FOLL*)	The number of analysts issuing forecasts for the firm.	I/B/E/S

Appendix Table I (Cont.)

Category	Definition of Variable (*Name*)	Measurement	Data Source
Firm Variables	Media coverage of the CEO/firm. (*MEDIA_FIRM; MEDIA_CEO*)	The number of media documents with the firm's name in them in a given year(or the number of media articles on a CEO in a year).	Hand collection from news articles and press releases from Factiva.
	Prevalence of fraud by industry. (*%IND_FRAUD*)	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. (*FSCORE*)	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. (*IC_WEAKNESS; IC_WEAKNESS_START*)	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. We also consider this variable measured as of the first year of the CEO's tenure or his/her start year.	Compustat and CRSP
	Age of the firm. (*FIRM_AGE*)	The natural logarithm of the age of the firm, measured as the number of years the firm is on CRSP.	CRSP
	Net income or loss. (*NET_INCOME*; *LOSS*)	Net income is the seasonally adjusted income before extraordinary items. Net loss is measured by a dummy variable that equals 1 if net income is negative in the current quarter. Net loss in a prior quarter q is represented with a subscript (t-q).	Compustat
	Foreign currency transactions. (*FOREIGN*)	A dummy variable that equals 1 if the firm has foreign currency transactions.	Compustat
	Acquisition intensity. (*ACQUISITION*)	The sum of acquisitions over the past two years scaled by the market capitalization of the prior year.	Compustat
	Extreme Sales growth. (*SALES_GROWTH*)	A dummy variable that euals 1 if the industry-adjusted growth in sales over the last year is in the top quintile.	Compustat
	Restructuring charges. (*RESTRUCTURE*)	The sum of restructuring charges over the past two years scaled by the market capitalization of prior year.	Compustat
	Cash. (*CASH*)	The amount of cash as a proportion of total assets.	Compustat
	Research and development. (*R&D*)	The total research and development expenses as a proportion of total assets.	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
	Meeting or beating analysts' forecasts. (*MEET_BEAT*)	The percentage of last 8 quarters that a firm meets or beats (by one cent) the most recent median consensus analysts forecast.	I/B/E/S and Compustat
	Current asset intensity. (*CURRENT_ASSET*)	Current assets as a proportion of total assets.	Compustat

Appendix Table I (Cont.)

Category	Definition of Variable (*Name*)	Measurement	Data Source
Executive Variables	Legal infractions in the past of an executive (*RECORD*)	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), and 0 otherwise. Legal infractions include driving under the influence, other drug-related charges,domestic violence, reckless behavior, disturbing the peace and traffic violations (including speeding tickets).	eFOTT
	Luxury asset ownership by an executive. (*FRUGAL*)	A dummy variable that equals 1 if an executive does not own any luxury assets prior to the fraud initiation year (or the corresponding year for the matched control firm), and 0 otherwise. Luxury assets include cars costing more than $75,000, boats greater than 25 feet in length and yachts, primary residences worth more than twice the average of the median home prices in the zip codes within ten miles of the corporate headquarters, and additional residences or vacation home worth twice the average home prices in that metropolitan area (as defined by the Core Based Statistical Area (CBSA)).	eFOTT
	Executive named in a fraud case. (*NAMED_EXEC; OTHERS_NAMED*)	Dummy variables that equal 1 if the CEO, or the CFO, or any other executives/directors/ employees are named by the SEC as being responsible in perpetrating the fraud.	SEC AAERs
	The age of the CEO in the firm (*CEO_AGE*)	The age of the CEO measured in the year of the initiation of fraud (or the corresponding year for the matched control firm).	ExecuComp/Boardex
	The delta of the CEO's wealth. (*CEO_DELTA*)	The dollar change in the value of a CEO's stock and option portfolio for a 1% change in stock price.	ExecuComp
	Wealth of the CEO. (*WEALTH*)	The logarithm of 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
	Tenure of the CEO. (*TENURE*)	The number of years the CEO has worked in his/her current position.	ExecuComp/Boardex
	Perquisites received by the CEO. (*PERKS*)	The average value of all perquisites received by the executive over the 3 years leading up to the event year.	Hand collection from from SEC DEF 14A filings.
	Overconfidence. (*OVERCONFIDENCE*)	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
	Narcissism. (*NARCISSISM*)	The area covered by a CEO's signature scaled by the number of letters in his/her name.	Hand collection from SEC DEF 14A filings and 10K reports.
	Industry CFO compensation. (*IND_COMP_CFO*)	The median 2-digit industry total compensation received by CFOs.	ExecuComp

Appendix Table II: First Stage Models for IV and BiProbit Analyses
Panel A: CEO Frugality and Others Named in Fraud

	DEPENDENT VARIABLE = FRUGAL					
	IV	**BIPROB**	**IV**	**BIPROB**	**IV**	**BIPROB**
INTERCEPT	0.439***	-0.179***	0.434***	-0.190**	0.389***	-0.324***
	(21.53)	(-3.18)	(17.02)	(-2.68)	(13.18)	(-3.82)
RECORD	-0.029	-0.078	-0.027	-0.065	0.085	0.224*
	(-0.77)	(-0.80)	(-0.60)	(-0.56)	(1.87)	(1.84)
TOBIN'S_Q	-0.013*	-0.037*	-0.009	-0.021	-0.011	-0.029
	(-1.90)	(-1.89)	(-1.19)	(-0.92)	(-1.41)	(-1.33)
ROA	0.001	0.001	-0.002	-0.007*	0.002	0.004
	(0.49)	(0.35)	(-1.62)	(-1.79)	(1.39)	(1.23)
%IND_FRAUD	0.068***	0.211***	0.087***	0.243***	0.069**	0.220**
	(4.36)	(4.32)	(4.02)	(3.92)	(3.38)	(3.40)
MEDIA_FIRM			0.001	0.002		
			(0.21)	(0.32)		
FSCORE					0.007	0.026
					(0.84)	(0.95)
CASH	0.757***	2.190***	0.692***	1.925***	0.718***	2.012***
	(10.11)	(9.81)	(7.53)	(7.28)	(8.22)	(7.94)
F-STATISTIC	**32.04**		**56.77**		**67.6**	
CENTERED R2	**0.07**		**0.08**		**0.08**	
UNCENTERED R2	**0.58**		**0.58**		**0.68**	
PARTIAL CORRELATION	**0.24*** **		**0.22*** **		**0.25*** **	
SEMI-PARTIAL CORRELATION	**0.24*** **		**0.22*** **		**0.24*** **	
NO. OF OBSERVATIONS	**1,661**	**1,661**	**1,062**	**1,062**	**1,060**	**1,060**

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

This table presents the first stage models of the IV analysis and the bivariate probit models for CEO selection for the others named in fraud analyses. The instrument for frugality is cash as a proportion of total assets. See Appendix Table I for definitions of all variables.

Appendix Table II (Cont.)
Panel B: CEO Frugality and Restatements due to Errors

	DEPENDENT VARIABLE = FRUGAL					
	IV	**BIPROB**	**IV**	**BIPROB**	**IV**	**BIPROB**
INTERCEPT	0.610***	0.279***	0.592***	0.233***	0.541***	0.132
	(33.87)	(5.95)	(27.96)	(4.22)	(11.92)	(1.10)
RECORD	-0.013	-0.024	-0.027	-0.067	-0.027	-0.071
	(-0.31)	(-0.22)	(-0.71)	(-0.66)	(-0.69)	(-0.69)
IC_WEAKNESS_START	0.036	0.119*				
	(1.43)	(1.80)				
IC_WEAKNESS			0.008	0.040		
			(0.30)	(0.57)		
SIZE					0.017**	0.041**
					(2.72)	(2.43)
FIRM_AGE					-0.035**	-0.094**
					(-2.99)	(-3.07)
LOSS					-0.113**	-0.297**
					(-3.63)	(-3.66)
FOREIGN					0.078**	0.192**
					(3.01)	(2.77)
ACQUISITIONS					0.102*	0.302*
					(1.89)	(1.89)
SALES_GROWTH					0.022	0.059
					(0.96)	(0.96)
RESTRUCTURE					1.059**	2.580**
					(2.33)	(2.15)
R&D	0.001***	0.001***	0.001***	0.001***	0.001**	0.001**
	(4.65)	(3.92)	(4.49)	(3.84)	(3.22)	(3.06)
F-STATISTIC	**23.78**		**20.74**		**11.93**	
CENTERED R2	**0.01**		**0.01**		**0.03**	
UNCENTERED R2	**0.60**		**0.60**		**0.60**	
PARTIAL CORRELATION	**0.01*** **		**0.09*** **		**0.07*** **	
SEMI-PARTIAL CORRELATION	**0.01*** **		**0.09*** **		**0.07*** **	
NO. OF OBSERVATIONS	**1,661**	**1,661**	**1,062**	**1,062**	**1,060**	**1,060**

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

This table presents the first stage models of the IV analysis and the bivariate probit models for CEO selection for the errors analyses. The instrument for frugality is research and development expenses as a proportion of total assets. See Appendix Table I for definitions of all variables.