



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of Corporate Finance

journal homepage: www.elsevier.com/locate/jcorpfin

Influential independent directors' reputation incentives: Impacts on CEO compensation contracts and financial reporting[☆]

Ronald W. Masulis^a, Shawn Mobbs^{b,*}

^a UNSW School of Business, University of New South Wales, Sydney, NSW 2052, Australia

^b Culverhouse College of Business, University of Alabama, Tuscaloosa, AL 35487, United States of America

ARTICLE INFO

JEL classification:

G30
G32
G34

Keywords:

Independent directors
Reputation incentives
CEO compensation
Earnings management

ABSTRACT

We study how reputation incentives of influential independent directors (those holding multiple directorships) affect CEO compensation and firm financial reporting decisions. We find that CEO equity-based incentives, measured by CEO delta, vega and the number of equity grants are positively related to these directors' reputation incentives. These director reputation incentives also mitigate the perverse CEO incentives to inflate earnings, which arise from such high-powered compensation structures, by motivating increased board monitoring to limit discretionary accruals and real activity-based earnings management. These findings are invariant to endogeneity adjustments under multiple approaches, including exogenous changes in reputation incentives.

A major function of a corporate board of directors is to mitigate serious management-shareholder agency conflicts arising from a separation of ownership and control. An important internal governance mechanism used by boards for this purpose is CEO equity-based compensation that links pay to firm performance.¹ However, equity-based pay raises a CEO's risk bearing and incentives to inflate earnings as a way to improve reported firm performance and short-term stock prices (Cheng and Warfield (2005), Bergstresser and Philippon (2006), Burns and Kedia (2006)). To protect shareholder interests, boards that award greater CEO equity-based compensation need to more closely monitor firm financial reports; a critical information source for shareholders and boards, which can strongly influence financial performance ratios and short-term stock prices. Within a board, independent directors (IDs) are widely viewed as the agents most responsible for protecting shareholder interests.² However, ID incentives to closely monitor management and their board influence vary widely, leading to very different board decisions concerning CEO compensation structure and financial reporting quality.³

[☆] This paper has benefited from comments and suggestions from Anup Agrawal, SP Kothari, David Reeb, Gwenael Roudaut, an anonymous referee and seminar participants at Cambridge University, Fordham University, London Business School, Macquarie University, National University of Singapore, Norwegian School of Economics Rutgers University and Yeshiva University.

* Corresponding author at: 200 Alston Hall Box 870224, 361 Stadium Drive, Tuscaloosa, AL 35487, United States of America.

E-mail addresses: ron.masulis@unsw.edu.au (R.W. Masulis), smobbs@cba.ua.edu (S. Mobbs).

¹ Holmstrom and Tirole (1993) show that incentive pay is a valuable device for aligning the interests of managers and shareholders, and the stock price is more forward looking than accounting benchmarks, making stock and option awards an important dimension of optimal managerial compensation.

² Recent studies find independent directors are primary monitors of firm performance (Knyazeva et al. (2013), Armstrong et al. (2014), Coles et al. (2014), Falato, Kadyrzhanova and Lel (2014), Guo and Masulis (2015), Masulis and Zhang (2019), Ellis et al. (2020) and Souther (2021).

³ For example, Mehran (1995) documents a positive relationship between more IDs and CEO equity-based compensation, while Ferreira et al. (2011) find a negative relationship between the two governance mechanisms.

<https://doi.org/10.1016/j.jcorpfin.2023.102449>

Received 25 May 2022; Received in revised form 19 June 2023; Accepted 3 July 2023

Available online 5 July 2023

0929-1199/Published by Elsevier B.V.

A common metric of a director's influence is based on his/her recognized talent or quality, which is often measured as the number of directorships the individual director holds since this generally implies more board experience and a greater demand for director services (e.g., Fama and Jensen (1983), Shivdasani (1993), Shivdasani and Yermack (1999) and Masulis and Mobbs (2014)). Thus, IDs with multiple directorships should generally be more influential in a boardroom (Ferris, Jagannathan and Pritchard (2003), Field et al. (2013) and Coles, Daniels, Durrani and Naveen (2021)).⁴ Among influential independent directors (IIDs), it is important to consider variation in their incentives to closely monitor managers at the firms where they serve on boards. Following Masulis and Mobbs (2014), we view IID reputation incentives to depend on a firm's visibility relative to the other firms where the same director sits on the board. When a directorship is relatively more (less) prestigious, directors have stronger (weaker) incentives to monitor more diligently since their board actions are more visible to investors.⁵ We view an IID on a board to have stronger reputation incentives if this is a more prestigious board, defined as the board of a firm that is at least 10% larger in market capitalization than the smallest firm where the same director serves on the board. We define an IID with weak reputation incentives in an analogous fashion. The remaining IIDs who do not meet either criterion are viewed as having average reputation incentives.

To measure the impact of IIDs on board decisions, we create two firm-level measures of IID reputation incentives based on the proportion of IIDs with particularly strong versus weak reputation incentives relative to the total number of IDs on the board. When the board includes a larger proportion of IIDs with strong (weak) reputation incentives, we expect to observe that board decisions produce greater (lesser) CEO-shareholder alignment of interests. Our analysis explores the power of IID reputation incentives to explain why boards differ in their use of CEO equity-based incentives and in the quality of financial reporting that they demand. More (less) CEO equity-based compensation is generally viewed as improving CEO-shareholder alignment of interests (e.g., Lambert and Larcker (1987), Morck et al. (1988), Mehran (1995), Edmans et al. (2012), Edmans et al. (2017) and Bettis et al. (2018)).⁶ Likewise, higher quality financial reports are also viewed as improving CEO-shareholder alignment of interests.

We begin our analysis by examining CEO compensation structure with a primary focus on pay-for-performance incentives captured by annual stock and option grants and existing CEO stock holdings. Our first finding is that when boards have a larger representation by IIDs with strong (weak) reputation incentives, CEOs have higher (lower) deltas, which is the dollar change in CEO wealth for a 1% change in a firm's stock price, and a greater percentage of their compensation is equity-based.

We also analyze a CEO's option-based compensation, which helps reward risk-averse CEOs for accepting greater firm risk. We first examine the percentage of CEO compensation that is option based and find evidence that the boards that have greater representation by IIDs with stronger (weaker) reputation incentives pay a larger (smaller) fraction of CEO compensation in option grants. We then examine CEO vega, which represents the sensitivity of a manager's wealth to a 1% change in stock return volatility, as our primary measure of CEO risk taking incentives. We find a significantly higher CEO vega when boards have greater representation by IIDs with stronger reputation incentives.

Finally, we examine two types of restrictions that boards impose on CEOs and their compensation. First, we consider the number of grants issued and the vesting periods imposed on those grants. Not only do we find that greater director reputation incentives are associated with more CEO equity grant awards, but when the compensation committee has stronger reputation incentives, the awards are associated with longer vesting periods. Second, we assess the frequency that boards impose minimum personal investment in firm shares or a minimum shareholding requirement on a CEO that is aimed at strengthening a manager's long-term equity-based incentives, while leaving compensation unaltered. We find that boards with a larger fraction of IIDs with stronger reputation incentives are more likely to impose minimum shareholding requirement on CEOs, particularly when the compensation committee has stronger reputation incentives. In summary, we find clear evidence that IID reputation incentives are positively related to CEO risk-taking incentives and the fraction of CEO compensation closely tied to firm performance. Moreover, we document evidence that the alignment of CEO and shareholder interests motivates these CEO compensation contract features when the board has stronger reputation incentives. When boards have stronger (weaker) reputation incentives they are also more (less) likely to put forth a proposal to give shareholders a periodic say-on-pay advisory vote. Among firms that do put forth say-on-pay proposals, those whose boards have stronger reputation incentives are more likely to recommend giving shareholders an annual say-on-pay vote. Finally, executive compensation proposals receive significantly greater shareholder support at boards with stronger reputation incentives.

It is widely documented that CEO compensation incentives and firm financial reporting quality are closely related. Stronger CEO performance incentives or risk-taking incentives are positively related to their incentives to manage earnings or misreport accounting performance. Importantly, more earnings management or earnings inflation weakens CEO-shareholder alignment of interests by undercutting the performance incentives embedded in CEO compensation (e.g., see Leuz et al. (2003), Cheng and Warfield (2005), Bergstresser and Philippon (2006), Burns and Kedia (2006) and Hazarika et al. (2012) for performance incentives and see Armstrong, Larcker, Ormazabal and Taylor (2013) for risk-taking incentives). Well performing boards should actively discourage this type of behavior. However, the extant research linking CEO compensation and financial reporting has not explored the impacts of heterogeneity in ID monitoring incentives or in ID influence on the level of board monitoring of firm financial statements. Thus, we next examine if IID reputation incentives are related to the level of board monitoring of financial reporting quality. We predict that boards

⁴ Of course, this does not invariably lead to beneficial shareholder outcomes since IDs on multiple boards can be overly busy (Fich and Shivdasani (2006)).

⁵ Greater visibility in the director labor market strengthens their reputation incentives and a large literature finds that directors who are poor monitors face subsequent labor market penalties. See for example Fama (1980), Gilson (1990), Kaplan and Reishus (1990), Yermack (2004), Fich and Shivdasani (2007), Jiang et al. (2016), Levit and Malenko (2016), Ferreira et al. (2018), and Aggarwal et al. (2019).

⁶ See Masulis (2020) for a survey of recent studies on boards of directors.

having a larger proportion of IIDs with stronger (weaker) reputation incentives more (less) closely monitor a firm's financial accounting reports to enhance their reliability and further strengthen (weaken) CEO-shareholder alignment of interests. To examine this question, we assess the degree of earnings management that is acceptable to a firm's board of directors.

In studying financial reporting quality, we focus on earnings inflation both through accruals-based and real earnings management following the recent accounting literature (Jones (1991), Dechow et al. (1995), Armstrong et al. (2013), Roychowdhury (2006) and Cohen et al. (2008)). We find a consistent body of evidence that the proportion of IIDs with stronger reputation incentives are associated with more reliable financial reporting in terms of accruals-based and real earnings management. We also find that greater audit committee representation by IIDs with stronger reputation incentives is associated with significantly less real earnings management, which underscores the importance of the reputation incentives of this key committee's members. Overall, these results suggest that stronger reputation incentives of IIDs lead to better CEO performance incentives and greater shareholder value.

To address endogeneity concerns and to separate the impact of individual director reputation incentives from general board incentives associated with a firm's size or its general economic importance, we conduct several robustness tests. First, we create a matched sample of firms based on firm size and continue to find that boards having more IIDs with stronger reputation incentives are associated with significantly lower accrual-based earnings management, whereas boards having more IIDs with weaker reputation incentives are associated with lower CEO delta. Second, we exploit exogenous positive shocks to individual IIDs' reputation incentives. These shocks are due to a relatively large decline (15% or more) in the equity capitalization of a second firm where the same IID sits on the board, which in the prior year had a significantly higher equity capitalization, and where the second firm's equity capitalization declines sufficiently to reverse the IID's ranking of the two directorships.

We then conduct a difference-in-differences (DiD) analysis with respect to our two primary results using this sample of treatment firms and a closely matched sample of control firms in the same industry and with similar market capitalization. We find that when the individual IID's reputation incentives exogenously rise at the first firm, this leads to a rise in its CEO's delta and to a reduction in a firm's earnings management. These causal results are important in part because (1) corporate financial reporting quality and manager compensation incentives are endogenously determined (Yang et al. (2021)) and (2) corporate financial reporting quality and board independence can be jointly determined (Armstrong, Core and Guay (2014)). Therefore, these exogenous shock-based findings reduce concerns that our major findings are endogenously driven by non-causal correlations of board characteristics and CEO incentives.

In additional robustness analysis, we consider two alternative reputation measures for directors. The first measure is based on a firm's relative size in the economy, so that we can further assess whether reputation incentives directly related to a firm's size in the economy could explain some of our findings. For example, some prior researchers argue that a firm's relative size in the economy is one measure of prestige (or a reputation incentive) for its directors (Yermack (2004), Ryan and Wiggins (2004), Fich (2005), Adams and Ferreira (2008), Kuhnen and Niessen (2012)). Crucially, this reputation incentive can exist regardless of whether an individual director holds other directorships. To capture the reputation incentives arising from board prestige, we create equity capitalization-based reputation measures. This pair of measures captures the strong or weak reputation incentives shared equally by all the board's directors based on the firm's visibility relative to all listed firms in the economy. These measures recognize that director reputation incentives exist even when a board lacks any influential IIDs. In this way, we extend the earlier analysis of Masulis and Mobbs (2014). We find evidence that these board reputation measures are also significantly associated with CEO pay-performance sensitivity and with real earnings management, while the impact of individual IID reputation incentives remains statistically significant.

Finally, we use media attention-based measures to capture a board's relative prestige for individual IIDs who sits on multiple boards. These measures of strong and weak reputation incentives are based on the level of media attention a focal firm attracts relative to that of the other firms where the same IIDs also serve as board members. With these media-based attention measures, we again find that firms with a larger fraction of IIDs who view this as a more prestigious board are associated with significantly greater CEO delta and lower real and accrual-based earnings management.

In summary, we provide an array of evidence that stronger reputation incentives of IIDs motivates boards to monitor more diligently, rather than to turn a blind eye to a CEO's financial incentives to inflate short-term operating performance measures. Our findings highlight the importance of recognizing that the reputation incentives of individual IIDs can differ and these differences when weighted by the fractions of IIDs holding them lead to observable differences in CEO compensation structure and firm accounting statement quality. Thus, focusing simply on a board's independence level ignores important differences among independent directors in terms of their experience, influence and reputation incentives.

Understanding how director reputation incentives differ is especially important in the post-Sarbanes-Oxley era since most S&P 1500 boards are composed almost entirely of IIDs. More generally, our findings uncover an important link between a firm's external and internal corporate governance mechanisms, as the reputation incentives of IIDs on a board, and especially IIDs, on a board are strongly influenced by the external labor market for directors. This, in turn, significantly affects CEO compensation structure and financial reporting quality.

1. Related literature and contributions

An important stream of compensation literature documents that raising equity-based CEO compensation improves manager-shareholder alignment of interests, but it creates unwanted CEO incentives to manipulate reported firm performance (Leuz (2003), Cheng and Warfield (2005), Bergstresser and Philippon (2006), Burns and Kedia (2006), Hazarika et al. (2012), and Edmans et al. (2017)). First, greater equity-based compensation increases managerial ownership, which given their risk aversion raises a manager's incentives to periodically sell some firm stock for diversification purposes (Ofek and Yermack (2000)), which in-turn creates incentives to manipulate short-term earnings prior to these sales (Beneish and Vargus (2002)). Second, raising accounting earnings generally

raises a firm's stock price (Stein (1989)) and earnings and stock prices can determine if a CEO falls short or exceeds stock- and accounting-based performance hurdles (performance vesting).

Boards also create incentives to encourage firm risk-taking by poorly diversified CEOs. Risk-taking incentives are typically based on stock option grants that introduce convexity in CEO pay-for-performance contracts (e.g., Murphy (2013) and Sitorus et al. (2020)).⁷ However, Peng and Röell (2008b) and Armstrong et al., 2013 show that option-based compensation also produces an unintended side effect of raising CEO incentives to focus on short-term share price and to manipulate earnings upward. These CEO misreporting incentives are exacerbated by performance hurdles embedded in equity grants that in recent years are very common (e.g., Carter et al. (2009), ISS (2013) and Bettis et al. (2018)). In practice, CFOs view executive compensation as a major reason for earnings misrepresentations (Dichev et al. (2013)). Thus, if undeterred, earnings management can raise CEO performance-based pay and the likelihood of meeting performance vesting thresholds, while lowering CEO pay-performance sensitivity and the threat of forced termination, which seriously weaken the effectiveness of CEO performance incentives.

It is possible that the threat of being caught can deter risk-averse CEOs from engaging in financial misreporting (Armstrong et al. (2013) and Karpoff et al. (2008a, 2008b)), although it is unclear whether exploiting accounting discretion within FASB guidelines creates sufficient risk to deter managers from less extreme misreporting activities (e.g., see Fischer and Verrecchia (2000), Zakolyukina (2018) and Dichev et al. (2013)). More concerning, Amiram et al. (2020) recently report that even extreme misreporting can benefit a significant portion of these managers.⁸ They argue that an important implication of their findings is that given current CEO performance incentives, boards need to monitor financial statements more carefully for misreporting than was necessary in the past.

Peng and Röell (2008a) argue that more board monitoring of financial statements allows “investors to make better inferences about the degree to which management's reports are inflated” (p. 287), which should lead to stock prices more accurately reflecting firm performance (Ferri et al. (2018)). Prior empirical studies of reporting quality show that boards with more IDs are associated with better financial statement quality or earnings informativeness, in part because greater reporting quality complements director monitoring (e.g., Beekes et al. (2004); Petra (2007); Ahmed and Duellman (2007); Ferreira et al. (2011) and Armstrong et al. (2014)).

Given the above concerns about CEO compensation contracts, a decision to use equity-based compensation to motivate CEOs is likely to cost reputable directors both time and effort due to a need for increased monitoring. Raising CEO risk-bearing through greater pay-performance sensitivity also can mean IDs can expect to bear another cost. CEOs unhappy with the greater risk bearing that directors impose on them can in response seek to derail these directors' future re-nominations to the board. Given these reappointment concerns, boards are more likely to rely on directors with the most experience and talent, which is typically reflected in such directors holding multiple directorships (e.g., Fama and Jensen (1983), Shivdasani (1993) and others).

We seek to understand the mechanisms through which a board can improve actual CEO financial performance incentives by deterring misreporting. Laux and Laux (2009) develop a model of board decision making that accomplishes this goal by separating boards into directors who determine CEO compensation (compensation committee) and directors who monitor financial reporting (audit committee). Our results reveal that director reputation is another such mechanism. Specifically, our findings reveal a more nuanced relationship between IIDs and CEO equity-based pay depending on an individual director's reputation incentives. This finding is in the spirit of Chen et al. (2020) who show theoretically that director expertise can be positively or negatively related to CEO equity-based pay, depending on a board's independence level. When independence is high (low), board expertise and CEO equity incentives act as substitutes (complements).

Our results show the relation between IIDs and CEO equity-based pay varies with individual director's reputation incentives. When IID reputation incentives are strong, the equilibrium level of CEO equity-based compensation is higher and directors more closely monitor financial reports. Conversely, when these reputation incentives are weak, the equilibrium level of equity-based compensation is lower and directors less closely monitor financial reports, allowing senior management greater financial reporting discretion.

We focus on monitoring by IIDs and especially by those on the board's audit committee as a key deterrent mechanism (DeFond et al. (2005)). Badolato et al. (2014) find that beyond financial expertise, audit committee director status relative to a firm's managers is an important factor that reduces earnings management. Our findings suggest that reputation incentives of audit committee members represents an important characteristic, beyond independence, that influences a board's monitoring of a firm's financial reports. These results complement Ahmed and Duellman (2007), Ferreira et al. (2011) and Armstrong et al. (2014), who find that the proportion of IDs on a board is positively related to firm transparency and stock price informativeness. Our results reveal that IIDs with stronger reputation incentives improve firm transparency by reducing accruals-based and real earnings management. This helps explain how stronger reputation incentives lead to reduced financial reporting misconduct and more financial development (Amiram et al. (2018)).

More broadly, our findings show that IIDs can have varying reputation incentives on the boards where they serve. Conventional proxies for director reputation do not recognize this heterogeneity and as a result they can yield apparently contradictory findings. For example, Fich and Shivdasani (2006) find that busy boards (where more directors sit on multiple boards) are detrimental to firm performance, while Carcello and Neal (2003) find evidence that more directorships by audit committee members are associated with

⁷ Unlike stock grants, views on stock option grants have shifted over time (Armstrong, Larcker, Ormazabal and Taylor (2013)). While some older studies argue that greater convexity in CEO incentive contracts is optimal (Coles et al. (2006) and Manso (2011)), other later studies suggest it depends on CEO preferences, (e.g. Gervais et al. (2011), Gormley et al. (2013), Banerjee Humphrey-Jenner and Nanda (2015), Chaigneau et al. (2017)) while still other recent studies argue that optimal compensation contracts should only include stock, and not options (Edmans et al. (2017)).

⁸ This is due to the low probability of detection and for those caught, roughly one third of these managers find the gains from performance-based compensation and their stock holding gains outweigh the losses from realized fines, foregone earnings and the price declines of their firms' stockholdings after accounting misconduct is revealed.

improved auditing quality. Our results help to reconcile these findings by revealing that busy (influential) IDs can be stronger (weaker) monitors when their relative reputation incentives are stronger (weaker).⁹ Furthermore, our findings also highlight potentially more nuanced effects of varying director reputation incentives.

It is not necessary that strong and weak reputation incentives should always have equal and opposite effects. Not having strong reputation incentives on the board is not equivalent to having weak reputation incentives on the board and vice versa. In other words, any given board could have directors with strong reputation incentives, directors with weak reputation incentives or directors with neither strong nor weak incentives. Strong and weak reputation incentives represent two different effects and those effects need not be symmetric. Thus, for some board decisions, it may be that strong director reputation incentives are more influential on a positive outcome than weak director reputation incentives are detrimental to that same outcome or vice versa. To the degree that we observe some outcomes when either IIDs with strong reputation incentives are significantly related to the outcome examined and IIDs with weak reputation incentives are not, or vice versa, we provide additional insight into the heterogeneous effects of director reputation incentives. In this way, we extend the findings of Masulis and Mobbs (2014) who document a symmetric relation between High and Low IID reputation measures and broad measures of firm performance. By looking at individual board decisions that affect the broader measure of firm performance we find some evidence of an asymmetric relation between High and Low IID reputation incentives and CEO compensation decisions and firm financial report monitoring.

2. Sample data and descriptive statistics

U.S. boards of director data over the 24-year period, 1997–2020, are drawn from the RiskMetrics database of S&P 1500 firm directors. We exclude directors who are firm employees, former employees or who are otherwise affiliated with the firm or its senior management.¹⁰ The resulting sample has 37,718 firm-years and 263,141 ID-years. Of these ID-years, almost 38% (99,659) represent IIDs on multiple boards listed in RiskMetrics. Thus, a large portion of IDs are on multiple boards and can have varying reputation incentives across these directorships. It follows the IDs on the same board can have different reputation incentives as shown in Masulis and Mobbs (2014). We extract firm financial and accounting data from Standard and Poor's Compustat database, stock returns from the Center for Research and Security Prices (CRSP) monthly stock database and CEO compensation data from Standard and Poor's Execucomp and the ExecComp Analytics databases. We classify firms by Fama-French 49 industries. Detailed variable definitions are reported in Appendix A. Throughout the analysis, our sample size varies depending on the specific test undertaken since we only require observations to have data available for the specific variables used in a given test.

Table 1 Panel A presents firm level descriptive statistics for our primary sample of S&P 1500 firms and the subsample that excludes highly regulated finance and utility firms. On average, a firm in our primary sample controls \$18.95 billion in total assets. In the subsample of 29,800 firms that exclude financial and utility firms, a firm on average controls \$8.76 billion in total assets. In approximately 89% of firm-years, IDs represent a majority of the board. Given the 2003 NYSE and Nasdaq listing rule changes, this is common through most of the sample period. Prior to 2003, 78.6% of firm-years had an ID majority on their board, whereas 98% of post-2003 firm-years had an ID majority.

Our primary firm IID reputation measures are High Ranked IID % and Low Ranked IID %, which are defined as the percentage of IIDs on a firm's board for whom this directorship is at least 10% larger and 10% smaller in terms of equity capitalization, than their smallest and largest directorship respectively. Across all firms in the subsample of non-financial and utility firms, the mean High Ranked IID % is 15.03%, while the mean Low Ranked IID % is 18.01%. However, some firms with IIDs can find that they have only High Ranked IIDs, other firms have only Low Ranked IIDs and the remaining firms have some mix of both Ranked IIDs or neither High nor Low Ranked IIDs (classified as neutral). We also create indicator variables that equal one when a majority of IDs are also IIDs who rank a firm's directorship as HIGH or LOW, denoted by Maj-IID-HIGH and Maj-IID-LOW respectively. We find that in the full sample the frequency of boards with a Maj-IID-HIGH is 6% and with a Maj-IID-LOW is 5%. Finally, of our sample of firm-years, 11% of boards are classified as busy (i.e., a majority of the IDs hold three or more directorships).¹¹

Table 1 Panel B reports the correlations of our two board level IID reputation variables, with alternative measures of firm size and several key CEO compensation and accounting quality measures. As noted earlier, our IID reputation measures are correlated with firm size, whether measured by a firm's equity market capitalization or total assets. Interestingly, the correlations of our aggregate IID reputation measures with either CEO compensation measures or various accounting quality measures are much lower. The High Ranked IID % has its largest correlation with a mandatory CEO shareholding requirement (0.3392), while the Low Ranked IID % has its largest correlation with absolute value of discretionary accruals (−0.2825). Thus, our IID reputation measures, while correlated with firm size by construction, have very low correlations with the firm outcome variables that we study.

⁹ These findings provide insights into the literature on directors with multiple board seats (e.g., Masulis and Mobbs (2011), Field et al. (2013), Hauser (2018), Brown et al. (2019)) by showing that evaluating director effectiveness based on number of directorships held can be a misleading metric, since it implicitly assumes a director's reputation incentives do not vary across the boards they sit on.

¹⁰ RiskMetrics considers a director as affiliated if they are a former employee; an employee of or is a service provider, supplier, customer; a recipient of charitable funds; are an interlocking or designated director; or are a family member of a firm's senior executive team.

¹¹ Following the existing literature, we include all industries in our CEO compensation analysis, but exclude utility and financial firms in our analysis of earnings management, given their heavily regulated nature and the distinctly different characteristics of their financial statements.

Table 1
Firm level descriptive statistics.

Panel A	All firms			Excluding finance and utility		
	N	Mean	Median	N	Mean	Median
<i>Board Characteristics</i>						
Low Ranked IID%	37,718	16.95	13	29,800	18.01	14
Majority IID - Low Ranked	37,718	0.05	0	29,800	0.06	0
High Ranked IID%	37,718	15.36	0	29,800	15.03	0
Majority IID-High Ranked	37,718	0.06	0	29,800	0.06	0
ID % on one Board	37,797	73.48	78	29,861	72.85	78
Independent Board	37,841	0.89	1	29,902	0.88	1
Board Size	37,841	9.46	9	29,902	9.12	9
Busy board	37,797	0.11	0	29,861	0.12	0
Independent Director Ownership (%)	37,298	1.36	0	29,484	1.42	0
<i>CEO Characteristics</i>						
CEO-Chair	37,841	0.54	1	29,902	0.54	1
CEO Board Tenure	33,555	10.80	8	25,663	10.77	7.00
CEO Ownership	32,328	3.38	1	24,683	3.73	1
CEO % Equity Based Compensation	32,221	40.35	38	24,661	40.58	38
<i>Firm Characteristics</i>						
Assets (\$ million)	33,807	18,945.28	2392	25,868	8764.78	1660
Institutional Holdings	37,841	60.71	71	29,902	60.01	71
Firm Age	33,369	25.82	21.0	25,512	25.46	20.0
Number of Business Segments	37,841	2.6	1.0	29,902	2.49	1.0
Capital Expenditures / Sales	32,917	0.09	0.03	25,732	0.09	0.04
Annual Stock Return	33,460	0.16	0.10	25,584	0.17	0.10
ROA	30,980	0.14	0.13	24,602	0.16	0.15
Volatility	33,769	0.11	0.09	25,836	0.12	0.10
Leverage	33,683	0.24	0.22	25,777	0.23	0.22
Herfindahl Index (Fama-French 49 Industry)	33,801	719.90	555.60	25,862	832.58	641.91
NYSE	37,841	0.57	1.00	29,902	0.53	1.00
<i>Panel B: Correlations</i>						
		High Ranked IID %		Low Ranked IID%		
High Ranked IID%		1				
Low Ranked IID%		0.1394		1		
Ln(Market Capitalization)		0.6237		-0.1095		
Ln(Assets)		0.5147		-0.0706		
Ln(Sales)		0.5631		0.0575		
CEO % Equity Based Compensation		0.0384		0.0033		
CEO % Option Based Compensation		0.1527		0.0909		
Ln(CEO Delta +1)		0.2998		-0.1017		
CEO Stock Holding Requirement		0.3392		0.1165		
Negative Earnings Restatement		0.0100		0.0368		
Abs(Discretionary Accruals)		-0.1545		-0.2825		
Real Earnings Management (Total)		-0.1170		-0.2553		

This table reports means and medians for various firm-year level variables from fiscal years 1997 to 2020. Panel A reports firm level characteristics for the primary sample and for the sub-sample excluding finance and utility firms. Panel B reports the correlations between our reputation measures, measure of firm size and our CEO compensation and accounting quality variables. All variable definitions are in Appendix A.

3. Main empirical evidence

We begin by examining the association of a board's IID reputation measures with annual CEO compensation structure and then turn to examine if director reputation measures are linked to discretionary accruals and real earnings management levels.

3.1. CEO Delta

We examine CEO compensation structure in terms of pay-for-performance sensitivity under several regression specifications in Table 2. We use year fixed effects to capture general time trends in CEO compensation, while robust standard errors are clustered by firm to account for possible time series dependence. Except for model 4, which uses a matched sample, all models include firm fixed effects to exploit time series variation in board reputation incentives within firms.

Since a larger fraction of equity in CEO compensation better aligns CEO and shareholder interests, and encourages greater CEO risk-taking, boards that rely more heavily on equity incentives are generally viewed as stronger monitors (Mehran (1995), Ryan and

Table 2
CEO compensation incentives and independent director reputation incentives.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Dependent Variable:</i>	Full Sample: Ln (CEO Delta)	Top/Bottom 5% Censored: Ln(CEO Delta)	-5% < adjannret _{t-1} < 5% Ln(CEO Delta)	Matched Sample: Ln (CEO Delta)	Full Sample: Ln (CEO Delta)
High Ranked IID %	0.006*** (<i>< 0.01</i>)	0.0051*** (<i>< 0.01</i>)	0.004** (<i>0.01</i>)	0.001 (<i>0.3</i>)	0.0024*** (<i>< 0.01</i>)
Low Ranked IID %	-0.004*** (<i>< 0.01</i>)	-0.004*** (<i>< 0.010</i>)	-0.003** (<i>0.04</i>)	-0.004** (<i>0.02</i>)	-0.002*** (<i>< 0.01</i>)
High Board Reputation					0.0429*** (<i>< 0.01</i>)
Low Board Reputation					-0.056*** (<i>< 0.01</i>)
Independent Board	-0.121** (<i>0.02</i>)	-0.1184** (<i>0.03</i>)	-0.1067 (<i>0.41</i>)	-0.261 (<i>0.18</i>)	-0.017 (<i>0.76</i>)
Busy Board	0.0098 (<i>0.75</i>)	-0.028 (<i>0.41</i>)	0.02 (<i>0.77</i>)	0.108* (<i>0.07</i>)	0.017 (<i>0.58</i>)
Independent Director Ownership	0.004 (<i>0.25</i>)	0.004 (<i>0.27</i>)	0.018** (<i>0.02</i>)	0.007 (<i>0.21</i>)	0.008** (<i>0.04</i>)
CEO Chair	0.087*** (<i>< 0.01</i>)	0.119*** (<i>< 0.01</i>)	-0.026 (<i>0.67</i>)	-0.0121 (<i>0.86</i>)	0.0686** (<i>0.03</i>)
Ln(Board Size)	-0.068 (<i>0.43</i>)	-0.12 (<i>0.15</i>)	-0.36** (<i>0.04</i>)	-0.271* (<i>0.09</i>)	-0.086 (<i>0.32</i>)
Institutional Holdings	0.001 (<i>0.5</i>)	0 (<i>0.66</i>)	0 (<i>0.99</i>)	-0.003** (<i>0.01</i>)	0.001 (<i>0.21</i>)
Ln(Assets)	0.94*** (<i>< 0.01</i>)	0.67*** (<i>< 0.01</i>)	1.4093*** (<i>< 0.01</i>)	0.97989*** (<i>< 0.010</i>)	0.5882*** (<i>< 0.010</i>)
Ln(Assets) ²	-0.0391*** (<i>< 0.01</i>)	-0.0226** (<i>0.05</i>)	-0.0592*** (<i>< 0.01</i>)	-0.0342*** (<i>< 0.01</i>)	-0.0379*** (<i>< 0.01</i>)
Ln(Firm Age)	-0.372*** (<i>< 0.01</i>)	-0.3806*** (<i>< 0.01</i>)	-0.118 (<i>0.52</i>)	-0.223*** (<i>< 0.01</i>)	-0.3195*** (<i>< 0.01</i>)
Ln(Business Segments)	-0.005 (<i>0.89</i>)	0.002 (<i>0.96</i>)	0.072 (<i>0.3</i>)	0.001 (<i>0.99</i>)	0.017 (<i>0.62</i>)
Capital Expenditure/Sales	0* (<i>0.09</i>)	0.01*** (<i>< 0.01</i>)	1.6*** (<i>< 0.01</i>)	-0.528*** (<i>< 0.01</i>)	0.0069*** (<i>< 0.01</i>)
Annual Stock Return	0.2** (<i>0.03</i>)	0.176** (<i>0.04</i>)	0.696*** (<i>< 0.01</i>)	0.092** (<i>0.01</i>)	0.119** (<i>0.03</i>)
Annual Stock Return _(t-1)	0.194*** (<i>< 0.01</i>)	0.171*** (<i>< 0.01</i>)	1.197*** (<i>< 0.01</i>)	0.267*** (<i>< 0.01</i>)	0.126*** (<i>< 0.01</i>)
ROA	1.3*** (<i>< 0.01</i>)	1.4*** (<i>< 0.01</i>)	0.678 (<i>0.18</i>)	2.6202*** (<i>< 0.01</i>)	0.6528*** (<i>< 0.01</i>)
ROA _(t-1)	0.6*** (<i>< 0.01</i>)	0.6*** (<i>< 0.01</i>)	1** (<i>0.04</i>)	0.1793 (<i>0.38</i>)	0.3885*** (<i>< 0.01</i>)
Volatility	-1*** (<i>< 0.01</i>)	-0.8** (<i>0.04</i>)	0.258 (<i>0.81</i>)	1.005 (<i>0.22</i>)	-0.095 (<i>0.8</i>)
CEO Tenure	0.087*** (<i>< 0.01</i>)	0.086*** (<i>< 0.01</i>)	0.079*** (<i>< 0.01</i>)	0.113*** (<i>< 0.01</i>)	0.085*** (<i>< 0.01</i>)
CEO Tenure ²	-0.001*** (<i>< 0.01</i>)	-0.001*** (<i>< 0.01</i>)	0 (<i>1</i>)	-0.001* (<i>0.06</i>)	-0.001*** (<i>< 0.01</i>)
Number of Observations	23,532	21,113	2692	4442	22,468
Fixed Effects	Firm/Year	Firm/Year	Firm/Year	Year	Firm/Year
Adjusted-R ² / Prob $\chi^2 >$ 0 / Pseudo-R ²	72.65%	70.68%	76.12%	41.47%	74.37%

This table presents results of OLS models of director reputation incentives on the ln(CEO Delta +1). High (Low) Ranked IID % is the percentage of influential independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Models 1 and 5 use the full sample. Model 2 excludes the 5% largest and smallest firms, by annual market capitalization from the full sample. Model 3 uses the subsample of firms that are within +/- 5% of the adjusted annual return, where the adjusted annual return is the firm annual stock return less the median annual return for the sample that year. Model 4 reports results using a matched sample, where firms with a majority of independent directors who are High Ranked IIDs are annually matched with firms in the same industry and within 75% of the market capitalization of the focal firm, but these matched firms do not have a majority of High Ranked IIDs. The models employ robust standard errors that are clustered by firm. *p*-values are reported in parentheses beneath the coefficients. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Wiggins (2004) and Mobbs (2013)). Conversely, boards more aligned with CEO interests, possibly due to the CEO's role in the director's initial appointment (Coles et al. (2014)) or greater director concerns about re-nomination to the board (Guo and Masulis (2015)), are viewed as weaker monitors who are likely to approve less CEO equity-based compensation, thus reducing CEO-shareholder alignment of interests.

We start by analyzing CEO delta, defined as the dollar change in CEO wealth for a 1% change in a firm's stock price, which is

calculated following [Core and Guay \(2002\)](#) and [Coles et al. \(2006\)](#). Delta accounts for a CEO's pre-existing equity holdings and any unvested stock and option grants. Not surprisingly, CEO delta is a commonly used measure of CEO alignment of interests with shareholders (e.g., [Bizjak et al. \(1993\)](#), [Core and Guay \(2002\)](#) and [Coles et al. \(2006\)](#)). Delta, as a wealth-to-equity price sensitivity measure, captures the performance incentives created by a CEO's total firm shareholdings, and as such it offers a more comprehensive measure of CEO alignment of interest with shareholders than conventional annual compensation measures provide.¹² When shareholder-friendly boards structure a CEO's equity grants to maintain a high CEO-shareholder alignment of interests through long vesting periods and more demanding exercise restrictions, this results in a higher CEO delta.

[Table 2](#) model 1 presents our initial analysis of CEO delta. We observe a significant positive coefficient estimate for High Ranked IID %.¹³ This finding is consistent with boards having more IIDs with stronger reputation incentives taking actions to improve CEO alignment of interest with shareholders by raising the fraction of equity-based compensation, as reflected in a higher CEO delta. At the same time, the coefficient of Low Ranked IID % is significantly negative, which is consistent with boards having more IIDs with weak reputation incentives exhibiting more manager-friendly compensation decisions, reflected in lower CEO deltas. As a benchmark, consider a typical board comprised of the CEO and nine IDs of whom 40% are IIDs, and where each IID views this directorship as comparable in prestige to their other directorships. In this hypothetical board, our coefficient estimates imply that as one IID's assessment changes to view this as a more prestigious directorship, the CEO's delta rises on average by 6.6%.

Firm size can also contribute to a director's reputation incentives, which can be either strong or weak. In model 2, we minimize the effect of extremely large and small firms driving our results by excluding in each year the 5% largest and smallest firms from our sample. We continue to find significant differences in CEO deltas for boards having strong versus weak IID reputation incentives.

One possible concern with the main finding in model 1 is that fluctuations in a firm's stock price can affect both the relative value of equity-based compensation in a CEO's total compensation and the directorship ranking of at least one IID that moves in the same direction. In other words, if the board follows a pattern of setting annual compensation using the same number of share and option grants as in the prior year,¹⁴ then a relative rise (fall) in the firm's prior-year stock price can mechanically raise (lower) the ex-ante value of a CEO's equity-based compensation. This stock price change can also raise (lower) the percentage of IIDs for whom this is relatively more (less) prestigious directorship since the firm's equity capitalization likewise rises (falls). Accordingly, the observed relation in model 1 could be driven by such a mechanical link, even if the CEO's employment contract is unchanged in terms of the numbers of options and shares granted. We address this concern next.

In model 3 of [Table 2](#), we analyze the subsample of firm-years where only small relative changes in a focal firm's stock price occur, which should minimize any mechanically induced changes in equity compensation and directorship rankings due to changes in the focal firm's own stock price. First, we center each firm's annual stock return around the median market return for the year. Then, we examine firm-years where the adjusted annual stock return of the focal firm is bounded between -5% and 5%. Although this approach reduces our sample size, we again find similar results. Boards where IIDs have strong (weak) reputation incentives are associated with significantly larger (smaller) CEO deltas. In general, in different subsamples of firms where data on specific dependent and key explanatory variables are needed, there can be an unbalanced number of firms with High Ranked IIDs versus Low Ranked IIDs on the board.¹⁵

Thus far, we primarily focus on an individual IID's reputation incentives reflected in the relative size of the focal firm compared to the other firms where the same director also holds board seats. These reputation incentives are specific to each IID. Another dimension of reputation is a firm's size relative to *the entire sample population of S&P 1500 firms*, which equally affects the reputation incentives of the firm's entire board of directors, regardless of any other directorships they may hold. We term this metric the firm's *board reputation* measure. In principle, both measures can capture important dimensions of director reputation incentives. As robustness analysis, we employ two approaches to separate board reputation incentives from IID reputation incentives.

First, we repeat our earlier analysis of CEO delta for two samples where we match treated and control firms by firm size and industry. For this test, we restrict firms to have a *majority* of IIDs. Then, we match each firm having a majority of IIDs who rank their board relatively high compared to up to four similar sized firms that do not have a majority of IIDs who rank their board relatively high. We also require matching firms to come from the same Fama-French 49 industry-year and to have an absolute difference in market capitalization within 75% of the firm with stronger director reputation incentives. By matching on firm size, we minimize the possibility that observed differences in firm outcomes are caused by differences in firm size, which is captured by the board reputation measure.

The results of our size and industry matched analysis are reported in model 4 of [Table 2](#). We observe strong evidence that the Low Ranked IID % continues to be associated with a significantly lower CEO delta, while the High Ranked IID % has no significant association with CEO deltas. On the one hand, the results suggest that strong board incentives arising from the sheer size or visibility of a firm, which creates strong reputation incentives affecting all directors equally, are driving the rises in CEO delta observed in models 1 and 2. In other words, stronger board reputation from greater visibility of the firm appears to substitute for individual strong reputation

¹² An alternative measure of CEO incentives is annual equity grants. However, since CEOs can adjust their portfolios to alter their equity incentives following equity grants ([Armstrong, Guay and Weber \(2010\)](#)) by selling a large block of shares, CEO-shareholder alignment of interests can rise or fall following annual equity grants.

¹³ We find similar results when we run a Poisson regression ([Chon et al. \(2022\)](#)).

¹⁴ [Shue and Townsend \(2017\)](#) report evidence of this board behavior in the early portion of our sample period.

¹⁵ In this model, there are 434 (551) firms with at least one High (Low) Ranked IID and no Low (High) Ranked IID. Further, there are 1057 (945) firms for which the High (Low) IID% is greater than the Low (High) IID%

incentives. On the other hand, weak director level incentives as measured by Low Ranked IID % appear to drive the fall in CEO delta observed in models 1–3.

As a second approach to controlling for firm size, using our full sample, we create board reputation measures that are calculated in the same way as the High Ranked and Low Ranked IID % measures, but which are independent of who the actual IIDs are or on what other boards they sit. For each of our sample years, each ID is randomly assigned to a sample firm (or several sample firms for directors with multiple board seats), while board size and fraction of IDs are held fixed. Each ID's board-ranking measure in each firm-year is calculated from these randomized IID-firm assignments. We then aggregate ID rankings to the board level as we do with our IID reputation measures to create pseudo- High and Low Board reputation measures. We repeat the process 100 times and average the 100 board reputation measures to derive estimates of both High and Low Board reputation incentives.¹⁶

Since these High and Low Board Reputation measures are based on random director-firm assignments, their calculation is devoid of actual director reputation incentives caused by sitting on other specific corporate boards. But these board reputation measures do reflect a firm's relative size in the overall population of S&P 1500 firms. Accounting for board size and percentage of IIDs in creating these pseudo board reputation measures due to firm size alone allows for greater cross-sectional heterogeneity and non-linear effects when estimating board level reputation effects, than does simply adding a linear control for firm size in this regression analysis. When we add these two board reputation measures to our prior statistical model, any remaining variation captured by our original reputation measures should then reflect each IID's reputation incentives net of any board reputation incentives. In addition, these board reputation measures capture the reputation incentives of a given board that are common to all its directors, including non-influential IIDs holding only a single directorship. Thus, including board reputation measures more fully captures directors' reputation incentives.

Model 5 in Table 2 tests the relation between IID reputation incentives and CEO delta, while controlling for board reputation measures. We find that the High Ranked IID% reputation measure is positive and significant, while the Low Ranked IID % reputation measure continues to have a significant negative association with CEO delta. We also find strong evidence of a significant effect for both board reputation measures. High board reputation has a significantly positive association with CEO delta, while Low board reputation has a significantly negative association.

One attractive feature of this approach in comparison to matching methods is that the board reputation measures allow us to separately measure the reputation incentive of all the directors on a board due to the firm's size in the economy, while the IID reputation incentives are based on the importance of this focal firm's directorship relative to other directorships held by individual IIDs. The positive coefficient on both the High Ranked IID% and the High board reputation measure suggests that individual reputation incentives as well as those arising at large firms that reflect their high overall visibility both have important positive influences on CEO delta. Conversely, the strong results associated with the Low Ranked IID % measure combined with significant results for the Low board reputation measure suggests that IIDs' weak individual reputation incentives as well as weak board-level reputation incentives together have important negative influences on CEO delta.

The strong negative results for the Low Ranked IID % reputation measure seriously undermines an alternative interpretation of these reputation measures. If a director's reputation incentives across all their directorships are determined by the IID's most prestigious directorship (the largest and most visible directorship), then these same directors should have equally strong incentives across all of their directorships. This alternative perspective predicts boards with greater representation by influential directors who also sit on the boards of larger firms (Low Ranked IID %) should be associated with greater equity-based pay. Contrary to this alternative perspective, our evidence shows a strong association between Low Ranked IID % and lower levels of CEO delta.¹⁷ This evidence is also not supportive of the view that IIDs allocate their limited time and energy equally across their directorships, since this would predict similar positive results for the High Ranked IID % and Low Ranked IID %.

3.2. CEO equity compensation structure

In Table 3, we examine the relationship of other forms of CEO compensation with our two IID reputation measures. The models in Panel A are based on OLS estimation with firm fixed effects and robust standard errors clustered by firm. The controls are the same as in Table 2.

In Table 3 Panel A, model 1, we analyze the percentage of CEO equity-based pay in annual compensation, measured by the sum of the ex-ante values of stock and option grants for the year divided by ex-ante annual compensation. We find a positive relation between the High Ranked IID % reputation measure and the percentage of annual equity-based CEO compensation. The coefficient estimate on Low Ranked IID% is statistically insignificant.

In models 2 and 3, we decompose equity compensation into stock based and option based equity compensation, respectively. Interestingly, in model 2 we find that High Ranked IID% is not significantly related to the percentage of CEO compensation that is stock-based. Furthermore, we find some evidence that Low Ranked IID% is associated with a greater portion of stock-based compensation. One concern with greater CEO performance-based pay is that it can lead risk adverse CEOs to reduce firm risk-taking, which could reduce a firm's profitable, high-risk investments (Coles et al. (2006)). To offset the CEO risk aversion effect, boards often provide CEOs with more risk-taking incentives through stock option grants. Given the results in models 1 and 2, we expect

¹⁶ We thank Juhani Linnainmaa for this helpful suggestion.

¹⁷ One interesting finding concerning the control variables is that the board independence coefficient is negatively related to CEO delta in several models. This is consistent with the findings of Coles et al. (2014) and with the conclusion that board independence and CEO delta can be substitutes in motivating CEOs.

Table 3
Robustness analysis of the composition of CEO compensation.

Panel A.	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable:	Full Sample: % Equity Compensation	Full Sample: % Stock Compensation	Full Sample: % Option Compensation	Full Sample: CEO Vega	Full Sample: CEO Vega
High Ranked IID %	0.043** (0.02)	-0.014 (0.27)	0.0571*** (< 0.01)	0.0034*** (< 0.01)	0.0022* (0.08)
Low Ranked IID %	-0.019 (0.25)	0.024* (0.06)	-0.042*** (< 0.010)	-0.001 (0.53)	-0.001 (0.46)
High RD					0.0472 (0.67)
High Ranked IID % x High RD					0.0052** (0.03)
Low Ranked IID % x High RD					0.001 (0.57)
Independent Board	2.251* (0.06)	-2.073*** (< 0.01)	4.3242*** (< 0.01)	0.1628** (0.02)	0.1576** (0.02)
Busy Board	-0.3235 (0.68)	-0.7369 (0.22)	0.413 (0.44)	-0.034 (0.53)	-0.034 (0.53)
Independent Director Ownership	0.003*** (< 0.01)	0.001** (0.01)	0.002*** (< 0.01)	0.009** (0.01)	0.009** (0.01)
CEO Chair	1.59** (0.02)	0.707 (0.18)	0.883* (0.06)	0.024 (0.6)	0.025 (0.59)
Ln(Board Size)	-1.554 (0.38)	0.09 (0.95)	-1.644 (0.22)	0.208* (0.08)	0.213* (0.07)
Institutional Holdings	0.05*** (< 0.01)	0.029** (0.01)	0.021** (0.03)	0.002** (< 0.01)	0.002** (0.04)
Ln(Assets)	3.77 (0.2)	-2.83 (0.31)	6.6*** (< 0.01)	1.4784*** (< 0.01)	1.472*** (< 0.01)
Ln(Assets) ²	-0.201 (0.26)	0.2309 (0.19)	-0.4319*** (< 0.01)	-0.0789*** (< 0.01)	-0.078*** (< 0.01)
Ln(Firm Age)	-1.8599 (0.26)	2.2093* (0.06)	-4.0692*** (< 0.01)	0.0636 (0.58)	0.0563 (0.62)
Ln(Business Segments)	-0.942 (0.27)	-0.639 (0.34)	-0.302 (0.6)	0.035 (0.55)	0.033 (0.57)
Capital Expenditure/Sales	8.94*** (< 0.01)	1.64 (0.18)	7.3*** (< 0.01)	0*** (< 0.01)	0*** (< 0.01)
Annual Stock Return	-0.184 (0.57)	0.007 (0.97)	-0.191 (0.28)	-0.007 (0.46)	-0.007 (0.46)
Annual Stock Return _(t-1)	0.814** (0.04)	0.844*** (< 0.01)	-0.03 (0.93)	-0.023 (0.19)	-0.024 (0.17)
ROA	-13.3*** (< 0.01)	-11.7*** (< 0.01)	-1.6 (0.47)	-0.019 (0.9)	-0.027 (0.85)
ROA _(t-1)	12.9*** (< 0.01)	4.4** (0.05)	8.5*** (< 0.01)	-0.1 (0.49)	-0.1 (0.44)
Volatility	19.5** (0.01)	-26.9*** (< 0.01)	46.4*** (< 0.01)	-1.503*** (< 0.01)	-1.515*** (< 0.01)
CEO Tenure	-0.235*** (< 0.01)	-0.132*** (< 0.01)	-0.103*** (< 0.01)	0.019*** (< 0.01)	0.019*** (< 0.01)
CEO Tenure ²	0*** (< 0.01)	0*** (< 0.01)	0*** (< 0.01)	-0.001*** (< 0.01)	-0.001*** (< 0.01)
Number of Observations	26,890	26,890	26,890	24,092	24,092
Fixed Effects	Firm/Year	Firm/Year	Firm/Year	Firm/Year	Firm/Year
Adjusted-R ² / Prob $\chi^2 > 0$ / Pseudo-R ²	39.27%	66.30%	63.56%	70.35%	70.38%

Panel B.	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Dependent Variable:	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	OLS Weighted Vesting Period Post-2005 to 2015	OLS Weighted Vesting Period Post-2005 to 2015

(continued on next page)

Table 3 (continued)

Panel B.	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Dependent Variable:	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	OLS Weighted Vesting Period Post-2005 to 2015	OLS Weighted Vesting Period Post-2005 to 2015
High Ranked IID %	0.003*** (< 0.01)	0.0122*** (< 0.01)			0.001 (0.18)	
Low Ranked IID %	0.002*** (< 0.01)	-0.001 (0.81)			-0.0002 (0.81)	
High Ranked IID % (Comp)			0.002*** (< 0.01)	0.009*** (< 0.01)		0.001** (0.01)
Low Ranked IID % (Comp)			0.001*** (< 0.01)	0.003 (0.11)		-0.00003 (0.95)
Independent Board	0.526*** (< 0.01)	0.492 (0.26)	0.508*** (< 0.01)	0.409 (0.34)	0.184 (0.12)	0.214* (0.06)
Busy Board	-0.016 (0.48)	0.46*** (< 0.01)	0.0239 (0.28)	0.4460*** (< 0.01)	0.024 (0.54)	0.028 (0.48)
Independent Director Ownership	-0.01*** (< 0.01)	-0.0003 (0.22)	-0.009*** (< 0.01)	0 (0.15)	0*** (< 0.01)	0*** (< 0.01)
CEO Chair	0.0419*** (< 0.01)	0.2764** (0.04)	0.045*** (< 0.01)	0.277** (0.05)	0.019 (0.57)	0.022 (0.5)
Ln(Board Size)	0.2850*** (< 0.01)	1.0510*** (< 0.01)	0.285*** (< 0.01)	0.993*** (< 0.01)	0.093 (0.31)	0.102 (0.26)
Institutional Holdings	0.004*** (< 0.01)	-0.007*** (< 0.01)	0.004*** (< 0.01)	-0.007*** (< 0.01)	-0.0003 (0.67)	-0.0003 (0.65)
Ln(Assets)	0.57491*** (< 0.010)	2.84046*** (< 0.010)	0.5794*** (< 0.01)	2.8749*** (< 0.01)	0.7678*** (< 0.01)	0.7676*** (< 0.01)
Ln(Assets) ²	-0.0367*** (< 0.01)	-0.1342*** (< 0.01)	-0.0365*** (< 0.01)	-0.1347*** (< 0.01)	-0.0409*** (< 0.01)	-0.0408*** (< 0.01)
Ln(Firm Age)	0.1062*** (< 0.01)	0.009 (0.89)	0.1144*** (< 0.01)	0.003 (0.96)	0.0242 (0.81)	0.0152 (0.88)
Ln(Business Segments)	0.063*** (< 0.01)	0.247* (0.05)	0.064*** (< 0.01)	0.227* (0.07)	-0.009 (0.82)	-0.006 (0.89)
Capital Expenditure/Sales	-0.0824 (0.12)	0.0252 (0.94)	-0.09* (0.09)	0.0248 (0.95)	-0.1279* (0.1)	-0.1036 (0.21)
Annul Stock Return	0.029*** (< 0.01)	0.19 (0.13)	0.029*** (< 0.01)	0.206* (0.1)	-0.001 (0.95)	0 (0.99)
Annual Stock Return _(t-1)	-0.015 (0.19)	0.25* (0.07)	-0.012 (0.27)	0.26* (0.05)	-0.03* (0.06)	-0.028* (0.08)
ROA	-0.2435*** (< 0.01)	1.5944** (0.03)	-0.206** (0.02)	1.707** (0.02)	-0.163 (0.17)	-0.141 (0.24)
ROA _(t-1)	0.0443 (0.55)	0.3062* (0.07)	0.0612 (0.41)	0.3307** (0.05)	0.1647 (0.17)	0.1449 (0.23)
Volatility	0.509*** (< 0.01)	-8.056*** (< 0.01)	0.494*** (< 0.01)	-8.323*** (< 0.01)	0.155 (0.63)	0.075 (0.81)
CEO Tenure	0.022*** (< 0.01)	-0.009 (0.53)	0.022*** (< 0.01)	-0.008 (0.56)	-0.001 (0.62)	-0.001 (0.58)
CEO Tenure ²	-0.001***	0	-0.001***	0	0	0

(continued on next page)

High Ranked IID% to be associated with a greater use of stock options, whereas we expect Low Ranked IID% to be associated with less option use. In model 3, the dependent variable is the proportion of CEO total compensation derived from options, measured in ex-ante terms using the Black-Scholes model. We find results consistent with those in Table 2. Indeed, the High Ranked IID% is associated with a significantly higher proportion of CEO option-based pay, while the Low Ranked IID % is associated with a significantly lower proportion of CEO option-based pay.

In model 4, the dependent variable is CEO vega, defined as the sensitivity of a manager's wealth to a 1% change in stock return

Table 3 (continued)

Panel B.	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Dependent Variable:	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	Negative Binomial Number of Equity Grants Issued	Conditional Logit First Holding Requirement (1/0) Post-2005	OLS Weighted Vesting Period Post-2005 to 2015	OLS Weighted Vesting Period Post-2005 to 2015
	(< 0.01)	(0.36)	(< 0.01)	(0.35)	(0.93)	(0.9)
Number of Observations	Number of obs	10,850	25,414	10,771	18,461	18,326
Fixed Effects	Firm	Industry	Firm	Industry	Firm/Year	Firm/Year
Adjusted-R ² / Prob $\chi^2 > 0$ / Pseudo-R ²	0.00%	19.52%	0.00%	19.62%	57.83%	57.68%

This table presents results of OLS, negative binomial and logit models of the percentage of CEO compensation that is option or equity based, the number of equity grants issued, the likelihood of the board employing a CEO holding requirement and the grant vesting period on board of director reputation incentives. In Panel A, the dependent variable in models 1–3 is the percentage of CEO compensation that is equity-based, stock-based, and option based, respectively. CEO vega, the dependent variable in models 4 and 5, is winsorized at the 99% level. In Panel B, the dependent variable in models 6 and 8 is the number of equity grants issued during the year. The dependent variable in models 7 and 9 is an indicator variable that equals 1 if the board imposes an initial stock ownership requirement on the CEO and 0 otherwise for the subsample of post-2005 observations. In these models, once a holding plan is imposed the subsequent firm-year observations are set to missing. The dependent variables in models 10 and 11 is the weighted vesting period for the post-2005 period. The OLS models incorporate robust standard errors that are clustered by firm. *p*-values are reported in parentheses beneath the coefficients. Models 6 and 8 are a negative binomial with firm fixed effects. Models 7 and 9 are a conditional logit grouped by industry (logit fixed-effects model). Controls are the same as in Table 2. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

volatility (Armstrong et al. (2013)). Here we observe a positive relation between the High Ranked IID % and CEO vega, while we find an insignificant relation between Low Ranked IID % and CEO vega. Incentives that can mitigate CEO risk aversion are most beneficial to firms whose operations potentially benefit from greater risk taking. Thus, boards of these firms should be more apt to structure CEO compensation packages with higher vega (Coles et al. (2006)). We use R&D expenditure (scaled by total assets) to identify firms whose operations are more likely to benefit from greater CEO risk-taking incentives. Specifically, we control for an indicator that equals one if the firm's R&D to total assets is in the top quintile and zero otherwise.

We also interact this high R&D firm indicator variable with our High and Low Ranked IID% measures to see whether boards with strong or weak reputation incentives consider firm investment opportunities when structuring CEO compensation packages. The results are shown in model 5. We continue to find a positive and significant association with High Ranked IID% and an insignificant relation for Low Ranked IID%, consistent with model 4. The indicator for High R&D is itself not significant. However, the interaction between High Ranked IID% and the High R&D indicator is positive and significant. This positive interaction term indicates that boards with stronger reputation incentives tend to design CEO compensation packages with greater consideration of a firm's operational and investment needs. Moreover, the insignificant coefficient on the High R&D indicator itself reveals that the reputation incentives of the board affect whether or not CEO compensation packages reflect the firm's operational and investment needs. Finally, we find no evidence that boards with Low IID% take into account firm operations and investment opportunities or CEO risk taking incentives when designing CEO compensation packages.

While the above finding is consistent with greater representation by IIDs with strong reputation incentives choosing CEO compensation contracts with greater risk-taking incentives, stronger CEO risk-taking incentives may not be beneficial for all firms. For example, boards of firms with a greater reliance upon debt financing may not wish to employ strong CEO risk-taking incentives to avoid increasing the cost of debt. To test this conjecture, in unreported results, we repeat model 4, and include the Fama-French 48 industry median leverage as a measure of the degree to which firms in the industry rely on debt financing and we interact this measure with both the High and Low Ranked IID%. Under this specification, we continue to find a positive and significant coefficient estimate for the High Ranked IID% and an insignificant coefficient for Low Ranked IID%. However, we find a negative and significant coefficient estimate for the interaction between the High Ranked IID% and industry leverage. Thus, in industries with higher leverage the economic link between the High Ranked IID% and CEO vega is weaker, which indicates that there is cross-sectional variation in the degree to which the High Ranked IID% is associated with choosing higher CEO vega in their compensation contracts.¹⁸

One possible concern with having greater option-based compensation is that it can further exacerbate CEO incentives to manipulate earnings and may reflect an inattentive board that is overly reliant on short term performance-based financial incentives (Cheng and Farber (2008)), rather than a more diligent board pursuing more careful long-term monitoring. We explore this question later. Next, we provide stronger tests where we focus on aspects of CEO compensation contracts, which are clearly not mechanically linked to a firm's stock price because they require the board to explicitly alter components of the compensation contract.

In Table 3 Panel B, model 6, we examine the association of director reputation incentives to the number of equity grants issued

¹⁸ The coefficient estimates of the unreported regression reveal that in the average firm, the estimated effect for High Ranked IID% is 0.0032. Furthermore, a one standard deviation in median industry leverage significantly reduces this effect to 0.0015.

during the year, using a negative binomial regression model to accommodate the integer nature of the equity grants data along with firm fixed effects. We find a positive and significant relation between the High Ranked IID % reputation measure and the number of equity grants issued, which suggests that boards having more IIDs with strong reputation incentives support greater equity grant use, which better aligns CEO interests with shareholders. One advantage of using more equity grants as opposed to fewer large equity grants is that more grants provide greater flexibility in customizing CEO incentives to better align their interests with shareholders (Core and Guay (1999)). We also find that the Low Ranked IID % is also associated with a significantly greater number of equity grants, but the economic magnitude is 33% less than that for High Ranked IID% and the differences are statistically significant (p -value < 0.01). Thus, while, all IIDs are associated with a greater number of equity grants, reflecting their experience and influence, those with stronger reputation incentives are associated with significantly more than those with weak reputation incentives. The results for Low Ranked IIDs are consistent with the results in model 2. Specifically, Low Ranked IIDs, who are also talented influential directors, are more likely than the average independent director to incorporate a greater portion of equity in a CEO's compensation package. They do this by using a greater number of equity grants than the average independent director. Nonetheless, given that Low Ranked IIDs are likely to be allocating most of their time and attention to their other directorships, they are less likely, relative to High Ranked IIDs, to incorporate options into the CEO compensation contracts, which require greater director monitoring due to greater risk-taking incentives imputed on the CEO (Saunders and Song (2018), Liu et al. (2021)). In sum, Low Ranked IIDs recognize the value of equity grants, but they are reluctant to commit to more monitoring of senior executives at the firm.

Another important dimension of CEO compensation contracts, which is not mechanically linked to a firm's stock price, nor to CEO compensation level, is a *minimum shareholding requirement* that requires a CEO to make a minimum personal investment in a firm's equity, which would generally raise a CEO's delta. Imposing such a stock holding requirement helps align CEO-shareholder interests and is inherently long-term in nature. Importantly, this reduces any perverse CEO incentives to manipulate earnings arising from equity-based compensation since such manipulations are predominantly short-term. Thus, a board's willingness to impose a minimum holding requirement reflects their long-term orientation and can deter managerial short termism (Edmans et al. (2012)).

In model 7, the dependent variable is an indicator variable that equals one if the board imposes a new minimum shareholding requirement on the CEO in terms of share number, percentage or share dollar value and is zero otherwise. We estimate this equation using a conditional logit model, given the binary nature of the dependent variable and to avoid an incidental parameters concern, given our use of industry fixed effects. These data are available beginning in 2006. We find a positive and significant coefficient for the High Ranked IID % and an insignificant coefficient for the Low Ranked IID%. Thus, we conclude that boards having more IIDs with strong reputation incentives are more likely to impose longer-term equity incentives on their CEOs.

In models 8 and 9, we analyze the reputation incentives of IIDs on the board's compensation committee.¹⁹ We focus on these last two CEO compensation outcomes as they are most likely to be determined by the compensation committee and are unlikely to be mechanically related to our director reputation measures. In model 6, the dependent variable is the number of equity grants. We find a significant positive coefficient for a board having more IIDs with high reputation incentives represented on the compensation committee. We also find a positive coefficient estimate for Low Ranked IID%, but the magnitude is only half that of High Ranked IID% and the difference is statistically significant (p -value = 0.01). In model 7, the dependent variable is one if the board imposes a new minimum CEO shareholding requirement and is zero otherwise. The coefficient estimate for the High Ranked IID % (comp) is positive and significant (p -value < 0.01). While the coefficient estimate for the Low Ranked IID% (comp) is also positive, the magnitude is only one third that for the High Ranked IID% (comp) and it is not statistically significant (p -value = 0.11).

Finally, we consider one other non-monetary incentive mechanism boards can impose on their CEO to increase incentive alignment with shareholders. Namely, we consider the vesting periods, if any, associated with CEO grant awards. In models 10 and 11 of Table 3 Panel B, we examine the weighted vesting period for the CEO's grants awarded each year. The data are from the ExecComp Analytics database and are available for the post-2005 period. We report OLS models, where the dependent variable is the annual grant-size-weighted average vesting period. In model 10, we do not find a significant relation with vesting period length and either the High or Low Ranked IID%.²⁰ However, in model 11, we do find a positive and significant relation between vesting period length and the percentage of High Ranked IID on the compensation committee. We continue to find no evidence of weak IID reputation incentives enhancing CEO grant vesting period length.

The results in Tables 2 and 3 corroborate our first major finding. Boards having more IIDs with stronger (weaker) reputation incentives are associated with compensation policies that improve (weaken) CEO alignment of interests with shareholders. The results in Table 3 provide further evidence that our primary findings linking CEO delta and IID reputation incentives are not an artifact of a firm's stock price affecting all these variables in a mechanical fashion since neither the number of CEO equity grants, nor the CEO shareholding requirement, are mechanically linked to share price.

3.3. Compensation structure and shareholder proposals

In the latter portion of our sample, many regulatory and disclosure changes occurred related to executive compensation. In

¹⁹ These relationships for committee member reputation incentives in models 6, 7, and 9 hold after including High Ranked IID % and Low Ranked IID % representation measures. We do not include these measures in the reported results as committee members are a subset of the High Ranked IID % and Low Ranked IID % measures.

²⁰ In unreported results, when the dependent variable is the maximum vesting period, rather than the weighted vesting period, we find a positive and significant coefficient for High Ranked IID%.

particular, new regulations mandated that boards issue advisory say-on-pay proposals. In addition to the advisory votes, shareholders also vote on how often these advisory votes are held. Thus, shareholders have two votes. They vote on executive compensation through the advisory say-on-pay proposals, and they vote on the frequency that these advisory say-on-pay votes are held. The advisory votes can occur annually, every two years or every three years. The frequency vote can occur anywhere from annually to once every six years.²¹ If boards with stronger (weaker) reputations are more aligned with shareholder interests regarding executive compensation, then we may expect to see these boards support more (less) shareholder say-on-pay frequency votes, but we especially expect that the actual frequency of the advisory votes to occur more (less) often.

To test this conjecture, we first assess the likelihood that a board proposes a periodic say-on-pay shareholder vote in a given year. We use data from ISS available over the post-2010 period on shareholder voting results on management proposals at each annual board meeting. In Table 4 Panel A, we report the results of conditional logit model regressions on the likelihood that a board initiated a say-on-pay-advisory-vote frequency proposal at its annual meeting. In model 1, we include the same control variables as in the previous tables and industry fixed effects. We find that the High Ranked IID% is positive and significantly related to the likelihood of the firm having a shareholder say-on-pay frequency proposal, whereas a firm's Low Ranked IID% is significantly negatively related to having such a proposal.

Cai and Walkling (2011), in one of the first studies of say-on-pay proposals, find evidence that such proposals often occur at firms that already exhibit good executive compensation practices. Thus, given our previous findings, it is not surprising that boards with greater reputation incentives are also the same boards initiating shareholder say-on-pay advisory vote frequency proposals more often. In model 2, we include total compensation and CEO delta, two measures of current executive compensation, to see if we find similar patterns over our sample period. In fact, we do find very similar evidence. In model 2, we see that firms with lower CEO total compensation and greater pay-for-performance sensitivity (measured by its predicted CEO Delta) are associated with a greater likelihood of having a say-on-pay advisory vote frequency proposal, consistent with the evidence in Cai and Walkling (2011). However, we continue to find clear evidence that higher IID reputation incentives are significantly positively related to the likelihood of a board initiating say-on-pay vote frequency proposals.

Having say-on-pay vote frequency proposals is likely to be associated with a board that also supports giving shareholders an annual say-on-pay advisory vote. In model 3 we examine the firm-years in which the board initiates a say-on-pay vote frequency proposal and examine the determinants of the proposed frequency of shareholder advisory votes on CEO compensation. A proposal to give shareholders a say-on-pay advisory vote every year is more sensitive to shareholders interests than a proposal to only give them a say-on-pay vote every three years. Thus, if boards are more inclined to cater to shareholder interests when their reputation incentives are higher, then we expect these boards to be more likely to support a higher frequency of say-on-pay shareholder votes. Indeed, among firms putting forth a say-on-pay frequency proposal, 92.4% propose annual say-on-pay votes. In contrast, only 7.1% recommend shareholders have a vote every three years and 0.16% recommend every two years. In model 3, the dependent variable is one if the say-on-pay frequency proposal is for one year. We find that the High Ranked IID% is positively and significantly related to say-on-pay frequency proposals that give shareholders an advisory vote annually. We also find that when CEO compensation is higher or when compensation is less sensitive to performance, board say-on-pay frequency proposals are more likely to be held annually. Thus, although some shareholder say-on-pay frequency proposals are initiated by firms that need them the least, the proposed frequency of such shareholder votes is also positively related to firms with a greater need to closely monitor executive compensation. In sum, these results reveal that director reputation incentives do help the board to align CEO and shareholder interests by more frequently giving shareholders a say on executive pay.

To more directly test the extent to which shareholders support management compensation packages, we examine shareholder votes on say-on-pay proposals. Specifically, in Table 4 Panel B we focus on the Advisory Vote to Ratify Named Executive Officer Compensation and examine measures of shareholder support for these proposals. In model 1, the dependent variable is the fraction of shares voted in favor of the proposal relative to the total shares outstanding. We find that boards with stronger IID reputation incentives are associated with significantly greater support for the compensation proposals. Conversely, boards with weaker IID reputation incentives are not significantly associated with greater shareholder support for such proposals.

In model 2, we consider another measures of shareholder support, namely the number of votes in favor relative to number of votes against. The results are similar to those in model 1, namely High Ranked IID% is positively associated with more shareholder support, but it is statistically weaker. The coefficient for High Ranked IID% is significant in model 2 (p -value = 0.07).

Because ISS no longer provides data on its recommendations on individual proposals, it is no longer possible to control for ISS recommendations against a proposal. However, since shareholder voting support for individual proposals are likely to be depressed when ISS issues an "against" recommendation, we examine the likelihood that the firm proposal receives abnormally weak shareholder support. Specifically, we create a dependent variable that equals one if the proposal receives support from fewer than 70% of the total shares outstanding, which we label "weak shareholder voting support". ISS uses this 70% threshold for say-on-pay voting support to trigger a review of the firm's shareholder engagement practices (Dey et al. (2023)). We report the results of a linear probability model incorporating firm and year fixed effects in model 3. We find a negative and significant relation between High Ranked IID% and the likelihood of the proposal receiving weak shareholder voting support. Conversely, when the Low Ranked IID% is greater, we find no evidence of a reduced likelihood of receiving weak shareholder voting support on say-on-pay proposals. Thus, while we cannot control for ISS recommendations on a board's say-on-pay proposals, we do see evidence that proposals from boards with stronger reputation

²¹ <https://www.sec.gov/files/sayonpay.pdf>

Table 4
Shareholders say-on-pay frequency proposals and executive compensation approval rates.

Panel A: Say-on-Pay Proposals	Model 1	Model 2	Model 3
Dependent Variable:	Conditional Logit Say-on-Pay Frequency Proposal (1/0) Post-2010	Conditional Logit Say-on-Pay Frequency Proposal (1/0) Post-2010	Conditional Logit Say-On-Pay Frequency Proposal of 1 Year (1/0)
High Ranked IID %	0.0068*** (<i>< 0.01</i>)	0.0056*** (<i>< 0.01</i>)	0.0198** (0.03)
Low Ranked IID %	-0.006*** (<i>< 0.01</i>)	-0.003** (0.02)	0.007 (0.33)
Ln(Total CEO Compensation+1)		-0.11*** (<i>< 0.01</i>)	0.175** (0.02)
Predicted Ln(CEO Delta +1)		3.561*** (<i>< 0.01</i>)	-1.696** (0.03)
Independent Board	-0.118 (0.51)	0.397** (0.02)	1.727*** (<i>< 0.01</i>)
Busy Board	0.188** (0.02)	0.112 (0.13)	0.752 (0.22)
Independent Director Ownership	00*** (<i>< 0.01</i>)	-0.0130*** (<i>< 0.01</i>)	-0.033* (0.05)
CEO Chair	0.2315*** (<i>< 0.01</i>)	-0.1249*** (<i>< 0.01</i>)	0.1041 (0.66)
Ln(Board Size)	0.4310*** (<i>< 0.01</i>)	0.5960*** (<i>< 0.01</i>)	0.062 (0.9)
Institutional Holdings	0.003*** (<i>< 0.01</i>)	0.003*** (<i>< 0.01</i>)	0.03*** (<i>< 0.01</i>)
Ln(Assets)	-0.24841*** (<i>< 0.01</i>)	-3.84946*** (<i>< 0.01</i>)	1.00601 (0.28)
Ln(Assets) ²	0.0072 (0.11)	0.1527*** (<i>< 0.01</i>)	-0.0323 (0.45)
Ln(Firm Age)	-0.1112*** (<i>< 0.01</i>)	1.2758*** (<i>< 0.01</i>)	-0.4676 (0.24)
Ln(Business Segments)	0.068** (0.02)	0.079*** (<i>< 0.01</i>)	0.281 (0.35)
Capital Expenditure/Sales	-0.1728 (0.39)	0.2079* (0.06)	1.4274 (0.58)
Annual Stock Return	-0.222 (0.11)	-1.162*** (<i>< 0.01</i>)	0.085 (0.71)
Annual Stock Return _(t-1)	-2.154*** (<i>< 0.01</i>)	-2.574*** (<i>< 0.01</i>)	0.732* (0.07)
ROA	-0.985 (0.4)	-6.5899*** (<i>< 0.01</i>)	0.1931 (0.94)
ROA _(t-1)	1.1333 (0.25)	-0.9913 (0.24)	1.9201 (0.22)
Volatility	0.91 (0.23)	0.06 (0.94)	2.394 (0.29)
CEO Tenure	0.017*** (<i>< 0.01</i>)	-0.291*** (<i>< 0.01</i>)	0.106 (0.14)
CEO Tenure ²	0** (0.03)	0.003*** (<i>< 0.01</i>)	-0.001* (0.09)
Number of Observations	12,903	12,851	1921
Fixed Effects	Industry	Industry	Industry
Pseudo-R ²	8.38%	14.66%	22.83%

Panel B: Executive Compensation Shareholder Approval Rates	Model 1	Model 2	Model 3	Model 4
Dependent Variable:	Yes Votes / Outstanding Shares	Shares Voted For / Shares Voted Against	Weak Shareholder Voting Support (<70%)	Shares Voted For / Outstanding Shares
High Ranked IID %	0.0003*** (<i>< 0.01</i>)	0.248* (0.07)	-0.0004* (0.09)	
Low Ranked IID %	-0.0002 (0.13)	0.124 (0.32)	0.0001 (0.61)	
High Ranked IID % (Comp)				0.0001 (0.27)
Low Ranked IID % (Comp)				-0.0001**

(continued on next page)

Table 4 (continued)

Panel B: Executive Compensation Shareholder Approval Rates	Model 1	Model 2	Model 3	Model 4
Dependent Variable:	Yes Votes / Outstanding Shares	Shares Voted For / Shares Voted Against	Weak Shareholder Voting Support (<70%)	Shares Voted For / Outstanding Shares
				(0.04)
Independent Board	0.019 (0.36)	-11.754 (0.6)	-0.019 (0.64)	0.024 (0.25)
Busy Board	-0.002 (0.69)	-1.3582 (0.82)	0.01 (0.45)	-0.0006 (0.91)
Independent Director Ownership	0.00001*** (< 0.01)	-0.027*** (< 0.01)	0*** (< 0.01)	0*** (< 0.01)
CEO Chair	-0.001 (0.83)	-3.763 (0.31)	-0.005 (0.58)	0 (0.94)
Ln(Board Size)	0.0098 (0.48)	-12.4346 (0.28)	-0.0375 (0.16)	0.0119 (0.4)
Institutional Holdings	0.0003*** (< 0.01)	-0.00072 (1)	-0.00107*** (< 0.01)	0.00029*** (< 0.01)
Ln(Assets)	0.0547** (0.01)	8.4868 (0.83)	-0.0821 (0.12)	0.0576*** (< 0.01)
Ln(Assets) ²	-0.0045*** (< 0.01)	-1.3611 (0.56)	0.0036 (0.27)	-0.0046*** (< 0.01)
Ln(Firm Age)	-0.016 (0.28)	-73.596 (0.15)	0.08** (0.03)	-0.018 (0.22)
Ln(Business Segments)	-0.0081 (0.2)	-0.2861 (0.96)	0.0027 (0.83)	-0.0072 (0.26)
Capital Expenditure/Sales	0.006 (0.76)	-16.166* (0.08)	-0.072 (0.11)	0.008 (0.65)
Annul Stock Return	0.006 (0.28)	1.601 (0.17)	-0.002 (0.85)	0.007 (0.28)
Annual Stock Return _(t-1)	0.021*** (< 0.01)	5.1774 (0.19)	-0.0077 (0.27)	0.0215*** (< 0.01)
ROA	0.122*** (< 0.01)	5.1898 (0.73)	-0.0619 (0.28)	0.1247*** (< 0.01)
ROA _(t-1)	-0.026 (0.24)	5.349 (0.72)	0.083* (0.08)	-0.027 (0.22)
Volatility	-0.276*** (< 0.01)	-70.747 (0.31)	0.628*** (< 0.01)	-0.281*** (< 0.01)
CEO Tenure	-0.0005 (0.16)	0.117 (0.66)	-0.0002 (0.76)	-0.0005 (0.16)
CEO Tenure ²	0.0000002 (0.2)	-0.00012 (0.35)	0.0000001 (0.74)	0.0000002 (0.2)
Number of Observations	12,604	12,599	12,604	12,472
Fixed Effects	Firm / Year	Firm / Year	Firm / Year	Firm / Year
Adjusted-R ²	48.90%	17.59%	55.06%	48.64%

Panel A presents results of conditional logit models analyzing the relation between director reputation incentives and the boards' decision to have an advisory proposal on the frequency of shareholder say-on-pay for the post-2010 fiscal years. The dependent variable in models 1 and 2 is an indicator variable that equals 1 if the board has an advisory proposal for the frequency of shareholder say-on-pay at the next meeting. Model 3 reports results of conditional logit models for the subsample of say-on-pay frequency proposals firm years. The dependent variable in model 3 is an indicator if the proposed frequency was one year. All models incorporate robust standard errors and industry fixed effects. Panel B presents results of firm fixed effects regression models analyzing the shareholder support for proposals to approve executive compensation (ISS Item description: Advisory Vote to Ratify Named Executive Officers' Compensation; Agenda Item ID = M0550). Due to data availability, we only use the post-2006 fiscal year period of sample for these tests. The dependent variable in models 1, 2 and 4 is a measure of shareholder votes of approval. Model 3 reports the results of a linear probability model, where the dependent variable is an indicator variable that equals one if the total shareholder vote in favor of the proposal falls below 70%. All models incorporate robust standard errors and firm and year fixed effects. *p*-values are reported in parentheses beneath the coefficients. Controls are the same as in Table 2. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

incentives are less likely to experience weak shareholder voting support, which suggests that ISS is less likely to have recommended against these proposals.

Lastly, in model 4, we repeat the analysis of model 1, but focus on the on the reputation incentives of the IIDs on the compensation committee. Here we find evidence that weak IID reputation incentives on the compensation committee are significantly associated with lower shareholder support for executive compensation packages Together, the evidence in Table 4 reveals that boards with stronger IID reputation incentives seek to give shareholders greater say on CEO compensation and that these compensation packages in turn elicit greater voting support from shareholders.

3.4. Quasi-natural experiment: CEO deltas around initial CEO appointments

Large firms are more likely to have IIDs with strong reputation incentives and if these firms also have successful CEOs, then these CEOs are likely to have accumulated significant equity, which typically leads to higher CEO deltas. To address the concern that successful CEOs lead to both larger firms and to CEOs with longer tenure and larger accumulated equity and deltas, we consider a quasi-natural experiment where we examine the equity deltas of new CEOs. We exploit the fact that new CEOs generally begin without a large equity position in the firm, so that it takes a conscious decision on the part of a board to raise a new CEO's delta. Thus, if high director reputation incentives encourage a director to support greater CEO equity-based compensation, then we expect this to be especially observable in the first years following a CEO's initial appointment.

In this analysis, we examine a subsample of firm-years following a CEO's initial appointment. After identifying all firm-year observations with this condition, we then require the CEO to remain in office for at least three years to avoid including interim CEOs in the sample. We also include up to three firm-year observations prior to the new CEO appointment year. We classify these firm-years using a variable labeled *New CEO Firm*, which takes a value of one for the appointment year and the three years thereafter and equals zero for the three years prior to the appointment. We obtain qualitatively similar results if we drop the appointment year. In [Table 4](#), we report results of examining new CEOs' deltas in a cross-section of firms and changes in CEO deltas within firms around CEO turnovers. The controls are the same as in [Tables 2 and 3](#).

In model 1 of [Table 5](#), we consider only the firm-years when there is a newly appointed CEO (*New CEO Firm* equals to one). In this model, we incorporate industry fixed effects and consider the cross-sectional variation within the industry in board reputation incentives. In the first three years of a CEO's tenure, we find strong evidence that new CEO deltas are significantly higher for firms having greater representation by IIDs with strong reputation incentives, compared to firms having greater representation by IIDs with weaker reputation incentives where we observe significantly lower CEO deltas. In the next two models, we modify our sample, by separating firm-years into treatment and control groups and examine the change in CEO delta around a CEO turnover. Naturally, we expect the new CEOs to have a smaller delta than the outgoing CEO. Indeed, the average equity ownership held by the departing CEO is 2.15%, whereas that for the newly appointed CEOs is only 0.22%, and the difference is statistically significant at the 1% level.

We identify treatment firms (*Treatment* equals one) as having boards where the number of IIDs with strong reputation incentives, *High-Ranked IID %*, exceeds the number of IIDs with weak reputation incentives, *Low Ranked IID %*, for at least three of the four years spanning the turnover year and the subsequent three years. Control firms (*Treatment* equals zero) are defined as having boards in which *Low Ranked IID %* exceeds *High Ranked IID %* for at least three of these same four years. In models 2 and 3, we report results of a DiD analysis for these two subsamples of firms, where the coefficient of interest is the interaction between the *New CEO Firm* and the *Treatment* indicators.

In model 2, we incorporate industry fixed effects and as expected, we find a significantly negative coefficient for the *New CEO Firm* indicator, which shows that on average a new CEO begins with a significantly lower delta than the outgoing CEO has. More importantly, examining the interaction coefficient, we find it is positive and significant. This finding indicates that, while the average new CEO has a lower delta than the previous CEO, the new CEO in treatment firms on average have much larger deltas (7.9% larger) than do new control firm CEOs. In model 3, we replace industry with firm fixed effects (the treatment indicator is now subsumed by the fixed effects) and we find similar results. In this model, the interaction coefficient is positive and significant at the 5% level.

Finally, it is possible that internally appointed new CEOs could have accumulated significant equity ownership in the firm as a senior officer or director. While non-CEO senior executive ownership is generally much smaller than that of CEOs, it could be large for a subsample of these firms. In unreported results, we re-estimate models 2 and 3 after excluding firms where a new CEO's equity ownership is in the top quartile of our sample of CEO equity shareholdings, so we can filter out internal appointments of senior officers with pre-existing sizable equity holdings in the firm. With this filter, our primary findings remain qualitatively unchanged. These results reveal that when new CEOs have low initial equity ownership in the firm, and boards have more IIDs with strong reputation incentives, CEOs exhibit better CEO-shareholder alignment of interests, than for new CEOs in firms with boards that have more IIDs with weak reputation incentives.

3.5. CEO compensation and exogenous shocks to influential IID incentives

While the prior evidence shows significant associations between IID reputation incentives and CEO compensation contracts as predicted, we next consider a more formal test of causation. For this purpose, we analyze a quasi-natural experiment that occurs when an IID finds that the market value of one of their other firms where she serves on the board experiences a large decline in value, which makes that other directorship less prestigious than it was before, thereby implying an exogenous rise in the first board's ranking. Specifically, we require a fall in equity capitalization of at least 15% at the second firm that leads to a decline in its relative ranking. Among the directors identified by this test, the mean (median) drop in firm market capitalization at these directorships declining in ranking is 35.5% (42.3%).²² Thus, the drop in the second firm's equity value strengthens the reputation incentives of the common director at the first firm that does not experience a decline in its equity capitalization, leading to an exogenous rise in the focal firm's board ranking for that IID. We define treatment firms as having at least one IID whose ranking of this firm's directorship exogenously rises. To preclude ranking changes that are endogenous due to the director gaining or losing a larger or smaller directorship, treatment

²² Should a director have multiple other directorships fall in size in a year, only the largest decline is considered.

Table 5
Changes in CEO Delta around CEO transitions.

Dependent Variable: $\ln(\text{CEO Delta})$	Model 1	Model 2	Model 3
	New CEO Firm Years Only	Difference-in-Difference	Difference-in-Difference
High Ranked IID %	0.01*** (< 0.01)		
Low Ranked IID %	-0.005* (0.06)		
Treatment		0.173 (0.27)	
New CEO Firm Year (1/0)		-0.271* (0.07)	-0.256 (0.22)
Treatment X New CEO Firm Year		0.348** (0.02)	0.379** (0.03)
Independent Board	-0.146 (0.56)	-0.081 (0.79)	0.252 (0.26)
Busy Board	-0.082 (0.5)	0.0815 (0.51)	0.0082 (0.95)
Independent Director Ownership	0.012 (0.41)	0.019* (0.09)	-0.013 (0.44)
CEO Chair	0.027 (0.76)	0.119 (0.27)	-0.015 (0.89)
Ln(Board Size)	-0.0953 (0.69)	-0.3482 (0.14)	0.0992 (0.76)
Institutional Holdings	0.0012 (0.5)	0.00136 (0.580)	0.00728*** (< 0.010)
Ln(Assets)	0.5988*** (< 0.01)	0.5576** (0.02)	0.3064 (0.76)
Ln(Assets) ²	-0.0168 (0.12)	-0.014 (0.3)	-0.0176 (0.75)
Ln(Firm Age)	-0.097* (0.08)	-0.195*** (< 0.01)	-0.638 (0.16)
Ln(Business Segments)	0.0846 (0.37)	0.0806 (0.49)	0.0224 (0.91)
Capital Expenditure/Sales	-0.284 (0.15)	0.033 (0.9)	0.028 (0.95)
Annual Stock Return	0.589*** (< 0.01)	0.553*** (< 0.01)	0.442*** (< 0.01)
Annual Stock Return _(t-1)	0.482*** (< 0.01)	0.3289** (0.01)	0.1796 (0.2)
ROA	1.2** (0.02)	1.8981*** (< 0.01)	2.3363*** (< 0.01)
ROA _(t-1)	0.966** (0.04)	1.115** (0.04)	1.428** (0.01)
Volatility	-1.411 (0.24)	-3.306** (0.02)	-3.148** (0.05)
CEO Tenure	-0.919*** (< 0.01)	0.063*** (< 0.01)	0.05** (0.01)
CEO Tenure ²	0.276*** (< 0.01)	0.00003 (0.95)	0.00002 (0.95)
Number of Observations	1070	1085	1085
Fixed Effects	Industry/Year	Industry/Year	Firm/Year
Adjusted-R ²	44.40%	48.80%	65.12%

This table presents results of OLS models of director reputation incentives on the $\ln(\text{CEO Delta} + 1)$. The sample consists of the three years following a new CEO and up to the three years prior. Treatment firms are those in which the High Ranked IID % is greater than the Low Ranked IID % for at least three of the four years including and after the new CEO appointment. Control firms are those in which the High Ranked IID % is less than the Low Ranked IID % for at least three of the four years. High (Low) Ranked IID % is the percentage of independent directors on this firm's board who rank this firm high (low) based on its market capitalization relative to that of all the firms where this same director also serves on the board. The models employ robust standard errors that are clustered by firm. *p*-values are reported in parentheses beneath the coefficients. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

directors are restricted from changing their directorships in the event year. This requirement precludes changes in a director's preferences and performance from influencing the number of board seats a director holds and thus, causing a directorship's relative rankings to change. We also require the equity capitalization of each firm that rises in rank to exceed that of the firm falling in rank by at least 10%. Control firms are defined to have no treatment directors and must be drawn from the same Fama-French-48 industry group in the same calendar year and have the closest equity market value to the treatment firm.

We also require that our initial matched sample meet the common support condition for treatment and control firms in the year prior to the shock (Atanasov and Black (2016)). To achieve covariate balance in the pre-treatment period, the difference in means

Table 6
CEO compensation and exogenous shocks to director reputation incentives.

Dependent Variable:	Model 1	Model 2
	OLS CEO Delta	OLS CEO Delta
Treatment	-0.051 (0.61)	-0.138* (0.08)
Post-Shock	0.0652 (0.37)	0.014 (0.83)
Treatment X Post-Shock	0.188** (0.04)	0.214*** (< 0.01)
Number of Observations	3314	3009
Controls	No	Yes
Fixed Effects	Industry	Industry/Year
Adjusted-R ²	12.50%	54.11%

This table presents results from a difference-in-difference analysis. A treatment firm has at least one treatment director. A treatment director is an influential independent director where one of the other firms where this same director sits on the board decreases its equity capitalization and this results in the current firm's equity capitalization being larger, thereby raising the relative prestige of the current directorship. Control firms are in the same Fama-French industry, with the nearest market capitalization to the treatment firm, but have no treatment directors. To assess covariate balance in the year prior to the shock, we report in Appendix B the differences in the means for the dependent variable and the explanatory variables of the treatment and control samples and find evidence of good balance. The difference-in-differences estimated model is.

$$CEO\ Delta_{i,t} = \beta_0 + \beta_1 Treatment_i + \beta_2 Post-Treatment_t + \beta_3 Treatment_i * Post-Treatment_t + Controls_{i,t} + \varepsilon_{i,t}$$

The dependent variable is the natural log of CEO delta plus 1. $Post-treatment_t$ is an indicator variable that equals zero in the year prior to the ranking change and one in the two years following the ranking change event. $Treatment_i$ equals one for treatment firm-years and zero for control firm-years. The coefficient of the interaction term, β_3 , is the difference-in-differences estimate. Model 1 includes industry fixed effects and model 2 includes industry and year fixed effects. The controls are the same as in Table 2, but they are not reported for brevity. The full results with controls are reported in Appendix Table B2. p -values are based on robust standard errors, clustered by firm and are shown in parentheses beneath the coefficients. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

between the treatment and control firms should be insignificant with respect to CEO delta and each of the control variables in Table 2. This condition reduces our concern that a large difference in a control variable could drive the post-treatment rise in CEO delta, due to the control variable having an incorrectly specified functional form (Shipman et al. (2017)). To facilitate common support between treatment and control firms, we require all sample firms to have a majority of independent directors.

The results of this covariate balance test are reported in Appendix B (Table B1). All of the differences in control variable means of treatment and control firm samples are insignificant. Importantly, there are no significant differences between treatment and control firms in CEO delta as well as other measures of CEO equity-based compensation in the year prior to the shock. In unreported analysis, we find treatment and control firms have no significant differences in the fraction of CEO equity-based compensation two years prior to the shock, which supports the DiD parallel trends assumption.

Table 6 presents the results of the DiD analysis using this matched sample. The CEO's delta is measured in the year prior to the shock year and the following two years to allow sufficient time for the effects of director incentive changes to materialize. This enables us to assess whether treatment firms following an IID reputation shock are associated with a significant rise in CEO delta relative to control firms. The coefficient of interest is the interaction term between the treatment firm and post-shock period indicators.

Following an exogenous rise in a firm's relative ranking for at least one IID, we find in model 1 that treatment firms are associated with significantly larger CEO delta than are the control firms (p -value = 0.04). An attractive feature of the shock used to identify treatment firms is that factors causing changes in firm size occur at the director's other directorship, which are unrelated to the director's focal firm. A possible exception to the unrelatedness condition is if the director's other directorship is at a firm in the same industry. Although few directors sit on boards of other industry firms due to legal concerns about interlocking directors on competitors' boards,²³ to account for this possibility, we include industry fixed effects.

In model 2, we include additional controls along with industry and year fixed effects and find the coefficient of the interaction term remains positive and significant. Since we continue to find a significant DiD interaction term after including an array of control variables, this is further evidence that covariate imbalance is not the cause of our results. Finally, to account for time varying industry effects such as merger and acquisition activity that could affect the exogeneity of this shock, in unreported results we repeat the model 2 analysis using industry x year fixed effects. This specification exploits the similarity of firms within an industry each year. We continue to require all boards to have at least 50% independent directors. The DiD interaction term coefficient is positive with a p -value

²³ Legal concerns include pricing fixing and violating a director's duty of loyalty. In our sample of independent directors on multiple boards, 8.4% (2.8%) serve on two boards in the same Fama-French-48 (SIC-4 digit) industry.

of 0.045. Thus, we continue to find qualitatively and quantitatively similar results.²⁴

This analysis provides evidence that CEO equity-based incentive pay is one important channel through which ID reputation incentives affect shareholder wealth and is one explanation for the significant association of stronger (weaker) firm performance with better (weaker) motivated IIDs. Yet, before we can conclude that these changes in the composition of CEO pay create shareholder value, we need to examine the dark side of performance-based compensation, which is the enhanced CEO incentives to inflate a firm's reported earnings (e.g., [Dichev et al. \(2013\)](#)), which can undercut the performance incentives in CEO pay. If boards anticipate these perverse manager incentives, then well motivated IIDs should seek to counter them by raising firm monitoring ([Laux and Laux \(2009\)](#)) with more careful policing of firm accounting statements to counter any anticipated rise in CEO incentives to inflate earnings. We explore this possibility next.

3.6. Earnings management and misreporting

If reputation incentives cause IIDs to be primarily concerned with good short-term firm performance, rather than good long-term performance, then greater IID reputation incentives could foster an environment more conducive to performance enhancing earnings management. Whereas, if director reputation incentives lead to more careful monitoring of senior managers and firm accounting statements, then we expect to observe a fall in earnings management activity. To test whether boards encourage or discourage earnings inflation, we examine two forms of earnings management.

One commonly studied approach to enhancing a firm's reported earnings is the use of accruals-based earnings management, which is measured by abnormal accruals (see, e.g., [Bergstresser and Philippon \(2006\)](#), [Burns and Kedia \(2006\)](#), [Leuz \(2003\)](#), [Hazarika et al. \(2012\)](#)).²⁵ Accruals-based earnings management reflects the level of discretion that a board grants management over a firm's accounting statements. This is one of the two main measures we use to assess a CEO's ability to improve reported short-term financial performance.

[Table 7](#) Panel A examines the association of the percentage of IIDs with high versus low reputation incentives and the degree of discretionary accruals-based earnings management. Following the existing literature, we analyze abnormal accruals by the absolute values of the residuals from a modified Jones model of discretionary accruals (e.g. [Jones \(1991\)](#), [Dechow et al. \(1995\)](#), [Bergstresser and Philippon \(2006\)](#), [Armstrong et al. \(2013\)](#) and [Alam et al. \(2018\)](#)).²⁶ Following [Cheng and Warfield \(2005\)](#) and [Bergstresser and Philippon \(2006\)](#), we use a CEO's delta to account for possible stronger CEO incentives to manage earnings due to their current equity ownership. However, since this variable is endogenous ([Yang et al. \(2021\)](#)), in this analysis we use the predicted value of a CEO's delta, estimated from [Table 2](#) model 1, excluding the director reputation measures. Our results are also robust to excluding CEO delta. Each regression includes year and industry fixed effects to exploit variation in board reputation incentives across firms within industries and employs robust standard errors clustered by firm to account for serial correlations in firm data.

In [Table 7](#), Panel A, model 1, we find that a higher percentage of strongly motivated IIDs captured by High Ranked IID % is associated with significantly lower absolute levels of discretionary accruals and thus, a lower likelihood of accruals-based earnings management. For each IID who becomes highly motivated, the level of absolute discretionary accruals at a typical size board of nine directors plus the CEO falls by 0.00139, which represents a 3.65% decline in accruals from its 0.382 unconditional mean. The Low Ranked IID % is not statistically significant. Even after controlling for CEO equity-based incentives, we find evidence of greater financial statements monitoring by IIDs having stronger reputation incentives, which also suggests that these IIDs have a longer-term focus.²⁷

For robustness, we investigate the degree to which these results are due to general board reputation incentives versus individual IID reputation incentives similar to our earlier analysis of CEO compensation. In model 2, we report results using a matched sample as described earlier. We again find similar results. In addition, consistent with prior studies, we find strong evidence that greater CEO equity-based incentives are significantly associated with higher discretionary accruals. In model 3, we return to the full sample and include both High and Low Board reputation measures to control for reputation incentives arising purely from the firm's relative size in the economy. Here we find evidence that board reputation incentives arising from the size of the firm rather than individual relative reputation incentives drives the association between stronger reputation incentives and reduced accruals-based earnings management.

In models 4–6, we repeat our initial analysis using signed accruals to focus more directly on income increasing accruals. Generally, we find similar results to when we use absolute values of discretionary accruals, although the explanatory power of these models is slightly weaker in terms of a lower adjusted-R-squares. In model 4, we find results consistent with model 1, using the full sample. In model 5, we find similar results using the matched sample. Finally, in model 6 when we add our two board reputation measures, we continue to find evidence that only High Board Reputation is negatively and significantly related to discretionary accruals. These results are consistent with director reputation incentives leading to greater board oversight in terms of stricter monitoring of firm

²⁴ In unreported analysis, we find similar results when using the CEO's percentage of equity-based compensation as the dependent variable.

²⁵ Managers with greater reporting discretion can transfer earnings forward or backward to suit their share buying/selling desires. Taking the absolute value of discretionary accruals allows us to measure the total impact of earnings manipulation. For example, managers may reserve current earnings with negative discretionary accruals to prevent future earnings disappointments ([Healy \(1985\)](#) and [Cheng and Warfield \(2005\)](#)).

²⁶ Following the existing literature, we winsorize discretionary accruals. [Table 7A](#) is based on 2.5% and 97.5% levels, but similar results are found when winsorizing at the 5% and 95% levels or the 1% and 99% levels.

²⁷ In unreported results, we repeat the analysis including CEO vega to control for CEO risk-taking incentives ([Armstrong, Larcker, Ormazabal and Taylor \(2013\)](#) and [Mayberry et al. \(2021\)](#)). We continue to find that our reputation measures have positive relations to reporting quality.

financial statements.

In addition to equity-based incentive alignment as measured through CEO delta, other compensation policies intended to align CEO incentives with those of shareholders can also alter CEO incentives to management earnings. [Gopalan et al. \(2014\)](#) show that CEO pay duration, a measure of the vesting periods of various component of CEO pay, is negatively related to earnings-increasing accruals. Conversely, [Bettis et al. \(2010\)](#) argue that performance vesting can increase CEO incentives to manage earnings. However, they find no evidence that performance vesting policies affect discretionary accruals. Nonetheless, to account for the possibility of policies like these affecting the likelihood of accruals-based earnings management, in models 7 and 8, we replace CEO delta with two compensation policy measures. First, we include the weighted vesting period, as calculated in [Table 3](#). Second, we include an indicator variable that equals one if the board has imposed an equity-clawback provision, which enables the board to recapture CEO compensation due to violations of accounting rules. Data for these two variables are only available for the years 2006–2020.

Turning to the evidence, in model 7 we find a positive and significant coefficient estimate for the weighted vesting period and the magnitude of discretionary accruals and we continue to find a negative and significant relation between High Ranked IID% and the magnitude of discretionary accruals, consistent with our initial findings in model 1. In model 7, we also include our board reputation measures. Neither board reputation measure is significant. Interestingly, when we control for time vesting and the existence of clawback provisions, the coefficient estimate for High Board Reputation, which is significant when controlling for CEO delta in models 3 and 6, remains negative, but it is no longer significant. This lack of significance could be due to the much smaller sample size used in this model (only post-2005 data are available for these provisions). It is also possible that the use of clawback provisions is highly correlated with firm visibility, and thus, it acts as a proxy for our board reputation measures, which could obscure our ability to identify a statistically significant relation with accruals-based earnings management. Nonetheless, we continue to observe a negative and significant relation between High Ranked IID% and accrual-based earnings management. In unreported results, we find qualitatively similar results when examining signed accruals-based earnings management.

3.7. Real earnings management

While the study of accounting manipulation has a long history, with early work focused on fraud and accrual-based earnings management, the more recent accounting literature has broadened its investigation to include real earnings management, in which managers make operational changes to manipulate current earnings upward. Several recent studies show that real-earnings management and accrual-based earnings management are related and explore how managers can potentially use either mechanism to manipulate earnings to meet short-term earnings targets (e.g., [Roychowdhury, 2006](#), [Cohen et al. \(2008\)](#), and [Burnett et al. \(2012\)](#)).

By adjusting real activities, managers can manipulate short run earnings upward. However, whether a firm realizes short run gains in cash flows from operations, or from reductions in production costs and discretionary expenses, in later periods this action can produce substantially lower cash flows and higher costs. For example, firms can overproduce to reduce per unit cost of goods sold in the current period, thereby inflating current earnings. But the resulting rise in inventory costs reduces profitability in later periods ([Roychowdhury \(2006\)](#)). Importantly, many studies document a significant negative relation between real-earnings management and firm value (e.g., [Burnett et al. \(2012\)](#), [Zang \(2012\)](#), [Chan et al. \(2015\)](#), and [Chen et al. \(2015\)](#)).

To explore IID reputation incentives to constrain real earnings management, we follow [Roychowdhury \(2006\)](#) and [Cohen et al. \(2008\)](#) to examine real transactions management in three key areas. Specifically, we use residuals from separate regressions predicting production costs, cash flow from operations and discretionary expenses (R&D, SG&A and advertising) to obtain our estimates of abnormal real earnings management. Higher abnormal production cost (used to lower per unit costs) as well as lower abnormal discretionary expenses and abnormal cash flows from operations can all produce real earnings management.²⁸ Following [Chan et al. \(2015\)](#), we define an aggregate real earnings management measure, *total real transactions management*, to equal abnormal production cost minus abnormal cash flow from operations and abnormal discretionary expenses.

In [Table 7](#), Panel B, we examine the association of real earnings management with our main measures of IID reputation incentives. The dependent variable measures total real transactions management. The controls are the same as in Panel A, models 1–6.²⁹ In model 1, we observe a significant negative relation between High Ranked IID % and real earnings management. This finding indicates that at a typical board composed of a CEO and nine directors, for each IID who is strongly motivated by reputation incentives, real earnings management should decline by 0.041. This is of similar magnitude to the observed 300-basis point increase for an inter-quartile range increase in CEO equity incentives reported by ([Bergstresser and Philippon \(2006\)](#)). In our sample, this corresponds to an 8.75% reduction from the unconditional mean level of real earnings management (0.470). In contrast, we find an insignificant coefficient estimate for the Low Ranked IID %. This evidence is consistent with more IIDs with strong reputation incentives influencing a board to more closely monitor management actions, leading to a reduction in real earnings management.

In model 2, we examine the impact of IID reputation incentives of the audit committee members. For audit committees with strong

²⁸ Accelerating sales through price discounts, channel stuffing or lenient credit terms can temporarily increase sales volume as well as increase earnings in the current period, but it can also lead to lower cash flows from operations relative to total sales. Hence, lower *abnormal* cash flow from operations can indicate higher real earnings management ([Roychowdhury \(2006\)](#)).

²⁹ We do not include the weighted vesting period or the indicator for the presence of an equity-clawback provision because their limited availability (post-2005) significantly reduces the sample size. In unreported results, when we include these controls in model 1, neither the weighted vesting period nor the equity-clawback provision indicator is significant and the adjusted-R-squared is slightly lower (16.9% versus 19.2%). However, the High Ranked IID% remains negative and significant.

IID reputation incentives, we find evidence of significantly lower levels of real transaction management. For audit committees with weak IID reputation incentives, we find no association with real earnings management. In model 3, where we also take into account a board's reputation incentives, we find that weaker general board reputation incentives drive the previous results. Specifically, we find clear evidence that weak board reputation incentives are associated with a significantly higher level of real earnings management. After controlling for board reputation incentives, we also find a statistically significant relation between High Ranked IID% and lower levels of real transactions management, although this relation is somewhat weaker. This suggests that directors in more visible firms find total real earnings management unattractive, while directors in less visible firms are less sensitive to real earnings management. Given the higher (lower) market value of more (less) visible firms can reflect their greater (fewer) growth opportunities, this could raise (lessen) pressure on CEOs to meet higher earnings thresholds, which then heightens (lessens) a well-motivated board's need to monitor the firm's financial statements.

Finally, in model 4 we re-examine the effects of audit committee reputation incentives after accounting for board reputation incentives. We find evidence that strong IID reputation incentives of audit committee members are associated with a significantly lower degree of real earning management activity. Thus, we conclude that strong reputation incentives by IIDs on the audit committee lead to more rigorous monitoring, affording CEOs less leeway in managing earnings.

While tighter constraints on managers can deter self-serving earnings management activity, some earnings management may be beneficial, and as [Armstrong et al. \(2010\)](#) observe it “may improve the informativeness of the earnings process” (p. 191). Thus, if reputation incentives lead IIDs to aggressively limit manager discretion, then it is possible that this improved earnings quality is not always in the shareholders' best interests. To address this possibility, we explore another important measure of earnings quality, namely negative earnings restatements.

The results of our analysis of negative earnings restatements are reported in [Table B3](#) of Appendix B. We find an insignificant association between High Ranked IID % and the likelihood of a negative earnings restatement, but a negative (positive) and significant association between our High (Low) Board reputation measure. Furthermore, many prior studies show that restatements lead to substantial declines in shareholder value (e.g., [Palmrose et al. \(2004\)](#), [Burns and Kedia \(2006\)](#) and [Hennes et al. \(2008\)](#)). Together these results suggest that stronger IID reputation incentives are associated with better monitoring of financial statements, which protects shareholder interests. The above results, combined with our earlier evidence, suggest that director reputation incentives help ensure a better balance between strong CEO compensation incentives and the intensity of board monitoring of a firm's financial statements.

3.8. Earnings management and exogenous shocks to influential ID incentives

[Armstrong et al. \(2010\)](#) observe that despite the numerous earlier findings that examine executive incentive compensation and earnings management, causality is difficult to establish. Previously, we used exogenous shocks to an IID's ranking of a directorship to establish causality between director reputation incentives and the level of CEO delta. In this section, we utilize the same approach to assess whether the relation between director reputation incentives and the degree of firm earnings management is causal. For this purpose, we first construct an outcome variable that for a given year equals one if the firm experiences either discretionary accruals management or a real earnings management that falls in the top tercile of our sample and equals zero otherwise. By creating a single combined variable for these two forms of earnings reporting problems, we obtain a much larger outcome sample, and it has the additional benefit of eliminating any double counting of firms using both forms of earnings management.

For this analysis, we employ a DiD analysis using a matched sample procedure similar to the earlier CEO delta analysis where we compare treatment and control firms matched on industry, firm size and year. We again restrict IIDs to neither gain nor lose any directorships in the treatment year. Treatment firms are defined to have at least one IID who experiences an exogenous improvement in the ranking of this firm's directorship, while control firms have none. Beginning with the same initial sample, we next select a subsample to achieve covariate balance between the treatment and control samples with respect to the dependent variable and control variables used in [Table 7](#). We report the results of the covariate balance analysis in Appendix B ([Table B4](#)). We find the control variable means are not significantly different in the two subsamples. Finally, there is no significant pre-treatment difference in the likelihood of high earnings management in our treatment and control firms. Furthermore, in unreported results, there is no difference in the change in likelihood of an extreme earnings management event from years t-2 to t-1 between the treatment and control firms, which is consistent with the parallel trends assumption.

[Table 8](#) presents results based on our high earnings management indicator variable. The controls are identical to [Table 7](#), but for brevity are unreported. Models 1 and 2 present results from a DiD analysis of high earnings management events in the year prior to the exogenous shock and the two years thereafter. In each model, the key coefficient estimate is the interaction term between the treatment firm and post-shock indicator variables. Model 1 presents results from an OLS regression that includes only the two DiD variables and their interaction term. Model 2 presents coefficient estimates for the key DiD variables in a regression model that includes all the prior controls in [Table 7](#). We find that the coefficient of the interaction term is significantly negative in both models.³⁰

The above evidence indicates that when a board has at least one IID who experiences an exogenous rise in this directorship's ranking, the firm is significantly less likely to experience a high earnings management event in the post-treatment years than is a similar control firm. This evidence is consistent with our prior findings and avoids endogeneity concerns associated with changes in

³⁰ In unreported results, we find quantitatively and qualitatively similar estimates when we incorporate industry x year fixed effects to account for time varying industry activity.

Table 7
Earnings Management and Independent Director Reputation Incentives.

<i>Panel A: Accrual-Based Earnings Management</i>	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<i>Dependent Variable:</i>	Full Sample: Modified Jones Model DA	Matched Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Matched Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Sub Sample post-2005: Modified Jones Model DA	Sub Sample post-2005: Modified Jones Model DA
High Ranked IID %	-0.0013*** (0.01)	-0.0042** (0.02)	-0.0006 (0.23)	-0.0008* (0.09)	-0.0042** (0.03)	-0.0003 (0.56)	-0.0016** (0.02)	-0.0012* (0.1)
Low Ranked IID %	-0.00024 (0.64)	0.001 (0.64)	-0.0004 (0.44)	-0.00015 (0.77)	0.00128 (0.55)	-0.00035 (0.5)	-0.00078 (0.23)	-0.00089 (0.2)
High Board Reputation			-0.00661** (0.03)			-0.0054* (0.09)		-0.0036 (0.34)
Low Board Reputation			0.00101 (0.72)			0.00074 (0.8)		0.00075 (0.84)
Weighted Vesting Period							0.016* (0.09)	0.015 (0.11)
Equity-Clawback Policy							-0.01355 (0.67)	-0.011 (0.72)
Predicted Ln(CEO Delta +1)	0.00002 (0.13)	0.175*** (<i>< 0.01</i>)	0.00003** (0.04)	-0.00001 (0.35)	0.177*** (<i>< 0.01</i>)	-0.00001 (0.67)		
Independent Board	-0.056** (0.03)	-0.121 (0.39)	-0.033 (0.35)	-0.02854 (0.28)	-0.108 (0.47)	-0.012 (0.74)	-0.04 (0.38)	-0.045 (0.44)
Busy Board	0.0328 (0.31)	0.029 (0.75)	0.03 (0.37)	0.013 (0.7)	0.017 (0.86)	0.011 (0.75)	0.064 (0.13)	0.063 (0.16)
CEO Chair	0.0291 (0.11)	-0.158* (0.05)	0.0348* (0.05)	0.02183 (0.23)	-0.192** (0.02)	0.027 (0.13)	0.014 (0.53)	0.016 (0.49)
Ln(Board Size)	-0.025 (0.59)	0.243 (0.24)	-0.026 (0.57)	-0.041 (0.38)	0.297 (0.17)	-0.039 (0.4)	-0.014 (0.81)	-0.019 (0.75)
Institutional Holdings	0.0004 (0.26)	0.0033** (0.03)	0.0005 (0.2)	0.0006 (0.16)	0.004** (0.03)	0.001* (0.09)	0.0001 (0.74)	0.0002 (0.7)
Ln(Assets)	-0.186 (0.11)	-1.254*** (<i>< 0.01</i>)	-0.1223 (0.25)	-0.215* (0.08)	-1.275*** (<i>< 0.01</i>)	-0.1634 (0.15)	-0.1656 (0.17)	-0.1163 (0.33)
Ln(Assets) ²	0.015* (0.05)	0.082*** (<i>< 0.01</i>)	0.013* (0.08)	0.017** (0.03)	0.085*** (<i>< 0.01</i>)	0.015** (0.05)	0.013 (0.1)	0.011 (0.16)
Leverage	0.285*** (<i>< 0.01</i>)	-0.492* (0.08)	0.244*** (<i>< 0.01</i>)	0.3228*** (<i>< 0.01</i>)	-0.4392 (0.14)	0.2907*** (<i>< 0.01</i>)	0.2602*** (<i>< 0.01</i>)	0.2232*** (<i>< 0.01</i>)
Ln(# Business Segments)	-0.005 (0.85)	0.068 (0.41)	-0.00988 (0.71)	-0.004 (0.88)	0.048 (0.57)	-0.007 (0.8)	-0.028 (0.34)	-0.031 (0.3)
ROA _(t-1)	-0.11564 (0.16)	-0.8114 (0.1)	-0.04431 (0.61)	-0.2145** (0.01)	-0.867 (0.12)	-0.161* (0.08)	-0.351*** (<i>< 0.01</i>)	-0.309** (0.02)
Herfindahl Index	-0.00001 (0.63)	-0.00022** (0.01)	-0.00001 (0.77)	-0.0000476* (0.07)	-0.00025*** (<i>< 0.01</i>)	-0.00005* (0.09)	0.00013*** (<i>< 0.01</i>)	0.00015*** (<i>< 0.01</i>)

(continued on next page)

Table 7 (continued)

Panel A: Accrual-Based Earnings Management	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<i>Dependent Variable:</i>	Full Sample: Modified Jones Model DA	Matched Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Matched Sample: Modified Jones Model DA	Full Sample: Modified Jones Model DA	Sub Sample post-2005: Modified Jones Model DA	Sub Sample post-2005: Modified Jones Model DA
NYSE	-0.05418 (0.11)	0.0341 (0.78)	-0.05294 (0.11)	-0.042 (0.23)	0.056 (0.67)	-0.03781 (0.27)	-0.03244 (0.34)	-0.02699 (0.42)
Number of Observations	22,263	5039	21,368	22,263	5039	21,368	14,752	13,831
Fixed Effects	Yr./Ind.	Yr.	Yr./Ind.	Yr./Ind.	Yr.	Yr./Ind.	Yr./Ind.	Yr./Ind.
Adjusted-R ²	19.26%	28.53%	19.39%	15.74%	28.47%	15.70%	21.53%	21.71%

Panel B: Real Earnings Management	Model 1	Model 2	Model 3	Model 4
<i>Dependent Variable: Sign (+/-) of greater Transaction Management</i>	Total Real Transactions Management (+)			
High Ranked IID %	-0.0037*** (<i>< 0.01</i>)		-0.0022* (0.1)	
Low Ranked IID %	-0.00023 (0.86)		-0.0008 (0.54)	
High Ranked IID % (Audit)		-0.0028*** (<i>< 0.01</i>)		-0.00214** (0.03)
Low Ranked IID % (Audit)		0.0008 (0.37)		0.00048 (0.6)
High Board Reputation			-0.0044 (0.49)	-0.0047 (0.46)
Low Board Reputation			0.0164*** (<i>< 0.01</i>)	0.01562** (0.01)
Predicted Ln(CEO Delta +1)	-0.0002*** (<i>< 0.01</i>)	-0.0001*** (<i>< 0.01</i>)	-0.0001*** (<i>< 0.01</i>)	-0.0001*** (<i>< 0.01</i>)
Independent Board	0.025 (0.75)	0.016 (0.85)	-0.086 (0.39)	-0.088 (0.37)
Busy Board	0.029 (0.64)	-0.001 (0.98)	0.044 (0.5)	0.022 (0.74)
CEO Chair	-0.034 (0.44)	-0.038 (0.39)	-0.026 (0.56)	-0.029 (0.52)
Ln(Board Size)	-0.088 (0.46)	-0.098 (0.41)	-0.078 (0.51)	-0.087 (0.46)
Institutional Holdings	-0.0012 (0.21)	-0.0012 (0.23)	-0.0015 (0.12)	-0.0015 (0.13)
Ln(Assets)	0.189 (0.22)	0.178 (0.25)	0.291* (0.07)	0.2788* (0.08)
Ln(Assets) ²	-0.003 (0.76)	-0.003 (0.79)	-0.004 (0.67)	-0.003 (0.73)
Leverage	0.097 (0.48)	0.083 (0.55)	0.008 (0.96)	-0.011 (0.93)
Ln(# Business Segments)	0.0355 (0.57)	0.039 (0.53)	0.024 (0.7)	0.02781 (0.65)

(continued on next page)

Table 7 (continued)

Panel B: Real Earnings Management	Model 1	Model 2	Model 3	Model 4
Dependent Variable: Sign (+/–) of greater Transaction Management	Total Real Transactions Management (+)			
ROA _(t-1)	–1.366*** (<i>< 0.01</i>)	–1.354*** (<i>< 0.01</i>)	–1.158*** (<i>< 0.01</i>)	–1.131*** (<i>< 0.01</i>)
Herfindahl Index	0.00001 (0.87)	0.000002 (0.97)	0.00002 (0.76)	0.00001 (0.84)
NYSE	–0.031 (0.64)	–0.0324 (0.62)	–0.0428 (0.52)	–0.044 (0.5)
Number of Observations	22,263	22,126	21,368	21,231
Fixed Effects	Year/Industry	Year/Industry	Year/Industry	Year/Industry
Adjusted-R ²	17.12%	17.09%	17.48%	17.45%

This table presents results from multivariate OLS regression analysis of the measures of accrual-based earnings management and real transactions-based earnings management. In Panel A, the dependent variable is the absolute value of firm discretionary accruals as a measure of earnings management in models 1–3, 7 and 8 and the signed firm discretionary accruals in models 4–6. Each earnings management variable is winsorized at the 2.5 and 97.5 percentiles. In Panel B, the dependent variable is total real earnings management, which consists of abnormal cash flow from operations, abnormal discretionary expenses and abnormal production following Roychowdhury (2006) and Chan, Chen, Chen and Yu (2015). Total real transactions management is measured as (abnormal production - abnormal discretionary expenses – abnormal cash flow from operations). The data are from fiscal years 1997 to 2020, except in models 7 and 8 of Panel A, which are drawn from 2006 to 2020. Firms in the finance and utility industries are excluded. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table 8
Occurrence of high earnings management: difference-in-differences analysis around exogenous directorship ranking changes.

Dependent Variable:	Model 1	Model 2
	OLS High Earnings Management	OLS High Earnings Management
Treatment	0.0375 (0.2)	0.036 (0.25)
Post-Shock	0.0473* (0.06)	0.041 (0.14)
Treatment X Post-Shock	-0.057* (0.09)	-0.063* (0.09)
Number of Observations	3298	3083
Controls	No	Yes
Fixed Effects	Industry	Industry/Year
Adjusted-R ²	0.65%	1.99%

This table presents results from multivariate difference-in-difference regression analysis of director reputation incentives and the propensity of the firm experiencing a high level of earnings management. The dependent variable equals one if the firm experiences a discretionary accrual or real earnings management measure in the top tercile and zero otherwise. Control variables are the same as in Table 7, but they are not reported for brevity. The data are for fiscal years 1997 to 2020. Firms in the finance and utility industries are excluded. A treatment firm has at least one treatment director. A treatment director is an independent director with multiple directorships for whom the firm of another one of their directorships decreased in size and this resulted in a ranking increase for the current directorship. Control firms are in the same Fama-French industry, with the nearest market capitalization to the treatment firm, but have no treatment directors. The differences in means for the dependent and independent variables for the treatment and control samples to assess covariate balance in the year prior to the shock are reported in Appendix B. The difference-in-differences estimated model is.

$$\text{Extreme Earnings Management}_{i,t} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post-Treatment}_t + \beta_3 \text{Treatment}_i * \text{Post-Treatment}_t + \text{Controls}_{i,t} + \varepsilon_{i,t}$$

*Post-treatment*_t is an indicator variable that equals zero in the year prior to the ranking change and one in the two years following the ranking change event. *Treatment*_i equals one for treatment firm-years and zero for control firm-years. The interaction term coefficient, β_3 , is a difference-in-differences estimate. Model 1 includes industry fixed effects and model 2 includes industry and year fixed effects and all the controls from Table 6. The controls are not reported here for brevity, but are reported in the Appendix (Table B5). Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

board composition, which might otherwise drive our results. This finding is particularly relevant as it provides further evidence supporting a causal role for IID reputation incentives leading to boards monitoring a firm's reported earnings quality more closely. More stringent monitoring of financial reporting has the further benefit of reducing investor uncertainty about reporting quality, which makes the financial reports more informative (Ferri et al. (2018)).

4. An alternative measure of reputation incentive: Relative media attention

In our primary analysis, we use a firm's equity capitalization to calculate IID reputation incentives. This is motivated in part by directors in relatively larger firms receiving greater media exposure, which raises their likelihood of gaining more board appointments if they perform well. An alternative measure of firm visibility is the level of media attention given to a firm relative to that received by other firms. For example, Dyck et al. (2008), Liu and McConnell (2013) and Dai et al., 2015 document evidence of media attention affecting firm governance practices, acquisitions and insider trading decisions, respectively. These studies argue that media influence is, at least in part, attributable to the impact it has on an individual director's reputation due to firm visibility. Strong media coverage in one firm can raise outside investors' attention, who might otherwise give little notice to the firm or its directors. This increased attention can provide incentives for directors to monitor managers more diligently, knowing their efforts have a greater likelihood of being noticed by investors, which increases their expected rewards in the director labor market. Thus, we assume that relatively more media attention raises the incentives for director monitoring of management actions, thereby improving management performance incentives.

Given the above perspective, we re-examine our main finding that greater reputation incentives of individual IIDs and the board are associated with greater manager compensation incentives measured by higher CEO pay for performance sensitivity and stronger monitoring of firm financial reports leading to lower real and discretionary accruals-based earnings management. Instead of ranking each IID's directorship by equity capitalization, we rank directorships by the annual number of media hits that a firm receives relative to other firms where this IID is also a board member. We only count articles reported that have a relevancy score of 100 (Dai et al. (2015)) to ensure an article's focus is on this firm.

Each year we count each firm's total number of news articles. We then repeat our prior analysis shown in Tables 2 and 7 to reexamine the associations of director reputation incentives on CEO compensation and firm earnings quality respectively, where media-based reputation measures aggregated across all IIDs are used in place of our earlier reputation measures. Specifically, we use High Media Ranked IID % (Low Media Ranked IID %) which represents the proportion of IIDs on the board where this directorship has at least 10% more (fewer) annual media hits than at least one of their other directorships. Since the number of media hits is correlated with firm size, we also scale a firm's total annual number of media hits by the total annual number of media hits received in the same year across all our sample firms in the same Fama-French 48 industry and then use this ratio to create an alternative measure of board

Table 9
Robustness: media visibility as an alternative measure of reputation incentives.

	Model 1	Model 2	Model 3	Model 4
<i>Dependent Variable:</i>	OLS: CEO Delta	OLS: CEO Delta	OLS: Modified Jones Model DA	OLS: Total Real Transactions Management
High Media Ranked IID %	0.003*** (0.01)		-0.002** (0.02)	-0.004** (0.03)
Low Media Ranked IID %	0.002 (0.1)		-0.0001 (0.87)	-0.002 (0.17)
Majority IID High Media Ranked		0.121* (0.06)		
Majority IID Low Media Ranked		-0.133 (0.14)		
Firm Annual News Count/Sample Annual News Count	6.4* (0.06)	6.89** (0.04)	4.615* (0.1)	4.813 (0.54)
F-Test: High Media Ranked IID = Low Media Ranked IID (p-value)	(0.42)	(0.02)	(0.09)	(0.52)
Number of Observations	19,385	19,385	15,597	15,597
Adjusted-R ²	44.85%	44.80%	20.62%	16.61%

This table presents results from robustness analysis of previous results using the relative number of media hits per year, instead of firm size, as a proxy for director reputation incentives. We use the total number of all relevant news articles about the firm each year as a measure of media visibility. The data are from RavenPack and we only use articles with a relevancy score of 100. We rank each influential independent director's individual directorships using the total number of news articles instead of market capitalization and determine, in the same manner, if each directorship is relatively High Media Ranked or relatively Low Media Ranked. We also control for the firm's annual number of news articles scaled by the total annual news articles for the sample year. The dependent variable in Models 1 and 2 is the CEO delta. Models 3 and 4 report the results from the previous earnings management analysis reported in Table 7, where the dependent variable is the absolute value of discretionary accruals in model 3 and the total real transactions management measure in model 4. For Models 1 and 2 the controls are the same as in Table 2. For Models 3 and 4, they are the same as in Table 7. We report *p*-values for the F-Test of the differences in the coefficient estimates of the High and Low Media Ranked IID variables in each model. All models include industry and year fixed effects and models 3 and 4 exclude finance and utility firms. The controls are the same as in the previous tables but are omitted here for brevity. The full models are reported in the Appendix (Table B6). The OLS models incorporate robust standard errors that are clustered by firm. The definitions of control variables are found in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

reputation incentives that apply to all directors on the board. For brevity, the controls, which are the same as those used in Tables 2 and 7, are unreported.

The results based on these alternative media-based reputation metrics are reported in Table 9. We find similar results to our earlier equity capitalization-based reputation measures for IIDs. Specifically, in model 1 of Table 9, we reexamine CEO delta and find a significant positive relation to High Media Ranked IID % (*p*-value = 0.01) and an insignificant relation to Low Media Ranked IID % (*p*-value = 0.103).³¹ We also report the results of an F-Test for the difference in the coefficient estimates between High and Low Media Ranked IID%, which reveals the two measures are not significantly different. To examine this more closely, we repeat this analysis focusing on boards with extremely strong or weak reputations based on these media attention measures. Specifically, in model 2 we use our Majority IID High and Low Media Ranked measures. The coefficient estimate for Majority IID High Media Ranked is positive and significant, whereas that for Majority IID Low Media Ranked is negative and insignificant. Furthermore, the F-Test for the difference between the two coefficients is statistically significant (*p*-value = 0.02). Thus, we continue to find that stronger board reputation measures are associated with significantly greater levels of CEO delta.

In model 3 we consider financial accounting quality where the dependent variable is the absolute value of discretionary accruals, and we find that the relation to the High Media Ranked IID % is negative and significant at the 5% level, while the coefficient estimate for Low Media Ranked IID% is not significant. Moreover, the F-Test for the differences in the coefficients for High and Low Ranked IID % is statistically significant (*p*-value = 0.09). In model 4, the dependent variable is our measure of total real transaction management. We again find a negative and significant coefficient estimate for High Media Ranked IID % at the 5% level and an insignificant coefficient estimate for Low Media Ranked IID%. However, these two coefficient estimates are not statistically different. In unreported results, we repeated models 3 and 4 using the Majority IID High and Low Media Ranked indicators and we do not find either to be significantly related to either measure of earnings management. Thus, using these alternative reputation measures, we continue to find evidence that boards with stronger IID reputation incentives exhibit greater CEO pay-performance sensitivity and lower levels of accruals-based earnings management and, thus, higher financial statement quality.

³¹ In unreported results, when we exclude firms for which the CEO delta is zero the results are unchanged.

5. Conclusions

We explore the effects of influential independent director reputation incentives on the monitoring of firms' senior managers. We focus on influential independent directors on multiple boards, since they are likely to be the most talented and experienced directors on the board. We then study how the varying reputation incentives of these directors influence two important board governance mechanisms: CEO incentive pay and financial reporting quality. We find that if a larger proportion of IIDs view this directorship as relatively more prestigious or offering greater reputation benefits, then CEO compensation tends to include a larger fraction of equity-based incentives, which improves CEO-shareholder alignment of interests. At the same time, we find that boards with more IIDs with stronger reputation incentives tend to more carefully monitor a firm's accounting statements and significantly reduce real and accruals-based earnings management.

We also provide causal evidence using exogenous shocks that raise the relative prestige of an influential independent director's board seat at a focal firm. We employ a difference-in-differences analysis of these treatment firms relative to a set of control firms that are matched on industry, size and year. We find as influential independent director reputation incentives strengthen, that the fraction of CEO equity-based pay rises significantly, while the likelihood of real or accruals-based earnings management falls relative to a set of matched control firms.

We also find that the reputation incentives of a board's influential independent directors on the compensation and audit committees significantly influence CEO compensation contracts and the degree of earnings management that occurs at these firms. Specifically, stronger influential independent director reputation incentives of compensation committee members are associated with a greater use of CEO equity grants with longer vesting periods, which create greater alignment of interest with shareholders.

To conclude, our evidence reveals that reputation incentives, which operate through the director labor market, matter. They have major implications for how boards determine CEO performance-based compensation and the extent to which boards monitor financial statement quality and deter earnings management. We highlight how boards with more influential independent directors having strong reputation incentives appear to balance stronger CEO performance-based compensation with closer board monitoring of financial reporting reliability. Our findings highlight the importance of understanding the interconnectedness of these internal and external corporate governance mechanisms represented by boards of directors and the director reputation incentives in the corporate director labor market and their influence on CEO performance incentives and the reliability of firm financial reports.

Data availability

Data will be made available on request.

Appendix A. Variable definitions

Variable	Definition and Data Source
<i>Director Characteristics</i>	
High Ranked Directorship	Indicator variable: equals 1 if the independent directorship is at least 10% larger than the director's smallest independent directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Low Ranked Directorship	Indicator variable: equals 1 if the independent directorship is at least 10% smaller than the director's largest independent directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Number of Directorships	Number of additional directorships identified within the RiskMetrics data set. Source: RiskMetrics.
<i>Board Characteristics</i>	
Independent Board	Indicator variable: equals 1 if the percent independent directors is >50% and is 0 otherwise. Source: RiskMetrics.
ID %	Percentage of independent directors on the board. Source: RiskMetrics.
Low Ranked IID % (Audit) (Comp)	Percentage of independent directors on the board (on the board's audit or compensation committee) who are influential and where this directorship is at least 10% smaller than their largest directorship measured by the market capitalization of the firm. Source: RiskMetrics.
High Ranked IID % (Audit) (Comp)	Percentage of independent directors on the board (on the board's audit or compensation committee) who are influential and where this directorship is at least 10% larger than their smallest directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Low Media Ranked IID %	Percentage of independent directors who are influential and this directorship has at least 10% fewer media hits in the year than at least one of their other directorships. Media hits is the total number of news articles for the firm in the year for which RavenPack gives a relevancy score of 100.
High Media Ranked IID %	Percentage of independent directors who are influential and this directorship has at least 10% more media hits in the year than at least one of their other directorships. Media hits is the total number of news articles for the firm in the year for which RavenPack gives a relevancy score of 100.
High (Low) Board	Ranked IID % computed by randomly assigning directors to firms 100 times and taking the average.

(continued on next page)

(continued)

Variable	Definition and Data Source
Reputation	Source: RiskMetrics.
Majority High Ranked IIDs	Indicator variable: equals 1 if a majority of influential independent directors find this directorship is at least 10% larger than their smallest directorship measured by a firm's market capitalization and is 0 otherwise. Source: RiskMetrics.
Majority Low Ranked IIDs	Indicator variable: equals 1 if a majority of independent directors are influential and find this directorship is at least 10% smaller than their largest directorship measured by a firm's market capitalization and is 0 otherwise. Source: RiskMetrics.
Board Size	Number of directors on the board at year-end. Source: RiskMetrics.
Busy Board	Indicator variable: equals 1 if a majority of the independent directors each hold 3 or more directorships. Source: RiskMetrics.
ID Ownership	Percent of common shares outstanding held by all independent directors of the board at year-end, including stock options. Source: RiskMetrics.
<i>CEO Characteristics</i>	
CEO Chair	Indicator variable: equals 1 if the CEO is also the chairperson and is 0 otherwise. Source: RiskMetrics
CEO Delta	Natural logarithm of 1 plus the sensitivity of the CEO's equity portfolio associated with a 1% change in the firm's stock price. Source: Computed from Execucomp, CRSP and Treasury interest rate data.
CEO Ownership	Percent of common shares outstanding held by the CEO at year-end, including stock options. Source: RiskMetrics.
CEO % Equity	Ex ante total CEO compensation percentage that is equity compensation, stock options and restricted stock grants, received in the fiscal year (\$1000). Source: ExecuComp.
CEO Tenure	The number of years the CEO has served on the board. Source: RiskMetrics
CEO Total Compensation	Consists of ex ante salary, bonus, the Black-Scholes value of option grants, restricted stock grants, long-term incentive payments and other annual compensation (ExecuComp data item tdc1) (\$1000). Source: ExecuComp
CEO Vega	The sensitivity of the CEO's equity portfolio value associated with a 0.01 change in the standard deviation of the last 60 months of the firm's stock returns. Source: Computed from Execucomp data
CEO Weighted Vesting Period	The annual average vesting period for all the equity grants awarded in the year weighted by grant size. Source: ExecComp Analytics data.
<i>Firm Characteristics</i>	
Annual Stock Return	Twelve-month compounded return during the fiscal year. Source: CRSP.
Total Assets (\$ millions)	Year-end assets. Source: Compustat database.
Capital Expenditure /Sales	Capital Expense/Sales: Year-end Capital Expenditure/ year-end Total Assets: Source: Compustat database.
Cash Flow Transactions Management	Abnormal cash flow from operations, which is calculated as the actual cash flow from operations minus the predicted value based on the estimation model in Roychowdhury (2006) .
Discretionary Accruals Modified Jones Model	The residual from the year-industry regressions: Total Accruals = $B_0 + B_1(1/assets_{t-1}) + B_2(\Delta Sales - \Delta Account\ receivables) + B_3(PPE)$, where PPE is net increases property plant and equipment and both $\Delta Sales$ and PPE are scaled by lagged total assets.
Discretionary Expenses Transactions Management	Abnormal discretionary expenses, which is calculated as the actual discretionary expenses (advertising, R&D, and SG&A) minus the predicted value based on the estimation models in Roychowdhury (2006)
Extreme Earnings Management	Indicator variable: equals 1 if the firm experiences a discretionary accrual or real earnings management measure in the top tercile and is zero otherwise.
Firm Age	Number of years a firm is listed in CRSP.
Herfindahl Index	Calculated using all available firms for each of the SIC 2-digit industry definitions as $\sum_i (sales_i/indsales)^2$, where i is the number of firms in the industry.
Institutional Holdings	Percent ownership from institutions. Source: Thompson Financial.
Leverage	(Long-term Debt plus Debt in Current Liabilities) / Total Assets. Source: Compustat database.
Business Segments	A firm's number of business segments listed in Compustat.
Negative Earnings Restatement	Indicator variable: equals 1 if the firm restates its earnings for the fiscal year and the restatement is negative.
New CEO Firm Year	Indicator variable: equals 1 in the three years following the appointment of a new CEO in the firm and is zero in the three years prior to the new CEO appointment.
NYSE	Indicator variable: equals 1 if a firm's stock is New York Stock Exchange listed.
Production Transactions Management	Abnormal production, which is calculated as the actual production costs (COGS and changes in inventory) minus the predicted value based on the estimation model in Roychowdhury (2006) .
Real Earnings Management	Total real transactions management is measured as (abnormal production - abnormal discretionary expenses - abnormal cash flow from operations).
ROA	(EBITDA) / Beginning-year Total Assets. Source: Compustat.
Sales	Year-end sales. Source: Compustat database.
SOX	Indicator variable: equals 1 for fiscal years 2001 and greater and zero otherwise.
Total Accruals	Defined as change in current assets minus change in cash and short-term investments minus change in current liabilities plus change in debt in current liabilities minus depreciation all scaled by beginning year total assets. $((\Delta Current\ assets - \Delta Cash\ \&\ short\ term\ liab. - \Delta Current\ liab. + \Delta Debt\ in\ current\ liab. - depreciation)/Assets_{t-1})$. Source: Compustat database.
Stock Volatility	Standard deviation of last 3 years of monthly stock returns. Source: CRSP.

Appendix B. Detailed tables and further robustness analysis

Table B1

CEO compensation: difference-in-differences covariate balance.

Variables	Means		Diff.	Pr(T.t)
	Control	Treatment		
CEO % Equity Compensation	42.15057	43.31355	-1.16298	0.61
CEO % Option Compensation	11.11115	10.00972	1.10178	0.42
ln(CEO Delta +1)	5.371122	5.30425	0.066872	0.51
Busy Board	0.2149712	0.2400794	-0.0251082	0.34
Independent Director Ownership	1.080493	0.8546493	0.2258437	0.39
CEO Chair	0.5834933	0.593254	-0.0097607	0.75
Ln(Board Size)	2.282172	2.283524	-0.001352	0.93
Institutional Holdings	69.8678	70.09992	-0.23212	0.89
Ln(Assets)	8.574745	8.5481	0.026645	0.81
Ln(Assets) ²	76.43376	76.56649	-0.13273	0.95
Ln(Firm Age)	3.15329	3.155175	-0.001885	0.97
Ln(Number of Business Segments)	1.262207	1.277556	-0.015349	0.64
Capital Expenditure/Sales	0.0668063	0.0713499	-0.0045436	0.55
Annual Stock Return	0.1724266	0.1890604	-0.0166338	0.62
Annual Stock Return _(t-1)	0.1801273	0.1860223	-0.005895	0.87
ROA	0.1491727	0.1447777	0.004395	0.54
ROA _(t-1)	0.1542319	0.1518536	0.0023783	0.73
Volatility	0.0971922	0.0978874	-0.0006952	0.84
CEO Tenure	9.021318	8.952096	0.069222	0.88
CEO Tenure ²	138.5019	133.6547	4.8472	0.74

This table reports the differences in means for the dependent and explanatory variables for the treatment and control samples to assess covariate balance in the year prior to the shock for the difference-in-differences analysis reported in Table 6. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table B2

CEO compensation and exogenous shocks to director reputation incentives.

Dependent Variable:	Model 1	Model 2
	OLS CEO Delta	OLS CEO Delta
Treatment	-0.051 (0.61)	-0.138* (0.08)
Post-Shock	0.0652 (0.37)	0.014 (0.83)
Treatment X Post-Shock	0.188** (0.04)	0.214*** (< 0.01)
Busy Board		0.021 (0.73)
Director ownership		0.003 (0.72)
CEO Chair		0.019 (0.76)
Ln(Board Size)		-0.043 (0.79)
Institutional Holdings		-0.002 (0.11)
Ln(Assets)		0.7166*** (< 0.01)
Ln(Assets) ²		-0.0162* (0.05)
Ln(Firm Age)		-0.1728*** (< 0.01)
Number of Business Segments		-0.019 (0.71)
Capital Expenditure/Sales		0.3116 (0.11)
Annual Stock Return		0.633*** (< 0.01)
Annual Stock Return _(t-1)		0.316*** (< 0.01)

(continued on next page)

Table B2 (continued)

<i>Dependent Variable:</i>	Model 1	Model 2
	OLS CEO Delta	OLS CEO Delta
ROA		1.069*** (<i>< 0.01</i>)
ROA _(t-1)		1.3682*** (<i>< 0.01</i>)
Volatility		-1.687** (<i>0.04</i>)
CEO Tenure		0.12*** (<i>< 0.01</i>)
CEO Tenure ²		-0.001*** (<i>< 0.01</i>)
Number of Observations	3314	3009
Controls	No	Yes
Fixed Effects	Industry	Industry/Year
Adjusted-R ²	12.50%	54.11%

This table reports the full results with the controls from Table 6. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table B3
Negative restatements.

<i>Dependent Variable: Negative Restatement (1/0)</i>	Model 1	Model 2
High Ranked IID %	-0.0003 (<i>0.14</i>)	-0.00005 (<i>0.84</i>)
Low Ranked IID %	-0.00015 (<i>0.44</i>)	-0.0003 (<i>0.14</i>)
High Board Reputation		-0.002** (<i>0.01</i>)
Low Board Reputation		0.0019** (<i>0.04</i>)
Predicted Ln(CEO Delta +1)	0.00003*** (<i>< 0.01</i>)	0.00004*** (<i>< 0.01</i>)
Independent Board	-0.017 (<i>0.23</i>)	-0.02 (<i>0.23</i>)
Busy Board	-0.0107 (<i>0.31</i>)	-0.009 (<i>0.41</i>)
CEO Chair	-0.007 (<i>0.36</i>)	-0.005 (<i>0.48</i>)
Ln(Board Size)	-0.024 (<i>0.27</i>)	-0.022 (<i>0.32</i>)
Institutional Holdings	0.00002 (<i>0.9</i>)	-0.00003 (<i>0.88</i>)
Ln(Assets)	0.043** (<i>0.04</i>)	0.076*** (<i>< 0.01</i>)
Ln(Assets) ²	-0.003** (<i>0.03</i>)	-0.004*** (<i>< 0.01</i>)
Leverage	0.027 (<i>0.19</i>)	0.01 (<i>0.61</i>)
Ln(# Business Segments)	0.019** (<i>0.02</i>)	0.016* (<i>0.05</i>)
ROA _(t-1)	-0.0591** (<i>0.05</i>)	-0.025 (<i>0.4</i>)
Herfindahl Index	0.00001 (<i>0.33</i>)	0.00002 (<i>0.29</i>)
NYSE	-0.00114 (<i>0.91</i>)	-0.00555 (<i>0.59</i>)
Number of Observations	22,154	21,261
Fixed Effects	Year/Industry	Year/Industry
Adjusted-R ²	3.75%	4.02%

This table presents reports OLS regression analysis for the determinants of the likelihood of the firm experiencing a negative restatement during the fiscal year. The dependent variable equals one if the firm restates its earnings for the fiscal year and the restatement is negative. The controls are the same as those used in Table 7. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table B4

Occurrence of high earnings management: difference-in-differences covariate balance.

Variables	Means		Diff.	Pr(T > t)
	Control	Treatment		
High Earnings Management	0.39	0.42	-0.03	0.23
Ln(CEO Delta +1)	5.36	5.26	0.10	0.24
Independent Board	1.00	1.00	0.00	-
Busy Board	0.18	0.22	-0.03	0.11
Independent Director Ownership	1.03	0.92	0.11	0.61
CEO Chair	0.56	0.58	-0.02	0.47
Ln(Board Size)	2.27	2.28	-0.01	0.31
Institutional Holdings	70.82	69.96	0.86	0.58
Ln(Assets)	8.47	8.43	0.04	0.69
Ln(Assets) ²	74.65	74.27	0.37	0.82
Leverage	0.26	0.26	-0.01	0.54
Ln(Business Segments)	1.27	1.29	-0.02	0.42
ROA _(t-1)	0.15	0.15	0.01	0.32
Herfindahl Index	732.01	745.61	-13.60	0.74
NYSE	0.73	0.73	0.00	0.88

This table presents reports the differences in means for the dependent and explanatory variables for the treatment and control samples to assess covariate balance in the year prior to the shock for the difference-in-differences analysis reported in Table 8. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table B5

Occurrence of high earnings management: difference-in-differences analysis around exogenous directorship ranking changes.

Dependent Variable:	Model 1	Model 2
	OLS High Earnings Management	OLS High Earnings Management
Treatment	0.0375 (0.2)	0.036 (0.25)
Post-Shock	0.0473* (0.06)	0.0419 (0.14)
Treatment X Post-Shock	-0.057* (0.09)	-0.063* (0.09)
Predicted Ln(CEO Delta +1)		-0.016 (0.41)
Busy Board		-0.024 (0.35)
CEO Chair		0.02553 (0.29)
Ln(Board Size)		0.026 (0.65)
Institutional Holdings		0.0006 (0.21)
Ln(Assets)		-0.0306 (0.66)
Ln(Assets) ²		0.0033 (0.42)
Leverage		0.0631 (0.31)
Ln(# Business Segments)		0.037 (0.12)
ROA _(t-1)		-0.2784*** (<i>< 0.01</i>)
Herfindahl Index		0.00002 (0.55)
NYSE		0.0127 (0.68)
Number of Observations	3298	3083
Controls	No	Yes
Fixed Effects	Industry	Industry/Year
Adjusted-R ²	0.65%	1.99%

This table reports the full results with the controls from Table 8. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table B6

Robustness: media visibility as an alternative measure of reputation incentives.

Panel A	Model 1	Model 2
---------	---------	---------

(continued on next page)

Table B6 (continued)

Panel A	Model 1	Model 2
<i>Dependent Variable:</i>	OLS: CEO Delta	OLS: CEO Delta
<i>Dependent Variable:</i>	OLS: CEO Delta	OLS: CEO Delta
High Media Ranked IID %	0.003*** (0.01)	
Low Media Ranked IID %	0.002 (0.1)	
Majority IID High Media Ranked		0.121* (0.06)
Majority IID Low Media Ranked		-0.133 (0.14)
Firm Annual News Count/Sample Annual News Count	6.4* (0.06)	6.89** (0.04)
Independent Board	-0.137* (0.06)	-0.11 (0.14)
Busy Board	0.039 (0.36)	0.083** (0.05)
Independent Director Ownership	0.003 (0.24)	0.004 (0.23)
CEO Chair	0.211*** (< 0.01)	0.22*** (< 0.01)
Ln(Board Size)	-0.284*** (< 0.01)	-0.272*** (< 0.01)
Institutional Holdings	-0.002*** (< 0.01)	-0.002*** (< 0.01)
Ln(Assets)	0.569*** (< 0.01)	0.57*** (< 0.01)
Ln(Assets) ²	-0.009 (0.17)	-0.009 (0.19)
Ln(Firm Age)	-0.196*** (< 0.01)	-0.193*** (< 0.01)
Ln(Business Segments)	-0.0078 (0.82)	-0.0043 (0.9)
Capital Expenditure/Sales	0.2521*** (< 0.01)	0.2504*** (< 0.01)
Annual Stock Return	0.1802** (0.03)	0.1799** (0.03)
Annual Stock Return _(t-1)	0.1981*** (< 0.01)	0.1982*** (< 0.01)
ROA	1.896*** (< 0.01)	1.907*** (< 0.01)
ROA _(t-1)	0.5475** (0.03)	0.5478** (0.03)
Stock Volatility	-1.22*** (< 0.01)	-1.234*** (< 0.01)
CEO Tenure	0.101*** (< 0.01)	0.101*** (< 0.01)
CEO Tenure ²	-0.001*** (< 0.01)	-0.001*** (< 0.01)
Number of Observations	19,385	19,385
Adjusted-R ²	44.85%	44.80%
<i>Panel B</i>	Model 3	Model 4
<i>Dependent Variable:</i>	OLS: Modified Jones Model DA	OLS: Total Real Transactions Management
High Media Ranked IID %	-0.002** (0.02)	-0.004** (0.03)
Low Media Ranked IID %	-0.0001 (0.87)	-0.002 (0.17)
Firm Annual News Count/Sample Annual News Count	4.615* (0.1)	4.813 (0.54)
Predicted Ln(CEO Delta + 1)	0.01813 (0.34)	-0.072 (0.16)
Independent Board	-0.013 (0.68)	0.128 (0.2)
Busy Board	0.052	0.026

(continued on next page)

Table B6 (continued)

Panel B	Model 3	Model 4
Dependent Variable:	OLS: Modified Jones Model DA	OLS: Total Real Transactions Management
	(0.17)	(0.72)
CEO Chair	0.021	-0.021
	(0.4)	(0.71)
Ln(Board Size)	-0.048	-0.118
	(0.36)	(0.38)
Institutional Holdings	0.0003	-0.001
	(0.48)	(0.25)
Ln(Assets)	-0.246*	0.473**
	(0.07)	(0.02)
Ln(Assets) ²	0.018**	-0.018
	(0.04)	(0.16)
Leverage	0.345***	-0.053
	(< 0.01)	(0.72)
Ln(# Business Segments)	-0.0231	0.0573
	(0.4)	(0.41)
ROA _(t-1)	-0.1405	-1.2856***
	(0.16)	(< 0.01)
Herfindahl Index	-0.00003	-0.0001
	(0.28)	(0.18)
NYSE	-0.0615	-0.0351
	(0.11)	(0.64)
Number of Observations	15,597	15,597
Adjusted-R ²	20.62%	16.61%

This table reports the full results with the controls from Table 9. Panel A reports results from Table 9 Models 1–2. Panel B reports the results from Table 9 Models 3–4. The definitions of control variable are given in Appendix A. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

References

- Adams, R., Ferreira, D., 2008. Do directors perform for pay? *J. Account. Econ.* 46, 154–171.
- Aggarwal, R., Dahiya, S., Prabhala, N., 2019. The power of shareholder votes: evidence from uncontested director elections. *J. Financ. Econ.* 133, 134–153.
- Ahmed, A.S., Duellman, S., 2007. Accounting conservatism and board of director characteristics: an empirical analysis. *J. Account. Econ.* 43, 411–437.
- Alam, Z.S., Chen, M.A., Ciccotello, C.S., Ryan, H.E., 2018. Board structure mandates: consequences for director location and financial reporting. *Manag. Sci.* 64, 4735–4754.
- Amiram, D., Bozanic, Z., Cox, J.D., Dupont, Q., Karpoff, J., Sloan, R., 2018. Financial reporting fraud and other forms of misconduct: a multidisciplinary review of the literature. *Rev. Acc. Stud.* 23, 732–783.
- Amiram, D., Huang, S., Rajgopal, S., 2020. Does financial misreporting conduct pay off even when discovered? *Rev. Acc. Stud. Springer* 25 (3), 811–854.
- Armstrong, Christopher S., Guay, Wayne R., Weber, Joseph P., 2010a. The role of information and financial reporting in corporate governance and debt contracting. *J. Account. Econ.* 50, 179–234.
- Armstrong, Christopher S., Larker, David, Ormazabal, Gaizka, Taylor, Daniel J., 2013. The relation between equity incentives and misreporting: the role of risk-taking incentives. *J. Financ. Econ.* 109, 327–350.
- Armstrong, Christopher S., Core, John E., Guay, Wayne R., 2014. Do independent directors cause improvements in firm transparency? *J. Financ. Econ.* 113, 383–403.
- Atanasov, V., Black, B., 2016. The Trouble with Instruments: Re-Examining Shock-Based IV Designs, Working Paper College of William and Mary and Northwestern University.
- Badolato, P.G., Donelson, D.C., Ege, M., 2014. Audit committee financial expertise and earnings management: the role of status. *J. Account. Econ.* 58, 208–230.
- Beekes, W., Pope, P., Young, S., 2004. The Link between Earnings and Timeliness, Earnings Conservatism and Board Composition: Evidence from the UK. *Corporate Governance. An International Review* 12, 14–59.
- Beneish, M.D., Vargus, M.E., 2002. Insider trading, earnings quality and accrual mispricing. *Account. Rev.* 77, 755–791.
- Bergstresser, D., Philippon, T., 2006. CEO incentives and earnings management: evidence from the 1990s. *J. Financ. Econ.* 80, 511–529.
- Bettis, C., Bizjak, J., Coles, J., Kalpathy, S., 2010. Stock and option grants with performance-based vesting provisions. *Rev. Financ. Stud.* 23, 3849–3888.
- Bettis, C., Bizjak, J., Coles, J., Kalpathy, S., 2018. Performance-vesting provisions in executive compensation. *J. Account. Econ.* 66, 194–221.
- Bizjak, J., Brickley, J., Coles, J., 1993. Stock-based incentive compensation and investment behavior. *J. Account. Econ.* 16, 349–372.
- Brown, A., Dai, J., Zur, E., 2019. Too busy or well connected? Evidence from a shock to multiple directorships. *Account. Rev.* 94 (2), 83–104.
- Burnett, Brian, Cripe, Bradrick, Martin, Gregory, McAllister, Brian, 2012. Audit quality and the trade-off between accretive stock repurchases and accrual-based earnings management. *Account. Rev.* 87 (6), 1861–1884.
- Burns, N., Kedia, S., 2006. The impact of performance-based compensation on misreporting. *Journal Financial Economics* 79, 35–67.
- Cai, J., Walking, R., 2011. Shareholders' say on pay: does it create value? *J. Financ. Quant. Anal.* 46, 299–339.
- Carcello, J., Neal, T., 2003. Audit committee characteristics and auditor dismissals following "new" going-concern reports. *Account. Rev.* 78, 95–117.
- Carter, M.E., Ittner, C.D., Zechman, S.L.C., 2009. Explicit relative performance evaluation in performance-vested equity grants. *Rev. Acc. Stud.* 14, 269–306.
- Chaigneau, P., Sahuguet, N., Sinclair-Desgagne, B., 2017. Prudence and convexity of compensation contracts. *Econ. Lett.* 157, 14–16.
- Chan, Lilian H., Chen, Kevin C.W., Chen, Tai-Yuan, Yangxin, Yu, 2015. Substitution between real and accruals-based earnings management after voluntary adoption of compensation clawback provisions. *Account. Rev.* 90, 147–174.
- Chen, Xia, Cheng, Qiang, Lo, Alvis, Wang, Xin, 2015. CEO contractual protection and managerial short-termism. *Account. Rev.* 90 (5), 1871–1906.
- Chen, K., Guay, W., Lambert, R., 2020. Multidimensional Corporate Governance. Working paper.
- Cheng, Q., Farber, D.B., 2008. Earnings restatements, changes in CEO compensation and firm performance. *Account. Rev.* 83, 1217–1250.
- Cheng, Q., Warfield, T., 2005. Equity incentives and earnings management. *Account. Rev.* 80, 441–476.
- Chon, Jonathan B., Liu, Zack, Wardlaw, Malcolm I., 2022. Count (and count-like) data in finance. *J. Financ. Econ.* 146, 529–551.

- Cohen, Daniel A., Dey, Aiysha, Lys, Thomas Z., 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *Account. Rev.* 83, 757–787.
- Coles, J., Daniel, N., Naveen, L., 2006. Managerial incentives and risk-taking. *J. Financ. Econ.* 79, 431–468.
- Coles, J., Daniel, N., Naveen, L., 2014. Co-opted boards. *Rev. Financ. Stud.* 27, 1751–1796.
- Core, J., Guay, W., 1999. The use of equity grants to manage optimal equity incentive levels. *J. Account. Econ.* 28, 152–184.
- Core, J., Guay, W., 2002. Estimate the value of employee stock option portfolios and their sensitivities to price and volatility. *J. Account. Res.* 40, 613–630.
- Dai, L., Parwada, J.T., Zhang, B., 2015. The governance effect of the media's news dissemination role: evidence from insider trading. *J. Account. Res.* 53, 331–366.
- Dechow, P., Sloan, R., Sweeney, A., 1995. Detecting earnings management. *Account. Rev.* 70, 193–225.
- DeFond, M., Hann, R., Hu, X., 2005. Does the market value financial expertise on audit committees of boards of directors? *J. Account. Res.* 43, 153–193.
- Dey, Aiysha, Starkweather, A., White, J., 2023. Proxy Advisory Firms and Corporate Shareholder Engagement. Working Paper.
- Dichev, I.D., Graham, J.R., Harvey, C.R., 2013. Earnings quality: evidence from the field. *J. Account. Econ.* 56, 1–33.
- Dyck, A., Volchkova, N., Zingales, L., 2008. The corporate governance role of the media: evidence from Russia. *J. Financ.* 63, 1093–1135.
- Edmans, A., Gabaix, X., Sadzik, T., Sannikov, Y., 2012. Dynamic CEO compensation. *J. Financ.* 67, 1603–1647.
- Edmans, A., Gabaix, X., Jenter, D., 2017. Executive compensation: a survey of theory and evidence. *The Handbook of the Economics of Corporate Governance* 1, 383–539.
- Ellis, J., Guo, L., Mobbs, S., 2020. How does forced-CEO-turnover experience affect directors? *J. Financ. Quant. Anal.* 56, 1163–1191.
- Fama, E., 1980. Agency problems and the theory of the firm. *J. Polit. Econ.* 88, 288–307.
- Fama, E., Jensen, M., 1983. Separation of ownership and control. *J. Law Econ.* 26, 301–325.
- Ferreira, D., Ferreira, M., Raposo, C., 2011. Board structure and price informativeness. *J. Financ. Econ.* 99, 523–545.
- Ferreira, D., Ferreira, M., Mariano, B., 2018. Creditor control rights and board independence. *J. Financ.* 73, 2385–2423.
- Ferri, F., Zheng, R., Zou, Y., 2018. Uncertainty about managers' reporting objectives and investors' response to earnings reports: evidence from the 2006 executive compensation disclosures. *J. Account. Econ.* 66, 339–365.
- Fich, E., 2005. Are some outside directors better than others? Evidence from director appointments by Fortune 1000 firms. *J. Bus.* 78, 1943–1972.
- Fich, E., Shivdasani, A., 2006. Are busy boards effective monitors? *J. Financ.* 61, 689–724.
- Fich, E., Shivdasani, A., 2007. Financial fraud, director reputation, and shareholder wealth. *J. Financ. Econ.* 86, 306–336.
- Field, L., Lowry, M., Mkrtychyan, A., 2013. Are busy boards detrimental? *J. Financ. Econ.* 109, 63–82.
- Fischer, P.E., Verrecchia, R.E., 2000. Reporting bias. *Account. Rev.* 75, 229–245.
- Gervais, S., Heaton, J.B., Odean, T., 2011. Overconfidence, compensation contracts, and capital budgeting. *J. Financ.* 66, 1735–1777.
- Gilson, S., 1990. Bankruptcy, boards, banks, and block holders: evidence on changes in corporate governance when firms default. *J. Financ. Econ.* 27, 355–387.
- Gopalan, R., Milbourn, T., Song, F., Thakor, A., 2014. Duration of executive compensation. *J. Financ.* 69, 2777–2817.
- Gormley, T., Matsa, D., Milbourn, T., 2013. CEO compensation and corporate risk: evidence from a natural experiment. *J. Account. Econ.* 56 (2), 79–101.
- Guo, Lixiong, Masulis, Ronald, 2015. Board structure and monitoring: new evidence from CEO turnovers. *Rev. Financ. Stud.* 28, 2770–2811.
- Hauser, R., 2018. Busy directors and firm performance: evidence from mergers. *J. Financ. Econ.* 128, 16–37.
- Hazarika, S., Karpoff, J., Nahata, R., 2012. Internal corporate governance, CEO turnover, and earnings management. *J. Financ. Econ.* 104 (1), 44–69.
- Healy, P.M., 1985. The effect of bonus schemes on accounting decisions. *J. Account. Econ.* 7, 85–107.
- Hennes, K.M., Leone, A.J., Miller, B.P., 2008. The importance of distinguishing errors from irregularities in restatement research: the case of restatements and CEO/ CFO turnover. *Account. Rev.* 83, 1487–1519.
- ISS, 2013. Realizable Pay 101: What you Really Need to Know. Institutional Shareholder Services Inc.
- Jiang, W., Wan, H., Zhao, S., 2016. Reputation concerns of independent directors: evidence from individual director voting. *Rev. Financ. Stud.* 29, 655–696.
- Jones, J., 1991. Earnings management during import relief investigations. *J. Account. Res.* 29, 193–228.
- Kaplan, S., Reishus, D., 1990. Outside directorships and corporate performance. *J. Financ. Econ.* 27, 389–410.
- Karpoff, J.M., Lee, D.S., Martin, G.S., 2008a. The cost to firms of cooking the books. *J. Financ. Quant. Anal.* 43, 581–611.
- Karpoff, J.M., Lee, D.S., Martin, G.S., 2008b. The consequences to managers for financial misrepresentation. *J. Financ. Econ.* 88, 193–215.
- Knyazeva, A., Knyazeva, D., Masulis, R., 2013. The supply of corporate directors and board independence. *Rev. Financ. Stud.* 26, 1561–1605.
- Kuhnen, C.M., Niessen, A., 2012. Public opinion and executive compensation. *Manag. Sci.* 58, 1249–1272.
- Laux, C., Laux, V., 2009. Board committees, CEO compensation, and earnings management. *Account. Rev.* 84, 869–891.
- Leuz, C., Nanda, D., Wysocki, P., 2003. Earnings management and investor protection: an international comparison. *J. Financ. Econ.* 69 (3), 505–527.
- Levit, D., Malenko, N., 2016. The labor market for directors and externalities in corporate governance. *J. Financ.* 72, 775–808.
- Liu, B., McConnell, J.J., 2013. The role of the media in corporate governance: do the media influence managers' capital allocation decisions? *J. Financ. Econ.* 110, 1–17.
- Liu, C., Masulis, R., Stanfield, J., 2021. CEO option compensation can be a bad option: evidence from product market relationships. *J. Financ. Econ.* 142, 453–481.
- Manso, G., 2011. Motivating innovation. *J. Financ.* 66, 1823–1860.
- Masulis, R., 2020. A survey of recent evidence on boards of directors and CEO incentives. *Asia Pac. J. Financ. Stud.* 49, 7–35.
- Masulis, R., Mobbs, S., 2011. Are all inside directors the same? Evidence from the external directorship market. *J. Financ.* 66, 823–872.
- Masulis, R., Mobbs, S., 2014. Independent director incentives: where do talented directors spend their time and energy? *J. Financ. Econ.* 111, 406–429.
- Masulis, R., Zhang, E.J., 2019. How valuable are independent directors? *J. Financ. Econ.* 132 (226), 256.
- Mayberry, M., Park, H.J., Xu, T., 2021. Risk-taking incentives and earnings management: new evidence. *Contemp. Acc. Res.* 38, 2723–2757.
- Mehran, H., 1995. Executive compensation structure, ownership, and firm performance. *J. Financ. Econ.* 38, 163–184.
- Mobbs, S., 2013. CEOs under fire: the effects of competition from inside directors on forced CEO turnover and CEO compensation. *J. Financ. Quant. Anal.* 48, 669–698.
- Morck, R., Shliefer, A., Vishny, R.W., 1988. Management ownership and market valuation: an empirical analysis. *J. Financ. Econ.* 20, 293–315.
- Murphy, K., 2013. Executive compensation. Where we are and how we got there. In: *Handbook of the Economics of Finance*, Chapter 4, pp. 211–356.
- Ofek, E., Yermack, D., 2000. Take stock: equity-based compensation and the evolution of managerial ownership. *J. Financ.* 55, 1367–1384.
- Palmrose, Z.V., Richardson, V.J., Scholz, S., 2004. Determinants of market reactions to restatement announcements. *J. Account. Econ.* 37, 59–89.
- Peng, L., Röell, A., 2008a. Manipulation and equity-based compensation. *Am. Econ. Rev.* 98, 285–290.
- Peng, L., Röell, A., 2008b. Executive pay and shareholder litigation. *Review of Finance* 12, 141–184.
- Petra, Steven T., 2007. The Effects of Corporate Governance on the Informativeness of Earnings. *Econ. Governance* 8, 129–152.
- Roychowdhury, Sugata, 2006. Earnings management through real activities management. *J. Account. Econ.* 42, 335–370.
- Ryan, H., Wiggins, R., 2004. Who is in whose pocket? Director compensation, board independence, and barriers to effective monitoring. *J. Financ. Econ.* 73, 497–524.
- Saunders, A., Song, K., 2018. Bank monitoring and CEO risk-taking incentives. *J. Bank. Financ.* 88, 225–240.
- Shipman, J.E., Swanquist, Q.T., Whited, R.L., 2017. Propensity score matching in accounting research. *Account. Rev.* 92, 213–244.
- Shivdasani, A., 1993. Board composition, ownership structure and hostile takeovers. *J. Account. Econ.* 16, 167–198.
- Shivdasani, A., Yermack, D., 1999. CEO involvement in the selection of new board members: an empirical analysis. *J. Financ.* 54, 1829–1853.
- Shue, K., Townsend, R., 2017. Growth through rigidity: an explanation of the rise in CEO pay. *J. Financ. Econ.* 123 (1), 1–21.
- Sitorus, R., Litov, L., Megginson, W., Liu, X., 2020. Venture Capitalist Directors and Managerial Incentives. University of Oklahoma Working Paper.
- Souther, M.E., 2021. Does board independence increase firm value? Evidence from closed-end funds. *J. Financ. Quant. Anal.* 56, 313–336.
- Stein, J.C., 1989. Efficient capital markets, inefficient firms: a model of myopic corporate behavior. *Q. J. Econ.* 104, 655–669.
- Yang, J., Yu, Y., Zheng, L., 2021. The impact of shareholder litigation on risk and equity incentives: evidence from a quasi-natural experiment. *Account. Rev.* 96, 427–449.

- Yermack, D., 2004. Remuneration, retention, and reputation incentives for outside directors. *J. Financ.* 59, 2281–2308.
- Zakolyukina, A., 2018. How common are intentional GAAP violations? Estimates from a dynamic model. *J. Account. Res.* 56, 5–44.
- Zang, Amy, 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *Account. Rev.* 87, 675–703.