

Performance Based Incentives for Internal Monitors

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Abstract: This study examines the use of performance based incentives for internal monitors (general counsel and chief internal auditor) and whether these incentives impair monitors' independence by aligning monitors' interests with the interests of those being monitored. We find evidence that incentives are greater when monitors' job duties contribute more to the firm's production function, other top managers receive greater incentives, and a firm has lower expected litigation risk. We also find evidence that incentive levels vary with demand for internal monitoring. We find no evidence that internal monitor incentives impair the monitoring function. Instead, our results suggest that adverse firm outcomes (e.g., regulatory enforcement actions and internal control material weakness disclosures) occur less frequently at firms that provide greater monitor incentives.

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1. Introduction

Certain corporate officers, such as the firm general counsel (GC) and chief internal auditor (IA), are largely responsible for mitigating legal, compliance, and regulatory risk and enhancing general governance within the firm.¹ Because of the scope of their responsibilities, these internal firm monitors are often provided large compensation packages that are similar in composition to those granted to other top managers within the firm. What is particularly interesting about internal firm monitors' compensation, however, is that a substantial proportion of this compensation is derived from incentives tied to overall firm performance. Although agency theory might suggest that these incentives should align the internal monitors' interests with those of shareholders, there is some concern that these incentives instead align internal monitors' interests with those of the agents who are being monitored, thereby compromising the integrity of the monitors.²

For example, in its May 2001 Ethics Opinion 109, the Colorado Bar Association states that “[t]he potential conflicts of interest between a lawyer who is both counsel to and an equity owner in a client are myriad”. Prosecutors in the Tyco International criminal case argued that Tyco General Counsel Mark Belnick’s independence was impaired, in part, because he had received substantial performance based incentives (Oreskovic, 2004). DeZoort et al. (2000) also report that internal auditor survey participants believe there are “a number of potential disadvantages associated with [incentive based compensation] based on overall company performance... [including] potential impairment of objectivity and independence”. Barclift

¹ The GC of a prominent industrial supply firm stated during a telephone interview that he serves as “the ultimate fiduciary in the company”. Demott (2005) and the Institute of Internal Auditors (Position Statement, Sept 2004) note that the role of the internal auditor is to identify, evaluate, and mitigate enterprise risk.

² Several recent papers suggest that performance based compensation may provide incentives for managers to extract personal rents (e.g., Cheng and Warfield, 2005; Burns and Kedia, 2006; Bergstresser and Phillipon, 2006; and Jiang, Petroni, and Wang, 2009).

(2005) voices a similar concern and suggests that GC compensation contracts should not contain contingent payouts as function of firm performance, since performance based incentives in general, and equity-based compensation in particular, are thought to impair a GC's ability to "rein in corporate misconduct". The purpose of this study is to provide insight into the choice of performance based incentives for the GC and IA and assess whether these incentives enhance or impair monitoring incentives.

In this study, we utilize proprietary and public data that provide details about the incentive compensation contracts of the GC and the IA to examine why firms choose to grant performance based incentives to internal monitors. More importantly, we also examine the impact these incentives have on either alleviating or exacerbating agency problems within the firm. We draw inferences regarding the implications of compensating internal monitors with performance based incentives using a propensity score matched pair research design, which helps address econometric issues related to the endogenous design of incentive compensation contracts.

We find that internal monitors receive greater incentives when their job duties contribute more to the firm's production function. Internal monitors also receive greater incentives when they are more highly ranked within the firm and when the firm's CEO receives greater incentives, consistent with standardization in compensation contracts within the executive suite. In addition, monitors receive lower incentives at firms with greater *ex ante* litigation risk, consistent with risk averse monitors demanding less risky compensation when their human capital is more at risk. Finally, we find some evidence that incentive levels vary as a function of the demand for internal monitoring.

To better understand the implications of internal monitor incentives, we next examine the association between internal monitor incentive levels and the frequency of adverse firm outcomes, which we use to proxy for unresolved agency problems within the firm. After matching monitors on observable characteristics of their contracting environments using a propensity score approach, we find a lower frequency of adverse outcomes (e.g., regulatory enforcement actions and internal control material weakness disclosures) at firms that provide their monitors with greater performance based incentives. These results are consistent across a variety of alternative measures of incentives and outcomes and appear robust in sensitivity analyses which assess the impact of omitted variable bias.

Overall, our results support the notion that performance based incentives enhance the internal monitoring function, perhaps by providing incentives for better monitoring effort or by facilitating the selection of more talented monitors. These results may allay concerns raised in the economics and legal literatures regarding whether performance based incentives are an appropriate form of compensation for internal monitors. These results also provide new insights into the implications of providing management with incentive based compensation by focusing directly on the implications of providing incentives to corporate officers who are responsible for overall governance within the firm.

The remainder of this paper is organized as follows. Section 2 of this discusses prior research and develops our hypotheses. Section 3 describes the sample and provides descriptive statistics for the primary variables. Section 4 discusses our methodological approach. Section 5 presents our primary empirical results and accompanying sensitivity analyses. Section 6 provides concluding remarks.

2. Prior Literature and Research Hypotheses

2.1. Incentives of top management

There has been considerable research examining the implications of providing performance based incentives to the CEO on firm performance (e.g., Hanlon, Rajgopal, and Shevlin, 2003) and earnings management, financial reporting restatements, and accounting related enforcement actions (e.g., Burns and Kedia, 2006; Erickson, Hanlon, and Maydew, 2006; Armstrong, Jagolinzer, and Larcker, 2009). The basic research question in this work focuses on whether incentives alleviate or exacerbate agency problems that exist between shareholders and the CEO, or the senior management team.

A recent series of papers focuses on the incentives provided to Chief Financial Officers (CFOs), because CFOs are thought to have a more direct influence over the financial reporting environment than the CEO. Wang (2006), Gore, Matsunaga, and Yeung (2007), and Indjejikian and Matejka (2009) examine the determinants of CFO incentive compensation contracts and find that the pay-for-performance sensitivity of CFO incentives decreased following the passage of the Sarbanes-Oxley Act (SOX). This decrease in sensitivity is consistent with SOX increasing the overall cost of misreporting, so high-powered incentives, which are viewed as a substitute mechanism, are no longer needed to align the incentives of the CFO. Similarly, Jiang, Petroni, and Wang (2009) find a higher level of earnings management at firms that provide greater levels of CFO incentives, after controlling for CEO incentives levels. Despite extensive prior research, the evidence linking incentives to firm outcomes is very mixed.³

2.2. Incentives of monitors

³ Armstrong, Jagolinzer, and Larcker (2009) provide a more complete review of the mixed findings of this research and a discussion of the possible causes.

Prior research also examines the implications of providing incentives to monitoring agents by generally focusing on agents who are *external* to the operational management of the firm, but are responsible for overseeing managers' actions (e.g., outside directors). For example, Yermack (2004) examines the level of incentives provided to outside directors at *Fortune 500* firms. He reports that these directors receive performance based incentives that are much lower in magnitude than those provided to top management. He also reports that the level of outside directors' incentives, like those of top management, is increasing in tenure, firm growth opportunities, and firm cash constraints and decreasing in firm leverage, which proxies for the agency costs of debt. Ryan and Wiggins (2004) examine the degree to which outside director "bargaining" power over the CEO determines the level of equity incentives provided to the board. The authors assume that equity-based compensation provides stronger incentives to monitor top management's actions and report that firms with fewer independent directors have lower equity-to-cash pay ratios for board member compensation.⁴

Other studies in this area examine the implications of incentives on the board's monitoring performance. Along these lines, Kumar and Sivaramakrishnan (2002) model the role of compensation contracts in inducing monitoring by the board of directors. They find that directors require incentives to induce them to expend personally costly effort acquiring information which increases the precision of their monitoring efforts. However, empirical tests regarding the degree to which director incentives affect monitoring are, at best, indirect. For example, Feng, Ghosh, and Sirmans (2007) examine the relation between director incentives and firm performance in a small sample of Real Estate Investment Trusts (REITs). They find that

⁴ In a similar vein, Engel, Hayes, and Wang (2009) examine the degree to which audit committee board member total compensation is associated with demands for better monitoring of the financial reporting process. Although they find evidence that audit committee member compensation is higher when there are greater monitoring demands (e.g., after Sarbanes-Oxley), they do not test whether monitoring itself appears to improve after providing increased compensation levels.

higher returns accrue to REITs that provide greater equity based compensation to board members. Becher, Campbell, and Frye (2005) find a positive relation between equity based compensation for board members and subsequent accounting performance in banks. Similarly, Cordeiro, Veliyath, and Romal (2007) find a positive relation between equity based compensation for directors and firm performance when there are high investment opportunities and weak external monitoring. Finally, Brick, Palmon, and Wald (2006) find that “excess” director (and CEO) compensation exhibits a negative relation with subsequent firm performance.

These studies suggest that director incentives have, at best, a modest association with firm performance and presumably monitoring effort.⁵ One possible explanation for these results is that the low incentive levels provided to external monitors, such as outside directors, may not be substantial enough to influence their monitoring effort. Another possible explanation is that external monitors such as outside directors are not engaged in active monitoring on a day-to-day basis, so the impact of incentives on monitoring effort (if it exists) may be difficult to detect empirically.

There is little prior research that directly examines the determinants or implications of providing incentives to internal monitors. The closest study to ours is Chen, Chung, and Wynn (2009) which examines a sample of 273 NYSE firms that responded to a survey regarding whether the chief internal auditor receives incentive-based compensation. Their results suggest that external auditors charge higher audit fees at firms that provide their internal auditor

⁵ Related studies exist that examine the implications of auditor compensation on audit or financial statement quality. For example, Frankel, Johnson, and Nelson (2002) provide evidence that the quality of auditor monitoring may be compromised by the degree to which firms compensate auditors for non-audit related services. This evidence has been challenged, however, by other research (e.g., Larcker and Richardson, 2004; DeFond, Raghunandan, and Subramanyam, 2002).

incentive-based compensation, perhaps because external auditors perceive that internal audit work may be compromised as a result.⁶

2.3. Research Hypotheses

The level of internal monitors' incentives is likely to be a function of expectations of whether incentives enhance or impair monitoring effort conditional on overall demand for monitoring. If incentives are thought to enhance monitoring effort then, *ceteris paribus*, firms with greater monitoring demand should provide their internal monitors with greater incentives. Conversely, if incentives are thought to impair monitoring effort then, *ceteris paribus*, firms with greater monitoring demand should provide their internal monitors with lower incentives.

The optimal level of internal monitors' incentives is also likely to be a function of the degree to which monitors' assigned duties impact the firm's production function. For example, if incentives enhance these agents' productive efforts, then, *ceteris paribus*, internal monitors should receive greater performance based incentives when their actions have a greater overall impact on firm value (e.g., Indjejikian and Matejka, 2009).

Finally, the level of internal monitors' incentives is also likely to be a function of the firm's overall compensation contracting environment. For example, firms with higher litigation risk may provide monitors with lower incentives because it is costly to impose more uncertainty on a risk averse agent in this environment. Firms may also provide greater incentives to monitors when other top managers receive greater incentives for internal consistency or selection on type (e.g., risk-aversion).

With respect to the economic impact of providing internal monitors with performance based incentives, theoretical predictions are similar to those used in prior research for the CEO,

⁶ Chen, Chung, and Wynn (2009) do not control for the general incentive structure provided to top management. Therefore, it is possible that their incentive based compensation measure captures the effect of incentives provided to top executives (e.g., the CEO) rather than the incentives of the internal auditor.

CFO, and outside directors. In particular, incentives may be necessary to attract and subsequently motivate internal monitoring agents to provide the desired level of monitoring. Alternatively, performance based incentives may align the monitoring agent's interests with those of the agents who they are charged with monitoring. This might occur because these individuals are compensated based on the same performance measures as other senior-level executives. If performance based incentives impair the monitoring ability of internal monitors, there will likely be more instances of adverse outcomes at firms that provide internal monitors with greater levels of incentives. In contrast, if performance based incentives improve internal monitoring effort through better alignment of interests with those of shareholders or by attracting better skilled internal monitors, there will likely be fewer instances of adverse outcomes at firms that provide internal monitors with greater levels of incentives.

3. Sample and Descriptive Statistics

We obtain some of our data for internal monitor incentives from a proprietary database provided by a large human resources consulting firm. These data cover the calendar years 2002 to 2005 and are obtained through a detailed annual survey conducted by the consulting firm. The proprietary data includes information about the major components of executive compensation for many executive positions. We also obtain data for incentives measure from Equilar Inc., which collects publicly reported compensation data from approximately 4,000 firms' proxy statements (DEF14A). Firms are only required to report compensation and stock and option holdings data for the five highest paid employees. We are only able to obtain data for GCs when they are very highly compensated. As might be expected given the task of the internal auditor, we do not find any observations for the IA in public filings.

We compute three different incentive measures for the GC and IA executives.

GCCompMix is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002).⁷

IntAudCompMix is the ratio of the chief internal auditor's contingent compensation to total compensation. We do not have a portfolio delta measure for the IA because this executive is not listed in the proxy statement and, consequently, we do not have information about their stock and option portfolio holdings. The compensation mix variables are computed from our proprietary data and the portfolio delta variable is computed from public data.

After removing private firms and observations with missing data, we retain 293 unique firms and 648 GC-firm-year observations for our *GCCompMix* estimation that are relatively evenly distributed across the sample period (147, 146, 179, and 176 observations from the calendar years 2002 to 2005, respectively). We also retain 168 unique firms and 294 GC-firm-year observations for our *GCPortDelta* estimation (61, 67, 78, and 88 observations from the calendar years 2002 to 2005, respectively). Finally, we retain 70 unique firms and 150 IA-firm-year observations for our *IACompMix* estimation (28, 34, 46, and 42 observations from the calendar years 2002 to 2005, respectively).

Table 1 reports the industry composition of the *GCCompMix* sample relative to all firms in Compustat during the same period. Industries are defined using the classification system

⁷ For *GCPortDelta*, the value of stock and restricted stock is assumed to change dollar-for-dollar with changes in the price of the underlying stock. The value of stock options is assumed to change according to the option's delta, which is the derivative of its Black-Scholes value with respect to the price of the underlying stock. Annualized volatility is calculated using continuously compounded monthly returns over the prior 36 months (with a minimum of 12 months of returns). The risk-free rate is calculated using interpolated interest rate on a Treasury Note with the same maturity (to the closest month) as the remaining life of the option multiplied by 0.70 to account for the prevalence of early-exercise. Dividend Yield is calculated as the dividends paid over the last 12 months scaled by the stock price at the beginning of the month.

outlined in Barth, Beaver, and Landsman (1998). Relative to the full Compustat sample, our sample of firm years includes a relatively greater proportion of firms from Food, Textiles and Chemicals, and a relatively smaller proportion of firms from Financial Services. In general, the distribution of firms across industries in our primary sample does not appear to differ materially from that of the general Compustat population.

Sample descriptive statistics are reported in Table 2. The mean (median) market capitalization for our largest sample is \$18,780 (\$6,740) million which indicates that these firms are relatively large. Firms in our sample provide their GCs and internal auditors with substantial total compensation and a large proportion of this compensation is tied to overall firm performance. Specifically, the mean total compensation paid to the GC (IA) is \$2,459,000 (\$996,000). On average, 74.5% (67.0%) of this total compensation is contingent on firm performance. In addition, the mean (median) portfolio delta for the GCs in the sample for which we have compensation and holdings data is \$250,000 (\$129,000). This sensitivity to firm performance appears economically significant even if it is relatively smaller in magnitude than the mean (median) portfolio delta for CEOs in the sample of \$1,857,000 (\$785,000).

Table 3 Panel A reports Pearson and Spearman correlation coefficients for the variables used in the propensity score model. Not surprisingly *GCCompMix* and *GCPortDelta* are highly positively correlated (Pearson $\rho = 0.55$) which is consistent with GCs having a higher sensitivity of their wealth to changes in firm value when they receive a high proportion of performance based compensation. Similarly, both measures of GC incentives are highly correlated with the level of CEO incentives (e.g., Pearson $\rho(GCCompMix, CEOIncentives) = 0.37$; Pearson $\rho(GCPortDelta, CEOIncentives) = 0.67$). Likewise, there is a high correlation between internal auditor incentives and both GC and CEO incentives (e.g., Pearson $\rho(GCCompMix,$

$IntAudCompMix) = 0.80$; Pearson $\rho(IntAudCompMix, CEOIncentives) = 0.35$). These correlations are consistent with contracting environments being similar across executives within a firm, making it necessary to control for the incentives of the CEO in order to identify the effect of internal monitor incentives separately from the effect of CEO incentives. This latter point is further illustrated by the high correlation between firm size and both GC and CEO incentives measures (e.g., Pearson $\rho(GCPortDelta, Log(MVE)) = 0.65$; Pearson $\rho(CEOIncentives, Log(MVE)) = 0.64$, respectively). These relatively high correlations highlight the need to control for the CEO incentives when attempting to attribute performance consequences to lower level executives (i.e., there is an obvious identification problem).

Since unresolved agency problems are not directly observable, we proxy for the existence of these problems with a set of adverse firm outcomes that are presumably a result of inappropriate actions by managers. Class action lawsuit litigation damage periods (i.e., where $LitDmgYr = 1$) are those years in which a class action plaintiff alleges that the firm engaged in improper activity that led to the class action lawsuit filing. These data are obtained from Woodruff Sawyer & Co., a directors and officers liability insurance firm, which comprehensively collects class action data from public filings. We designate as a class action damage period any year during which a portion of the calendar year falls between the class action damage period start date and the earlier of the class action damage period end date or the class action suit filing date. Class action suit filing years (i.e., where $SuitYr = 1$) are those years in which the firm is formally named in a class action proceeding. We designate a class action filing year for the calendar year in which plaintiffs record their formal complaint.

Financial reporting restatement years (i.e., where $RstmtYr = 1$) are those years that are restated, for financial reporting purposes, as a result of potential accounting manipulation. These

data are obtained from Glass-Lewis & Co., which comprehensively collects restatement information from SEC filings, press releases, and other public data. We identify accounting restatements between 2001 and 2005 that relate to perceived financial reporting manipulation classified as accounting fraud, an SEC investigation, a securities class action suit, improper reserve allowances, improper revenue recognition, or improper expense recognition.⁸ We code a restatement incident as the first fiscal year in which improper accounting occurred that subsequently necessitated a restatement.

AAER years (i.e., where $AAERYr = 1$) are those years in which the SEC alleges financial reporting irregularities that eventually led to formal regulatory action. We identify these firms from the comprehensive AAER listing provided on the SEC website for allegation periods between 2001 and 2005 that allege earnings-estimate improprieties, financial misrepresentation, or failure to adhere to GAAP.⁹ We code an AAER incident as the first fiscal year in which the SEC alleges that accounting manipulation occurred, as detailed in the Enforcement Release.

Enforcement action years (i.e., where $EnfnmtYr = 1$) are those years in which the firm is alleged to have engaged in activities that subsequently led to regulatory or oversight enforcement action citing one of the following provisions of the 1977 Foreign Corrupt Practices Act: 15 USC 78(m)(b)(2)(A) or 13(m)(b)(2)(A) [books and records provision], 15 USC 78(m)(b)(2)(B) or 13(m)(b)(2)(B) [internal controls provision], 15 USC 78(m)(b)(5) or 13(m)(b)(5) [circumvention provision], 17 CFR 240.13b2-1 [falsification of accounting records], or 17 CFR

⁸ Revenue recognition restatements may result from changes in GAAP or GAAP enforcement (e.g., Staff Accounting Bulletin 101). We classify these restatements as “manipulation,” since many GAAP enforcement changes resulted from regulatory perception that revenue was being misreported. For sensitivity, we also restrict our restatement sample to the subsample of Glass-Lewis restatements that note revenue recognition, expense recognition, or concerns over reserves and allowances (Palmrose, Richardson, and Scholz, 2004) and also note a material weakness, a late filing, an auditor change, or a restatement via 8-K filing. Results for this restricted restatement sample are qualitatively similar to our reported results.

⁹ We define an enforcement action allegation period as the period that precedes the AAER filing date during which the SEC alleges that accounting manipulation had occurred.

240.13b2-2 [misrepresentation].¹⁰ It includes enforcement actions such as class action lawsuits against the firm and its officers, criminal proceedings against the firm and its officers, and regulatory or oversight actions such as AAERs and deregistrations. Although elements of this dataset overlap with some of our other outcome measures, this dataset is broader in scope and thus captures other potential adverse outcomes that are likely within the purview of an internal monitor's job responsibility. We designate an enforcement action year when any portion of the calendar year falls between the enforcement period start date and the enforcement period end date.¹¹

Finally, material weakness report years (i.e., where $MwYr = 1$) are those years in which the auditor or firm management identifies and reports a material weakness in internal controls. Material weakness disclosure data begins with data collected by Doyle, Ge, and McVay (2007) and is augmented with data from Audit Analytics.

Table 3 Panel B reports Pearson correlation coefficients relating to our measures of adverse outcomes. As should be expected, our measures of adverse outcomes are positively correlated. For example, there is a high correlation between the incidence of a litigation damage period year and the filing of the actual class action lawsuit ($\rho(LitDmgYr_t, SuitYr_t) = 0.61$) and the incidence of an accounting restatement ($\rho(LitDmgYr_t, RstmtYr_t) = 0.30$). These correlations suggest that our proxies are capturing the unobservable construct related to unresolved agency concerns.

¹⁰ This data has been previously used by Karpoff, Lee and Martin (2008a, b).

¹¹ The Karpoff, Martin, and Lee dataset defines the enforcement period start date as the first public date where there is an indication of misconduct. It is the earliest of the trigger date (date indicated in enforcement proceedings that precipitated regulatory or private action), the informal request date (date the firm announced an informal request for information by regulators), the investigation date (date the firm announced it was the target of a formal investigation or the date a subpoena was served), the Wells Notice date (date the firm received an SEC Wells Notice), the beginning date of regulatory enforcement or the date of a class action suit filing. The dataset defines the enforcement period end date as the latest of the violation beginning date (beginning date of the violation as indicated in the enforcement proceedings), the violation ending date, the class action settlement date, the ending of class action proceedings date, or the date of last regulatory enforcement proceeding.

4. Methodological Approach

3.1. Determinants of Internal Monitor Incentives

To understand the determinants of internal monitors' performance based incentive levels, and to estimate propensity scores for subsequent match pair analysis, we estimate the following specification:

$$\begin{aligned} Incentives_t = & \alpha_0 + \alpha_1 NumGeoSegs_{t-1} + \alpha_2 Log(MVE)_{t-1} + \alpha_3 GovMonFactor_{t-1} + \alpha_4 InstitOwnerPct_{t-1} + \\ & \alpha_5 Leverage_{t-1} + \alpha_6 NewPublicDebt_{t-1} + \alpha_7 Log(ExtAudFees)_{t-1} + \alpha_8 + PredLitRisk_{t-1} \\ & \alpha_9 PctLawyers_{t-1} + \alpha_{10} M\&A_{t-1} + \alpha_{11} CEOIncentives_{t-1} + \alpha_{12} ReportLvl_{t-1} + \varepsilon_t \end{aligned} \quad (1)$$

Incentives represent one of three measures of internal monitor incentives: *GCCompMix*, *GCPortDelta*, or *IntAudCompMix*.¹² *NumGeoSegs* is the beginning of year number of geographic segments in which the firm operates as provided by Compustat. *Log(MVE)* is the natural logarithm of market value of equity at the beginning of the year. *GovMonFactor* is a governance monitoring demand factor derived through principal components analysis from the following governance variables provided by Equilar: *OutsideChmn*, an indicator variable that equals one if the Chairman of the Board of Directors is classified as an outsider and equals zero otherwise; *PctOutsiders*, the ratio of outside directors to total directors; *PctBusyDir*s, the fraction of outside directors who serve simultaneously on at least two boards; *NumDir*s, the natural logarithm of the number of directors on the board; and *NumBdMeetings*, the number of board meetings in the calendar year.¹³ *InstitOwnerPct* is the percentage of outstanding shares

¹² *GCCompMix* and *IntAudCompMix* are bounded at 0 and 1, so we estimate double-censored Tobit regressions for these two incentives measures. *GCPortDelta* is bounded from below at 0, so we estimate a Tobit regression for this incentives measure. For all three incentives measures, however, we tabulate results from OLS estimations to facilitate the interpretation of the marginal effects. Since there are few observations censored at the limits, our results are not sensitive to this choice.

¹³ The individual governance variables are aggregated into *GovMonFactor* to facilitate interpretation. The principal component analysis produced one substantive factor, and this weighted combination of variables was used to compute *GovMonFactor*. For the subsequent propensity score matching, we estimate equation (1) using the

designated as institutionally owned by CDA/Spectrum. *Leverage* is the ratio of total debt to book value of assets. *NewPublicDebt* is an indicator that equals one if Securities Data Corporation (SDC) indicates the firm issued new public debt during the calendar year and equals zero otherwise. *ExtAudFees* is the amount of fees paid to external auditors for the fiscal year as reported in Audit Analytics. *PredLitRisk* is the firm's expected class action litigation probability estimated in the year prior to measuring the internal monitor's compensation.¹⁴ *PctLawyers* is the ratio of the number of legal department employees to total firm employees.¹⁵ *M&A* is an indicator variable that equals one if an acquisition contributed to sales during the year (Erickson, Hanlon, and Maydew, 2006) and equals zero otherwise. *CEOIncentives*, computed using a similar method as *GCPortDelta*, is the natural logarithm of the portfolio delta of the firm's CEO. *ReportLvl* is a rank variable provided within the proprietary dataset that indicates the corporate level to which the monitor reports for supervision. Lower values indicate a higher reporting rank. *t* is a subscript denoting calendar compensation year and firm subscripts are not annotated for

individual governance variables in lieu of *GovMonFactor*, since this facilitates better matching by ensuring covariate balance along each of these relevant variables.

¹⁴ *PredLitRisk* is estimated from the following annual cross-sectional logistic regression (adapted from Rogers and Stocken, 2005): $Pr(DMGPd = 1) = \gamma_0 + \gamma_1 \text{MinReturn} + \gamma_2 \text{SkewReturn} + \gamma_3 \text{StdDevRet} + \gamma_4 \text{Turnover} + \gamma_5 \text{Log}(MVE) + \gamma_6 \text{BHReturn} + \gamma_7 \text{Beta} + \gamma_8 \text{BiotechInd} + \gamma_9 \text{CompHWInd} + \gamma_{10} \text{CompSWInd} + \gamma_{11} \text{ElecInd} + \gamma_{12} \text{RetailInd} + \varepsilon$, where *DMGPd* equals one if the fiscal year falls within an alleged class action damage period (data provided by Woodruff Sawyer and Co.) and equals zero otherwise; *MinReturn* is the minimum single day firm return during the fiscal year; *SkewReturn* is the skewness of daily returns during the fiscal year; *StdDevRet* is the standard deviation of residuals from a regression of daily firm returns on daily value-weighted CRSP portfolio returns; *Turnover* is the average daily trade volume scaled by shares outstanding during the fiscal year; *MVE* is the average market value of equity during the fiscal year; *BHReturn* is the prior fiscal year's buy and hold return; *Beta* is the firm's beta coefficient from a regression of daily firm returns on daily market returns; and *BiotechInd*, *CompHWInd*, *CompSWInd*, *ElecInd*, and *RetailInd* are dichotomous variables that equal one if the firm represents the biotechnology, computer hardware, computer software, electric, or retail industries, and equal zero otherwise.

¹⁵ Data on the number of legal department employees is collected for calendar years 2004, 2005, and 2008 from the annual *Corporate Counsel Magazine* In-House Law Departments survey. Where data are missing (i.e., prior to 2004 for all observations and between 2004-2008 for some observations), we estimate fitted values for the numerator from the pooled estimation of $\text{Log}(\text{NumLawyers}) = \delta_0 + \delta_1 \text{Log}(\text{Assets}) + \delta_2 \text{Log}(\text{CapEx}) + \delta_3 \text{NI}/\text{Assets} + \delta_4 \text{SalesGrowth} + \delta_5 \text{MktShare} + \delta_6 \text{LTDebt}/\text{Equity} + \delta_7 \text{Log}(\text{Employees}) + \rho$, where *NumLawyers* is the number of law firm employees, *Assets* is the book value of total assets, *CapEx* is the value of annual capital expenditures, *NI* is annual net income, *SalesGrowth* is the annual percentage change in revenue, *MktShare* is the firm's percentage of total (two-digit) industry annual sales, *LTDebt/Equity* is the ratio of long term debt to book value of shareholders' equity, and *Employees* is the number of total firm employees. Data are collected from Compustat for the fiscal year that precedes the survey calendar year.

brevity. Robust standard errors are computed using two-way clustering by firm and year to control for time-series and cross-sectional correlation (Petersen, 2009; Gow, Ormazabal, and Taylor, 2010).

If performance based incentives are effective at enhancing monitoring effort, then we expect internal monitors to receive more performance based incentives at firms that face higher monitoring demands. Alternatively, if performance based incentives are thought to misalign monitoring incentives, we expect internal monitors to receive lower (perhaps zero) performance based incentives at firms that face higher monitoring demands. Prior studies have used firm size and geographic diversity to proxy for firm complexity (e.g., Bushman et al., 2004; Linck, Netter, and Yang, 2008), so we include *Log(MVE)* and *NumGeoSegs* to capture these two constructs. More complex firms should also exhibit a greater demand for external auditing, so we include *Log(ExtAuditFees)*. *GovMonFactor* and *InstitOwnPct* to proxy for monitoring demands related to outside shareholder information asymmetries. *PredLitRisk* is included to proxy for monitoring demand related to litigation exposure. Finally, *Leverage* and *NewPublicDebt* are included to proxy for monitoring demands related to creditor information asymmetries (e.g., Diamond, 1984; Fama, 1985). We do not predict the sign of the relationship between *Incentives* and the set of monitoring demand variables because *ex ante* it is not clear whether firms expect internal monitor incentives to enhance or misalign monitoring effort.¹⁶

If firms expect performance based incentives to enhance productive effort, we expect internal monitors to receive more performance based incentives when these agents play a more direct role in the firms' production function (Indjejikian and Matejka, 2009). *PctLawyers* and *M&A* are included to proxy for the degree to which the internal monitor's job scope is related to

¹⁶ Since *PredLitRisk* also proxies for the firm's overall risk exposure, one might expect to see a negative relation with *Incentives* if firms remunerate risk-averse monitors with less risky pay when facing uncertain environments.

fundamental business operations.¹⁷ If firms provide more performance based incentives when their internal monitors play a more direct role in business operations, then we should observe a positive relation between incentive levels and *PctLawyers* and *M&A*.

CEOIncentives and *ReportLvl* are included to control for other factors (e.g., selection of employees on risk-aversion, talent, or reputation) related to the compensation contracting environment and scope of responsibility for the firm's top employees. For example, if firms tend to require (e.g., through target ownership) or grant uniform levels of incentives across top employees or hire senior management teams with similar levels of risk-aversion and/or talent then we expect a positive (negative) association between *Incentives* and *CEOIncentives* (*ReportLvl*). It is also important to control for *CEOIncentives* in our study since it allows us to separately identify the impact of the monitor's incentives on adverse firm outcomes incremental to the effect of CEO incentives.

3.2. *Effects of Internal Monitor Incentives*

To understand the economic implications of providing performance based incentives to internal monitors, we utilize a propensity score matched pair research design that consists of the following steps (e.g., Rosenbaum, 2002; Imbens, 2000). First, we model the determinants of the level of performance based incentives provided to internal monitors using equation (1). The fitted values from equation (1) serve as our propensity scores. Second, using the approach outlined in Lu et al. (2001), we form matched pairs of observations with the smallest propensity score difference (i.e., the most similar observed contracting environments) but the greatest difference in actual incentives (i.e., the most dissimilar incentive compensation contracts for their internal monitors). We form matched pairs by identifying the pairings that result in

¹⁷ *PctLawyers* is excluded in the *IntAudCompMix* regression since there is no reason to suspect that law department size is a determinant of internal auditor compensation.

observations with the smallest propensity-score differences (i.e., the most similar observed contracting environments) but the greatest difference in actual incentives (i.e., the most dissimilar contracts). Third, we examine the covariate balance between the matched pairs (i.e., monitors with high and low incentives) to ensure that the observable variables are balanced across the two subsamples, which helps to mitigate overt bias.¹⁸ Fourth, we examine the relationship between monitor incentives and adverse outcomes by assessing whether the frequency of these outcomes is significantly different between the high and low incentives groups. Fifth, we assess the sensitivity of any significant differences to potential hidden bias by relaxing the assumption that matched observations have an equal probability of receiving a certain level of incentives conditional on the observable features of the contracting environment (Rosenbaum, 2002). This assessment enables us to quantify the potential impact of confounding variables on the observed statistical association between the level of monitor incentives and the outcome of interest. Finally, in order to ensure that our matched pair results are robust to potentially incomplete controls through matching, we estimate a post-matching logistic regression that accounts for any remaining local covariate imbalance that remains after matching (Ho et al., 2007).

5. Results

5.1. Determinants of monitor incentives

Results from estimating equation (1) are reported in Table 4. We first consider whether there is consistent evidence with regard to our proxies for monitoring demands. Recall that predicted coefficients for our monitoring demand proxies rely both on the degree to which these

¹⁸ Rosenbaum (2002) defines overt bias as “one that can be seen in the data at hand,” which means that it is bias that is related to observable variables. In contrast, “hidden bias” is associated with the omission of relevant unobservable variables (i.e., correlated omitted variables).

proxies capture monitoring demand and whether firms believe incentives will enhance or impair monitoring efforts conditional on monitoring demand.

We find evidence of a positive relation between *Incentives* and our proxies for firm complexity. For example, the coefficients for *NumGeoSegs* and *Log(MVE)* when *Incentives = GCCompMix* are 0.008 (*t*-statistic = 4.82) and 0.050 (*t*-statistic = 4.86), respectively. If these proxies capture greater monitoring demand relating to firm complexity, then this evidence is consistent with firms expecting internal monitors' incentives to enhance their monitoring effort.

We find some evidence of a negative relation between *Incentives* and both *InstitOwnerPct* and *Log(ExtAudFees)*. In particular, the coefficient for *InstitOwnerPct* when *Incentives = IntAudCompMix* is -0.118 (*t*-statistic = -2.03). Likewise, the coefficient for *Log(ExtAudFees)* when *Incentives = GCCompMix* is -0.017 (*t*-statistic = -3.21). The interpretation of these coefficients depends on whether greater institutional ownership and external audit scope magnitude indicate greater demand for internal monitoring because these two are complements, or instead indicates a lower demand for internal monitoring because institutions and external auditors act as substitute monitors. If these variables proxy for greater internal monitoring demand, these negative coefficients are consistent with firms expecting incentives to impair monitoring effort. If these variables, instead, proxy for lower internal monitoring demand, then the results are consistent with firms expecting incentives to enhance monitoring effort.

Finally, we find evidence of a negative relation between *Incentives* and our proxy for the firm's litigation risk. For example, the coefficient for *PredLitRisk* when *Incentives = GCCompMix* is -0.225 (*t*-statistic = -1.89). If this proxy captures greater monitoring demand relating to firm risk exposure, then this evidence is consistent with firms expecting incentives to

impair monitoring effort. Interpreting the coefficient for *PredLitRisk* in this manner is difficult, however, since the association between *Incentives* and *PredLitRisk* will also be affected by compensation contracting demands. Since it is costly to impose compensation risk on a risk-averse agent, firms may choose to provide lower incentive compensation to internal monitors when these monitors are operating in environments with greater legal uncertainty. The negative coefficient for *PredLitRisk* is also consistent with this alternative inference.

Table 4 also provides some evidence that firms provide more performance based incentives when the internal monitor has a more direct role in the firm production function. For example, the coefficient for *PctLawyers* when *Incentives = GCCompMix* is 7.356 (*t*-statistic = 3.11). There is also some evidence that that internal monitors receive greater incentives when CEO incentives are high and when the internal monitor is of higher rank. Specifically, the coefficients for *CEOIncentives* and *ReportLvl* when *Incentives = GCCompMix* are 0.014 (*t*-statistic = 1.99) and -0.034 (*t*-statistic = -3.07), respectively. This indicates that there is a systematic component of firms' incentive compensation plans across senior executives. The relatively high (partial) correlation between the incentives of the internal monitors and the CEO after controlling for other features of the contracting environment (e.g., firm size and industry) also highlights why it is important to control for the firm-specific component of incentives in order to accurately identify the effect of internal monitors' incentives separate from those of the CEO.

5.2. Matched pair covariate balance

Table 5 reports results regarding covariate balance across the matched pairs of treatment (i.e., executives with relatively "high" incentives) and control (i.e., executives with relatively "low" incentives) observations. For all three incentives measures, Table 5 provides no evidence

that the characteristics of the underlying contracting environments differ either statistically or economically across the treatment and control groups. The first row of each panel of Table 5 also indicates that the propensity score matching algorithm successfully retains variation in the level of incentives across the matched samples. Retaining variation in the distributions of treatment variables is an important research design element since it helps to ensure that our subsequent tests of differences in adverse outcomes across the treatment and control groups are powerful (see Armstrong, Jagolinzer, and Larcker, 2009 for a discussion).

5.3. Internal monitor incentives and the frequency of adverse firm outcomes

Table 6 reports evidence of whether the contemporaneous and one year ahead frequency of adverse outcomes is higher or lower as a function of incentives provided to internal monitors.¹⁹ Since there is ambiguity regarding when incentives might induce an effect on adverse outcomes, we present results for both contemporaneous and one year ahead outcomes. If performance based incentives impair monitors' independence or otherwise compromise their monitoring ability, we should observe a greater frequency of class action damage periods, class action filings, financial reporting restatements, AAERs, and material weakness reports at firms that provide greater internal monitor performance based incentives (treatment firms) relative to firms that provide lower performance based incentives (control firms), after controlling for other factors that determine the economic contracting environment. If instead, performance based

¹⁹ Our formal statistical tests of the difference in outcomes are based on McNemar's (1947) statistic which assesses the significance of the discordant pairs. A pair of observations is said to be "concordant" if the subjects experience the same outcome (e.g., there is no adverse outcome at either firm) and "discordant" if they have experience different outcomes (i.e., one firm experiences an adverse outcome, but the other firm does not). McNemar's (1947) statistic is a special case of a sign-score statistic that takes the general form $T = t(Z, r) = \sum_{s=1}^S d_s \sum_{i=1}^2 c_{s,i} Z_{s,i}$ where each stratum $s \in S$ has $i = 1, 2$ matched pairs, $Z_{s,i}$ is the treatment given to subject i in stratum s , and d_s and $c_{s,i}$ are both continuous functions of the response r . McNemar's (1947) statistic is the special case where $d_s = 1$ and c is a binary indicator of the outcome so $c_{s,i} = 1$ if the outcome (i.e., an adverse outcome) occurs and $c_{s,i} = 0$ if the outcome does not occur. With small samples, the McNemars χ^2 may be misleading and an exact cumulative binominal test should be used (Liddell, 1983). Our inferences are unchanged when this exact test is used for evaluating the results in Table 6.

incentives enhance monitoring because they better align the internal monitors' interests with those of shareholders, we should observe either a lower frequency of adverse outcomes or no difference across the firms that supply these agents with high and low levels of performance based incentives.

The results in Table 6 indicate that there are fewer instances of adverse outcomes at firms that provide greater incentives to internal monitors. These results suggest that performance based incentives either align the interests of monitors with the interests of shareholders or enable firms to select better monitors. For example, Table 6 Panel A indicates that there are 20 (12 – 32) fewer incidences of contemporaneous enforcement action events (McNemar's p -value = 0.004) at firms that provide greater *GCCompMix*. Similarly, Panel B indicates that there are 10 (2 – 12) fewer one year ahead class action filing events (McNemar's p -value = 0.013) at firms that provide greater *GCPortDelta*. Likewise, Panel C indicates that there are also 10 (5 – 15) fewer one year ahead enforcement action events (McNemar's p -value = 0.041) for firms that provide greater *IntAudCompMix* incentives.

5.4. Sensitivity to hidden bias

We assess the sensitivity of statistically significant results by estimating the boundary Γ values for cases in which the McNemar's test p -values exceed 0.10 (two-tailed). Specifically, in the cases in which there is a statistically significant difference between the outcomes of the treatment and control groups, we calculate the value of Γ (or the odds ratio) at which a significance level of 0.10 would be obtained.²⁰ These Γ values allow us to quantify the amount of

²⁰ Rosenbaum (2002, section 4.3.2) illustrates how one can obtain threshold Γ estimates for the McNemar's test. Conceptually, the McNemar's test statistic relies on the chi-square distribution which is a function of the binomial distribution in the case where there are only two cells (i.e., treatment and control). The default probability of treatment (p) vs. control ($1-p$) for the binomial distribution is 0.5. To obtain threshold Γ estimates, one can iterate through alternative values of p until the resulting McNemar's test p -value converges to a predetermined insignificance level (e.g., 0.10, two-tail, for this study).

hidden bias necessary to invalidate the statistical significance that results from the assumption that two observations with identical propensity scores have an equal probability of receiving the treatment (i.e., high incentives).

We find that, in cases in which a statistically significant relationship is observed, a Γ value of between 1.046 and 2.287 is needed to reduce the statistical significance of the results to a 10% level (two-tail). Since no objective benchmark exists to determine whether these values for Γ are “large” or “small”, we consider the economic setting and the integrity of our propensity score estimation to draw an inference regarding the likelihood that reported results are affected by omitted variable bias.²¹ In our setting it seems unlikely that there exists some omitted factor(s) that would create an environment where one internal monitor would be approximately 1.5 times more likely to obtain greater levels of incentives than another, after matching on CEO incentives, firm size, year, governance, *ex ante* firm legal risk, and the other variables included in the propensity score model.²² Thus, several results are likely to be robust to hidden bias.

5.5. Sensitivity to potentially incomplete controls through matching

Inferences from Table 6 also rely on the assumption that propensity score matching effectively controls for the effects of the observable variables on the outcome of interest. Ho et al. (2007) suggest that this might not always be the case and propose that researchers use propensity score matching as a “preprocessing step”, and then include the variables from the propensity score model in a parametric estimation (e.g., logistic regression for binary outcomes) in the second step. Ho et al. (2007) note that “except in the extraordinary case where matching is exact, common parametric procedures have the potential to greatly improve causal inferences

²¹ The designation of “small” vs. “large” is subjective and depends on the reader’s prior beliefs as to the degree of endogenous selection on unobservable factors (e.g., risk-aversion, talent, and/or productivity) in contracting. Larger values of Γ , however, provide greater confidence that results are robust to hidden bias. Smaller values of Γ indicate that results are sensitive to hidden bias, thereby confounding inferences from the analysis.

²² However, it does appear that results with a $\Gamma = 1.046$ (Table 6, Panel C) are appropriately considered to be fragile.

even after matching”. The benefit of this approach is that pre-matching balances the variables over much of their support and any remaining “local” imbalance is controlled through parametric estimation.²³ Following Ho et al. (2007), we assess the sensitivity of our results by estimating logistic regressions of outcomes as a function of monitor incentives and the set of control variables outlined in equation (1) on a pre-matched sample.²⁴

Panel A (Panel B) of Table 7 reports results of the association between the three measures of incentives and the likelihood of a contemporaneous (one year ahead) adverse outcome.²⁵ Coefficient estimates for control variables are not reported for brevity. Consistent with results reported in Table 6, we find that the probability of an adverse firm outcome is decreasing in the level of internal monitor incentives.

6. Conclusion

An important unresolved question is whether it is desirable for firms to provide internal monitors with substantial performance based incentives. Although incentives may motivate monitors to provide valuable effort, the same incentives may also impair the efficacy of their monitoring activities. We examine the factors that are associated with the level of internal monitor incentives and the implications of this choice for alleviating or exacerbating agency problems within the firm.

Our evidence suggests that the GC and IA are provided greater incentives when their job duties contribute more to the firm’s production function. We also find evidence consistent with

²³ Although this regression technique requires assumptions about the correct parametric relationship (e.g., linearity) between the outcome and the control variables, Ho et al. (2007) note that the parametric relational assumption is more likely to be descriptive over the smaller post-matching range rather than over the entire support of the variable (which is implicit without matching).

²⁴ Since pre-matching achieves a sufficient degree of covariate balance, we do not have to eliminate any matched pairs from the sample. Accordingly, in this case, the procedure of Ho et al. (2007) is identical to estimating a logistic regression using the full sample.

²⁵ Some results are not provided in Table 7 because estimation convergence did not occur due to the relatively low frequency of adverse outcomes.

the existence of a systematic structure to the compensation program across senior executives. We also find that monitors receive lower incentives at firms with greater *ex ante* litigation risk, consistent with risk averse monitors demanding less performance based compensation when the business environment is risky. Finally, we find some evidence that internal monitors' incentives are a function of the demand for internal monitoring.

More importantly, our evidence suggests that there is a lower frequency of adverse outcomes at firms that provide their internal monitors with greater performance based incentives. This suggests that incentives align the monitor's interests with the interests of shareholders or allow shareholders to select better monitors. Our results are consistent across alternative measures of internal monitor incentives and a number of outcome variables that have been used by prior research to proxy for the existence of unresolved agency problems.

As is the case with other related studies that examine the implications of incentive compensation, it is difficult to draw causal inferences because compensation contracts undoubtedly result from an endogenous choice by the board of directors (acting on behalf of shareholders). Although, our results appear to be reasonably robust to correlated omitted variables (or hidden bias), we cannot conclusively rule out the possibility that our results are affected by this econometric concern. Nevertheless, our results suggest that performance based incentives do not impair the monitoring ability of the general counsel or the chief internal auditor.

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Table 1
Industry Composition of Sample

Industry	Proprietary Sample		Compustat	
	Number	Frequency	Number	Frequency
1. Mining and Construction	16	2.47%	1,263	2.75%
2. Food	43	6.64%	859	1.87%
3. Textiles, Printing and Publishing	42	6.48%	1,568	3.42%
4. Chemicals	61	9.41%	955	2.08%
5. Pharmaceuticals	26	4.01%	2,719	5.93%
6. Extractive Industries	27	4.16%	1,686	3.67%
7. Durable Manufacturers	194	29.94%	12,518	27.28%
8. Computers	11	1.70%	2,338	5.09%
9. Transportation	21	3.24%	2,907	6.33%
10. Utilities	62	9.57%	1,797	3.92%
11. Retail	53	8.18%	3,595	7.83%
12. Financial Institutions	46	7.10%	6,806	14.83%
13. Insurance and Real Estate	0	0.00%	2,096	4.57%
14. Services	37	5.71%	3,862	8.42%
15. Other	9	1.39%	920	2.00%
Total	648	100.00%	45,889	100.00%

This table presents the industry classification of the proprietary sample and the Compustat database over the 2002 to 2006 fiscal year end period. The number and frequency of the 648 sample firm-year observations and the Compustat database from 2002 – 2006 are reported according to their industry classification following Barth et al (1998).

Table 2
Descriptive Statistics

Variable	<i>n</i>	Mean	25th pctl	Median	75th pctl	Std Dev
Adverse Firm Outcomes						
<i>LitDmgYr_t</i>	648	0.104	0.000	0.000	0.000	0.305
<i>LitDmgYr_{t+1}</i>	648	0.086	0.000	0.000	0.000	0.280
<i>SuitYr_t</i>	648	0.056	0.000	0.000	0.000	0.230
<i>SuitYr_{t+1}</i>	648	0.039	0.000	0.000	0.000	0.194
<i>RstmtYr_t</i>	648	0.027	0.000	0.000	0.000	0.163
<i>RstmtYr_{t+1}</i>	468	0.027	0.000	0.000	0.000	0.162
<i>AAERYr_t</i>	648	0.017	0.000	0.000	0.000	0.128
<i>AAERYr_{t+1}</i>	468	0.012	0.000	0.000	0.000	0.111
<i>EnfmntYr_t</i>	648	0.071	0.000	0.000	0.000	0.257
<i>EnfmntYr_{t+1}</i>	648	0.075	0.000	0.000	0.000	0.264
<i>MWYr_t</i>	648	0.093	0.000	0.000	0.000	0.291
<i>MWYr_{t+1}</i>	648	0.090	0.000	0.000	0.000	0.287
Incentives Measures						
<i>GCCompMix</i>	648	0.745	0.673	0.780	0.857	0.158
<i>GCPortDelta</i> (\$thousand)	294	250	54	129	315	325
<i>GCTotalComp</i> (\$thousand)	648	2,459	974	1,724	3,106	3,037
<i>IntAudCompMix</i>	150	0.670	0.585	0.691	0.788	0.159
<i>IntAudTotalComp</i> (\$thousand)	150	996	474	766	1,145	1,069
Incentives Determinants						
<i>PctLawyers</i>	648	0.001	0.000	0.001	0.002	0.001
<i>NewPublicDebt_{t-1}</i>	648	0.200	0.000	0.000	0.000	0.402
<i>MVE</i> (\$mill)	648	18,780	2,247	6,740	16,225	39,949
<i>Leverage</i>	648	0.243	0.125	0.263	0.343	0.166
<i>PctOutsiders</i>	648	0.847	0.813	0.875	0.900	0.084
<i>OutsideChmn</i>	648	0.039	0.000	0.000	0.000	0.194
<i>PctBusyDir</i>	648	0.641	0.533	0.667	0.793	0.200
<i>NumDir</i>	648	10.65	9.000	10.000	12.000	2.373
<i>NumBdMeetings</i>	648	7.705	6.000	7.000	9.000	2.973
<i>NumGeoSegs</i>	648	3.059	2.000	3.000	4.000	1.927
<i>PredLitRisk</i>	648	0.041	0.019	0.028	0.043	0.049
<i>M&A</i>	648	0.071	0.000	0.000	0.000	0.257
<i>InstitOwnerPct</i>	648	0.670	0.563	0.677	0.785	0.182
<i>ReportLvl</i>	648	2.366	2.000	2.000	3.000	0.612
<i>ExtAuditFees</i> (\$thousand)	648	5,333	1,200	2,690	5,890	7,881
<i>CEOIncentives</i> (\$thousand)	648	1,857	345	785	1,643	4,860

LitDmgYr, *SuitYr*, *RstmtYr*, *AAERYr*, *EnfmntYr*, and *MWYr* are indicator variables that equal one if the firm year falls within a litigation damage period, law suit filing period, accounting restatement period, AAER period, general enforcement period, or material weakness report period, respectively. All variables equal zero otherwise. *GCCompMix* is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002). *GCTotalComp* is the dollar value of total compensation provided to the GC during the year. *IntAudCompMix* is the ratio of the chief internal auditor's contingent compensation (i.e., the sum of the annual bonus, restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *IntAudTotalComp* is the

dollar value of total compensation provided to the chief internal auditor during the year. *PctLawyers* is the ratio of the number of legal department employees to total firm employees. *NewPublicDebt* is a dichotomous variable that equals one if SDC indicates the firm issued new public debt during the calendar year and equals zero otherwise. *MVE* is the beginning market value of equity. *Leverage* is the ratio of total debt to book value of assets. *PctOutsiders* is the ratio of outside directors to total directors as provided by Equilar. *OutsideChmn* is a dichotomous variable that equals one if the chairman of the board of directors is classified as an outsider by Equilar and is zero otherwise. *PctBusyDir*s is the fraction of outside directors who serve simultaneously on at least two boards to total directors. *NumDir*s is the number of directors on the board. *NumBdMeetings* is the number of board meetings in the calendar year as provided by Equilar. *NumGeoSegments* is the beginning of year number of geographic segments in which the firm operates as provided by Compustat. *PredLitRisk* is the firm's expected class action litigation probability estimated in the year prior to the GC compensation year. *M&A* is a dichotomous variable that equals one if the firm engaged in an acquisition during the year, and is zero otherwise. *M&A* is specifically set equal to one if an acquisition contributed to sales during the year (Erickson, Hanlon, and Maydew, 2006). *InstitOwnerPct* is the percentage of outstanding shares designated as institutionally owned by CDA/Spectrum. *ExtAudFees* is the amount of fees paid to external auditors for the fiscal year as reported in Audit Analytics. *ReportLvl* is a rank variable that indicates the corporate level to which the monitor reports for supervision. Lower values indicate a higher reporting rank (e.g., *ReportLvl* = 1 indicates supervision by the board of directors or CEO). *CEOIncentives* is the portfolio delta computed for the firm's CEO. *t* is a subscript denoting calendar compensation year.

Table 3
Correlations

Spearman (Pearson) correlations above (below) the diagonal

Panel A. Adverse outcome determinants

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) <i>GCCompMix</i>		^a 0.60	^a 0.75	^a 0.11	^a 0.14	0.00	^a 0.50	^a 0.20	-0.01	^a -0.13	^b 0.07	^a 0.45	^b 0.09	0.03	^a 0.28
(2) <i>GCPortDelta</i>	^a 0.55		^a 0.48	-0.06	^a 0.22	0.07	^a 0.64	^a 0.17	0.06	^a -0.26	0.09	^a 0.69	0.07	^b 0.14	^a 0.40
(3) <i>IntAudCompMix</i>	^a 0.80	^a 0.51		-0.06	0.13	-0.09	^a 0.47	^b 0.19	-0.13	-0.09	0.05	^a 0.35	^a 0.26	0.10	^a 0.23
(4) <i>PctLawyers</i>	0.06	-0.07	-0.11		^a -0.15	-0.03	^c 0.07	0.05	^a -0.14	^a 0.12	^a 0.10	-0.02	^a -0.12	0.05	^a 0.10
(5) <i>NumGeoSegs</i>	^a 0.16	^a 0.26	0.12	^c -0.08		-0.02	^a 0.14	^c 0.07	^c 0.07	^b -0.09	0.00	^a 0.16	^b 0.09	^b 0.09	^b 0.25
(6) <i>M&A</i>	-0.01	0.06	-0.06	-0.04	-0.04		0.00	^c -0.07	^b 0.10	0.06	0.00	^b 0.08	-0.03	-0.00	-0.00
(7) <i>Log(MVE)</i>	^a 0.44	^a 0.65	^a 0.43	^c 0.07	^a 0.17	0.01		^a 0.33	^a -0.16	^a -0.17	^a 0.24	^a 0.67	^a 0.18	^a 0.26	^a 0.65
(8) <i>GovMonFactor</i>	^a 0.17	^a 0.17	^a 0.29	0.02	^b 0.09	-0.05	^a 0.32		^c -0.07	0.01	^a 0.10	^a 0.15	^b 0.10	0.05	^a 0.41
(9) <i>InstitOwnerPct</i>	-0.00	0.07	^c -0.14	^c -0.06	0.06	^a 0.10	^a -0.12	-0.03		0.01	-0.05	-0.02	-0.06	^b -0.09	-0.03
(10) <i>Leverage</i>	^a -0.16	^a -0.26	-0.07	^a 0.10	^c -0.08	0.05	^a -0.24	0.02	-0.04		^b 0.10	^a -0.24	^b -0.09	-0.03	-0.02
(11) <i>NewPublicDebt_{t-1}</i>	^b 0.08	0.10	0.03	^a 0.10	0.04	0.00	^a 0.24	^b 0.09	-0.04	0.05		^a 0.18	^a 0.11	^c 0.07	^a 0.22
(12) <i>CEOIncentives</i>	^a 0.37	^a 0.67	^a 0.35	-0.04	^a 0.18	^b 0.09	^a 0.64	^a 0.16	-0.02	^a -0.25	^a 0.16		^b 0.09	^a 0.15	^a 0.34
(13) <i>PredLitRisk</i>	^a 0.12	0.08	^a 0.22	0.06	0.05	-0.01	^a 0.41	^a 0.14	^b -0.09	^a -0.16	^a 0.14	^a 0.17		^b 0.09	^b 0.09
(14) <i>ReportLvl</i>	0.00	^b 0.15	0.03	^c 0.07	^b 0.08	-0.01	^a 0.26	0.04	-0.05	-0.04	^c 0.07	^a 0.14	0.04		^a 0.19
(15) <i>Log(AuditFees)</i>	^a 0.25	^a 0.40	^a 0.21	^b 0.08	^a 0.28	-0.01	^a 0.67	^a 0.39	-0.02	-0.02	^a 0.22	^a 0.32	^a 0.27	^a 0.16	

Table 3
Correlations

Panel B. Adverse firm outcomes

Variable	Pearson					
	<i>LitDmgYr_t</i>	<i>SuitYr_t</i>	<i>RstmtYr_t</i>	<i>AAERYr_t</i>	<i>EnfmntYr_t</i>	<i>MWYr_t</i>
<i>SuitYr_t</i>	^a 0.61					
<i>RstmtYr_t</i>	^a 0.30	0.02				
<i>AAERYr_t</i>	^a 0.12	0.04	0.05			
<i>EnfmntYr_t</i>	^a 0.18	^a 0.14	0.03	^a 0.19		
<i>MWYr_t</i>	^a 0.16	^a 0.15	^a 0.33	^b 0.08	^a 0.17	
<i>GCCompMix</i>	-0.02	^c -0.08	-0.04	0.02	-0.05	^b -0.09
<i>GCPortDelta</i>	-0.02	-0.02	-0.07	0.06	-0.10	^a -0.18
<i>IntAudCompMix</i>	0.07	-0.01	-0.05	0.07	-0.07	-0.07
<i>PctLawyers</i>	-0.01	0.00	^b -0.09	-0.02	^b 0.08	0.01
<i>NumGeoSegs</i>	0.04	0.02	0.03	-0.01	0.00	0.05
<i>M&A</i>	0.00	0.04	-0.05	-0.04	-0.01	-0.01
<i>Log(MVE)</i>	^a 0.23	^a 0.18	-0.06	0.04	^a 0.13	^a -0.12
<i>GovMonFactor</i>	0.06	0.06	^c -0.07	0.00	^a 0.17	0.03
<i>InstitOwnerPct</i>	-0.05	-0.03	-0.02	^c -0.07	^b -0.07	^c 0.06
<i>Leverage</i>	^c -0.07	-0.04	^c -0.08	-0.03	^c 0.07	0.03
<i>NewPublicDebt_{t-1}</i>	^a 0.14	^c 0.07	-0.04	-0.01	0.02	-0.01
<i>CEOIncentives</i>	^a 0.11	^a 0.09	-0.03	-0.03	-0.01	^a -0.11
<i>PredLitRisk</i>	^a 0.30	^a 0.18	0.01	0.06	^a 0.18	0.06
<i>ReportLvl</i>	0.04	-0.02	0.05	^b 0.08	0.02	^c -0.07
<i>Log(AuditFees)</i>	^a 0.20	^a 0.15	-0.04	0.04	^a 0.26	^a 0.12

^{a, b, c} denotes significance at the 0.01, 0.05, and 0.10 (two-tailed) level, respectively. *LitDmgYr*, *SuitYr*, *RstmtYr*, *AAERYr*, *EnfmntYr*, and *MWYr* are indicator variables that equal one if the firm year falls within a litigation damage period, law suit filing period, accounting restatement period, AAER period, general enforcement period, or material weakness report period, respectively. All variables equal zero otherwise. *GCCompMix* is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002). *IntAudCompMix* is the ratio of the internal auditor's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *PctLawyers* is the ratio of the number of legal department employees to total firm employees. *NumGeoSegs* is the beginning of year number of geographic segments in which the firm operates as provided by Compustat. *M&A* is an indicator variable that equals one if the firm engaged in an acquisition during the year and equals zero otherwise. *Log(MVE)* is the natural logarithm of market value of equity at the beginning of the year. *GovMonFactor* is a governance monitoring demand factor derived through principal components analysis (with orthogonal rotation) of a set of governance variables provided by Equilar: *OutsideChmn*, an indicator variable that equals one if the Chairman of the Board of Directors is classified as an outsider and equals zero otherwise; *PctOutsiders*, the ratio of outside directors to total directors; *PctBusyDir*, the fraction of outside directors who serve simultaneously on at least two boards; *NumDir*, the natural logarithm of the number of directors on the board; and *NumBdMeeting*, the number of board meetings in the calendar year. *InstitOwnerPct* is the percentage of outstanding shares designated as institutionally owned by CDA/Spectrum. *Leverage* is the ratio of total debt to book value of assets. *NewPublicDebt* is an indicator variable that equals one if Securities Data Corporation (SDC) indicates the firm issued new public debt during the calendar year and equals zero otherwise. *CEOIncentives* is the natural logarithm of the portfolio delta computed for the firm's CEO. *PredLitRisk* is the firm's expected class action litigation probability estimated in the year prior to the GC compensation year. *t* is a subscript denoting calendar compensation year. *ExtAudFees* is the amount of fees paid to external auditors for the fiscal year as reported in Audit Analytics. *ReportLvl* is a rank variable that indicates the corporate level to which the monitor reports for supervision. Lower values indicate a higher reporting rank (e.g., *ReportLvl* = 1 indicates supervision by the board of directors or CEO).

Table 4
GC and Internal Auditor Incentives Determinants

OLS regression of the determinants of GC and Internal Auditor Incentives

	Prediction	Incentives = <i>GCCompMix</i>		Incentives = <i>GCPortDelta</i>		Incentives = <i>IntAudCompMix</i>	
		Coeff	<i>t</i> -statistic	Coeff	<i>t</i> -statistic	Coeff	<i>t</i> -statistic
<i>Intercept</i>		0.402	4.58	2.947	1.98	0.315	1.59
<i>NumGeoSegs</i>	+/-	0.008	4.82	0.075	2.96	0.006	1.37
<i>Log(MVE)</i>	+/-	0.050	4.86	0.324	6.45	0.052	2.35
<i>GovMonFactor</i>	+/-	0.010	1.33	0.028	0.43	0.017	1.62
<i>InstitOwnerPct</i>	+/-	0.039	1.39	0.432	1.17	-0.118	-2.03
<i>Leverage</i>	+/-	-0.024	-1.07	-0.369	-1.41	0.040	0.43
<i>NewPublicDebt_{t-1}</i>	+/-	-0.006	-0.30	-0.199	-2.66	-0.020	-1.01
<i>Log(ExtAudFees)</i>	+/-	-0.017	-3.21	0.064	0.90	-0.019	-0.86
<i>PredLitRisk</i>	+/-	-0.225	-1.89	-2.898	-1.87	-0.039	-0.32
<i>PctLawyers</i>	+	7.356	3.11	-16.339	-0.36		
<i>M&A</i>	+	-0.014	-0.53	0.257	0.96	-0.037	-1.34
<i>CEOIncentives</i>	+	0.014	1.99	0.350	4.03	0.018	1.32
<i>ReportLvl</i>	-	-0.034	-3.07	0.044	0.40	-0.015	-0.96
<i>Monitor firm yr. obs.</i>		648		294		150	
<i>Adj. R²</i>		24.9%		56.4%		26.6%	

GCCompMix is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002). *IntAudCompMix* is the ratio of the internal auditor's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *Log(MVE)* is the natural logarithm of market value of equity at the beginning of the year. *GovMonFactor* is a governance monitoring demand factor derived through principal components analysis (with orthogonal rotation) of a set of governance variables provided by Equilar: *OutsideChmn*, an indicator variable that equals one if the Chairman of the Board of Directors is classified as an outsider and equals zero otherwise; *PctOutsiders*, the ratio of outside directors to total directors; *PctBusyDir*s, the fraction of outside directors who serve simultaneously on at least two boards; *NumDir*s, the natural logarithm of the number

of directors on the board; and *NumBdMeeting*, the number of board meetings in the calendar year. *InstitOwnerPct* is the percentage of outstanding shares designated as institutionally owned by CDA/Spectrum. *Leverage* is the ratio of total debt to book value of assets. *NewPublicDebt* is an indicator variable that equals one if Securities Data Corporation (SDC) indicates the firm issued new public debt during the calendar year and equals zero otherwise. *ExtAudFees* is the amount of fees paid to external auditors for the fiscal year as reported in Audit Analytics. *PredLitRisk* is the firm's expected class action litigation probability estimated in the year prior to the GC compensation year. *PctLawyers* is the ratio of the number of legal department employees to total firm employees. *NumGeoSegs* is the beginning of year number of geographic segments in which the firm operates as provided by Compustat. *M&A* is an indicator variable that equals one if the firm engaged in an acquisition during the year and equals zero otherwise. *t* is a subscript denoting calendar compensation year. *CEOIncentives* is the natural logarithm of the portfolio delta computed for the firm's CEO. *ReportLvl* is a rank variable that indicates the corporate level to which the monitor reports for supervision. Lower values indicate a higher reporting rank. *t*-statistics are adjusted for firm and year clusters (Gow et al., 2010).

Table 5
Covariate Balance between the Matched Pairs

Test statistics of covariate distributions for the treatment (high *Incentives*) and the control (low *Incentives*) groups

Panel A. Incentives = *GCCompMix* (n = 324 matched pairs)

	Mean Treatment	Mean Control	Median Treatment	Median Control	t-test difference p-value	KS bootstrap difference p-value
<i>GCCompMix</i>	0.812	0.679	0.834	0.724	0.000	0.000
<i>PctLawyers</i>	0.001	0.001	0.001	0.001	0.045	0.169
<i>NewPublicDebt_{t-1}</i>	0.207	0.198	0.000	0.000	0.770	0.822
<i>Log(ExtAudFees)</i>	14.823	14.811	14.802	14.732	0.894	0.870
<i>ReportLvl</i>	2.359	2.347	2.000	2.000	0.796	0.579
<i>Log(MVE)</i>	8.772	8.724	8.832	8.854	0.678	0.622
<i>Leverage</i>	0.245	0.237	0.241	0.229	0.504	0.359
<i>PctOutsiders</i>	0.844	0.852	0.875	0.875	0.208	0.707
<i>OutsideChmn</i>	0.043	0.046	0.000	0.000	0.854	0.930
<i>PctBusyDirs</i>	0.627	0.633	0.636	0.667	0.702	0.351
<i>InstitOwnerPct</i>	0.669	0.677	0.688	0.681	0.570	0.515
<i>Log(1+NumDirs)</i>	2.436	2.426	2.398	2.398	0.510	0.261
<i>NumBdMeetings</i>	7.759	7.681	7.000	7.000	0.743	0.780
<i>NumGeoSegs</i>	3.056	3.065	3.000	3.000	0.951	0.890
<i>PredLitRisk</i>	0.043	0.039	0.029	0.028	0.327	0.144
<i>M&A</i>	0.074	0.068	0.000	0.000	0.760	0.818
<i>CEOIncentives</i>	13.496	13.501	13.546	13.517	0.961	0.607

Panel B. Incentives = *GCPortDelta* (n = 147 matched pairs)

	Mean Treatment	Mean Control	Median Treatment	Median Control	t-test difference p-value	KS bootstrap difference p-value
<i>GCPortDelta</i>	12.182	11.293	12.232	11.364	0.000	0.000
<i>PctLawyers</i>	0.001	0.001	0.001	0.001	0.704	0.938
<i>NewPublicDebt_{t-1}</i>	0.190	0.136	0.000	0.000	0.208	0.233
<i>Log(ExtAudFees)</i>	14.761	14.855	14.773	14.732	0.455	0.404
<i>ReportLvl</i>	2.320	2.252	2.000	2.000	0.265	0.483
<i>Log(MVE)</i>	8.595	8.588	8.654	8.783	0.966	0.933
<i>Leverage</i>	0.249	0.260	0.230	0.246	0.582	0.177
<i>PctOutsiders</i>	0.848	0.850	0.875	0.875	0.833	0.876
<i>OutsideChmn</i>	0.027	0.027	0.000	0.000	1.000	1.000
<i>PctBusyDirs</i>	0.614	0.637	0.667	0.667	0.314	0.573
<i>InstitOwnerPct</i>	0.687	0.680	0.697	0.677	0.747	0.796
<i>Log(1+NumDirs)</i>	2.412	2.394	2.398	2.398	0.410	0.149
<i>NumBdMeetings</i>	7.803	8.232	7.000	7.000	0.268	0.342
<i>NumGeoSegs</i>	3.252	2.844	3.000	2.000	0.088	0.240
<i>PredLitRisk</i>	0.042	0.040	0.027	0.027	0.772	0.863
<i>M&A</i>	0.048	0.075	0.000	0.000	0.332	0.383
<i>CEOIncentives</i>	13.393	13.322	13.494	13.397	0.640	0.318

Table 5 (cont'd)
Covariate Balance between the Matched Pairs

Test statistics of covariate distributions for the treatment (high *Incentives*) and the control (low *Incentives*) groups

Panel C. Incentives = *IntAudCompMix* (n = 75 matched pairs)

	Mean Treatment	Mean Control	Median Treatment	Median Control	t-test difference p-value	KS bootstrap difference p-value
<i>IntAudCompMix</i>	0.746	0.621	0.770	0.662	0.000	0.000
<i>PctLawyers</i>	0.001	0.001	0.001	0.001	0.932	0.400
<i>NewPublicDebt_{t-1}</i>	0.296	0.296	0.000	0.000	1.000	1.000
<i>Log(ExtAudFees)</i>	15.242	15.205	15.372	15.255	0.855	0.720
<i>ReportLvl</i>	3.056	3.056	3.000	3.000	1.000	0.583
<i>Log(MVE)</i>	9.510	9.548	9.507	9.499	0.882	0.881
<i>Leverage</i>	0.222	0.227	0.245	0.227	0.838	0.962
<i>PctOutsiders</i>	0.845	0.846	0.857	0.866	0.967	0.761
<i>OutsideChmn</i>	0.019	0.056	0.000	0.000	0.313	0.450
<i>PctBusyDirs</i>	0.695	0.643	0.721	0.679	0.174	0.505
<i>InstitOwnerPct</i>	0.642	0.651	0.628	0.648	0.693	0.814
<i>Log(1+NumDirs)</i>	2.551	2.547	2.565	2.485	0.905	0.350
<i>NumBdMeetings</i>	8.704	7.759	8.000	7.000	0.198	0.802
<i>NumGeoSegs</i>	3.074	3.630	3.000	2.500	0.218	0.745
<i>PredLitRisk</i>	0.060	0.048	0.031	0.035	0.368	0.545
<i>M&A</i>	0.019	0.037	0.000	0.000	0.563	0.763
<i>CEOIncentives</i>	13.923	13.847	13.897	13.842	0.741	0.965

GCCompMix is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002). *IntAudCompMix* is the ratio of the internal auditor's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *PctLawyers* is the ratio of the number of legal department employees to total firm employees. *NumGeoSegs* is the beginning of year number of geographic segments in which the firm operates as provided by Compustat. *M&A* is an indicator variable that equals one if the firm engaged in an acquisition during the year and equals zero otherwise. *Log(MVE)* is the natural logarithm of market value of equity at the beginning of the year. *GovMonFactor* is a governance monitoring demand factor derived through principal components analysis (with orthogonal rotation) of a set of governance variables provided by Equilar: *OutsideChmn*, an indicator variable that equals one if the Chairman of the Board of Directors is classified as an outsider and equals zero otherwise; *PctOutsiders*, the ratio of outside directors to total directors; *PctBusyDirs*, the fraction of outside directors who serve simultaneously on at least two boards; *NumDirs*, the natural logarithm of the number of directors on the board; and *NumBdMeeting*, the number of board meetings in the calendar year. *InstitOwnerPct* is the percentage of outstanding shares designated as institutionally owned by CDA/Spectrum. *Leverage* is the ratio of total debt to book value of assets. *NewPublicDebt* is an indicator variable that equals one if Securities Data Corporation (SDC) indicates the firm issued new public debt during the calendar year and equals zero otherwise. *CEOIncentives* is the natural logarithm of the portfolio delta computed for the firm's CEO. *PredLitRisk* is the firm's expected class action litigation probability estimated in the year prior to the GC compensation year. *t* is a subscript denoting calendar compensation year. *ExtAudFees* is the amount of fees paid to external auditors for the fiscal year as reported in Audit Analytics. *ReportLvl* is a rank variable that indicates the corporate level to which the monitor reports for supervision. Lower values indicate a higher reporting rank (e.g., *ReportLvl* = 1 indicates supervision by the board of directors or CEO).

Table 6
Outcome Frequencies

Observed outcomes for the treatment (T = high incentives) and the control (C = low incentives) groups

Panel A. *GCCompMix* as Incentives Measure

<i>Outcome</i>	<i>Contemporaneous</i>					<i>One Year Ahead</i>				
	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ
Class Action Damage Pd	646	26	40	0.109		646	29	28	1.000	
Class Action Filing	646	10	24	0.024	1.332	646	12	14	0.845	
Restatement	646	10	8	0.815		468	8	7	1.000	
AAER	646	4	8	0.388		468	2	4	0.688	
Enforcement Action	646	12	32	0.004	1.548	646	14	33	0.008	1.507
Material Weakness	646	19	38	0.016	1.246	646	23	36	0.117	

Panel B. *GCPortDelta* as Incentives Measure

<i>Outcome</i>	<i>Contemporaneous</i>					<i>One Year Ahead</i>				
	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ
Class Action Damage Pd	294	7	21	0.013	1.711	294	10	16	0.327	
Class Action Filing	294	2	13	0.007	2.287	294	2	12	0.013	1.942
Restatement	294	3	4	1.000		206	3	3	1.000	
AAER	294	3	1	0.625		206	1	1	1.000	
Enforcement Action	294	8	19	0.052	1.353	294	8	18	0.076	1.164
Material Weakness	294	8	19	0.052	1.353	294	12	14	0.845	

Panel C. *IntAudCompMix* as Incentives Measure

<i>Outcome</i>	<i>Contemporaneous</i>					<i>One Year Ahead</i>				
	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ	<i>n</i>	<i>T</i>	<i>C</i>	<i>MN p</i>	Γ
Class Action Damage Pd	150	8	13	0.383		150	8	12	0.503	
Class Action Filing	150	3	5	0.727		150	4	4	1.000	
Restatement	150	3	3	1.000		108	1	2	1.000	
AAER	150	2	5	0.453		108	0	3	0.250	
Enforcement Action	150	5	13	0.096	1.046	150	5	15	0.041	1.348
Material Weakness	150	3	7	0.344		150	6	9	0.607	

GCCompMix is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price. The value of stock and restricted stock is assumed to change dollar-for-dollar with changes in the price of the underlying stock. The value of stock options is assumed to change according to the option's delta, which is the derivative of its Black-Scholes value with respect to the price of the underlying stock. Annualized volatility is calculated using continuously compounded monthly returns over the prior 36 months (with a minimum of 12 months of returns). The risk-free rate is calculated using interpolated interest rate on a Treasury Note with the same maturity (to the closest month) as the remaining life of the option multiplied by 0.7 to account for the prevalence of early-exercise. Dividend Yield is calculated as the dividends paid over the last 12 months scaled by the stock price at the beginning of the month. This is essentially the same method described by Core and Guay (2002). *IntAudCompMix* is the ratio of the chief internal auditor's contingent compensation (i.e., the sum of the annual bonus, restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *MN p* is the *p*-value derived from a McNemar's (1947) test.

Table 7
Sensitivity Analysis: Pre-Matched Logistic Regression
 Logistic regression of the determinants of adverse firm outcomes

Panel A. Contemporaneous outcomes

	<i>n</i>	<i>LitDmgYr_t</i>		<i>SuitYr_t</i>		<i>RstmtYr_t</i>		<i>AAERYr_t</i>		<i>EnfmntYr_t</i>		<i>MWYr_t</i>	
		Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>
<i>GCCompMix</i>	646	-2.521	-2.836	-4.040	-3.925	0.202	0.101	0.795	0.329	-2.627	-2.480	-0.788	-0.725
<i>GCPortDelta</i>	294	-0.929	-2.994	-1.146	-2.700	-0.103	-0.159	n/a		-1.508	-3.672	-0.830	-2.292
<i>IntAudCompMix</i>	150	-0.227	-0.092	-0.997	-0.322	-5.553	-1.252	6.063	0.823	-3.427	-1.062	-11.901	-1.628

Panel B. One year ahead outcomes

	<i>n</i>	<i>LitDmgYr_{t+1}</i>		<i>SuitYr_{t+1}</i>		<i>RstmtYr_{t+1}</i>		<i>AAERYr_{t+1}</i>		<i>EnfmntYr_{t+1}</i>		<i>MWYr_{t+1}</i>	
		Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>	Coeff	<i>t-stat</i>
<i>GCCompMix</i>	468	0.178	0.141	-0.571	-0.352	-1.105	-0.593	1.889	0.487	-2.194	-2.138	-1.252	-1.248
<i>GCPortDelta</i>	206	-0.459	-1.407	-0.720	-1.565	n/a		n/a		-1.350	-3.318	0.153	0.514
<i>IntAudCompMix</i>	108	0.070	0.024	-1.223	-0.260	n/a		n/a		-1.593	-0.533	n/a	

LitDmgYr, *SuitYr*, *RstmtYr*, *AAERYr*, *EnfmntYr*, and *MWYr* are indicator variables that equal one if the firm year falls within a litigation damage period, law suit filing period, accounting restatement period, AAER period, general enforcement period, or material weakness report period, respectively. All variables equal zero otherwise. *GCCompMix* is the ratio of the GC's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *GCPortDelta* is the (risk-neutral) dollar change in the GC's equity portfolio value for a 1% change in the firm's stock price (Core and Guay, 2002). *IntAudCompMix* is the ratio of the internal auditor's contingent compensation (i.e., the sum of the annual bonus, and the grant date values of restricted stock, stock option, and equity-based long-term incentive plan grants) to total compensation. *n* is the number of observations for the most restrictive estimations (*RstmtYr* and *AAERYr* regressions). Standard errors are corrected for firm and year clusters to adjust for potential correlation (Gow, Ormazabal, and Taylor, 2009). Coefficients for control variables are not reported for brevity. n/a denotes cases where the logistic estimation did not converge due to very small variance in the outcome variable.