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ASSESSING THE EFFECTS OF MANDATED COMPENSATION DISCLOSURES

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Abstract

This paper analyzes the effects of mandated, management compensation disclosures on compensation levels. For identification, I use the introduction of the Compensation Discussion and Analysis (CD&A) in 2006, a significant expansion in the required disclosures related to compensation. The design uses the timing of the introduction date to compare manager pay at firms with and without the disclosure in a difference-in-differences analysis. I find evidence that disclosures are associated with increasing compensation. Also, the CD&A is associated with increases in pay dispersion. I corroborate this evidence with the partial rollback of the CD&A allowed by the Jumpstart Our Business Startups Act in 2012, again finding that the CD&A is associated with higher compensation. From cross-sectional tests, this compensation increase appears to be concentrated among managers with shorter tenure, at smaller firms, and in industries with higher variation in pay. Entrenched and powerful managers (CEOs, CFOs, and executive directors) do not have incremental pay increases with disclosures.

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1. Introduction

Incentivizing the manager to act in shareholders' interest is a key challenge resulting from separation of ownership and control. The primary tool in aligning managerial incentives is the compensation contract. Among widely dispersed shareholders, these contracts become harder to negotiate and enforce because no single shareholder might have sufficient interest to incur the costs. The compensation committee performs these duties on behalf of shareholders but also suffers from an agency relationship. The manager might capture or influence the compensation committee and extract rents. In an effort to reduce costs of monitoring both managers and compensation committees for U.S. firms, the Securities and Exchange Commission (SEC) has mandated disclosures of management compensation levels, mix, and determinants beginning as early as the Great Depression (Murphy, 2013). The volume of required disclosures has increased substantially through time, with perquisite information in the 1970s, option information in the 1990s, and pay determinants and post-employment information in the 2000s.

Despite increases in disclosure, we do not have a good understanding of the economic effects of compensation disclosures, mandated or voluntary. The SEC rules that have increased compensation disclosure were a response to perceived managerial power in the compensation setting process to extract perquisites or excess pay (Bebchuk et al., 2002; Bebchuk and Fried, 2003). The mandate's purpose is to enhance shareholder oversight and prevent managers from receiving unearned compensation, which could result in lower pay. Even with expanding disclosures, manager pay continues to rise.[1] Consistent with this, Murphy (2013) states that

[1] Rising pay among top managers is unclear (Kaplan, 2012). I present in Figure 1 some descriptive evidence consistent with rising, inflation-adjusted, grant-date total pay among CEOs in the Execucomp database universe (generally S&P 1500 firms). Regulators likely respond to the perception of compensation increases among top managers when developing and implementing new disclosure mandates.

"there is little evidence that enhanced disclosure leads to reductions in objectionable practices." Compensation disclosures could have other effects besides improving monitoring, not all of them beneficial to the firm and likely causing higher pay. As one example, disclosures that reveal information about the quality of the manager through (e.g.) benchmarks and specific performance incentivization to hiring firms could lower headhunting costs and result in the inside firm raising pay to retain the manager.

Figure 1: Inflation-adjusted Median CEO Pay for the Execucomp Universe

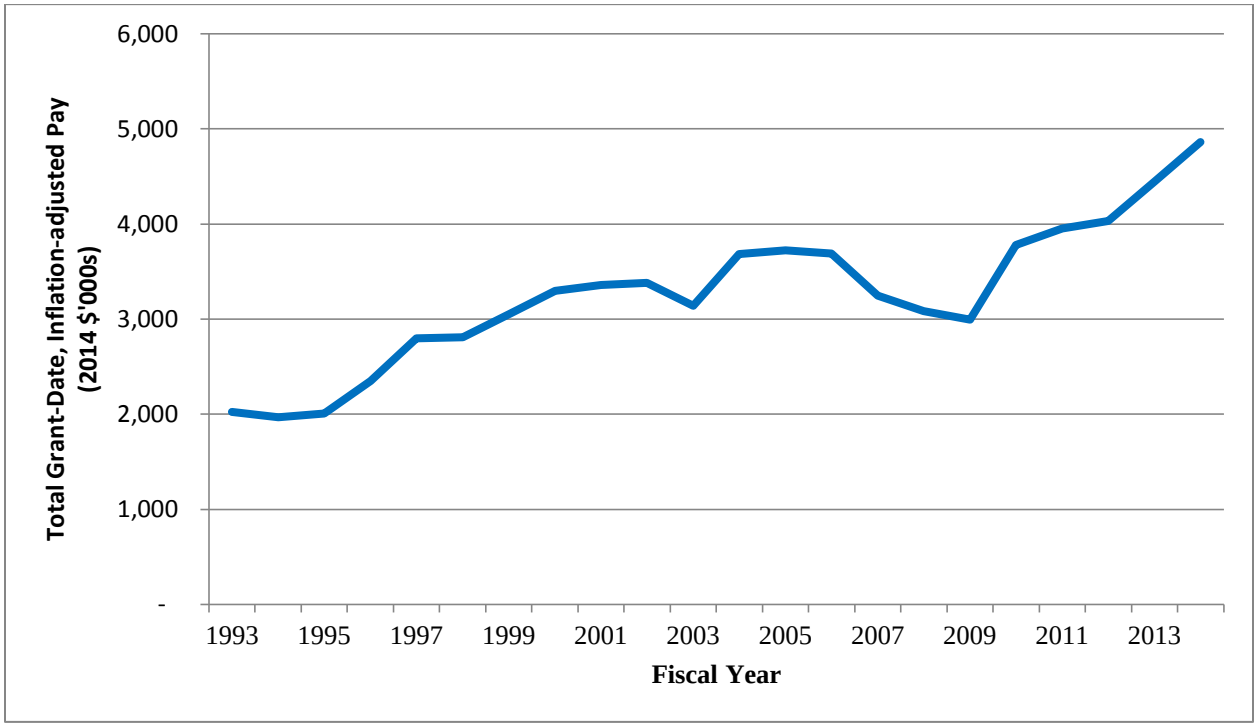

Figure 1 shows the trend in median total compensation (i.e. Execucomp variable "tdc1") inflation-adjusted using the CRSP inflation index to December 2014 dollar values. I use all observable CEOs in the Execucomp database. When using managers with any position (e.g. CFO, COO, etc.), I see comparable increases through time. The 2014 to 1993 ratio for CEO pay charted above is 2.4; for all managers, the ratio is 2.2.

In light of these opposing predictions, I first analyze how expanded disclosure is related to managers' compensation levels. I provide evidence that disclosures do not mitigate rent extraction as suggested in the prior literature (Bebchuk et al., 2002; Morse et al., 2011). I find

that compensation disclosures are associated with increases in pay levels. Thereafter, I explore the mechanism and various explanations for the observed relation. I consider labor market consequences of having new information on the quality of the manager available through disclosures (e.g. Gibbons and Murphy, 1992), feasibly either beneficial or costly to the manager. When beneficial, the example above results. When costly, disclosures inform hiring firms about the manager, reducing bargaining power when searching for a job. The manager shares these costs with the firm, observable as higher pay. I also consider an outcome where additional compensation disclosures tie the hands of the compensation committee. When the disclosed pay determinants do not ex post reflect the efforts of management, binding to a pay plan ex ante imposes risk on managers. To compensate, the compensation committee raises target pay.

The relation between compensation levels and compensation disclosures is likely to be endogenous and vary with economic characteristics of the manager and the firm. To identify a causal link, I exploit the introduction of the Compensation Discussion and Analysis (CD&A) in 2006 and its partial rollback in 2012 with the Jumpstart Our Business Startups (JOBS) Act. The CD&A, a narrative description of the policies and determinants of compensation by the firm, has been the largest introduction of new, mandated information about compensation for more than two decades (Yeaton, 2007). I exploit exogenous variation in the timing of the introduction, which differentially came into force depending on the fiscal year-end date of the firm. The timing allows for a comparison of manager pay at firms with and without the disclosure in comparable fiscal years. I analyze all settings using a difference-in-differences design on two-year compensation level panels. I examine manager pay at December year-end firms, which were the first subject to the disclosure regime. Then, I examine September, October, and November year-end firms, which were the last to make the disclosures almost one calendar year later.

Finally, I perform tests using the partial rollback of the CD&A allowed by the JOBS Act where affected firms were allowed to exclude the disclosure from SEC filings. I exploit the retroactive application of the Act to a set of firms that IPO immediately prior to its passage to better identify those firms which—absent a mandate—would likely avoid compensation disclosures.

With the introduction of the CD&A and the JOBS Act settings, I find that mandated compensation disclosure is associated with a significant increase in compensation. Reporting magnitudes from the December fiscal year-end firm introduction, I find a 15% increase in annual, total compensation[2] when including the most robust set of control variables. Limited to cash compensation, the increase is 8%. This equals approximately $60 thousand ($40 thousand) when multiplied by the mean (median) annual cash compensation levels. Using the JOBS Act setting, I again find that compensation disclosure is associated with increases in compensation.

In other tests, I provide evidence on mechanisms for compensation increases. I find that the increase is concentrated in less prominent managers, measured as managers with shorter pay histories or at smaller firms, and managers in industries with higher variance in pay. These cross-sectional findings are consistent with larger compensation increases for managers who would benefit most (incur the most costs) with expanded information in the managerial labor market. I also find that pay dispersion increases with the CD&A disclosures. I provide descriptive evidence from within-year cross-sectional tests of regression r-squared statistics through time. These statistics measure the power of firm-level variables in explaining total compensation. The

[2] The correlation is weaker and economic magnitude smaller in the CD&A introduction among September through November year-end firms. This could be evidence that the finding for manager compensation at December year-end firms is potentially overstated. Alternatively, the effects of the disclosure could impact compensation levels over multiple periods dynamically. As a result, I would be unable to measure the effect on managers at September through November year-end firms because some mechanism causes pay at the control group (December year-end firms) to rise again in the year(s) following the CD&A introduction.

r-squared statistics decline with disclosures. Further, I find that within-firm dispersion of pay increases with disclosures. This is consistent with CD&A disclosures binding compensation to risky metrics. Boards experience reduced ex post flexibility and compensate managers for added risk with higher pay. Additional tests appear inconsistent with other explanations.

With these findings, I make the following contributions. First, I provide robust evidence that compensation disclosures can be costly. That is, transparency can have a real effect on the pay negotiations with managers, and the result is more compensation. I find evidence consistent with expanding information affecting managerial labor markets and disclosures reducing flexibility for compensation committees. Further, this finding adds to our more general understanding of the tradeoffs from disclosure outside the capital and product markets, where most of the literature focuses (e.g. Beyer et al., 2010). This paper provides novel evidence on real effects from disclosures, of which we have very little evidence. In this case, the intended benefits from pay transparency in capital markets appear to have other effects impacting the compensation setting process.

In papers examining pay and disclosure in the U.S.,[3] Jensen and Murphy (1990) and Mas (2016A) show conflicting evidence in compensation levels as a result of disclosure. Jensen and Murphy (1990) compare CEO pay relative to firm value when broad disclosures were first in place (1934 until 1938) and later (1974 until 1986) and find pay declines. They attribute this to increases in political pressures from scrutiny on pay at least partially attributable to

[3] Other papers analyze the disclosure and pay relation in foreign settings. These settings generally suffer from low power and use firms making voluntary disclosures to benchmark the "pre" period. Park et al. (2001) use a single difference design in Canada's 1993 disclosure change setting. Schmidt (2012) uses board linkages where managers who sit on many boards are untreated in Germany's 2006 DAX disclosure change setting. Both papers find rising pay and attribute the finding to learning. In contrast, this study discusses the economic effects on pay negotiations of a firm disclosing *its own* pay practices.

compensation disclosures. Examining a closely related setting, Mas (2016A) finds the opposite.[4] He uses pre-disclosure (1928 until 1932 collected by the Federal Trade Commission) and post-disclosure CEO pay data (from 1934 until 1940). Mas (2016A) examines pay relative to the 99.5th income percentile group from tax data and finds that pay levels appear to increase around the pay disclosure mandate in the 1930s. He also finds evidence consistent with pay compression. Mas (2016A) suggests that the mechanism could be learning due to the dearth of information prior to the mandate. I contribute to these conflicted findings with evidence consistent with Mas (2016A) on pay levels. I use a research design that enables inferences within managers and with fewer confounding events (e.g. establishment of the SEC and other 1933 Securities Act or 1934 Securities Exchange Act provisions). Also, I discuss and provide evidence among feasible mechanisms that could play a role in disclosures affecting compensation.

Second, I extend analyses into the economic effects of the JOBS Act. A stream of papers (e.g. Barth et al., 2014; Chaplinsky et al., 2015; Dambra et al., 2015A; Gupta and Israelsen, 2014) examines the overall impact of the JOBS Act. The consistent finding across these papers is that reduced disclosure (increased use of the Act's provisions) is positively associated with IPO underpricing and negatively associated with post-IPO liquidity. A second set of papers (Dambra et al., 2015B; Westfall and Omer, 2015) more closely examines the economic impact of a specific provision of the act (increased affiliated analyst access and interaction of reduced disclosure with the economics of the audit, respectively). This paper fits with the latter grouping, offering a close examination of the compensation disclosure rollback and its effects. Additionally, this paper uses the unique feature of the JOBS Act setting where the provisions

[4] In another paper, Mas (2016B) shows that mandated disclosures of California city manager compensation is associated with pay decreases of about 8%—not necessarily as a result of excessive pay—and increased job turnover. Mas's interpretation is that the results are consistent with a populist pressure on perceived, excess pay.

were retroactively applied to some firms; this allows me to better estimate the effect for firms where the mandate appears to be binding.

2. Background

2.1. Motivation

Theory work has examined designing contracts to induce optimal effort in great depth, e.g. see Hart and Holmström (1986) and Prendergast (1999) as surveys of this literature. Other theory and empirical work examines how firms implement compensation contracts and measures the resulting effects (e.g. see Bushman and Smith, 2001, for a review). Researchers in accounting have explored the interaction of compensation with aspects of the information environment (e.g. Healy, 1985; Hanlon et al., 2003; Larcker, et al. 2007; Armstrong et al., 2010B). These streams of literature speak to the functions and results of managerial incentives. However, the theoretical effects of firms disclosing management compensation are ambiguous, and the empirical effects are not yet well understood.

In a typical contracting model (e.g. Hart and Holmström, 1986), compensation disclosures are moot. These models often include a principal and an agent both party to the negotiations and aware of the specific information asymmetries which prevent the first-best contract. These negotiations result in a contract that both parties observe. However, the setting of this study is the widely-held firm, which is subject to a two-layer agency issue (e.g. Armstrong et al., 2010A). Shareholders elect the board who hire the manager. Often, shareholders are hamstrung in monitoring the board without sufficient information on the negotiation between the board and the manager. Firms make compensation disclosures—by mandate or voluntarily—to provide transparency into pay negotiations, improving the monitoring of the board and improving the incentives provided to the manager (Holmström, 1979).

Despite expanding disclosures through time, the compensation setting process is still opaque. It is unclear whether the difficulty in monitoring the compensation committee has resulted in pervasive rent extraction by managers (Frydman and Jenter, 2010). The SEC designs the disclosure regime to shed additional light on pay practices and improve the process (SEC, 2006A). The SEC's objective over the impact of disclosure on pay levels is unclear. Some commissioners (generally split by political party lines) suggest that levels should decline. For instance, Commissioner Glassman said in prepared remarks during the introduction of the CD&A, "if [directors or management] are uncomfortable seeing the amount of total executive compensation revealed and disseminated publicly, then perhaps they should not be paying it." Disclosures could enable shareholders to better monitor the compensation committee, reducing manager rent extraction (Bebchuk and Fried, 2003). A very closely related idea is the "outrage constraint" (Bebchuk et al., 2002), where shareholder discontent or reputation concerns surrounding perceived excess mitigates the manager's rent extraction. Overall, these theories assume excess compensation,[5] and disclosure causes an improvement in monitoring that would cause declines in pay levels. Yet, mandated compensation disclosures could have other effects besides improving monitoring.

Comment letters from firms and industry groups in response to proposed changes in compensation disclosures note the privacy concerns that employees face with expanded disclosure and possible competitive harm from headhunters bidding away employees. Holschuh

[5] Managers do not need to be extracting rents for the compensation committee to decide to lower pay as a result of stakeholder pressure. Expanded compensation disclosures might expose pay negotiations to influence by a diverse set of actors, including shareholder activists (e.g. Ertimur et al., 2011; Armstrong et al., 2013), proxy advisors (e.g. Ertimur et al., 2013; Larcker et al., 2015), popular press (e.g. Johnson et al., 1997; Core et al., 2008), etc. These influencers would not necessarily be incented to lobby for an optimal compensation contract, and compensation committee members might yield to these pressures despite what is best for the firm.

(2006), Assistant AG and Secretary of Wells Fargo, writes "Competitors will use the disclosed information to attempt to lure these highly productive employees away from Wells Fargo. As a result, the disclosure will likely lead to overall higher compensation costs as Wells Fargo may need to pay more to attract and retain these highly skilled employees." Similarly, McGuinness (2006), President of the HR Policy Association, writes "By making the pay information readily available, companies will need to be prepared to pre-empt the poachers, and this will cause total compensation to spiral upward." The anecdotes highlight that unintended consequences from mandated disclosures could increase compensation. In addition to expanded information in the managerial labor market, other economic mechanisms would result in pay increases. The disclosure can ex ante bind the compensation committee to a pay plan. Binding to a pay plan ex ante might be ex post inefficient. This occurs when the disclosed compensation determinants do not ultimately reflect the efforts of management. The compensation committee would raise target pay to compensate managers for this additional risk.

First, I examine this directional tension of the effects of a compensation disclosure mandate on pay levels. Disclosures could mitigate manager rent extraction, resulting in pay level declines. While other consequences of mandated disclosure from commenting firms or discussed in prior literature could result in pay level increases. Second, starting in Section 5, I provide more discussion and some evidence on these mechanisms that would cause pay increases.

2.2. Setting

2006 Disclosure Change: Compensation Discussion and Analysis (CD&A)

In January 2006, the SEC introduced the idea of reviewing its rules for disclosing manager compensation, including the addition of many supporting tables, finer detail on perquisites and parachutes, and an overarching narrative called the Compensation Discussion and

Analysis (CD&A). Subsequently, the SEC released a 370-page proposed rule with all of the specifics (SEC, 2006A). The final rules, approved in July 2006 and released in August 2006, were relatively close in form to the proposed rules. Other small changes, like implementing FAS 123R measurement for stock and options, occurred prior to the adoption date on December 15, 2006. Other papers have evaluated the extent of compliance with the disclosure change in the first year (Robinson et al., 2011), readability of the CD&A (Ladsmana et al., 2012), and the effect on merger and acquisition payouts (Wang et al., 2014). I use this disclosure change as an instrument to measure the effect of disclosing management compensation.

Anecdotally, the CD&A disclosure appears to contain new information (Yeaton, 2007). I include a December year-end firm, IBM, and September year-end firm, Starbucks, as examples of disclosure about annual bonus in Appendix 2. The CD&A includes details on the determinants of management compensation as both a narrative and, in many cases, through direct pay calculations. This is a departure from the prior regime in that much more context about pay accompanies a set of tables that detail pay levels by type (e.g. salary, bonus, etc.). Another important innovation is the possibility for some discussion about forward pay. The rules state, "The Compensation Discussion and Analysis should also cover actions regarding executive compensation that were taken after the registrant's last fiscal year's end" (SEC, 2006B).

The 2006 disclosure change provides a useful setting to evaluate the effects of disclosure on compensation for several reasons. First, the SEC intended the disclosures to be a substantial increase in the amount of information available to shareholders (SEC, 2006A, 2006B). To the extent that they succeeded, the new disclosures should result in a meaningful shift in the information environment surrounding manager compensation. Second, the adoption cutoff date allows me to observe pay at firms both with and without the disclosure over a comparable time

window. Third, this change happens when most forms of compensation are observable to the empiricist, so measuring compensation is likely to capture the complete amount of pecuniary benefits. This is an improvement over other, historic changes in compensation disclosures in the U.S., which simultaneously introduced detail on various types of pay, e.g. options in 1992, posing a challenge to calculate comparable pre and post pay levels.

On the other hand, it is unclear that the new disclosures provide new information to markets or that firms were fully compliant (Robinson et al., 2011). These concerns work against finding any result. As mentioned, I provide some examples in Appendix 2 and find anecdotally a large difference in by-executive detail before and after the mandate. Also, this regulation, like many regulatory shifts (Leuz and Wysocki, 2015), has other non-disclosure related changes bundled with the disclosure. Specifically, measurement changes were made to several types of pay.[6] These concurrent changes introduce noise to the compensation measures. The least affected types of pay are those made in cash, with which I verify my results. I discuss my measurement strategy in Section 3 below.

2012 Jumpstart Our Business Startups (JOBS) Act

In addition to the introduction of the CD&A, I also use the partial rollback of the CD&A in 2012 allowed for a subset of newly public firms. Several pieces of legislation with the general intention of easing the regulatory burden of capital formation were introduced in the U.S. Congress in late 2011. Ultimately, these were combined into the JOBS Act, which became law on April 5, 2012. The Act created a class of firms called "Emerging Growth Companies"

[6] Measures of long-term incentive schemes that include both cash and non-cash components pre-disclosure were split post-disclosure. Options were given dollar values for the first time post-disclosure. Share-type compensation pre-disclosure was valued at the grant-date share price for all awards (excluding those that are a component of a long-term incentive plan, which are disclosed on payout). Share and option compensation are valued at FAS 123R expense amount post-disclosure.

(EGCs)[7] that had an initial public offering (IPO) after December 7, 2011. EGCs were allowed to reduce disclosure in several areas, including the option to withhold the CD&A from prospectus and proxy filings. Many papers have evaluated the overall economic effects of the JOBS Act (e.g. Barth et al., 2014; Chaplinsky et al., 2015; Dambra et al., 2015A; Gupta and Israelsen, 2014). A few papers look more closely at specific provisions of the Act, such as analyst access (Dambra et al., 2015B) and the impact of disclosure changes on the EGCs' audits (Westfall and Omer, 2015). I use this second change in compensation disclosures from the JOBS Act, where the CD&A mandate is lifted, to complement the introduction setting and improve identification.

The JOBS Act has three main benefits as a second setting to explore the effects of disclosing compensation. First, the specific disclosure change is the same as the mandated disclosure in 2006; the Act specifically exempts affected firms from including a CD&A with filings. The two settings almost provide an apples-to-apples comparison in the instrument. Second, measurement in summary compensation tables was unaffected by the JOBS Act, so potential noise introduced by (e.g.) converting stock compensation from FAS 123R to grant-date value is reduced. Third, the Act applied retroactively to firms that went public starting in late 2011. This allows for a tighter identification strategy. I can observe firms that IPO under the CD&A regime then later withhold the CD&A disclosure. This indicates that the managers of the firm have some preference for avoiding compensation disclosures; I focus my sample selection on these managers. This enables me to measure a treatment effect where the disclosure mandate is likely binding.

[7] To qualify as an EGC, a firm cannot have been publicly traded before, must have less than $1 billion in annual revenue, must have less than $1 billion in recently-issued, non-convertible debt, and does not qualify as a large, accelerated SEC filer. These criteria cause most IPO firms to qualify as EGCs (Dambra et al., 2015A).

The JOBS Act setting also has drawbacks. First, only a small number of firms went public immediately prior to the passage of the Act. Because compensation is noisy, I may only be able to measure a statistically significant effect with magnitudes that seem disproportionate to any intuitive economic explanation. Second, EGCs, by virtue of their eligibility, do not have lengthy histories of available data on pay. This makes it more challenging to gain comfort that the parallel trends assumption is likely to be true; one cannot evaluate compensation trends through time. Related to this challenge, the firms that go public after the Act are systematically different than those that IPO prior to the Act (Dambra et al., 2015A). The intertemporal difference controls for some of this variability; however, I still rely crucially on the parallel trends assumption. Also, I limit my sample to firms that IPO in 2012. If the marginal firms incentivized to IPO by the JOBS Act are unable to do so until 2013 and beyond (e.g. Figure 1 from Dambra et al., 2015A), my sample will be less affected by this composition shift.

3. Research Design and Data

The first of my two settings is the introduction of the CD&A, which was mandated by the SEC in 2006 for the 2007 proxy season. That is, the disclosure is mandated during any fiscal year which begins on or after December 15, 2006. I use this cutoff date to implement a difference-in-differences design to evaluate the effects of the disclosure change. The design compares pay of managers at December year-end firms ("treated") in the first year of introduction, 2007, with pay of managers at September through November year-end firms ("control"). Because the latter group has year-end dates immediately prior to the December 15 cutoff, these do not release a CD&A until almost one year later, during the 2008 proxy season. For the 2006 fiscal year-end, I observe very little early adoption among September through

November firms and full, notional compliance for December firms.[8] See Figure 2 for an example of the timing.

Figure 2: Design of CD&A Introduction Setting

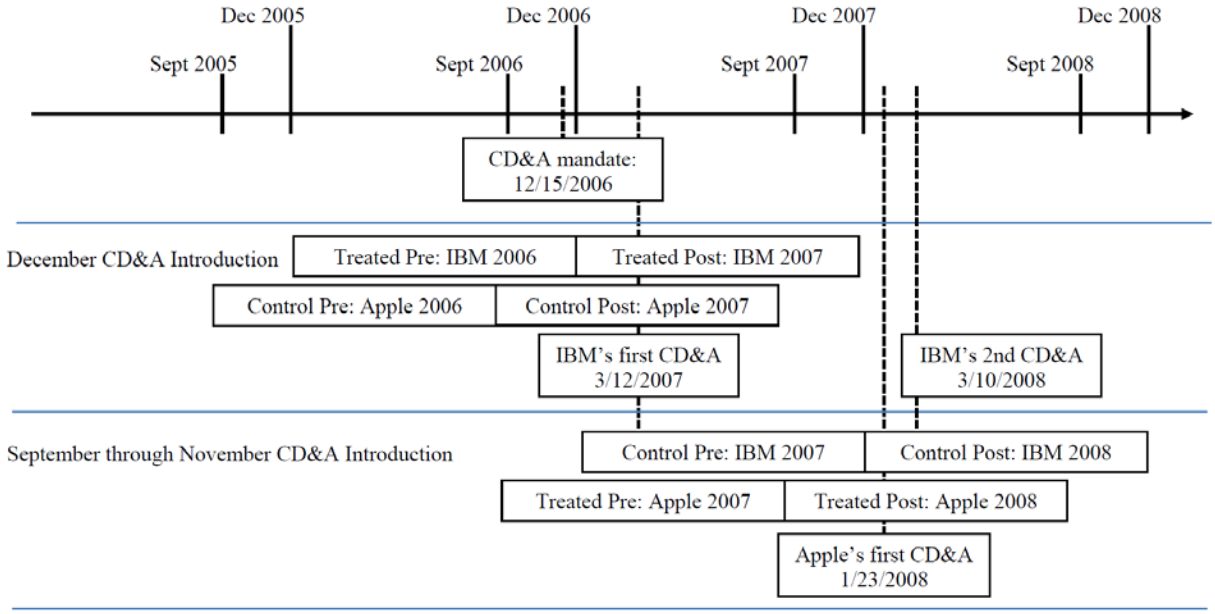

Figure 2 shows the research design for the CD&A introduction setting. I use the introduction date of December 15, 2006 to implement two difference-in-differences tests. First, the design measures the effect on the managers at December year-end firms, the first affected by the disclosure. Managers at September through November year-end firms compose the control group. I use IBM—a December year-end firm—as an example; its first CD&A release occurred on March 12, 2007. I use Apple—a September year-end firm—as the control firm example. During this introduction, these firms have reasonably close overlapping fiscal-years; however, the date of introduction causes IBM to disclose a CD&A in its proxy while Apple waits until the next fiscal-year. Second, I flip the design to measure the effect on the managers at September through November year-end firms. Here, managers at December year-end firms serve as the control. Apple, as treated, discloses a CD&A on January 23, 2008; IBM as control, has a CD&A in both 2007 and 2008.

[8] The data indicates 7 cases among September through November year-end firms that are early adopters. The data also indicates 7 cases among the December 2006 year-end firms that do not appear to comply with the CD&A mandate. These non-compliant firms are either foreign private issuers without the CD&A mandate or an Equilar coding error, through inspection of the filings on the SEC's website. In my main analyses, I exclude managers from these 14 firms. I rerun all analyses including these 14 firms "as if" they complied and find statistically and economically similar results. Robinson et al. (2011) evaluate compliance directly and find that while firms include a CD&A with the proxy filing, the extent of including detail as required by the rules varies across firms. This type of noncompliance adds noise to the indicator variable and works against finding any results.

Additionally, I use this lag to perform tests with flipped treatment and control groups. I do analyses using a difference-in-differences design comparing pay of managers at September through November year-end firms ("treated") in the second year of introduction with pay of managers at December year-end firms ("control"). With December year-end firms as the control group, I might be unable to measure a comparable effect for September through November year-end firms. The effects of the disclosure could impact compensation levels at December year-end firms (the control) over multiple years dynamically, including the treatment year for September through November year-end firms. This flipped test would work when the full impact on pay levels from the disclosure happens in the first year that a firm makes the disclosure. In this scenario, the test would more likely satisfy a parallel trends assumption because December year-end firms would fully respond to the treatment in 2007 and would have no incremental response in 2008, the year that September through November year-end firms are first treated.

The second of my two settings is the partial rollback of the CD&A for a very limited set of firms as allowed by the JOBS Act. I use the JOBS Act to identify a set of "treatment" firms which were plausibly shocked with the requirement to disclose a CD&A in the IPO prospectus. The variation that I use is the firm's IPO timing relative to the passage of the Act on April 5, 2012. If the firm has an offering prior to the Act, the firm must include the CD&A in its prospectus. If the firm has an offering after the Act, the firm has no such requirement. Importantly, the provisions of the Act retroactively applied to firms that IPOed beginning on December 8, 2011. While a firm that IPOs in this window—December 8, 2011 through April 5, 2012—could not retroactively change the IPO prospectus, it could adopt the provisions for subsequent filings, such as proxy statements or annual reports. Some firms included the CD&A in the IPO prospectus as required, though in subsequent proxy statements withheld the CD&A. I

define firms with this disclosure pattern as "treated." Put differently, I consider firms which IPO when the CD&A is mandated then do not disclose a CD&A in other filings when the mandate is lifted to be treated by the mandate.

In tests using the JOBS Act setting, I compare pay of managers at firms that IPO while the CD&A mandate is still in effect ("treated") to the pay of managers at firms that IPO after the JOBS Act is passed ("control"). I only include managers from firms in the treatment group if the firm includes the CD&A in the prospectus and subsequently withheld the CD&A in the first proxy statement after the Act. Relatedly, I only include managers from firms in the control group if the firm withheld the CD&A from the prospectus. This feature of the setting, the retroactive application of the JOBS Act to the treatment group, allows me to compare pay only for managers at firms who demonstrate some preference for withholding disclosures about pay. I use a difference-in-differences design by comparing pay in the pre-IPO year with pay in the IPO year for these two groups of managers. See Figure 3 for an example of the timing.

3.1. Identification

Like any difference-in-differences design, my ability to identify an effect depends critically on the parallel trends assumption. In my setting, this assumption asserts that pay levels would behave similarly for managers at treated firms and managers at control firms through time in the absence of compensation disclosures. I provide some evidence that this is plausible for the set of firms that are included in the CD&A introduction setting. For the JOBS Act setting, there is no historic series of data to make this same comparison. While the main results have consistent coefficient signs across the settings, providing some comfort, a reader should interpret these results carefully.

Figure 3: Design of JOBS Act Setting

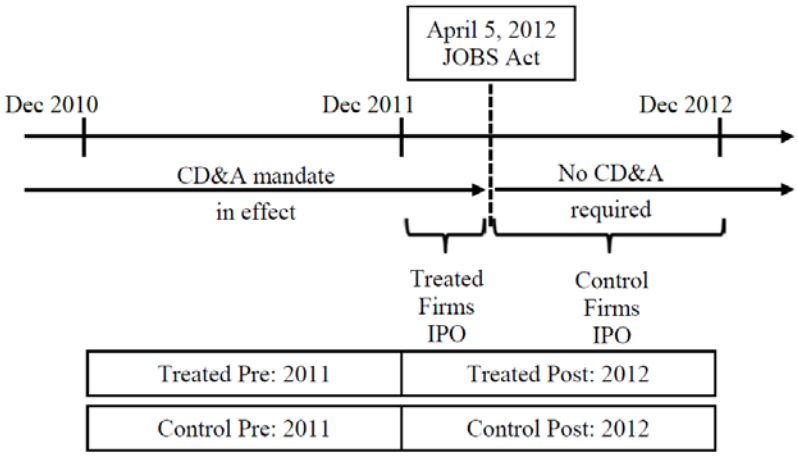

Figure 3 shows the research design for the JOBS Act setting. This figure presents the design for the tests related to compensation levels. I identify a set of treated managers at firms that IPOed beginning on January 1, 2012. For the period January 1, 2012 through April 4, 2012, firms included the CD&A in the IPO prospectus as required, though in subsequent proxy statements withheld the CD&A as allowed by the Act. Managers at these firms are treated through revealing a preference to not disclose the CD&A. I compare pay of managers at these treated firms to the pay of managers at firms that IPO after the JOBS Act is passed ("control"). Similar to the treated managers, I only include managers from firms in the control group if the firm withholds the CD&A from the prospectus during its IPO. I use a difference-in-differences design with 2011 as the baseline year and 2012 (the year of the IPO) as the post year.

3.2. Data and measurement

All data are from publicly available sources and commonly used databases. For the CD&A introduction setting, I use Equilar's Russell 3000 Executive Insight Report database for pay and manager-related control variables. I merge in firm data from Compustat and market data from CRSP to create a manager-year panel. I extract two-year windows from this panel to perform tests. Equilar includes a variable that indicates whether the firm has included a CD&A in its proxy. As described, I retain firms that have a September, October, November or December year-end month. All continuous variables have been truncated at 1% and 99%, using percentiles calculated by year. Descriptive data from the merged dataset are presented in Table 1: Panel A.

I measure total compensation as the sum of grant-date salary, grant-date bonus, realized cash incentives, grant-date value of stock, grant-date Black Scholes value of options, and other.[9] When the SEC introduced the CD&A, they concurrently changed the measure of disclosed compensation. The changes were specific to the type of compensation as described by Yeaton (2007). In summary, incentive plans were split by the rule change into cash and non-cash components. The new rules changed stock and option measurement to the FAS 123R expense amount. Across the many compensation forms, supplemental disclosures enable the calculation of comparable pre and post measures. I rely on Equilar's measure of pre CD&A cash incentive payout, share grant-date values and options' Black Scholes, grant-date values to construct a consistent measure. In tests, I use measures of pay (i.e. cash compensation) that suffer less from the measurement change to provide comfort that the effects are not the result of these concurrent pay-measure changes.

For the JOBS Act setting, I obtain a list of IPOs for the period January 1, 2012 through December 31, 2012 from Nasdaq's website. I exclude firms traded on OTCBB markets and others ineligible for the JOBS Act. I extract from the SEC's website all prospectus documents, and subsequent proxy statements or annual reports, and manually collect variables of interest, including the indicator for CD&A and compensation data, plus manager-specific control variables. Again, I merge firm data from Compustat to create a manager-year panel. I limit the sample to firms that avoid the CD&A disclosure when not compelled to do so by SEC mandate. In this setting, I measure total compensation as described above; however, because no measurement changes have occurred since 2009, I use compensation as disclosed by the firms.

[9] Within "other" I bundle the remaining forms including changes in pension value & retirement plans, "excess" earnings on deferred compensation, perquisites, tax gross-ups, etc.

All continuous variables have been Winsorized[10] at 1% and 99%, using percentiles calculated by year. Descriptive data from the merged dataset are presented in Table 1: Panel B.

3.3. Design

The design across both the CD&A introduction and JOBS Act settings is consistent, except in the cross sectional dummy variable. For simplicity, I present a generic version of the equation and describe how the dummy variables change across the tests below. The regression equation that I estimate is:

$$Compensation_{m,t} = \beta_1 \bullet Treated_{f(m)} + \beta_2 \bullet Post_t + \beta_3 \bullet Treated_{f(m)} \bullet Post_t + Controls + \varepsilon_{m,t} \quad (1)$$

The dependent variable, *Compensation*, is measured as described above for combined pay across many forms, e.g. salary, bonus, shares, etc. The cross-sectional dummy to indicate the "treated" managers of firms that disclose the CD&A is represented in the equation above as $Treated_{f(m)}$. In the tests, $Treated_{f(m)}$ is equal to one for December year-end firms [September through November year-end firms] {firms that IPO prior to the JOBS Act} for the first [second] CD&A introduction setting {JOBS Act setting} and zero otherwise. The intertemporal dummy to indicate the year affected by the disclosure is $Post_t$. In the tests, $Post_t$ is equal to one for year 2007 [2008] {2012} for the first [second] CD&A introduction setting {JOBS Act setting} and zero otherwise. The variable of interest is the interaction of these two indicators; I draw inferences from coefficient β_3. The subscripts, *m* and *t*, highlight that I use a manager-year panel.

[10] In the JOBS Act setting, I Winsorize instead of truncate because the observation count is so small; this change in empirical strategy materially affects the power of the tests. Specifically, I lose 15% of the sample when truncating across all variables. In untabulated tests with truncating, the coefficient magnitudes attenuate but are still economically meaningful. However, I am no longer able to make inferences at conventional levels of significance. When truncating compensation variables and Winsorizing all control variables, the coefficient of interest in a robust regression is 0.248 with a t-statistic of 2.02.

In tests, I use two-year panels. I do this because in all settings the treatment or control groups change compensation disclosures quickly. Specifically, in the first CD&A introduction setting, September through November year-end firms are required to begin making CD&A disclosures less than one year after the December year-end firms. Following the adoption by September through November year-end firms, they are no longer a useful control group. In the second CD&A introduction setting, I face the reverse issue. December year-end firms only have one year of CD&A disclosures prior to the September through November year-end firms' adoption of the disclosure. In the JOBS Act setting, pre JOBS Act IPO (treated) firms withhold the CD&A from the next proxy filing, i.e. they conform to the disclosure behavior of the post JOBS Act IPO (control) firms.

This design choice for identification causes three potential problems. First, any effect must be fairly sharp in order for it to be measured using this design. This works against finding any result or could favor economic mechanisms that are likely to appear in the data quickly but are not the most relevant over longer horizons. Second, I cannot measure any reversal from an immediate reaction to the disclosure. That is, I cannot measure any long run effects. However, the JOBS Act setting should be less affected by immediate responses because the disclosure regime had been in place for several years. Third, other slower moving effects from the disclosure would cause the December year-end firms to be a poor control group in the CD&A introduction for September through November year-end firms. Due to this concern, I rely more on the introduction for the December year-end firms when making inferences.

4. Empirical Results

4.1. Main analysis: directional changes in pay levels

My first set of analyses use the introduction of the Compensation Discussion and Analysis (CD&A) for managers at firms with December year-end dates. The dummy variable indicating December year-end can reasonably be interpreted as a "treated" dummy variable in a standard difference-in-differences design. I use managers at firms with September, October, and November year-end dates to control for time trends in compensation. I estimate the following equation as the first variant of equation (1) (suppressing manager and time subscripts):

$$Log(TotalCompensation) = \beta_1 \bullet DecemberYE + \beta_2 \bullet FY2007 + \beta_3 \bullet DecemberYE \bullet FY2007 + Controls + \varepsilon$$

I measure Total Compensation as described in Section 3. The indicator variable for December year-end is measured at the firm level. The 2007 indicator variable is measured using Compustat's FYEAR variable. β_3 is the coefficient of interest. It measures (approximately) the percentage change in total compensation correlated with the CD&A disclosure.

I include control variables that correlate with the economic determinants of manager compensation in the spirit of Core et al. (1999). Descriptively, I classify control variables in three groups. First, I have control variables for the performance of the firm. Performance controls include the following: (1) return on assets, calculated as earnings before interest and taxes divided by average total assets, (2) annual stock returns, the sum of daily, raw returns over the fiscal year, (3) annual return volatility, the standard deviation of daily, raw returns over the fiscal year, and (4) a loss indicator equal to one when annual, basic EPS before extraordinary items is negative, and zero otherwise. Second, I have control variables for the characteristics of the firm. Characteristic controls measured at the fiscal year-end include the following: (5) size proxied by the log of total assets, (6) the market-to-book ratio, and (7) leverage, calculated as total liabilities divided by total equity. Third, I have indicator variables for the manager's role at the firm. I include dummies that equal one when the manager is the (8) CEO, (9) CFO, (10) a director, and

(11) a founder, and zero otherwise. Across many specifications, I also include fixed effects for year and firm. Firm fixed effects will control for other stable aspects of the firm, such as corporate governance mechanisms. These fixed effects are collinear with the main effects from the difference-in-differences design from above.

Table 1 presents descriptive information for years 2006, 2007, and 2008. Each year contributes approximately 8,000 observations. The median manager has about $523 thousand in cash compensation and $1,020 thousand in total compensation. About 89% of the managers are at firms with December fiscal-year end dates. The control (treatment) sample is much smaller for the first (second) set of analyses. Because each firm-year provides approximately five manager observations, the performance and firm characteristic controls, measured at the firm-year level, enter the sample repeatedly.

In Table 2, I present results from the December year-end firm introduction of the CD&A with a difference-in-differences analysis. Column (1) provides OLS regression results for a univariate comparison. There is a level difference between pay at December and September through November year-end firms; managers at December year-end firms earn less—on average—in 2006. Additionally, some of the contribution to the magnitude of the coefficient of interest comes from a downward movement in pay level among the September through November year-end firms. I discuss the reasonableness of the parallel trends assumption below. The magnitude of the coefficient of interest (0.136) is statistically and economically significant: it represents an estimated 15% increase in pay. The economic effect is stable as I include additional control variables and use less noisy measures of pay for the dependent variable.

Table 1: Descriptive Statistics: CD&A Introduction Setting

	N	Mean	Std Dev	P25	Median	P75
Salary	24,339	391,458	215,343	248,000	332,751	475,000
Bonus	24,602	78,418	217,598	0	0	48,500
Incentive	24,512	266,541	467,908	0	95,263	314,183
Cash Compensation	24,391	765,008	731,425	340,423	522,568	895,904
Log(Cash Compensation)	24,391	13.245	0.750	12.738	13.167	13.706
Stock	24,549	266,409	610,544	0	0	255,569
Options	24,490	440,511	859,665	0	65,729	484,728
Other	24,361	183,349	414,202	9,563	34,622	145,764
Total Compensation	24,371	1,800,398	2,223,201	553,423	1,020,318	2,024,433
Log(Total Compensation)	24,371	13.914	0.955	13.224	13.836	14.521
Performance controls:						
Return on Assets	24,745	0.069	0.144	0.042	0.086	0.137
Annual Stock Returns	24,745	-0.020	0.450	-0.259	0.033	0.263
Annual Return Volatility	24,745	0.031	0.015	0.020	0.027	0.038
Loss Indicator	24,923	0.240	0.427	0	0	0
Firm Characteristic controls:						
Size: Log(Assets)	24,745	7.045	1.630	5.822	6.898	8.139
Market to Book	24,745	2.864	2.891	1.385	2.143	3.502
Leverage: Liabilities to Equity	24,745	1.557	2.734	0.449	1.027	1.929
Manager Role controls:						
CEO Indicator	24,745	0.196	0.397	0	0	0
CFO Indicator	24,745	0.196	0.397	0	0	0
Director Indicator	24,745	0.252	0.434	0	0	1
Founder Indicator	24,745	0.039	0.194	0	0	0
December Year-end Indicator	24,745	0.890	0.313	1	1	1
To-date Manager Observations	24,745	4.583	2.649	2	4	7
Size: Log(Market Capitalization)	24,485	7.024	1.495	5.940	6.895	7.955
Within-Firm Standard Deviation						
Total Compensation	6,584	1,169,987	1,214,171	320,587	712,348	1,589,761
Cash Compensation	6,571	410,521	384,698	146,677	276,782	538,811
Variable Cash Compensation	6,620	258,346	296,721	52,464	147,678	355,681

Table 1 presents descriptive statistics. The table shows variables used in the CD&A introduction analyses. Variables are described in Appendix 1. The sample comprises about 24,500 manager-year observations for years 2006 through 2008. I obtain compensation and manager-specific control variables from the Equilar Russell 3000 Executive Insight Report. I retain managers from firms that have a September, October, November, or December year-end. Each firm-year contributes approximately 5 manager-year observations. Firm-year control variables enter the sample multiple times. Firm-year data is from Compustat and CRSP. I truncate all continuous variables, including total and cash compensation, at 1% and 99% by year. For compensation variables that are censored at zero, I truncate at only 99%.

Table 2: Changes in Total Compensation around the Introduction of the CD&A for December Year-end Firms

LHS: Log(Compensation)	(1) Total	(2) Total	(3) Total	(4) Cash
2007 x December Year-end	**0.136*** **	**0.122*** **	**0.142*** **	**0.079*** **
	(4.128)	**(4.457)**	**(5.387)**	**(5.335)**
2007 Fiscal Year	-0.072**	-0.083***		
	(-2.308)	(-3.206)		
December Year-end	-0.062*	-0.075***		
	(-1.701)	(-3.097)		
Return on Assets		-0.294***	0.578***	0.448***
		(-5.246)	(3.667)	(4.302)
Annual Stock Returns		0.035*	0.080***	0.176***
		(1.934)	(3.330)	(11.941)
Annual Return Volatility		5.894***	0.363	-1.970**
		(5.923)	(0.242)	(-2.150)
Loss Indicator		0.054***	-0.028	-0.073***
		(2.596)	(-1.038)	(-4.369)
Size: Log(Assets)		0.409***	0.188***	0.113***
		(76.144)	(4.932)	(4.906)
Market to Book		0.060***	0.001	-0.003
		(21.812)	(0.118)	(-0.883)
Leverage: Liabilities to Equity		-0.070***	-0.012	-0.001
		(-18.599)	(-1.487)	(-0.125)
CEO Indicator		0.610***	0.574***	0.471***
		(19.828)	(23.609)	(24.415)
CFO Indicator		0.100***	0.093***	0.021**
		(6.556)	(8.637)	(2.480)
Director Indicator		0.393***	0.446***	0.355***
		(14.185)	(19.690)	(19.860)
Founder Indicator		-0.117***	-0.161***	-0.115***
		(-2.633)	(-4.546)	(-4.226)
Constant	13.943***	10.636***		
	(404.3)	(184.2)		
Observations	15,951	15,951	15,951	15,827
R-squared	0.001	0.499	0.723	0.756
Fixed Effects	No	No	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec

Table 2 reports an analysis of changes in total compensation around the introduction of the CD&A for December year-end firms. Following Equation (1), log of total compensation is regressed on indicators for December year-end, the fiscal year (2006 and 2007), control variables, and fixed effects, as specified by the table footer. Variables are described in Appendix 1. In Column (1), I estimate an OLS regression that excludes control variables and fixed effects. In Column (2), I estimate an OLS regression with the indicators from (1) and with control variables. In Column (3), I estimate an OLS regression from (2) and with firm and year fixed effects; the main effects are excluded because they are collinear with the fixed effects. In

Footnote continued on following page

Table 2 footnote continued
Column (4), I repeat (3) except that the dependent variable is log of cash compensation, including salary, bonus, and realized cash incentives. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Columns (2)-(3) present the primary test with control variables. Column (2) provides estimates from an OLS regression with the control variables described above. The descriptive ability of the model improves substantially; the r-squared increases from less than 1% in Column (1) to about 50% in Column (2). Column (3) presents estimates from an OLS regression with the inclusion of firm cross-sectional and time-series effects. With controls, the coefficient of interest remains statistically and economically significant at qualitatively similar levels.

Because the CD&A introduction includes a bundled change in the measurement of equity-type compensation by firms, comparable findings in cash-type compensation are important to any inferences from this setting. Column (4) provides OLS regression results where the dependent variable is the logarithm of cash compensation. I measure cash compensation as the sum of salary, bonus, and cash incentive pay. The coefficient of interest is positive (at 0.079), consistent with total pay. The magnitude is statistically and economically significant and represents an estimated 8% increase in cash pay associated with the CD&A disclosure.

In a second set of analyses presented in Table 3, I reverse the treatment and control groups for the first year of CD&A disclosures for September through November year-end firms in 2008, using 2007 as the baseline year. I estimate the following equation as the second variant of equation (1) using OLS regressions (suppressing manager and time subscripts):

$$Log(TotalCompensation) = \beta_1 \bullet SeptToNovYE + \beta_2 \bullet FY2008 + \beta_3 \bullet SeptToNovYE \bullet FY2008 + Controls + \varepsilon$$

Column (1) [(2)] presents the incremental trend in total compensation [cash compensation] for managers at September through November year-end firms relative to

managers at December year-end firms. The sign of the coefficient (0.012) is consistent with the first set of analyses but is not statistically significant nor does the economic magnitude align with findings from December year-end firm CD&A adoption. As discussed above, the design requires a fairly sharp response in order to measure any effect. If the disclosure has a multi-year, dynamic impact on compensation, then managers at December year-end firms would not be a good control group for these tests. Put differently, pay at December year-end firms might have a continued, incremental response from the disclosures in 2008. When this occurs, I would be unable to measure the effect on managers at September through November year-end firms. For instance, Bizjak et al. (2011) present evidence that the disclosed peer group might shift more than expected in subsequent years after the first disclosure.

To mitigate noise from hiring, promotions, terminations, etc. over this window, Column (3) [(4)] presents results from total compensation [cash compensation] for managers from a balanced panel. I balance the panel by excluding managers who do not have observations from both 2007 and 2008. I only include managers who have either the same Equilar-provided "role code" (e.g. CEO, CFO, COO, etc) or same title across the two years. Otherwise, the empirical design is identical to Columns (1)-(2). The balancing causes the observation count to drop by about 4,300 manager-years (26% of the sample). With this sample, the CD&A introduction is positively correlated with cash compensation, the coefficient of interest is 0.041 and significant at the 5% level. The economic magnitude of this estimated cash pay increase equals about 4%. Total compensation has a similar coefficient but is not significant at conventional levels. These magnitudes continue to be below those estimated in the first introduction of the CD&A among December year-end firms.

Table 3: Changes in Total Compensation around the Introduction of the CD&A for September through November Year-end Firms

	(1)	(2)	(3)	(4)
	Unbalanced Panel		Balanced Panel	
LHS: Log(Compensation)	Total	Cash	Total	Cash
2008 x Sept – Nov Year-end	0.012	0.024	0.034	0.041**
	(0.513)	(1.367)	(1.327)	(2.172)
Observations	16,636	16,501	12,318	12,213
R-squared	0.713	0.727	0.768	0.782
Performance Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Executive Role Controls	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec

Table 3 reports an analysis of changes in total and cash compensation around the introduction of the CD&A for September through November year-end firms. Following Equation (1), log of total or cash compensation is regressed on an indicator for September through November year-end, the fiscal year (2007 and 2008), control variables, and fixed effects, as specified by the table footer. The specification follows Table 2, Column (3) in all tests: in all Columns, I estimate a multivariate OLS regression with controls, year and firm fixed effects. The main effects are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. In Column (1) [(2)], the dependent variable is log of total [cash] compensation for all manager-year observations with sufficient data. In Column (3) [(4)], the dependent variable is log of total [cash] compensation for a panel that has been balanced by manager and the manager's role. I balance by role when Equilar's "Role Code" variable (e.g. "CEO", "CFO", "COO") is equal in both years or if the "Title" variable is equal in both years. This balancing causes the observation count to decline by about 4,300. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

For an additional setting, I use the passage of the JOBS Act. For firms—which IPO immediately prior to the Act within the retroactive period (December 8, 2011 through April 4, 2012)—that can take advantage of the Act's provisions, I code a dummy variable "Pre JOBS Act IPO" equal to one for these types of firms[11] and zero otherwise. This cross-sectional indicator

[11] I code the variable to equal one when the firm (1) files its S-1 prior to the JOBS Act, (2) includes a CD&A in its prospectus filing: 424(B)4, (3) identifies itself as an "Emerging Growth Company" in an SEC filing, and (4) does not include a CD&A in either its first 10-K or proxy (Def 14A) following the Act and zero otherwise.

should be interpreted in this setting as the "treated" dummy variable. The intertemporal dummy indicates the 2012 year (the IPO year) for both treated and control firms. I estimate the following equation as a third variant of equation (1) (suppressing manager and time subscripts):

$$Log(TotalCompensation) = \beta_1 \bullet PreJOBSActIPO + \beta_2 \bullet FY2012 + \beta_3 \bullet PreJOBSActIPO \bullet FY2012 + Controls + \varepsilon$$

Table 4: Descriptive Statistics: JOBS Act Setting

	N	Mean	Std Dev	P25	Median	P75
Salary	276	278,722	103,731	228,104	284,546	336,632
Bonus	276	49,520	116,872	0	0	44,070
Incentive	276	114,695	134,312	0	84,782	172,154
Stock	276	130,139	502,212	0	0	0
Options	276	371,200	932,945	0	0	343,440
Other	276	36,162	114,006	0	3,190	20,973
Total Compensation	276	973,511	1,065,545	412,602	630,226	1,087,037
Log(Total Compensation)	276	13.39	0.901	12.93	13.35	13.90
Performance controls:						
Return on Assets	276	-0.136	0.567	-0.168	0.022	0.103
Loss Indicator	276	0.457	0.499	0	0	1
Firm Characteristic controls:						
Size: Log(Expenses)	276	4.440	1.654	3.583	4.647	5.251
Market to Book	276	4.792	47.82	1.971	3.818	8.069
Leverage: Liabilities to Equity	276	0.571	8.906	-0.542	0.336	0.973
Manager Role controls:						
CEO Indicator	276	0.355	0.479	0	0	1
CFO Indicator	276	0.246	0.432	0	0	0
Founder Indicator	276	0.167	0.373	0	0	0
Director Indicator	276	0.116	0.321	0	0	0
Pre JOBS Act IPO Indicator	276	0.536	0.500	0	1	1

Table 4 shows variables used in the JOBS Act analyses. Variables are described in Appendix 1. The sample comprises 276 manager-year observations for years 2011 and 2012 from firms that IPO during 2012, are eligible for the provisions of the JOBS Act, and withhold CD&A disclosures in filings following the Act. I obtain compensation and manager-specific control variables from SEC EDGAR. I retain managers that are observable in both 2011 and 2012. Each firm-year contributes between 3 and 5 manager-year observations. So, firm-year control variables enter the sample multiple times. Firm-year data is from Compustat, supplemented by SEC EDGAR. I Winsorize all continuous variables, including compensation, at 1% and 99% by year.

I again include control variables that correlate with the economic determinants of manager compensation but modified slightly for the setting. I exclude annual stock returns and annual return volatility, because these variables are not available for the whole series. I measure

size with annual expenses rather than assets. I measure market-to-book in the pre-IPO year as the offering ratio. Other control variables are equivalent to the main analyses. Table 4 Panel A gives descriptive information for the JOBS Act setting. The sample is a balanced, manager-year panel. Managers for these smaller, IPO firms earn less, with the median pay equal to about $630 thousand. The firm-year controls enter the sample multiple times, like the introduction setting.

Table 5 presents the results from the JOBS Act setting. Column (1) gives the univariate relation from an OLS regression. In this setting, the relation between the CD&A and compensation levels is positive with an estimated coefficient of 0.291, significant at the 10% confidence level. The economic magnitude of this estimated effect is approximately 34%, much higher than the CD&A introduction setting. Because I limit the sample to managers at firms that do not have the disclosure after the JOBS Act is passed, the design measures the treatment effect on those likely to have the highest costs or least benefits from disclosure.[12] Column (2) shows the result with control variables. The magnitude of the coefficient increases to 0.381 and is significant at the 5% level. Column (3) shows the result using a robust regression estimation technique. I include this test because pay is noisy (e.g. Jin, 2002). With this small observation-count setting, I do not eliminate any observations through truncating: all continuous variables have been Winsorized at 1% and 99%. With the robust regression estimation, the coefficient of interest is similar in magnitude to the univariate estimate and significant at the 5% level.[13]

[12] In cross-sectional tests, I show that in the CD&A introduction setting managers at smaller firms have larger increases in compensation when the CD&A is disclosed. I interpret this to be consistent with expanded information in the managerial labor market: when managers are less well known to hiring firms, they receive more benefits or incur more costs from disclosure. The same mechanism would likely influence pay levels in the JOBS Act setting.

[13] In order to calculate the standard errors using clustering, I calculate weights using Stata's "rreg" command and run the analysis with a weighted least squares (WLS) regression. The r-squared from this WLS regression is also reported.

Table 5: Changes in Total Compensation for Managers at JOBS Act Eligible Firms that IPO in 2012

LHS: Log(Total Compensation)	(1) Univariate	(2) Controls	(3) Robust Regression
IPO Year x Pre JOBS Act IPO	**0.291***	**0.381****	**0.282****
	(1.782)	**(2.122)**	**(2.151)**
IPO Year (2012) Indicator	0.311***	0.196	0.194**
	(2.708)	(1.570)	(2.128)
Pre JOBS Act IPO (CD&A in Prospectus)	0.210	-0.131	-0.094
	(1.398)	(-0.973)	(-1.038)
Return on Assets		0.036	0.085*
		(0.550)	(1.718)
Loss Indicator		0.256*	0.218**
		(1.922)	(2.456)
Size: Log(Expenses)		0.198***	0.154***
		(4.307)	(5.169)
Market to Book		0.001	-0.000
		(0.789)	(-0.295)
Leverage: Liabilities to Equity		-0.025***	-0.023***
		(-4.642)	(-8.041)
CEO Indicator		0.530***	0.585***
		(4.244)	(7.351)
CFO Indicator		-0.032	0.056
		(-0.299)	(0.725)
Director Indicator		-0.419*	-0.386***
		(-1.850)	(-2.794)
Founder Indicator		-0.199	-0.145
		(-1.086)	(-1.458)
Constant	13.049***	12.184***	12.388***
	(104.4)	(47.22)	(77.66)
Observations	276	276	276
R-squared	0.113	0.318	0.392
Fixed Effects	No	No	No
Clustering	Exec	Exec	Exec

Table 5 reports an analysis of changes in total compensation around the 2012 IPO for managers at JOBS Act eligible firms. Following Equation (1), log of total compensation is regressed on indicators for firms which IPO prior to the JOBS Act, the fiscal year (2011 and 2012), and control variables, as specified by the table footer. Variables are described in Appendix 1. In Column (1), I estimate a univariate OLS regression that excludes control variables. In Column (2), I estimate a multivariate OLS regression with the indicators from (1) and with control variables. In Column (3), I estimate a robust regression using Stata's "rreg" command. Standard errors are calculated with clustering by executive. For the robust regression, executive-level-clustered standard errors are calculated using a weighted least squares (WLS) regression based on the weights (and coefficients) from the robust regression; the R-squared is also reported from this WLS regression. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Overall, the CD&A introduction for December year-end firms and the JOBS Act setting suggest that compensation disclosures are associated with higher levels of compensation. The CD&A introduction for September through November year-end firms is associated with higher compensation levels when using cash pay for managers in a balanced panel. These findings are inconsistent with expanded compensation disclosures resulting in a reduction in rent extraction by the manager. Managers feasibly extract rents as a result of monitoring problems between shareholders and the compensation committee. This mechanism has many built-in assumptions that individually could result in no effect presenting in the CD&A introduction and partial rollback settings. Alternatively, this mechanism is present but other mechanisms that increase pay dominate. Subsequent tests show robustness that these disclosures are associated with higher pay in the introduction setting and explore mechanisms that would cause pay increases.

4.2. Robustness for CD&A introduction setting

In Figure 4, I present descriptive evidence that the parallel trends assumption is reasonably plausible during the pre-CD&A introduction years. Figure 4 shows that for years 2002 through 2006, trends in mean cash compensation between managers at December year-end firms and at September through November year-end firms trend upward together. In constructing the series, I again use a balanced panel of manager-years. Cash compensation is defined as above, grant-date salary plus grant-date bonus plus realized cash-type incentives. When I include stock, options and other to measure total compensation over this window, the trends seem less parallel. Higher mean pay switches between managers at firms with different fiscal year-end timing in 2003 and diverges in 2004. Otherwise, the trends are fairly similar. Managers at September through November year-end firms appear to take a small cut in 2006, which I test explicitly in Table 7.

Figure 4: Pre Period Mean Pay Trends at December and September through November Year-end Firms

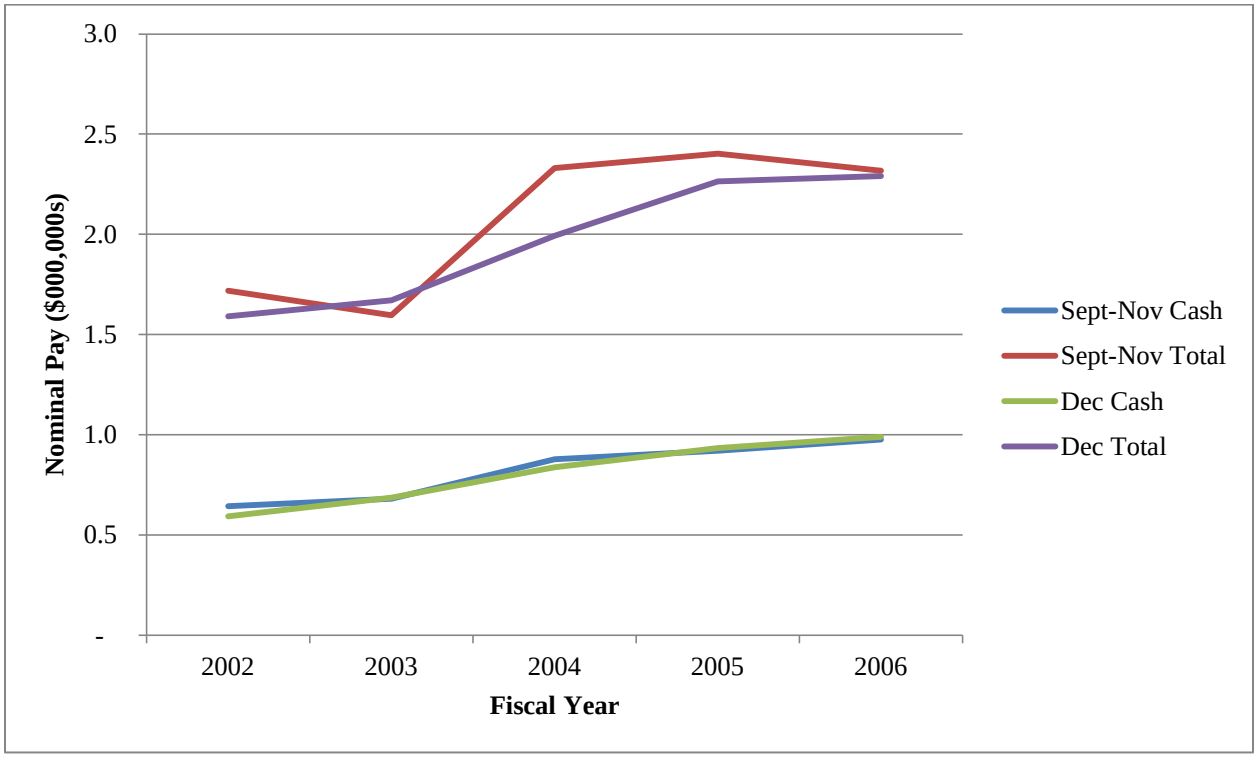

Figure 4 shows trends in mean total compensation and mean cash compensation (both as defined in the Appendix) in the five years leading up the to CD&A introduction. The red line represents mean total compensation for managers at September through November year-end firms. The purple line represents mean total compensation for managers at December year-end firms. The blue line represents mean cash compensation for managers at September through November year-end firms. Finally, the green line represents mean cash compensation for managers at December year-end firms.

Because it is unclear that the December and September through November firms are comparable, I first test the robustness of the main finding by using matching procedures to control for differences across these firms. Table 6 Panel A presents the main results when limiting observations to those selected by a propensity score matching (PSM) method between December and September through November year-end firms. I use controls Size, Market-to-

Book, and Leverage to generate matches.[14] The economic magnitude (and statistical significance) of the findings for December year-end firms attenuate, while the economic magnitude for the September through November year-end firms increases. Noise continues to be a problem for the latter setting; I (fail to) find statistical significance at the 10% (conventional) confidence levels for total (cash) compensation. For cash compensation, the decline in statistical significance appears likely to be a power issue because the economic magnitude is comparable to the full sample tests. Table 6 Panel B presents the main results using a weighted least squares (WLS) estimation. Weights are determined by a coarsened exact matching method (Iacus et al., 2012); in summary, the program calculates weights which balance the sample in quintile buckets for selected control variables, Size, Market-to-Book, and Leverage, between treatment and control groups. Similar to the PSM results, the economic magnitude of the findings for December year-end firms attenuates, while the magnitude for the September through November year-end firms increases. Statistical significance is comparable to the main results.

[14] The September through November Introduction (Columns (3) & (4)) includes average results from 10 different, random matches between treatment and control observations because control firms outnumber treatment firms. As a result, many December observations were found to be equally-well matched as controls.

Table 6: Introduction Setting Robustness

	(1)	(2)	(3)	(4)
	December Introduction		Sept - Nov Introduction	
LHS: Log(Compensation)	Total	Cash	Total	Cash
Panel A: Propensity Score Matching				
2007 x December Year-end	0.098**	0.068**		
	(2.367)	(2.648)		
2008 x Sept - Nov Year-end			0.126*	0.032
			(1.777)	(0.642)
Observations	3,574	3,549	2,658	2,647
R-squared	0.728	0.770	0.812	0.813
Panel B: Coarsened Exact Matching				
2007 x December Year-end	0.127***	0.071***		
	(4.861)	(4.818)		
2008 x Sept - Nov Year-end			0.039	0.042**
			(1.539)	(2.232)
Observations	15,596	15,476	12,124	12,020
R-squared	0.725	0.755	0.762	0.776
Performance Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Executive Role Controls	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec

Table 6 reports a robustness analysis of changes in total and cash compensation around the introduction of the CD&A. For Columns (1) & (2) and following Equation (1), log of total or cash compensation is regressed on an indicator for December year-end, the fiscal year, control variables, and fixed effects, as specified by the table footer. For Columns (3) & (4) and following Equation (1), log of total or cash compensation is regressed on an indicator for September - November year-end, the fiscal year, control variables, and fixed effects, as specified by the table footer. The main effects are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. Panel A presents results from OLS regressions that use observations selected by a propensity score matching procedure, using Firm Controls to select matches. The September through November Introduction presents the average results from 10 different, random matches between treatment and control observations because control firms outnumber treatment firms. Panel B presents results from WLS regressions that use weights selected by a coarsened exact matching procedure, where weights are determined by equating treatment and control groups by Firm Controls in quintile buckets. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Next, Table 7 presents tests of bonus and incentive compensation, forms of pay likely to respond quickly to the changes in mandated compensation disclosure. I perform these tests

because the CD&A was introduced and finalized as a rule during 2006; it is unclear that compensation committees and managers would respond to the disclosure in such a short timeframe in renegotiating all types of pay. Because equity-type compensation is often earned over multiple years, plans (and grants) are determined less frequently. Similarly, salary can be subject to a pre-determined raise schedule or decided by the compensation committee (in conjunction with the CEO for lower level managers) well before the fiscal year. Cash bonus and incentive are often determined annually in the year that they are earned.[15] As such, salary and equity-type pay could take longer relative to bonus and incentive compensation when adjusting to disclosure-related incentives. Column (1) [(3)] gives estimates of linear probability models for the propensity to receive any bonus or incentive; the magnitude suggests a 1% [2%] decline for December [September through November] year-end firms though the finding is not statistically significant at conventional levels. Conditional on receiving any bonus or incentive, Columns (2) & (4) show that the introduction of the CD&A is associated with large increases in variable cash compensation.

[15] Annual determination will not be the case for long-term incentive plans. Due to data constraints, I am unable to separately measure long-term and annual incentive plans.

Table 7: Bonus Analysis from Introduction Setting

	(1)	(2)	(3)	(4)
	December Introduction		Sept - Nov Introduction	
Left-hand Side	Bonus & Incentive Indicator	Log(Bonus + Incentive)	Bonus & Incentive Indicator	Log(Bonus + Incentive)
2007 x December Year-end	-0.006	0.164***		
	(-0.503)	(5.149)		
2008 x Sept - Nov Year-end			-0.020	0.125***
			(-1.121)	(2.830)
Observations	15,951	13,844	12,318	10,310
R-squared	0.447	0.772	0.551	0.787
Performance Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Executive Role Controls	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec

Table 7 reports an analysis of changes in bonus and incentive compensation around the introduction of the CD&A. For Columns (1) & (2) and following Equation (1), an indicator for nonzero bonus / incentive pay or log of bonus plus incentive is regressed on an indicator for December year-end, the fiscal year, control variables, and fixed effects, as specified by the table footer. For Columns (3) & (4) and following Equation (1), an indicator for nonzero bonus / incentive or log of bonus plus incentive is regressed on an indicator for September - November year-end, the fiscal year, control variables, and fixed effects, as specified by the table footer. The main effects are excluded because they are collinear with the fixed effects. Columns (1) & (3) are linear probability models using OLS. Columns (2) & (4) are log-level regressions also using OLS. I restrict observations in these columns to nonzero bonus plus incentive observations. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Finally, Table 8 presents two falsification settings by replicating the design of the CD&A introduction for December year-end firms. Columns (1)-(2) use this falsification design in the two-year window (2005 and 2006) prior to the true introduction, which occurred in 2007. As dependent variables, Column (1) [(2)] uses total compensation [cash compensation]. The coefficient estimates, at 0.042 for total and -0.038 for cash, are material in economic magnitude but have conflicting signs. The coefficient for changes in total compensation [cash compensation] is not statistically significant [significant at the 5% level]. Columns (3)-(4) use

the falsification design in the two-year window (2008 and 2009) following the introduction for September through November year-end firms. Again, the signs of the coefficients conflict; the economic magnitude is small but material. Neither coefficient is statistically significantly different from zero. These tests show that selecting a false date of introduction for the CD&A does not correspond to predictable movements in pay levels. Put another way, the difference-in-differences estimates uniformly correspond to compensation increases when correctly assigned to the true introduction dates and do not correspond to any particular change in compensation otherwise.

Table 8: Falsification Tests—Shifting the timing of the Introduction of the CD&A for December Year-end Firms

	(1)	(2)	(3)	(4)
	2005 & 2006		2008 & 2009	
LHS: Log(Compensation)	Total	Cash	Total	Cash
2006 x December Year-end	0.042	-0.038**		
	(1.432)	(-2.275)		
2009 x December Year-end			-0.028	0.024
			(-1.049)	(1.135)
Observations	10,251	10,268	12,434	12,430
R-squared	0.797	0.805	0.787	0.779
Performance Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Executive Role Controls	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec

Table 8 reports two counterfactual analyses of changes in total and cash compensation around a pseudo introduction of the CD&A for December year-end firms. Following Equation (1), log of total or cash compensation is regressed on an indicator for December year-end, the fiscal year, control variables, and fixed effects, as specified by the table footer. The specification follows Table 2, Column (3) in all tests: in all Columns, I estimate a multivariate OLS regression with controls, year and firm fixed effects. The main effects are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. In preparing the pseudo introduction two-year panels, I balance observations by manager and the manager's role. I balance by role when Equilar's "Role Code" variable (e.g. "CEO", "CFO", "COO") is equal in both years or if the "Title" variable is equal in both years. In Columns (1)-(2), I use years 2005 and 2006, one year

Footnote continued on following page

Table 8 footnote continued
prior to the true December fiscal-year CD&A introduction. In Column (1) [(2)], the dependent variable is log of total [cash] compensation. In Columns (3)-(4), I use years 2008 and 2009, one year following the true September through November fiscal-year CD&A introduction. In Column (3) [(4)], the dependent variable is log of total [cash] compensation. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

5. Economic Mechanisms Causing Pay Increases

5.1. Expanded information in the managerial labor market

Disclosures that reveal information about the manager to outside (hiring) firms could provide benefits or impose costs on the manager. With the mandated CD&A disclosures, prospective employers can observe compensation determinant detail and might reasonably infer information about a manager's quality, e.g. similar to the career concerns story from Gibbons and Murphy (1992). Effects of this incremental information revelation by prospective employers are not obvious. Disclosures might provide benefits to the manager as follows. For hiring firms, gathering information about prospective manager-hires is costly. Disclosures about managers can reduce these costs. As a result, managers would have improved outside options. The manager's current firm is incented to offer more pay to the manager to prevent attrition.[16] That is, when the manager experiences benefits from disclosures, compensation levels rise, reflecting retention costs for the manager's current firm (e.g. Cahuc et al., 2006).

Alternatively, disclosures might impose costs on the manager, and these costs are shared with the manager's firm.[17] The manager is contracted to run her own firm, and the hiring firm

[16] Pay increases are not always the result from information benefits. A firm could be incented to offer lower pay because the firm could attract managers partially through the position's outside, promotional value. This would reduce my ability to find evidence for expanded information in the managerial labor market as a mechanism for pay increases or favors a cost-to-the-manager channel rather than a benefit-to-the-manager channel.

[17] Generic costs to the manager could cause pay to rise. With bargaining where gains to the manager-firm match are split evenly, any increase in costs to the manager in providing labor (i.e. an upward shift in the supply curve) would be observed in higher pay. This change in pay would

observes—with the CD&A disclosures—the contract's incentives and other dimensions of the manager's firm's outcomes. The hiring firm uses incremental disclosures to update its beliefs about the manager's ability. The hiring firm can then modify its job offer, implicit or explicit, to the manager. The result, i.e. the costs to the manager, is that the job offer is less favorable when the manager does not have all of the bargaining power and the hiring firm learns more about the manager. Put differently, the hiring firm can learn about the manager and tailor an offer that is still sufficient to attract the manager but pays less than the hiring firm might pay in the absence of information. This general idea is behind a set of models from Hart and Tirole (1988) and Laffont and Tirole (1988).

The CD&A offers signals of ability to the prospective employer. It details bonus schemes and incentive plans, with information on past performance; some disclosures provide forward information on pay targets. These types of information could provide benefits or impose costs on the manager through expanding information in the managerial labor market and lead to pay increases. When the manager has bargaining power with her own firm, any pay rise attributable to this information channel would be difficult to disentangle from other costs imposed on the manager through, e.g., disrupting her quiet life (Bertrand and Mullainathan, 2003). Also, distinguishing between benefits and costs is challenging because it is likely that similar managers ex ante would be subject to either benefits or costs from disclosure. I expect that pay changes resulting from expanded information in the managerial labor market are going to be concentrated in managers that are less well known to outsiders, i.e. less prominent. I use two different proxies for prominence, (1) length of time that the manager has been exposed to compensation disclosures and (2) size of the manager's firm. Also, I expect that managers in industries with

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generalize to variation in bargaining power, except in cases where the manager has no bargaining power.

higher pay variance will have a higher expected value of outside options and benefit more (suffer greater costs) when disclosures provide (impose) labor market benefits (costs). As a result of this, managers in these industries will have higher pay increases when disclosing the CD&A.

In Table 9, I examine interactions that are consistent with expanded information in the managerial labor market as a mechanism that would cause compensation to rise when the firm makes compensation disclosures. Columns (1)-(2) present a triple interaction with a count of the cumulative (i.e. to-date) number of observations attributable to the manager. For instance, if the manager has had compensation information disclosed in 2005, 2006, and 2007, then the count variable would equal two [three] in the 2006 [2007] manager-year observation. This variable will proxy for how well known the manager is to outsiders through these compensation disclosures. Because this study uses the 2000-2009 Equilar data, the count will at most equal eight [nine] for the December [September through November] CD&A introduction. Expanded information would result in less-well-known managers receiving greater benefits (incurring greater costs) from compensation disclosures. Evidence supporting this mechanism would result in a negative coefficient on the triple interaction. This result presents with a coefficient equal to -0.050 [-0.020] and significant at the 1% [5%] level in Column (1) [(2)], a finding consistent with the expanded information in the managerial labor market story.[18] When including these cross-sectional controls, the main effect for the September through November year-end firms is positive and significant at the 5% level. As a main effect to the triple interaction, the coefficient magnitude is hard to interpret.

[18] This finding is also inconsistent with a rent extraction explanation. Managers that have shorter tenure are less likely to be entrenched and less likely to have undue influence over the pay-setting process. The finding indicates that short-tenured managers receive more pay with disclosures, which is the opposite that would be predicted by a theory where entrenched managers use the disclosure to extract more rents.

Table 9: Cross-sectional Analyses using Changes in Total Compensation around the Introduction of the CD&A

LHS: Log(Total Compensation)	(1)	(2)	(3)	(4)	(5)	(6)
	Cumulative Manager Observations		Firm Market Capitalization		High Standard Deviation Pay Industry	
Interactions:						
2007 x Dec Year-end x Manager Obs	**-0.050*** **					
	(-4.073)					
2008 x Sept - Nov Year-end x Manager Obs		**-0.020** **				
		(-2.178)				
2007 x Dec Year-end x Log(Mkt)			**-0.057*** **			
			(-2.947)			
2008 x Sept - Nov Year-end x Log(Mkt)				**-0.042** **		
				(-2.464)		
2007 x Dec Year-end x High SD Pay					**0.140** **	
					(2.500)	
2008 x Sept - Nov Year-end x High SD Pay						**0.115** **
						(2.244)
Primary Interactions:						
2007 x December Year-end Indicator	0.363***		0.539***		0.033	
	(5.538)		(3.825)		(0.700)	
2008 x Sept - Nov Year-end Indicator		0.114**		0.311**		-0.076*
		(2.057)		(2.497)		(-1.764)
Other cross-sectional interactions:	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,951	16,636	15,795	16,468	15,951	16,636
R-squared	0.728	0.717	0.721	0.709	0.723	0.713
Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes+	Yes+	Yes	Yes
Executive Role Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec	Exec	Exec

Table 9 reports cross-sectional analyses of changes in total compensation around the introduction of the CD&A. For Columns (1), (3), & (5), I modify Equation (1); log of total compensation is regressed on an indicator for December year-end, the fiscal year 2007, and an additional cross-sectional variable, specified by the column header, all interacted. I use the two-year panel (2006 and 2007) consistent with Table 2. For Columns (2), (4), & (6), I again modify Equation (1); log of total compensation is regressed on an indicator for September through November year-end, the fiscal year 2008, and an additional cross-sectional variable, specified by the column header, all interacted. I use the two-year panel (2007 and 2008) consistent with Table 3 Column (1). Control variables and fixed effects are included as specified by the table footer. The main effect indicators are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. Additional variables are added and interacted with the main effect indicators; I do not report these coefficients. The triple interaction is highlighted at the top of the table. The primary interaction is included below. In Column (1) & (2), a count of the manager's cumulative observations in the Equilar dataset is interacted with the main effects. In Column (3) & (4), the log of the firm's market capitalization at fiscal year-end is interacted with the main effects. In Column (5) & (6), an indicator variable for high standard deviation of total compensation for fiscal years 2002-2005 is interacted with the main effects. + indicates that the market capitalization main effect has been substituted for the firm control for size, log of assets, because the two are highly correlated. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Columns (3)-(4) present another proxy for manager prominence by using a proxy of firm prominence, the firm's market capitalization. As I argue with the other proxy, a less prominent manager receives (incurs) more benefits (costs) from disclosure. If the prominence of the firm has an impact on the prominence of the manager, the coefficient on the triple interaction will be negative when managers at less prominent firms have compensation disclosures. The coefficient of interest is -0.057 [-0.042] and significant at the 1% [5%] level in Column (3) [(4)]. Note, the test specification substitutes the log of market value for the log of assets as a control variable.

Columns (5)-(6) present an interaction with an indicator for industry pay variance. I measure standard deviation of total compensation within 3-digit SIC code industries for years 2002-2005. I code the indicator variable equal to one when the industry is above the median and zero otherwise. Managers in industries with higher variance in pay are likely to have greater value of outside options and benefit more (have higher costs) from disclosures. A positive coefficient on the triple interaction would be consistent with this prediction. The coefficient of interest is 0.140 [0.115] and significant at the 5% [5%] level in Column (5) [(6)]. These findings in Table 9 are consistent with the expanded information in the managerial labor market mechanism: managers that are less prominent and have greater-value outside options have larger pay increases when their firm makes compensation disclosures.

5.2. Imposing risk through pay-metric binding

Another plausible channel for disclosures causing increased compensation is by imposing risk on managers. The CD&A disclosure can bind the compensation committee to a pay plan. Binding to a set of performance metrics ex ante might become inefficient when the committed compensation determinants do not best measure the efforts of management ex post. Without commitment through disclosure, the compensation committee could reward managers using non-

contractible or difficult-to-observe metrics which better reflect the manager's effort, imposing less risk. With commitment through disclosure, the compensation committee would raise target pay to compensate managers for additional risk. This channel is analogous to the story in Morse et al. (2011) but without the strong normative implications of labeling compensation committee flexibility as "rigging." Morse et al. (2011) present evidence of CEO compensation levels being positively correlated with the greater of industry-adjusted ROA and industry-adjusted share price performance, incrementally so for "powerful" CEOs. It is unclear whether this flexibility is compensation committees mitigating the riskiness of pay packages or powerful managers unwinding pay-for-performance. I present evidence consistent with the CD&A disclosures increasing riskiness.

In Figure 5, I present r-squared statistics from annual, OLS regressions of log total compensation on the control variables from all the main tests (but excluding fixed effects). I separately estimate these regressions for December year-end and September through November year-end firms. In Panel A, I find that while December year-end firms have a lower level than September through November year-end firms, the statistics move in parallel through time. Around the introduction of the CD&A, the trends diverge. The r-squared statistic for December year-end firms declines in 2007; the r-squared statistic for September through November year-end firms declines in 2008. Both declines coincide with the sequential introduction of the CD&A. In Panel B, I show standard error bounds by performing bootstrapped replications clustering by firm. The r-squared statistics appear significantly different in 2007.

Figure 5: R-squared Plots for Annual Compensation Regressions

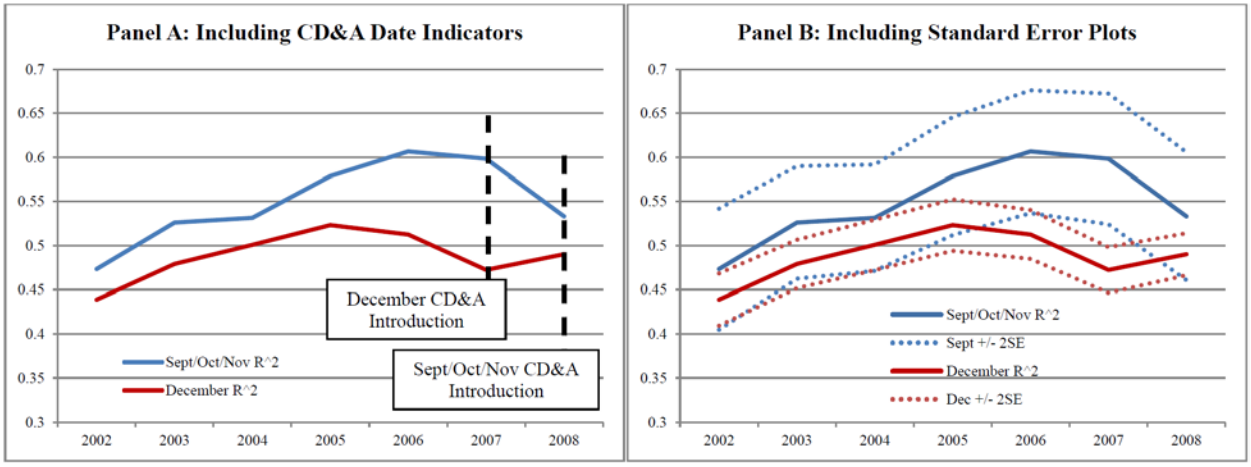

Figure 5 shows trends in r-squared statistics from within-year cross-sectional OLS regressions of total compensation on performance variables, firm characteristics, and manager role indicators. Performance variables include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm characteristics include Size, Market-to-Book, and Leverage. Manager role indicators include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1.These regressions are performed for fiscal years 2002 through 2008, separately for December year-end firms and September through November year-end firms. The blue line represents r-squared statistics through time for September through November year-end firms. The blue line represents r-squared statistics through time for December year-end firms. The blue line represents mean cash compensation for managers at September through November year-end firms. Panel A includes two vertical lines indicating the introduction of the CD&A for the two groups of firms separately. Panel B includes standard error (SE) lines two SEs away from the estimated r-squared statistics. SEs are calculated using bootstrapping with 500 repetitions and with firm clusters.

In Table 10, I examine within-firm standard deviation of pay during the CD&A introduction. Consistent with the design used in the main tests, these tests use two-year panels. Controls include performance and firm characteristics variables plus firm and year fixed effects. Columns (1)-(3) present regressions estimating the log of standard deviation of pay for total, cash, and bonus plus incentive, respectively, for the December year-end CD&A introduction including fiscal years 2006 and 2007. The interacted variable of interest is positive across all tests, though only statistically significant at convention levels for total compensation. The magnitude can be interpreted as about a 19% increase in standard deviation of total pay.

Columns (4)-(6) present regressions estimating the log of standard deviation of pay for total, cash, and bonus plus incentive, respectively, for the September through November year-end CD&A introduction including fiscal years 2007 and 2008. The interacted variable of interest is positive across all tests, though fails to be statistically significant at convention levels for total compensation. Although not significant for statistical inference, the magnitude can be interpreted as about a 12% increase in standard deviation of total pay. This range of increase in total compensation dispersion within firm of 12%-19% is economically meaningful. It likely represents a meaningful increase in risk to the manager that should be compensated. Because this change corresponds with the disclosure, this evidence is consistent with disclosures binding the metrics in compensation plans, imposing risk on managers.[19]

5.3. Other theories resulting in higher pay

Several other mechanisms besides these described above in Sections 5.1 and 5.2 might result in higher pay from disclosures. First, improvements in manager-shareholder bonding from disclosures would cause shareholders to entrust the manager with more decision-making and to pay her for these new efforts (e.g. Milgrom, 1981). Second, compensation levels can be a signal of the manager-firm match's surplus (e.g. Hayes and Schaefer, 2008). With this signal theory, shareholders place excessive reliance on the information in compensation levels in determining manager-firm match surplus and use the information to value the firm. So, the signaling value from disclosures about compensation levels causes pay to be distorted upward.

[19] Two of the cross-sectional tests from Table 8 are also consistent with this explanation. Smaller firms and firms in high-pay-variance industries are likely to have additional volatility in compensation metrics. Binding to metrics through disclosure would impose more risk on these managers than those at larger firms or firms in low-pay-variance industries, leading to a similar cross-sectional prediction as the CD&A expanding information in the managerial labor market.

Table 10: Pay Dispersion around the Introduction of the CD&A

	(1)	(2)	(3)	(4)	(5)	(6)
LHS: Log(Within-Firm Standard Deviation of Compensation)	Total	Cash	Bonus + Incentive	Total	Cash	Bonus + Incentive
2007 x December Year-end	0.178**	0.035	0.107			
	(2.251)	(0.741)	(1.537)			
2008 x Sept - Nov Year-end				0.109	0.149***	0.192***
				(1.558)	(3.154)	(2.618)
Observations	2,895	2,890	2,767	3,001	3,000	2,780
R-squared	0.852	0.916	0.892	0.845	0.892	0.886
Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

Table 10 reports an analysis of changes in within firm standard deviation of compensation around the introduction of the CD&A. For Columns (1)-(3), I modify Equation (1); log of standard deviation of compensation is regressed on an indicator for December year-end and the fiscal year 2007 interacted plus control variables and fixed effects. I use the two-year panel (2006 and 2007) consistent with Table 2 with firm-years as the unit of observation as opposed to manager-years. For Columns (4)-(6), I again modify Equation (1); log of standard deviation of compensation is regressed on an indicator for September through November year-end and the fiscal year 2008 interacted plus control variables and fixed effects. I use the two-year panel (2007 and 2008) consistent with Table 3 Column (1) with firm-years as the unit of observation as opposed to manager-years. Control variables and fixed effects are included as specified by the table footer. The main effect indicators are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. In Column (1) & (4), within-firm standard deviation is measured for total compensation. In Column (2) & (5), within-firm standard deviation is measured for cash compensation. In Column (3) & (6), within-firm standard deviation is measured for bonus and incentive compensation. Standard errors are calculated with clustering by firm. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

Third, disclosures from other firms might provide new information to the rent-extracting manager who uses it to strategically select higher-paid peers to benchmark his own pay. He uses these pay benchmarks to justify additional rent extraction (e.g. Faulkender and Yang, 2010). This is a special case of a larger, learning theory. Compensation contracts are likely to incorporate the performance of comparable firms and comparable managers across firms (Holmström, 1982). While empirical evidence for relative performance evaluations has been mixed (Antle and Smith, 1986; Janakiraman et al., 1992; Albuquerque, 2009), a shift in the information environment

could lead to learning about compensation practices across firms and a subsequent shift in pay as contracts evolve. These changes would not necessarily lead to either an upward or downward prediction in the level of pay. Efficient realignment in selected peer firms or peer managers might indicate underpayment, overpayment, or neither. Learning would likely cause contracts to more closely resemble each other across firms.

An unanswered question from learning is whether comparable peers are efficiently selected (Albuquerque, 2009; Albuquerque et al., 2013) or strategically selected for managers to extract rents (Bizjak et al., 2008; Faulkender and Yang, 2010; Bizjak et al., 2011). Compensation consultants play an ambiguous role in this peer selection process, feasibly aiding the efficient matching process (Armstrong et al., 2012) or aiding the bandit manager (Conyon et al., 2009; Murphy and Sandino, 2010; Cadman et al., 2010). If managers—either aided by compensation consultants or not—select peers to extract rents, pay levels are likely to rise when new disclosures become available.[20] The research design of this paper where disclosures are introduced would not be able to identify these effects. Managers at non-disclosing firms would be able to strategically select from the set of disclosing firms, the same as managers at disclosing firms. A desirable research design to measure strategic benchmarking would be the introduction of cross-sectional variation in access to other firms' information, not disclosing one's own information. Additionally, in the JOBS Act setting where a subset of firms are able to withhold the disclosure long after its introduction, rent extraction through benchmarking should still be present among managers in these non-disclosing firms.

[20] An important assumption of this theory is that managers are better equipped to use new disclosures to drive pay up than the compensation committee (or other monitors) who would use new disclosures to prevent rent extraction. While it is unclear that managers are naturally better equipped, they likely have stronger incentives to learn because they have greater benefits from rents than monitors, individually, have costs.

Table 11: Cross-sectional Analyses using Changes in Total Compensation around the Introduction of the CD&A

	(1)	(2)	(3)	(4)	(5)	(6)
LHS: Log(Total Compensation)	CEO Interactions		CFO Interactions		Director Interactions	
Interactions:						
2007 x Dec Year-end x CEO	**0.091***					
	(1.737)					
2008 x Sept - Nov Year-end x CEO		**-0.008**				
		(-0.110)				
2007 x Dec Year-end x CFO			**-0.027**			
			(-0.619)			
2008 x Sept - Nov Year-end x CFO				**0.032**		
				(0.567)		
2007 x Dec Year-end x Director					**0.066**	
					(1.471)	
2008 x Sept - Nov Year-end x Director						**0.004**
						(0.064)
Primary Interactions:						
2007 x December Year-end Indicator	0.129***		0.160***		0.123***	
	(3.969)		(5.159)		(3.882)	
2008 x Sept - Nov Year-end Indicator		0.009		-0.008		-0.003
		(0.299)		(-0.264)		(0.093)
Other cross-sectional interactions:	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,871	12,475	11,960	12,621	12,934	13,292
R-squared	0.744	0.737	0.708	0.688	0.739	0.734
Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Executive Role Controls	Yes+	Yes+	Yes+	Yes+	Yes	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering	Exec	Exec	Exec	Exec	Exec	Exec

Table 11 reports cross-sectional analyses of changes in total compensation around the introduction of the CD&A. For Columns (1), (3), & (5), I modify Equation (1); log of total compensation is regressed on an indicator for December year-end, the fiscal year 2007, and an additional cross-sectional variable, specified by the column header, all interacted. I use the two-year panel (2006 and 2007) consistent with Table 2. For Columns (2), (4), & (6), I again modify Equation (1); log of total compensation is regressed on an indicator for September through November year-end, the fiscal year 2008, and an additional cross-sectional variable, specified by the column header, all interacted. I use the two-year panel (2007 and 2008) consistent with Table 3 Column (1). In all columns, I exclude the other top managers that are not having pay levels incrementally measured (e.g. in Columns (1) & (2), I exclude CFOs and non-CEO directors). Control variables and fixed effects are included as specified by the table footer. The main effect indicators are excluded because they are collinear with the fixed effects. Performance controls include Return on Assets, Annual Stock Returns, Annual Return Volatility, and Loss Indicator. Firm Controls include Size, Market-to-Book, and Leverage. Manager Role Controls include indicator variables for CEO, CFO, Director, and Founder. Variables are described in Appendix 1. The role indicators are interacted with the main effect indicators; I do not report these coefficients. The triple interaction is highlighted at the top of the table. The primary interaction is included below. In Column (1) & (2), the CEO indicator, a Manager Role Control, is interacted with the main effects. In Column (3) & (4), the CFO indicator, a Manager Role Control, is interacted with the main effects. In Column (5) & (6), the director indicator, a Manager Role Control, is interacted with the main effects. +CFO [CEO] indicator is excluded for Columns (1) & (2) [(3) & (4)]. Standard errors are calculated with clustering by executive. *, **, and *** indicate significance (two-sided) at the 10%, 5%, and 1% confidence levels, respectively.

These other mechanisms have predictions in common. Bonding or signaling could impact all levels of management. Yet, the firm would receive the most benefit from (1) bonding between the CEO (or other highest ranking managers among the top managers) and shareholders or (2) signaling the CEO-firm match's quality, because the CEO generally has the most responsibility for guiding the firm's activities. In an empirical test, the pay level increases would be concentrated among CEOs. Strategic benchmarking would also result in pay increases to be concentrated in manager roles that have the most influence over the pay-setting process, namely CEOs or executive directors.

In Table 11, I present cross-manager tests to examine whether the pay increases are concentrated among the highest ranking managers: CEOs, CFOs, and executive directors. In these tests, I exclude other highest ranking managers. For instance, when testing incremental pay changes for CEOs, I exclude CFOs and non-CEO executive directors. Columns (1)-(2) present a triple interaction with the CEO indicator variable. The coefficient of interest for December year-end firms is positive and economically meaningful.[21] For September through November year-end firms, the coefficient is slightly negative but not statistically significant at conventional levels. Column (3) [(4)] presents a triple interaction with the CFO indicator variable for December [September through November] year-end firms. For both Columns, the economic magnitude is fairly small and not statistically significant. Finally, Columns (5)-(6) present a triple interaction with the director indicator variable. The coefficient of interest for December year-end firms is economically meaningful; for September through November year-end firms, the coefficient is

[21] When estimated in separate regressions, CEOs have a smaller, positive association between the CD&A disclosure and compensation levels than other managers, i.e. interactions between the CEO indicator and other control variables matter and excluding these separately estimated controls (i.e. allowing CEOs to be rewarded differently on firm characteristics and performance) contribute to the statistically significant finding in this pooled regression.

about equal to zero. This relation with the CEO indicator variable is unsurprising because these two indicators are highly correlated. Neither is statistically significant at conventional levels. Overall, these findings show that pay increases are spread across manager roles and are difficult to reconcile with other mechanisms causing pay increases as a result of compensation disclosures.

6. Conclusion

This paper analyzes the effects of mandated disclosure of management compensation determinants on compensation levels. For identification, I use the introduction of the CD&A in 2006, a significant expansion in the required disclosures related to compensation. The design uses the timing of the introduction date to compare manager pay at firms with and without the disclosure in a difference-in-differences analysis. I compare manager pay at December year-end firms, the first to disclose the CD&A, with pay at September through November year-end firms, the last to disclose the CD&A. I find empirical support for disclosures increasing compensation. I corroborate these findings with the partial rollback of the CD&A allowed by the JOBS Act in 2012, where I again find that the CD&A is associated with higher compensation. I use matching methods and examine bonus to test the robustness of the introduction setting. Analysis of historic compensation cash pay levels and placebo tests suggest that the parallel trends assumption is likely to hold.

From cross-sectional tests, I find evidence consistent with managers receiving benefits or incurring costs from expanded information in the managerial labor market. That is, disclosures that reveal information about the manager to outside firms could raise the manager's prospects (e.g. Cahuc et al., 2006), causing the manager's own firm to raise pay to prevent attrition. Alternatively, compensation disclosures could impose costs on the manager by reducing the

value of outside prospects (e.g. Hart and Tirole, 1988), causing pay to rise when the manager has bargaining power with her own firm. I predict and find that this mechanism would cause pay increases associated with disclosures to be concentrated among less prominent managers and managers with higher-valued outside options. From firm level tests, I also find evidence consistent with disclosures imposing additional risk on managers, likely through binding compensation plans to specific, volatile performance metrics. I examine within-firm standard deviation of compensation and find that it increases with the CD&A disclosure. In other tests, I find that entrenched and powerful managers (CEOs, CFOs, and executive directors) do not have incremental pay increases with disclosures compared with lower level managers. These results are inconsistent with powerful managers using disclosure to extract rents.

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Appendix 1: Variable Definitions

Compensation Variables	Measure
Bonus	Grant-date value. Collected from: • Pre CD&A: Bonus field from Equilar "Executive OD" • Post CD&A: Bonus field from Equilar "Executive ND" • JOBS Act: Bonus as disclosed in firm's summary compensation table
Cash Compensation	Sum of bonus, incentive, and salary
Incentive	Receipt date cash amounts. Collected from: • Pre CD&A: LTIP payouts from Equilar "Executive OD" when LTIP award types are "Cash, %Sal, Other" • Post CD&A NEIP from Equilar "Executive ND" • JOBS Act: NEIP as disclosed in firm's summary compensation table
Options	Grant-date value using Black Scholes estimates. Collected from: • Pre CD&A: Value of Stock Options (Black Scholes) from Equilar "Executive OD" • Post CD&A: Value of Stock Options (Black Scholes) from Equilar "Executive ND" • JOBS Act: Options as disclosed in firm's summary compensation table
Other	Composed of incremental cost of perquisites, annual change in value to post-employment plans, earnings on deferred compensation that exceed federally determined threshold, and tax gross-ups to offset income taxes on some perquisites. Collected from: • Pre CD&A: Other from Equilar "Executive OD" • Post CD&A: sum of Change in Pension, NQDC, and Other from Equilar "Executive ND" • JOBS Act: sum of Pension and Other from firm's summary compensation table
Salary	Grant-date value. Collected from: • Pre CD&A: Salary field from Equilar "Executive OD" • Post CD&A: Salary field from Equilar "Executive ND" • JOBS Act: Bonus as disclosed in firm's summary compensation table
Stock	Grant-date value at share price multiplied by expected share count reward. Collected from: • Pre CD&A: sum of LTIP payouts when LTIP award types are not "Cash, %Sal, Other" and Restricted Stock Awards from Equilar "Executive OD"

Stock (continued)	• Post CD&A: Stock from Equilar "Executive ND" • JOBS Act: sum of Share-Based Compensation and Stock Grants in firm's summary compensation table
Total Compensation	Sum of bonus, incentive, options, other, salary, and stock

Design Variables	**Measure**
December year-end	An indicator variable equal to one when the manager's firm has a December year-end date and zero otherwise
Pre JOBS Act IPO	An indicator variable equal to one when the firm (1) files its S-1 prior to the JOBS Act, (2) includes a CD&A in its prospectus filing: 424(B)4, (3) identifies itself as an "Emerging Growth Company" in an SEC filing, and (4) does not include a CD&A in either its first 10-K or proxy (Def 14A) following the Act and zero otherwise
September through November year-end	An indicator variable equal to one when the manager's firm has a September, October, or November year-end date and zero otherwise

Control Variables	**Measure**
Annual return volatility	A continuous variable equal to the sum of daily returns during the fiscal year as available on CRSP
Annual stock returns	A continuous variable equal to the standard deviation of daily returns during the fiscal year as available on CRSP
CEO indicator	An indicator variable equal to one if the manager is the firm's Chief Executive Officer for the fiscal year and zero otherwise
CFO indicator	An indicator variable equal to one if the manager is the firm's Chief Financial Officer for the fiscal year and zero otherwise
Director indicator	An indicator variable equal to one if the manager is on the firm's board of directors during the fiscal year and zero otherwise
Founder indicator	An indicator variable equal to one if the manager is identified as a founder or co-founder of the firm. For the CD&A introduction setting, I rely on Equilar's identification. For the JOBS Act setting, I use manager biographies disclosed by the IPO firm
High standard-deviation-of-pay industry	An indicator variable equal to one if the manager's firm is in a 3-digit SIC code industry that has above median standard deviation of total compensation calculated during fiscal years 2002-2005 and zero otherwise
Leverage	A continuous variable equal to liabilities divided by equity for the end of the fiscal year, as available on Compustat.
Loss	An indicator variable equal to one if the firm's basic earnings per share before extraordinary items on Compustat is less than zero
Market-to-book	A continuous variable equal to market capitalization from Compustat divided by book value of equity from Compustat

	at the end of the fiscal year.
Return on assets	A continuous variable equal to earnings before interest and taxes divided by average total assets from Compustat
Size	For the CD&A introduction setting, a continuous variable measured as log of assets at the end of the fiscal year except in one test (Table 6: Column (3)-(4)) measured as log of market capitalization from Compustat. For the JOBS Act setting, a continuous variable measured as log of expenses
To-date manager observations	A count variable equal to the number of manager-year observations specific to the manager are in the Equilar dataset, which includes years 2000-2009. This count includes the current year. Note that the Equilar dataset does not have a manager identifier able to track the same manager across firms

Appendix 2: Selected Compensation Discussion & Analysis Excerpts

The new CD&A disclosures are long compared with the Compensation Committee Report (CCR), a precursor to the CD&A. I do not include full disclosures here but excerpts from IBM, a December year-end firm, comparing the 2006 proxy statement CCR discussion of annual bonus with 2007 proxy statement CD&A discussion of annual bonus and Starbucks, a September year-end firm, comparing 2007 proxy statement CCR discussion of annual bonus with 2008 proxy statement CD&A discussion of annual bonus. All source materials are available from the SEC EDGAR website. Firms also have expanded disclosures on other elements of pay: salary, long-term incentive plans, stock grants, and option grants, plus perquisite policies and information.

Information on:	Before CD&A	After CD&A
IBM Annual Incentive Plan	[3/9/2006] Annual cash incentives link payments to Company performance, business-unit performance and individual performance. In 2005 the annual funding for incentive awards was determined based on achievement of financial performance measures, based 50 percent on IBM corporate performance and 50 percent on business unit performance, and reflect financial results in the areas of net income (weighted 70 percent), revenue growth (weighted 20 percent) and cash flow (weighted 10 percent). Total incentive funding is confirmed following evaluation against productivity measures and certain qualitative measures, including achievements in client satisfaction, market share growth, and workforce development. Individual awards reflect the individual's performance and contributions for the year.	[3/12/2007] EVP and SVP Compensation Decisions for 2006 and 2007 The Compensation Committee also made decisions for each of the executive officers following the process described above and using a mix of the components shown above. The Compensation Committee noted the following as key points for each of the other named executive officers: Mark Loughridge, Senior Vice President and Chief Financial Officer · Drove record earnings per share and cash flow results; · Continued strong focus and success in delivering IBM's business model to investors; · Managed IBM's portfolio, improving or divesting businesses that sub-optimize value; and · Leveraged IBM's global capabilities by identifying innovative ways of doing business and streamlining support models. Following IBM's practice, the recommendations for Mr. Loughridge's compensation were ratified by the independent directors on IBM's Board. Nick Donofrio, Executive Vice President, Innovation & Technology · Drove highly successful process transformation and standards efforts in IBM across all units; · Closed 14th consecutive year of patent leadership; · Drove advances in high-performance computing to enable new science and drive marketplace for new applications; · Engaged leaders to build a values-based culture within IBM; Employee survey shows strong improvement on key values-related questions; and · Continued strong leadership in driving innovation and technical advances. Doug Elix, Senior Vice President and Group Executive, Sales and Distribution · Grew revenue and profit through sales and distribution across IBM business units; · Improved worldwide customer satisfaction ratings; · Realigned sales force, resources and processes to enhance sales performance and drive growth; and · Increased revenue growth in key industries, offerings and emerging markets.

Steve Mills, Senior Vice President and Group Executive, Software Group
· Grew revenue faster than or with the market in each Software unit and improved profit;
· Completed significant strategic acquisitions; and
· Drove initiatives to better integrate Software and Services business units, focusing on services-oriented assets and created major new focus on industry vertical standards.

Based on these results and following the process outlined above, the Compensation Committee approved the following 2006 annual incentive payments for these named executive officers:

	2006 INCENTIVE	
	ANNUAL INCENTIVE	TEAM INCENTIVE
M. Loughridge	920,000	200,000
N.M. Donofrio	1,023,350	200,000
D.T. Elix	888,250	200,000
S.A. Mills	865,000	200,000

The team incentive payment reflected Chairman and CEO Palmisano's assessment of the performance of his entire senior leadership team and their success in working together to integrate across business units to enhance IBM's performance.

The Committee also approved these 2007 base salary, target incentive and stock-based grants:

	2007 CASH	
	SALARY RATE (EFFECTIVE JUNE 1, 2007)	ANNUAL INCENTIVE TARGET
M. Loughridge	690,000	935,000
N.M. Donofrio	800,000	1,080,000
D.T. Elix	775,000	1,045,000
S.A. Mills	670,000	905,000

Setting Performance Targets for Incentive Compensation

ANNUAL INCENTIVE PROGRAM

The Company sets business objectives at the beginning of each year that are reviewed by the Board of Directors. These objectives translate to targets for the Company and for each Business Unit for purposes of determining the target funding of the Annual Incentive Program. Actual funding levels can vary from 0% to 200% of target, depending on performance against objectives.

At the end of the year, management assesses the financial and productivity performance for the Company based on performance against financial metrics, as set out below.

FINANCIAL METRIC	WEIGHTING IN OVERALL SCORE
Net Income	60%
Revenue Growth	20%
Cash Flow	10%
Productivity	10%

Overall funding for the Annual Incentive Plan is based on the performance results against these targets and a discretionary assessment made by the Chairman and CEO based on factors such as individual and unit performance, client satisfaction, market share growth and workforce development, among others. This assessment can be either up or down. The Compensation Committee reviews the financial scoring and qualitative adjustments and approves the Annual Incentive Plan funding level. Once the funding level has been approved, a lower-performing executive will receive as little as zero payout and the most exceptional performers are capped at three times target (payouts at that level are rare and only possible when IBM's performance has also been exceptional).

		Because disclosure of the specific targets under the Annual Incentive Program would signal where IBM is shifting strategic focus, give competitors insight to areas where IBM is changing investments or divestments and impair IBM's ability to leverage these actions for competitive advantage, IBM is not disclosing these specific targets. The targets are set at aggressive levels each year to motivate high business performance and support attainment of longer-term financial objectives. These targets, individually or together, are designed to be challenging to attain. Knowledge of the targets could also be used by competitors to take advantage of insight into specific areas to target the recruitment of key skills from IBM. In addition, disclosing the details of our productivity metric provides confidential information we currently do not publicly disclose which would put at risk our ability to leverage for pricing competitiveness. Disclosing the specific targets and metrics used in the qualitative discretionary assessment made by the Chairman and CEO would give our competitors our insight to key market dynamics and areas that could be used against IBM competitively by industry consultants or competitors targeting existing customers. Also, the Company's financial model, as explained to investors, is a long-term model, with objectives and drivers for top line growth and EPS. The Company does not manage its financial model on a short-term or annual basis. Disclosing short-term compensation objectives would run counter to the Company's core financial model and could result in confusion for investors.
Starbucks Annual Incentive Bonus	[1/17/2007] Incentive bonuses are generally granted based on a percentage of each executive officer's base salary. During fiscal 2006, the president and chief executive officer, the chairman, the president, Starbucks Coffee U.S., the president, Starbucks Coffee International and the executive vice presidents of the Company, a total of eight officers, participated in the Company's Executive Management Bonus Plan (the "EMB Plan"). The Committee approves and recommends to the Independent Directors the objective performance measure or measures, bonus target percentages and other terms and conditions of awards under the EMB Plan. During fiscal 2006, target bonus amounts under the EMB Plan were expressed as a percentage of base salary and were established according to the overall intended competitive position and competitive survey data for comparable positions in comparator group companies. For fiscal 2006, the bonus targets for participating officers ranged from 50% to 100% of base salary depending on position. After the end of the fiscal year, the Committee determined the extent to which the performance goals were achieved, and approved and recommended to the Independent Directors the amount of the award to be paid to each participant. Under the EMB Plan as in effect during fiscal 2006, 80% of the target bonus was based on the achievement of the specified objective performance goal approved by the Committee and the Independent Directors for the fiscal year (other than for the chairman and the president and chief executive officer, for whom 100% of the target bonus was based on the objective performance goal). In fiscal 2006, an earnings per share target was the objective performance measure upon which the objective performance goal was based. The terms of the objective performance goal permit bonus payouts of up to 200% of the target bonus in the event (as was the case in fiscal 2006) that the Company's actual financial performance was better than the earnings per share target based on a scale approved by the Committee and the Independent Directors within the first 90 days of fiscal 2006. Twenty percent of the target bonus for each	[1/23/2008] We provide an annual incentive bonus opportunity for executive officers to drive company, business unit where appropriate, and individual performance on a year-over-year basis. For fiscal 2007, we designated the eight executive officers with a title of executive vice president or above, including all of the named executive officers, to participate in the Executive Management Bonus Plan at target bonus amounts expressed as a percentage of base salary. The target bonus amounts were established so that, when combined with base salary, total cash compensation was targeted at approximately the 50th percentile of comparator companies. The fiscal 2007 target bonus amounts and weighting between objective and individual performance goals for the named executive officers are shown in the table on page 25. *Individual Performance Goals* All executive officers participating in the Executive Management Bonus Plan for fiscal 2007, other than Messrs. Schultz and Donald, had individual performance goals under the plan. For fiscal 2007, we based bonus payouts to Messrs. Schultz and Donald solely on achievement of the objective performance goals, as described below, because they were responsible for the financial performance of the whole company. For fiscal 2008, the bonus payout to Mr. Schultz will continue to be based solely on the achievement of objective performance goals. For other executives, we believe individual bonus goals are appropriate primarily to drive individual performance against strategic corporate initiatives. Individual bonus goals may be set within, but are not limited to, the following five categories: • Financial and/or business performance; • Partner development; • Organizational effectiveness; • Strategic focus; and • Personal development. Individual bonus goals vary depending on our strategic plan initiatives and each executive's responsibilities. Individual bonus goals comprised 20% of total incentive bonus goal weighting in fiscal 2007 for all executive officers other than Messrs. Schultz and Donald. Individual bonus goals for fiscal 2007 under the annual incentive plan for the other named executive officers and the weighted percentage of total bonus goals assigned to each were: • Martin Coles: initiatives focused on our international business, related to (i) partner (employee) development (4%), (ii) meeting the fiscal 2007 international business profit target (4%), (iii) maintaining Starbucks as a "best place to work" (3%), (iv) product category and brand development

	executive officer other than the chairman and the president and chief executive officer was based on specific individual performance goals, which change somewhat each year according to strategic plan initiatives and the responsibilities of the positions. Relative weights assigned to each individual performance goal typically range from 5% to 35% of the 20% target bonus. The total bonus award is determined according to the level of achievement of both the objective performance and individual performance goals. Below a minimum threshold level of performance, no awards may be granted pursuant to the objective performance goal, and the Independent Directors, acting on the recommendation of the Committee may, in their discretion, reduce the awards pursuant to either objective or individual performance goals. For Mr. Donald, the EMB Plan provided a bonus target of $1,000,000, or 100% of base salary, for achievement of the objective performance goal. Under the terms of the EMB Plan, Mr. Donald earned a bonus of $2,000,000 for fiscal 2006. Because the Company achieved earnings per share at a level permitting payout of 200% of the target bonus, as approved by the Committee and the Independent Directors, the bonus paid to Mr. Donald was above the competitive target of the 50th percentile of bonuses paid to chief executive officers by target peer group companies.	(3%), (v) new store development (3%), and (vi) developing international markets (3%). • Michael Casey: (i) successful transition to new chief financial officer (5%), (ii) oversight of technology initiatives (5%), (iii) strategic projects assigned by the chief executive officer (5%), and (iv) leadership of cost-savings initiatives (5%). • James C. Alling: (i) meeting the fiscal 2007 U.S. business profit target (8%), (ii) partner (employee) development (3%), (iii) broadening exposure and influence in other areas of our business (3%), (iv) increasing customer satisfaction (3%), and (v) cost-savings initiatives (3%). *Objective Performance Goals* For fiscal 2007, the objective performance goal for each executive officer was adjusted earnings per share. During the course of fiscal 2007 we evaluated whether business unit performance or operating income should be a primary objective measure. Since business unit performance and operating income track core operating performance more closely than earnings per share, we decided to base the fiscal 2008 objective performance measures on a mix of either business unit performance (for executives responsible for a single business unit) or operating income (for executives with responsibilities that cross business units) and, to a lesser extent, adjusted earnings per share. Those objective measures also align with our fiscal 2008 general management incentive plan. The fiscal 2007 objective performance measure was adjusted earnings per share, rather than actual earnings per share calculated under generally accepted accounting principles, because we believe adjusted earnings per share gives executives a more certain target that is within their sphere of control and accountability. This avoids potentially interfering with the incentive purpose of the awards by increasing or reducing actual bonus payouts based on accounting impacts of extraordinary events and changes in accounting rules. Earnings per share is adjusted to exclude the impact of any (i) significant acquisitions or dispositions of businesses, (ii) one-time, non-operating charges and (iii) accounting changes (including early adoption of any accounting change mandated by any governing body, organization or authority). Adjusted earnings per shares is also adjusted for any stock split, stock dividend or other recapitalization. As shown in the table below, target adjusted earnings per share for fiscal 2007 was $0.87-0.88. To provide greater incentive for greater performance, the fiscal 2007 Executive Management Bonus Plan had a sliding scale which provided for bonus payouts greater than the target bonus if adjusted earnings per share was $0.89 or more (up to a 200% payout for $0.92 or greater) or less than the target bonus if adjusted earnings per share was $0.86 or lower (subject to a threshold adjusted earnings per share of $0.84). Fiscal 2007 adjusted earnings per share was $0.87, providing for a potential 100% payout. There were no adjustments to earnings per share based on the permitted adjustments described above. In setting the objective performance target, we consider target Company performance under the board-approved annual operating and long-term strategic plans, the potential payouts based on achievement at different levels on the sliding scale and whether the portion of incremental earnings paid as bonuses rather than returned to shareholders is appropriate. Objective performance goals are then targeted where they (i) require significant year-over-year growth in our business and (ii) are not easy to achieve. For example, 23% growth in earnings per share from $0.71 in fiscal 2006 (19% growth over fiscal 2006 earnings per share of $0.73 before the effect of a change in accounting principle) was required in order to achieve the target fiscal 2007 adjusted earnings per share of $0.87-0.88, and 18% adjusted earnings per share growth was required to permit even the threshold 25% payout for adjusted earnings per share of $0.84. For every cent of adjusted earnings per share over the target, we believe it is appropriate to provide for increased executive bonuses due to the significant shareholder returns commonly generated by above-target earnings per share performance. The committee and the independent directors have the discretion to reduce the awards paid, but do not have

discretion to increase payouts that are based on achievement of the objective performance goal or make a payout based on the objective performance goal if the threshold target is not achieved.

Fiscal 2007 Executive Management Bonus Plan Permitted Payout for Achievement of Objective Performance Goal		
Adjusted EPS	% of Payout	Impact
$0.92 or greater	200%	% of Payout is applied to both objective and individual performance goal targets.
$0.91	175%	
$0.90	150%	
$0.89	125%	
$0.87 - $0.88	100%	Target Adjusted EPS
$0.86	75%	% of Payout is applied only to objective performance goal target
$0.85	50%	
$0.84	25%	
Less than $0.84	0%	

The Executive Management Bonus Plan does not permit a payout of more than $3.5 million to any executive officer for any single fiscal year based on achievement of objective performance goals. The total bonus award is determined based on the extent to which objective performance and individual performance goals were achieved. Company performance above the objective target raises the payouts related to both the objective performance goal and the individual performance goals, if any. Company performance below the objective target automatically reduces only the payout related to the objective goal, not the individual performance goals, because we want executives to have the same incentive to achieve their individual performance goals even if our financial performance tracks below the target during the course of the fiscal year.

After the end of fiscal 2007, the committee determined the extent to which the performance goals were achieved, and subsequently approved, certified and recommended to the independent directors (who also approved and certified) the amount of the award to be paid to each participant in the plan. The table below shows the fiscal 2007 target bonus for each named executive officer as compared to the actual fiscal 2007 bonus payout.

Fiscal 2007 Target Bonus VS. Actual Payout		
Named Executive Officer	Target Bonus (as a % of Base Pay) (1)	Actual Payout (as a % of Base Pay) (1)
Howard Schultz	100%	0%
James L. Donald	100%	0%
Martin Coles	65%	32.2%
Michael Casey	50%	24.5%
James C. Alling	65%	0%

(1) The Target Bonus column is from column (b) in the table below and the Actual Payout column is from column (h) in the table below, which further describes the calculation of the fiscal 2007 bonus payouts.

The following table shows the level of achievement of performance goals and the related bonus paid for each of the named executive officers.

Fiscal 2007 Executive Management Bonus Plan Payouts to Named Executive Officers							
(a)	(b)	(c)(1)	(d)(2)	(e)(3)	(f)(4)	(g)	(h)
HS	100%	100%	0%	N/A	N/A	0	0%
JLD	100%	100%	0%	N/A	N/A	0	0%
MCo	65%	52%	19.5%	13%	12.7%	234k	32.2%
MCa	50%	40%	15%	10%	9.5%	156k	24.5%
JCA	65%	52%	0%(5)	13%	0%(5)	0	0%

(a)Named Executive Officer [initials]
(b)Target Bonus (as a % of Base Pay)
(c)Permitted Objective Goal Payout (as a % of Base Pay)(1)
(d)Actual Objective Goal Payout (as a % of Base Pay)(2)
(e)Target Individual Goal Payout (as a % of Base Pay)(3)

		(f)Individual Goal Payout (as a % of Base Pay)(4) (g)Actual Payout ($) (h)Actual Payout (as a % of Base Pay) (1) Since the fiscal 2007 objective performance goals were achieved (i.e., we achieved targeted adjusted earnings per share), the Executive Management Bonus Plan permits a full payout of the objective goal portion at the target level. The amounts reflected in column (c) above are equal to the amounts reflected in column (b) multiplied by the percentage of target bonus determined by objective performance goals for each named executive officer (which was 80% for each of Messrs. Coles, Casey and Alling). For example, Mr. Casey's Target Bonus (as a % of Base Pay) was 50% and 80% of his target bonus was determined by the objective performance goal, so the "Permitted Objective Goal Payout (as a % of Base Pay)" for Mr. Casey as reflected in column (c) above was 40%. (2) As discussed below, the Compensation Committee exercised its discretion to reduce the objective performance goal portion of the bonus payouts for all named executive officers other than Mr. Alling, who did not qualify for a payout because he did not achieve at least 50% of his individual performance goals. Column (d), "The Actual Objective Goal Payout (as a % of Base Pay), shows the adjusted objective bonus payout amounts. (3) The amounts in column (e) "Target Individual Goal Payout (as a % of Base Pay)" are equal to the percentages set forth in column (b) "Target Bonus (as a % of Base Pay)" multiplied by 20% (other than Messrs. Schultz and Donald who had no individual goals), the percentage of target bonus determined by individual performance goals for Messrs. Coles, Casey and Alling. For example, Mr. Casey's Target Bonus (as a % of Base Pay) was 50%, and 20% of his target bonus was determined by individual performance goals, so Mr. Casey's Target Individual Goal Payout (as a % of Base Pay) was 10%. (4) The amounts set forth in column (f) "Individual Goal Payout (as a % of Base Pay)" reflect the actual bonus amounts payable based upon achievement of each named executive officer's achievement of his individual performance goals in fiscal 2007. (5) Mr. Alling did not receive a payout (please see column (f)) because his individual goal achievement was 45%, primarily due to our U.S. operating segment not achieving its fiscal 2007 operating profit target. Although we achieved our fiscal 2007 adjusted earnings per share goal, permitting an objective goal payout percentage of 100%, the committee and the independent directors exercised negative discretion to reduce payouts because we did not meet our internal fiscal 2007 operating profit targets for either the total consolidated business or the U.S. business segment (which represented approximately 78% of fiscal 2007 total net revenues). Payouts were reduced also to align more closely with payouts under our general management incentive plan. Since Messrs. Schultz and Donald were responsible for the financial performance of the company as a whole during fiscal 2007, their bonus payouts were reduced to zero. Since Mr. Coles was responsible for the financial performance of the International business, which partially achieved its internal profit goals, during almost all of fiscal 2007, his objective payout percentage was reduced by 37.5%. Mr. Casey's objective payout percentage also was reduced by 37.5% as the head of our finance function, which successfully controlled costs and accomplished other significant business initiatives during fiscal 2007. So the percentages for Messrs. Coles and Casey set forth in column (d) are the percentages set forth in column (c) multiplied by 37.5%. For example, Mr. Coles "Permitted Objective Goal Payout (as a % of Base Pay)" set forth in column (c) was 52%. 52% × 37.5% = 19.5%, the "Actual Objective Goal Payout (as a % of Base Pay)" reported for Mr. Coles in column (d). Objective payouts to executives leading support functions were also reduced by 37.5% to recognize the success of those functions at controlling costs, which directly contributed to achievement of our fiscal 2007 earnings per share goal.